

DRAFT

Trash Screen Code of Practice

V0.8

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1 – Introduction

This code of practice (CoP) has been written with reference to the 'Trash and Security Screen Guide 2009' published by the Environment Agency (EA) which outlines good practice for the design, assessment, management and operation of trash and security screens across culverts in England and Wales.

Trash screens are generally installed on the ends of culverts for two main reasons:

- Reduce the amount of trash and debris entering the culvert where it could cause damage and/or a blockage;
- Prevent unauthorised access to the culvert.

In addition, trash screens may also be installed upstream and remote of the culverts to intercept trash and debris. Whilst a properly designed screen can reduce or even eliminate the probability of debris blockage, trash screens themselves can cause severe problems and lead to localised flooding problems arising from a total or partial blockage of the screen. Where this occurs, water will find an alternative route which in some cases may cause minimal nuisance with, for example, water overflowing onto adjacent open land or flowing at a shallow depth across a road. However, blockages to trash screens could cause extensive flooding. Incidents of flooding may lead to legal action being taken against the authority.

This CoP considers the trash screens which are the responsibility of the County Council as the highway authority and promotes the use of a risk-based approach to assessing the management and operation of all existing trash screens to ensure optimum performance. It is anticipated that the implementation of this CoP will seek to ensure that trash screens:

- Perform as designed;
- Are fit for purpose;
- Provide value for money;
- Are maintained on regular basis;
- Minimise both the flood and general health and safety risks.

2 – Justification of Trash Screens

The EA state in their design guidance note the 'we discourage the use of any form of screen except in circumstances where the benefits are significant and outweigh the risks'.

The objective of a trash screen should not be to trap as much debris as possible. In fact, the screen should trap as little debris as possible commensurate with the aim of preventing material that could cause a blockage from progressing downstream.

The type of trash screen required will depend upon the nature of the debris in the watercourse which can be loosely classified into three types:

- Coarse debris (such as boulders and tree trunks);
- General debris (anything from branches/plants to armchairs and oil drums);
- A combination of coarse and general.

The distinction between debris types and trash screen types is not clearly defined, and relates mainly to the spacing of the bars on the screen. However, coarse screens are often placed some distance upstream of the culvert and are designed to overtop when obscured by debris whereas general debris screens are usually situated at the inlet to the culvert.

Where it is considered that the benefits of a trash screen no longer outweighing the risks then it should be considered to be removed.

3 – Maintenance of Trash Screens

All screens, regardless of their primary purpose, will collect debris which may obstruct water flow, causing the upstream water level to rise and increase the probability of flooding.

In order to mitigate against the risk of this happening, it is important that procedures are put in place to maintain the trash screens which are maintainable by the Highway Authority. Typical maintenance activities include:-

- Regular inspections and cleaning of the screen with the safe disposal of accumulated debris
- Non-routine response in the event that the screen becomes blocked with trash in times of flood flow
- Maintaining the screen in a safe working condition

In order that these activities can be carried out safely, access to trash screens should wherever possible be via steps and handrails. Where these facilities are not provided and absence presents a hazard to operatives and inspectors, such sites need reporting to the Highway Asset Manager so that consideration can be given to funding this work. Notice of entry or consideration of easement arrangements may be required to access some structures and legal advice will be sought.

Risk Assessments

The safety of operatives and other staff whilst visiting a trash screen to carry out maintenance, cleaning or inspection works is paramount. Given the different locations and terrain in which trash screens are located it is essential that risk assessments are in place for each trash screen.

The risk assessments will record where access is difficult, or the trash screen has known issues or hazards. All risk assessments should be stored in individual site folders.

Site Specific Details

It is recommended individual folders are created for each trash screen. These should contain information relating to:-

- Decisions regarding the design and assessment of a new trash screen
- Site-specific issues
- Details of risk assessments
- Trash screen assessments carried out
- Maintenance / inspection regimes
- Audit trail detailing any changes to maintenance / inspection regimes
- Health and safety issues

4 – Trash Screen Assessments

Record of Existing Screens

As the Lead Local Flood Authority, Lancashire County Council has a duty, under the 2010 Flood and Water Management Act, to maintain an asset register of structures likely to have a significant effect on a flood risk in its area, and a record of information about each of those structures or features, including information about ownership and state of repair. As part of this we are recording information on trash screens, which are published on the Flood Risk Asset Register and recorded on the Highways Asset Management System (HAMS). This work is currently undertaken by the Asset Management Team. (Trash Screens that are recorded on HAMS are screens that have been identified as either privately owned and maintained, ones that are owned and maintained by other organisations such as the Environment Agency or ones that are either owned and maintained by Lancashire County Council or just maintained by Lancashire County Council).

Detail recorded

It may be necessary to further review the detail recorded regarding individual trash screens, this may be prompted by:

- Changes to the characteristics of the watercourse and associated debris
- Changes to the flood discharge under which the asset must perform satisfactorily
- Changes to the asset management regime
- Recognition that the trash screen has reached the end of its design life
- Failure of the trash screen
- Changes to surrounding terrain making access more difficult or unsafe
- Flood Risk Management / Highways becoming aware of new issues

Assessment of an existing location including the screen and surrounding vegetation may reveal that the characteristics of the screen, watercourse and location are unchanged, however it may be that the land use has changed or that the benefits of the trash screen (i.e. preventing flooding or protecting bridges and culverts from blockage or damage) no longer exist. In such situations, the maintenance regime may need to be reconsidered and revised accordingly.

To ensure good practice, all decisions made during the assessment will be recorded and the file details updated as appropriate. Where it is determined that there is no longer a need for a trash screen this may be removed.

The trash screen assessment form is found in Appendix 1.

5 - Risk Management Matrix

In order that trash screens are inspected, cleaned and maintained at sufficient frequencies to try to prevent flooding incidents, and that these are consistent across Lancashire a risk management matrix has been compiled which takes into account the following factors, which are not listed in order of importance :-

- proximity to the resilient road network
- proximity to emergency service and military installations
- proximity to schools, hospitals and electricity substations
- proximity to domestic and commercial property
- proximity to higher risk routes
- number of people per hectare
- in a flood risk area

To seek to reduce the consequences of flooding should a trash screen become blocked to the extent that water is restricted from entering the culvert and causes localised flooding, the risk matrix has been weighted by doubling all scores relating trash screens in flood zone 3 areas, proximity to higher risk routes and the resilient road network.

As a result of this work each trash screen has been placed into one of the following categories:-

- High
- Medium
- Low

In addition, should flooding occur, or following a change in site circumstances, further assessments of a trash screen should be considered. The criteria set out on and be undertaken on the trash screen assessment form, found in Appendix 1. The trash screen will then be reassessed and the inspection frequency may be adjusted.

Proposed Inspection Frequencies

Proactive Inspections:

To endeavour to prevent flooding as a result of blocked trash screens is a priority for the County Council. On receipt of a severe weather warning for heavy rain, inspection visits will be arranged to be carried out pre-event, during and post event starting with high risk screens.

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Pre-event inspections will be prioritised by the Area Highways Manager, or deputy, considering trash screen risk category and when the screen was last inspected and cleared. Depending on the prevailing conditions it may not be possible to visit all priority sites. Once high risk screens have been inspected, and there is sufficient time before the heavy rain is forecast, inspection visits will be made to medium risk screens and when those are done to low risk screens. If a screen of a lower risk is in very close proximity to one being inspected, the earlier inspection of said lower risk screen may be carried out immediately following the inspection of the higher risk one. During these visits any debris considered by the inspectors to be liable to contribute to flooding will be removed. It is proposed that such visits are to those areas which are the subject of an extreme weather warning for heavy rain.

During event inspections will be prioritised by the Area Highways Manager, or deputy, considering information gathered during the pre-event inspections, any additional relevant information and considering the trash screen risk categories.

Post event inspections will be prioritised by the Area Highways Manager, or deputy, considering information gathered during earlier inspections, any additional relevant information including advanced weather forecasts, and considering the routine inspection schedule.

Routine inspections:

It is proposed that the routine inspection and maintenance visits are carried out at frequencies that reflect both the consequences and probability of flooding as set out below:-

Task	Frequency	Applicable to Risk Scores
Inspection	Monthly	High Risk
Inspection	Quarterly	Medium Risk
Inspection	Twelve Monthly	Low Risk

The Highways Managers (West & East), Highways Service are responsible for adherence to this Code of Practice with operational responsibility for delivery being the responsibility of the Area Highways Managers.

An inventory of the trash screens that are cleaned and/or maintained by the County Council will be stored in Insight the countywide Highway Asset Management System.

Trash screens, along with other flood risk assets can be found on the flood risk register available at:

<http://www.lancashire.gov.uk/council/strategies-policies-plans/environmental/lancashire-and-blackpool-flood-risk-management-strategy.aspx>

Trash Screen Assessment

(Using Environment Agency publication 'Trash and Security Screen Guide 2009')

Assessment criteria	Comments
<ul style="list-style-type: none">• Is it in good working order?• Does existing screen perform?• What are the consequences of not screening the location?• Is there still a need for a screen at the site?• Assess the suitability of the operational procedures and update where required• Is appropriate documentation in place, including H&S file and Operational Plan?• Is access still safe – are there any modifications required?• Assess condition of the screen, has there been any damage since the last assessment?	
Report outcome to Highway Asset Manager	