

laid asphalt should be used between edging strips. Where this is not possible, textured and smooth bituminous material should be used. It is particularly important that weeds are killed before surfacing a cycle route;

- dropped kerbs across a cycle route should be flush (3mm high) with the carriageway or access particularly where cyclists will cross them obliquely;
- drainage should prevent the ponding of water or the accumulation of grit or silt on the cycle route. However this is often impossible to achieve where a converted footway runs through a wide verge at a lower level than the carriageway with little longitudinal fall;
- the authority notes that it is the responsibility of the adjacent landowner to trim hedges from the edge of the cycle route once each year. Where the natural hedge line is within half a metre of the edge of the carriageway, a second trim will be required and this cut can be allocated from the highway maintenance budget. Arrangements should be made for the District Council's contractor to sweep the cycle route after these operations (this is particularly important for thorn hedges) to a maximum of 2 sweeps. These 2 sweeps may be funded by the highway authority and may be in addition to sweeping by the District Council to keep the highway clean.
- headroom along cycle routes beneath signs and branches should be at least 2.7m.

10.7 CONDITION OF HIGHWAY DRAINAGE SYSTEMS

10.7.1 The condition of highway drainage systems can contribute to the core objectives as follows:

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| Safety | <ul style="list-style-type: none">• Accumulation of water on carriageways, footways and cycle routes. |
| Serviceability | <ul style="list-style-type: none">• Accumulation of water on carriageways, footways and cycle routes. |
| Sustainability | <ul style="list-style-type: none">• Polluted effluent from clearing of highway drainage should not be directed into watercourses;• Authorities have a duty to prevent nuisance to adjoining landowners by flooding and should also work with others in the wider community to minimise the future risk of flooding;• Inadequate drainage of the highway structure will reduce effective life and increase maintenance liability. |

10.7.2 Highway drainage elements fall into five main categories:

- gullies, grips and ditches, which may be obstructed by the growth of vegetation or damaged by traffic. In most cases the responsibility for maintenance of ditches will rest with the adjoining landowner;

- culverts under roads which may be affected by blockage, subsidence or structural damage;
 - other piped drainage which may be affected by blockage or subsidence;
 - sustainable urban drainage systems, which may require special maintenance attention for maximum effectiveness;
 - surface boxes and ironwork for both drainage and non-drainage applications, which may be affected by subsidence or obstructed access.
- 10.7.3 There are no statutory or local indicators identifying the condition of highway drainage systems. Authorities should develop local standards based on fitness for purpose to provide the level of service required and assessment of the risk of this being compromised by failure of the system. The impact of drainage system failure will be greater on high speed roads, or in areas susceptible to flooding, and specified condition standards should reflect this. In such circumstances, the condition of drainage systems should require them to be free of obstructions at all times, with an appropriate inspection and cleansing regime to deliver this.
- 10.7.4 The frequency of emptying will also depend upon the location, extent of tree cover, level of rainfall, the extent of kerbing and the frequency of sweeping. The nature of local industrial and agricultural land use may also be influential. In lower risk situations, by default all gullies should be cleansed annually and arrangements made for non-functioning gullies to be recorded for more frequent or detailed attention. Schedules of gullies requiring increased frequency of emptying should be built up by experience and any known trouble spots included. Streets rather than individual gullies may be identified. Gullies should be over-filled when emptied to ensure they are clear and if not, the unit should be recorded for jetting. No more than 50mm of material should remain in the unit before it is recharged with clean water.
- 10.7.5 In lower risk areas culverts and manholes should be inspected every five years by default and cleaned where necessary, and piped drainage should be checked and flushed if necessary during regular service inspections, but by default at not more than 10 year intervals. Grips and kerb offlets should be jetted by default annually.
- 10.7.6 The frequency of cleansing of oil interceptors will depend on their design and location and will need particular consideration on a site-specific basis.
- 10.7.7 Material arising from all road drainage emptying and cleansing operations has potential implications for pollution and should be disposed of correctly in accordance with Environment Agency (EA), or equivalent authority, requirements.
- 10.7.8 Where despite effective maintenance operations, flooding of the highway occurs, with implications for safety or serviceability, relevant warning signs should be placed in position as quickly as possible and users advised through local media. The cause of the flooding should be determined and given prompt attention, in order to restore the highway to a reasonable condition. If it is subsequently determined that the flooding is attributable to deficiencies in infrastructure or the maintenance regime, given the nature of the weather conditions under which it occurred, then action to permanently relieve the problem should be considered urgently. If the event is attributable to the actions of a third party, the matter should be taken up with them at the earliest opportunity.

10.7.9 Ironware comprising covers, gratings, frames and boxes set in carriageways, footways and cycle routes has the potential to compromise safety and serviceability, and in certain cases cause noise and disturbance to local residents. Responsibility for defective ironwork, where this is part of the apparatus installed by a utility, lies with the company. Defects identified during inspection or from users should be formally notified to the utility, with a follow up procedure to ensure that dangerous defects are remedied within a specified timescale.

10.7.10 The following default condition standards are suggested for ironware set in carriageways. Manhole covers and boxes in the carriageway should be installed to a tolerance of $\pm 5\text{mm}$ to the surrounding level. Gully frames and gratings should be installed level, or not exceeding 10mm lower than the surrounding carriageway. When boxes, frames and covers are found to be greater than 20mm lower than the surrounding carriageway they should be re-set.

10.8 CONDITION OF EMBANKMENTS AND CUTTINGS

10.8.1 The condition of embankments and cuttings can contribute to the core objectives as follows:

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| Safety | <ul style="list-style-type: none">• Risk of loose material falling to injure users or damage facility. |
| Serviceability | <ul style="list-style-type: none">• Risk of damage or service interruption. |
| Sustainability | <ul style="list-style-type: none">• Damage or loss of habitat;• Interruption or pollution of watercourse;• Extent of damage and reduced life. |

10.8.2 There are no statutory or local indicators identifying the condition of embankments or cuttings. Authorities should develop local standards based on fitness for purpose to provide the level of service required, and assessment of the risk of this being compromised by failure of the system. The probability of failure will be affected by soil conditions and drainage. The impact of embankment or cutting failure will generally be high in all situations, but particularly so on important high speed links, or where dwellings could be affected. In such circumstances, the condition of embankments and cuttings will require a robust regime of inspection, and possibly continuous condition monitoring.

10.8.3 Slips and rock-falls from embankments and cuttings are relatively infrequent but the frequency and severity of such events may be affected by climatic change. Authorities should have records of relevant locations and should establish an inspection and maintenance regime based on a local risk assessment. In higher risk locations, or where ground conditions are difficult, specialist geotechnical advice should be obtained.

10.9 CONDITION OF LANDSCAPED AREAS AND TREES

10.9.1 The condition of landscaped areas and trees can contribute to the core objectives as follows: