Condition surveys may provide contributory information and reduce the scope of detailed inspections. The surveys may be undertaken either by a slow-moving vehicle, on foot or by utilising data such as video, depending on the circumstances. The frequency of the detailed inspection should be determined on a local basis.

17.2.3.3 Condition inspections

Condition inspections are primarily intended to identify deficiencies in the fabric of the highway network which, if untreated, are likely to adversely affect its long-term performance, serviceability and safety. Repeatable condition surveys allow trend analysis to be used, either to confirm the original decisions or to allow for changes as a result of the changing network condition, and to inform life-cycle planning.

17.2.4 Warning/intervention (investigatory) levels

The 2005 code was prescriptive regarding intervention if the defect was below a set investigatory level. An example in Table 17.3 sets out a typical recommendation for the standards of maintenance for whole-carriageway minor deterioration (Roads Liaison Group, 2005). The 2016 code, on the other hand, steps away from prescribing or encouraging a set level, and allows authorities to have a reference level. In the risk-based assessment, all defects observed during safety inspections that provide a risk should be recorded, and the response must be determined based on the risk assessment, meaning that, in some circumstances, inspection items with a lesser degree of deficiency may pose an equal or greater safety hazard to those with a greater degree of deficiency. For example, the degree of risk from a pothole depends not only on its depth but also on its surface area and location, and as such different potholes may warrant different response times. When distress is approaching, has reached or has exceeded the investigatory level, the safety inspector should conduct a risk assessment to determine the appropriate level of response.

Surface treatment covers all forms of surface sealing techniques, including patching, surface dressing using normal or special aggregates and binders, thin coatings using dense material and, in extreme cases of traffic loading, relaying or overlaying the road surface layers. Surface treatment should be considered when the warning levels set out in Table 17.3 are reached (or close to being reached). Once a certain level of roughness has been reached, the rate of structural deterioration caused by commercial vehicle axles increases at an exponential rate due to dynamic effects rather than effects simply related to the flow of traffic.

Bituminous pavements and concrete pavements are considered separately, as the character of the work is fundamentally different. The character of work envisaged in this chapter covers a range, including

- patching
- surface dressing
- retreading
- resurfacing.

This area is one of considerable current innovation. However, many of the products are proprietary, and therefore it is difficult to obtain much information about them.

17.3. Damage and distress in asphalt surfaces

This section sets out the more common forms of damage and distress found in asphalt surfaces. It examines the causes and comments on appropriate maintenance responses. Brief consideration is also given to the materials that are considered most suitable in each case.

17.3.1 Potholes

Potholes are the result of local materials deterioration and appear in the form of small or large bowl-shaped holes on the pavement surface. In potholes, pieces of aggregate have become detached from the parent body, allowing the ingress of water, which may lead to stripping of the binder and enhanced deterioration – not to mention damage to passing traffic.

Table 17.3 Typical investigatory level in the 2005 code

Category to which applicable	Limitation or severity	Percentage of area	Treatment
2–4	Note 1	20%	Surface treatment (Notes 1–4)

Data taken from Roads Liaison Group, 2005.

Notes 1–4

1. Whole-carriageway minor deterioration covers: fine crazing, permeable surfaces, fretting, loss of chippings and fatting up of existing surface dressings.
2. With the commercial introduction of a range of improved binders and chipping application techniques, surface treatment should be seriously considered as an alternative to resurfacing all categories of the road when minor carriageway defects emerge.
3. Patching, either in isolation or before surface treatment, should always be carried out where required to ensure a uniform surface with the remainder of the road and to remove isolated weak areas.
4. Patching repairs should be considered when the repairs are those resulting primarily from ageing or thermal stresses and as such lead either to a poor ride or a permeable pavement. The objectives, therefore, are to maintain the impermeability of the surface course and at the same time provide a smooth ride.