

	<p>Where machine measurement of retroreflectivity has been carried out and a Visual Assessment shall be required (TD26/17 Figure C.3ii), the Inspections shall be carried out in accordance with the following requirements.</p> <p>The road marking shall be assessed in accordance with the principals of TD26/17 including Figure C.3ii, Table C.1 and the photographic examples in Annex E.</p> <p>The visually assessed score shall also be processed by the Operating Company to:</p> <ul style="list-style-type: none"> • Match individual visually assessed scores to APMS asset records, • Analyse the data to identify CAT1 and CAT2 High Defects, All Critical Defects defined by TD26/17 shall be considered to be a Category 1 Defect, • Record individual visually assessed scores against the relevant APMS asset record. <p>Defects assessed as "Critical Defects" by TD26/17 shall be classified as a Category 1 Defect.</p>
Inspection Records	<p>On completion of each Inspection the visually assessed score shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item.</p>

Road Marking Transverse & Special - Retro-Reflectivity Measurement - Handheld

Inspection Name	Road Marking Transverse & Special - Retro-Reflectivity Measurement - Handheld		
Inspection Group	Condition Assessment - Road Markings and Studs		
Inspection Interval	At intervals not exceeding 12 months		
Inspection Requirement	<p>The retro-reflectivity and condition of all Transverse and Special Road Markings shall be assessed in accordance with the principals of TD26/17 using either of the following processes:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Inspection Process</p> <p>Machine measurement of retro-reflectivity of Transverse and Special Road Markings with Visual Assessment generally in accordance with TD26/17 and the process and thresholds set out in Annex C, Figures C.3i & Figures C.3ii.</p> <p>Handheld measurement of retro-reflectivity of Transverse and Special Road Markings with Visual Assessment generally in accordance with TD26/17 and the process and thresholds set out in Annex C and Figures C.4</p> </td> <td style="width: 50%; vertical-align: top;"> <p>TRIM inspection</p> <p>Inspections shall be recorded as</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Retro-Reflectivity Measurement - Machine <p>and where required</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Visual Assessment <p>Inspections shall be recorded as</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Retro-Reflectivity Measurement - Handheld </td> </tr> </table>	<p>Inspection Process</p> <p>Machine measurement of retro-reflectivity of Transverse and Special Road Markings with Visual Assessment generally in accordance with TD26/17 and the process and thresholds set out in Annex C, Figures C.3i & Figures C.3ii.</p> <p>Handheld measurement of retro-reflectivity of Transverse and Special Road Markings with Visual Assessment generally in accordance with TD26/17 and the process and thresholds set out in Annex C and Figures C.4</p>	<p>TRIM inspection</p> <p>Inspections shall be recorded as</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Retro-Reflectivity Measurement - Machine <p>and where required</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Visual Assessment <p>Inspections shall be recorded as</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Retro-Reflectivity Measurement - Handheld
<p>Inspection Process</p> <p>Machine measurement of retro-reflectivity of Transverse and Special Road Markings with Visual Assessment generally in accordance with TD26/17 and the process and thresholds set out in Annex C, Figures C.3i & Figures C.3ii.</p> <p>Handheld measurement of retro-reflectivity of Transverse and Special Road Markings with Visual Assessment generally in accordance with TD26/17 and the process and thresholds set out in Annex C and Figures C.4</p>	<p>TRIM inspection</p> <p>Inspections shall be recorded as</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Retro-Reflectivity Measurement - Machine <p>and where required</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Visual Assessment <p>Inspections shall be recorded as</p> <ul style="list-style-type: none"> • Road Marking Transverse & Special - Retro-Reflectivity Measurement - Handheld 		

	<p>Where the measurement of retroreflectivity is carried out by handheld device with visual assessment, the Inspections shall be carried out in accordance with the following requirements.</p> <p>The road marking shall be assessed in accordance with the principals of TD26/17 including Figure C.4, Table C.1 and the photographic examples in Annex E.</p> <ul style="list-style-type: none"> • The retro-reflectivity of each road marking shall be measured using a hand held retro-reflectivity meter. • The wear of the road marking shall be visually assessed and scored in accordance with TD26/17 • The Luminance factor assessed. • A condition rating derived based on the above assessments. <p>Defects assessed as "Critical Defects" by TD26/17 shall be classified as a Category 1 Defect.</p>
Inspection Records	<p>On completion of each Inspection the following data shall be recorded against each asset:</p> <ul style="list-style-type: none"> • Measured retro-reflectivity • Visual assessment of wear score • Luminance factor or luminance co-efficient • Derived asset condition rating <p>Where an asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded against each asset.</p>

Road Markings Transverse & Special - Night Time Reflectivity Safety Inspections

Inspection Name	Road Markings Transverse & Special - Night Time Reflectivity Safety Inspections
Inspection Group	Night Time Reflectivity Safety Inspections
Inspection Interval	At intervals not exceeding 6 months
Inspection Requirement	During each Inspection the reflective properties of Road Markings Transverse & Special shall be assessed during the hours of darkness to ensure it is visible and delivers its intended message to drivers and any Defects noted. This Inspection will generally be carried out from a slow moving vehicle with and Inspector and Driver.
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Road Marking Transverse & Special - Skid Resistance

Inspection Name	Road Marking Transverse & Special - Skid Resistance
Inspection Group	Condition Assessment - Road Markings and Studs
Inspection Interval	At intervals not exceeding 48 months and on approximately 1/4 of the critical assets per year

Inspection Requirement	<p>The skid resistance of all critical Road Markings shall be measured and any Defects present shall be noted.</p> <p>Skid Resistance measurements shall be carried out in accordance with the principals of TD26/17 Appendix C4, measured using the British Pendulum Tester in accordance with BS EN 1436. Defects assessed as "Critical Defects" by TD26/17 shall be classified as a Category 1 Defect.</p> <p>Skid Resistance measurements shall be carried out on all critical road markings, see definition in comments section below.</p>
Inspection Records	On completion of each Inspection a skid resistance reading shall be recorded against each inventory item along with a date/time stamp and any Defects associated with the asset.
Comments	<p>Critical Road markings shall include all Road Markings Listed below.</p> <ul style="list-style-type: none"> • All Give Way and Stop Lines on the Trunk Road at junctions and roundabouts , See TSRGD 2016 - Schedule 9 - Part 6. <ul style="list-style-type: none"> ○ Stop Line (Diag 1002.1). ○ Give Way Line (Diag 1003A). ○ Give Way Line at roundabout (Diag 1003.3). • All Transverse Yellow Bar markings on Dual Carriageway approaches to junctions, All Bifurcation arrows, All SLOW markings, All Arrows where there is a reduction in the number of traffic lanes in the carriageway ahead, see TSRGD 2016 - Schedule 11 - Part 4 <ul style="list-style-type: none"> ○ Yellow bar markings (Diag. 1067). ○ Bifurcation arrows (Diag. 1039). ○ SLOW markings (Diag. 1024). ○ Arrows where there is a reduction in the number of traffic lanes in the carriageway ahead (Diag. 1014). • Any other road markings suspected of having poor skid resistance.

Road Marking Transverse & Special- Accessibility Inspection



Inspection Name	Road Marking Transverse & Special- Accessibility Inspection
Inspection Group	Accessibility Inspection
Inspection Interval	Within 2 years of Commencement of Service and then at Intervals not exceeding 5 years
Inspection Requirement	<p>During each Inspection all assets on the Network shall be inspected to identify all situations where the network fails to make provision for disabilities and specific age groups (elderly and children) in accordance with the Public Sector Equality Duty of the Equality Act 2010.</p> <p>The Inspection shall be carried out by Specialist Inspectors with specific training and be approved by Transport Scotland.</p> <p>The Inspection shall assess all assets, including third party assets such as bus stops, cabinets etc. and access points onto the Trunk Road Network. The defects listed in this manual reflect the requirements of Roads for all Good Practice for Roads (TS), Inclusive Mobility (DfT) and Guidance on the Use of Tactile Paving (DfT).</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Defects

Condition Rating

Road Markings (Special) - Condition Rating

Condition	Description
A - Excellent	<p>New or nearly new condition. Score of 5/5 on the visual assessment of 'Wear' (TD26/07).</p> <div style="display: flex; justify-content: space-around;">   </div>
B - Good	<p>No visual Defects and with few visible signs of deterioration. Good night time conspicuity and very little wear, score of 4/5 on the visual assessment of 'Wear' (TD26/07). >100mcd/m²/lux retroreflectivity.</p> <div style="display: flex; justify-content: space-around;">   </div>
C - Fair	<p>Some initial visible wear and/or fair night time conspicuity characteristics score of 3/5 on the visual assessment of 'Wear' (TD26/07). 80-100 mcd/m²/lux retroreflectivity.</p> <div style="display: flex; justify-content: space-around;">   </div>
D - Poor	<p>Visible but has bare spots and poor night time conspicuity, score of 2/5 on the visual assessment of 'Wear' (TD26/07). <80 mcd/m²/lux retroreflectivity. Skidding resistance results close to threshold.</p>

Condition	Description
	
E - Very Poor	<p>Barely visible, score 0 or 1/5 on the visual assessment of 'Wear' (TD26/07). Below any threshold levels on critical road areas (e.g. Give Way or Stop lines). Below threshold skidding resistance levels detailed in BS EN 1436. <math><80\text{ mcd/m}^2/\text{lux}</math> retroreflectivity on unlit single carriageway. Life expired asset.</p> 
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Road Studs



Studs placed on the carriageway to guide traffic.

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>Road Studs should only require occasional and irregular maintenance, all maintenance should be identified by Inspection. Road Studs can suffer increased wear during winter snow ploughing operations, inspections shall be carried out towards the end of the Winter Period with a view that re-studding schemes can be identified, prioritised and installed before the next winter period.</p> <p>Most Road Studs are reflective, providing important additional guidance at night and are highly rated by road users. Some road Studs are illuminated and provide guidance both during the daytime and night time. Subject to available budget, Road Studs shall be maintained to an elevated standard.</p> <p>The majority of Road Studs will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response. Safety Inspections shall also be used to identify higher priority CAT2A Defects.</p> <p>Recurring Comprehensive Inspections shall be carried out during both daytime and night time to record asset condition and Defects.</p>
Common Attributes	Road Studs Attributes shall include the Common Attributes .
Parent/Child Assets	Road Studs Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Reflective ("Catseye") • Reflective (Stick on) - Single Sided • Reflective (Stick on) - Double Sided • Non-reflective • Illuminated - Solar • Illuminated - Led 	Desirable	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
Category	Lookup <ul style="list-style-type: none"> ? (Default) Regulatory Warning Informatory Other 	Mandatory	
Spacing (Metres)	Number (decimal)	Mandatory	
Colour	Lookup <ul style="list-style-type: none"> ? (Default) White Red Amber Green Other 	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is street lighting present?
Speed and volume of traffic?

Defect Category and Response Time Considerations

Road geometry and proximity to junctions
Is street lighting present?
Speed and volume of traffic?
Road geometry and proximity to junctions

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Loose catseye or stud	Any loose catseye or stud	Any single loose or displaced road stud or casing on the carriageway	
Damaged catseye or stud	Any damaged catseye or stud	Any damage which affects the performance of the studs	
Missing catseye or stud	Any missing catseye or stud	Any single loss of road stud where studs are a legal requirement, or more than one in any ten consecutive studs at other areas	
Sinkage, settlement or masking	Any sinkage, settlement or masking	Any sinkage, settlement or masking that affects the performance of the studs	
Misalignment	Any misalignment		
Other	All other Defects		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Poor reflection at night	Any poor reflection		More than one in any ten consecutive studs in critical areas, or three in ten in other areas
Conspicuity test failure	Any test failure		

Inspections

Road Studs - Visual Assessment Inspection (nearside)

Inspection Name	Road Studs - Visual Assessment Inspection (nearside)
Inspection Group	Visual Assessment Inspection - Carriageway (Nearside)

Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>During each Inspection all road markings shall be inspected and any Defects noted.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected.</p> <p>This Inspection will generally be carried out from the nearside footway, verge, hardshoulder of lane central with the need for traffic management assessed by the OC.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Road Studs - Visual Assessment Inspection (Central Reserve)

Inspection Name	Road Studs - Visual Assessment Inspection (Central Reserve)
Inspection Group	Visual Assessment Inspection - Carriageway (Central Reserve)
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>During each Inspection all road markings shall be inspected and any Defects noted.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected.</p> <p>This Inspection will be carried out from the offside lane, or central reserve under traffic management to allow assets situated on or near the Central Reserve of Dual Carriageways to be inspected at close quarters as close quarters.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.
Comments	<p>On Dual Carriageway Sections an additional Inspection shall be carried out to supplement the Road Marking Transverse & Special - Visual Detailed Inspection (nearside) ensuring that assets on or close to the Central Reserve can be inspected with the same frequency and receive the same Inspection rigor.</p> <p>Dual Carriageway Sections are defined as sections where the "Dual" attribute of the Section Type is true.</p>

Road Studs - Night Time Reflectivity Safety Inspections

Inspection Name	Road Studs - Night Time Reflectivity Safety Inspections
Inspection Group	Night Time Reflectivity Safety Inspections
Inspection Interval	At intervals not exceeding 6 months
Inspection Requirement	During each Inspection the reflective or illumination properties of Road Studs shall be assessed during the hours of darkness to ensure it is visible and delivers its intended message to drivers and any Defects noted. This Inspection will generally be carried out from a slow moving vehicle with an Inspector and Driver.

Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.
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Road Studs - Night-time Visual Assessment Inspection




Inspection Name	Road Studs - Night-time Visual Assessment Inspection
Inspection Group	Condition Assessment - Road Markings and Studs
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>Reflectivity of road studs shall be undertaken and assessed in accordance with TD26/17 including Annex C, Figure C.1. with a Condition rating noted for each 100m length and any Defects noted. The Inspection shall be carried out on all roads in both directions.</p> <p>Where the Operating Company can demonstrate that comparable results can be obtained from an alternative survey method (e.g. machine survey) they must demonstrate the suitability, provide evidence demonstrating the equivalence of the method and request permission from the Director. All data must be processed into a suitable format, agreed with the Director, for loading into APMS.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each 100m section of asset along with a date/time stamp. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded. Defects shall be recorded against the relevant inventory item and relative position.

Defects

Condition Rating

Road Studs - Condition Rating

Condition	Description
A - Excellent	<p>New or nearly new condition. No missing or Defective studs.</p> 
B - Good	<p>Few Defects or visible signs of deterioration during either during night or day. Up to 5 % Defective studs (e.g. showing wear/corrosion/missing/sinkage).</p>

Condition	Description
	
C - Fair	<p>Evidence of initial deterioration. Between 5% - 10% Defective studs (e.g. showing wear/corrosion/missing/sinkage).</p> 
D - Poor	<p>Day inspection - Between 10% -25% Defective studs (e.g. showing wear/corrosion/missing/sinkage). Night inspection – Between 10% -25% of studs with poor reflective qualities.</p> 
E - Very Poor	<p>Day inspection - more than 25% Defective studs (e.g. showing wear/corrosion/missing/sinkage). Night inspection – more than 25% of studs with poor reflective qualities. Any single missing studs in double white lines (legal requirement areas) or loose/displaced studs or loose casings on carriageway irrespective of total % Defective.</p> 
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Roadside Services



Roadside services are buildings and/or enclosures (more substantial enclosure than a cabinet) providing a service or shelter to other apparatus including:

- Administration buildings
- Road side services such as toilets, car parking or information points
- Bus shelters
- Control building e.g. pump houses, control points etc.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Roadside services should only require occasional and irregular maintenance with the need for all maintenance identified through inspections. It should be noted that many Roadside Services will contain specialist equipment which may be the subject of specific or specialist inspections. The contents of most Roadside Services will be recorded as Child (or associated) assets with their inspection/maintenance recorded against the relevant child assets.</p> <p>Most Roadside Services will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response. Safety Inspections shall also be used to identify higher priority CAT2A Defects.</p> <p>Regular Comprehensive Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	<p>Roadside Services Attributes shall include the Common Attributes but with the following amendments.</p> <p>All Roadside Services within or adjacent to the trunk road boundary shall be recorded and the ownership and maintenance fields used to record ownership/responsibility.</p>
Parent/Child Assets	All Roadside Services - Electrical assets shall only exist as a child item of a Roadside Services asset.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Roadside Service - Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Toilet Block • Occupied Building • Control Point - Building • Control Point - Enclosure • Other 	Mandatory	

Field Name	Field Format	Field Required	Comments
Electrically Powered	Lookup <ul style="list-style-type: none"> • ? (Default) • Yes • No 	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

There are no Inspections associated with this Asset.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Roadside Services - Electrical



Electrically energised apparatus associated with Roadside services including:

- Frost protection heater
- Water heater
- Luminaire

Asset Attributes

Asset Shape	Point
Asset Service Level	Regular Cyclic Maintenance shall be carried out on Roadside Service - electrical assets to clean, inspect and maintain all electrical apparatus. All other maintenance shall be identified through inspections. Regular Comprehensive Inspections shall be carried out to record asset condition and Defects.
Common Attributes	Roadside Services - Electrical Attributes shall include the Common Attributes but with the following amendments. All Roadside Services - electrical assets within Roadside Services on or adjacent to the trunk road boundary shall be recorded and the ownership and maintenance fields used to record ownership/responsibility.
Parent/Child Assets	All Roadside Services - Electrical assets shall only exist as a child item of a Roadside Services asset.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Identity Code	Text	Mandatory	Comment From Common Attributes. Every Electrically powered asset should have a yellow sticker with a legible Identity Code.
Electrically Powered	Lookup <ul style="list-style-type: none"> • ? (Default) • Yes • No 	Mandatory	Comment Default = ?
Roadside service - Specific Attributes			
Roadside Service - Power Supply Attributes			
Supply Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Toilet Block 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Occupied Building Control Point - Building Control Point - Enclosure Other 		
Distribution Network Operator	Lookup <ul style="list-style-type: none"> ? (Default) Scottish Power Scottish & Southern Energy Other 	Mandatory	
Electrical Protection Device	Lookup <ul style="list-style-type: none"> ? (Default) MCB FUSE RCD None N/A 	Mandatory	Comment Where asset has no electrical power, Electrical Protection Device shall be "N/A". Where the asset has electrical power but no protection device is provided Electrical Protection Device shall be "None".
Maintenance Safety			
Documents in Place	Yes/No	Mandatory	
Schematic Showing Cables	Yes/No	Mandatory	
Lamps - Power consumption attributes			
Roadside Service - Lamp - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Luminaires"=Yes
Roadside Service - Lamp - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Luminaires"=Yes Derived from Elexon Code
Roadside Service - Lamp - Regime Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Luminaires"=Yes
Roadside Service - Lamp - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Luminaires"=Yes Derived from Regime Code

Field Name	Field Format	Field Required	Comments
Roadside Service - Lamp - Type of Lamps	Lookup <ul style="list-style-type: none"> • ? (Default) • LED • Fluorescent • Other 	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Luminaires"=Yes
Roadside Service - Lamp - No. of Lamps	Text	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Luminaires"=Yes Default = 1
Frost Protection - Power consumption attributes			
Roadside Service - Frost Protection heater - Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Desirable)	Comment Conditional on "Roadside Service - Frost Protection"=Yes
Roadside Service - Frost Protection heater - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Frost Protection"=Yes Derived from Elexon Code
Roadside Service - Frost Protection heater - Regime Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Frost Protection"=Yes
Roadside Service - Frost Protection heater - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Frost Protection"=Yes Derived from Regime Code
Roadside Service - Frost Protection heater - No. of heaters	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Frost Protection"=Yes Default = 1
Water Heater - Power consumption attributes			
Roadside Service - Water heater - Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Water heater"=Yes
Roadside Service - Water heater - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Water heater"=Yes Derived from Elexon Code
Roadside Service - Water heater - Regime Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Water heater"=Yes

Field Name	Field Format	Field Required	Comments
Roadside Service - Water heater - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Water heater"=Yes Derived from Regime Code
Roadside Service - Water heater - No. of heaters	Number (int)	Conditional (Mandatory)	Comment Conditional on "Roadside Service - Water heater"=Yes Default = 1

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe (by TRISS/Incident response) as per incident response timescales. Where a defect requires the attendance of an Electrical Specialist within 4 hours, unless a longer timescale is stated for the defect,
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
	;

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the exposed wiring have a high risk of pedestrian access?
Is the damaged column or post projecting into the carriageway or footway?
Is the damaged column or component unstable and could fall into the carriageway, footway or private land?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged	Any damage	Fallen or leaning roadside electrical apparatus	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damage to columns, cabinets or other roadside electrical apparatus which exposes wiring/internal equipment	Any damage to columns, cabinets or other roadside electrical apparatus	Any exposed wiring/ internal equipment	
Missing or unsecured doors on columns or feeder pillars which exposes wiring	Any missing or unsecured doors	Any exposed wiring	Any missing or unsecured doors
Difficult access to column or cabinet	Any difficult access to column or cabinet		
Lamp failures	Any lamp failure	Lamp failures on a road subject to a speed limit of 30 mph or less. Any lamp failure at a pedestrian crossing or near a junction	Any lamp failure
Lamp on during day	Any lamp on during the day		Any lamp on during the day
Need for tree pruning	Any need for tree pruning	Where luminaires or access routes are obscured by trees	Any need for tree pruning
Missing or illegible reference number	Lighting columns reference numbers not at a height of 1.5 to 2.0m from the ground or not visible from a moving vehicle		Missing or illegible reference number
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Damage to cabinets that exposes wiring/internal equipment - no live	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
wiring exposed but high risk of pedestrian access		Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring but low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Component or other miscellaneous failure not covered in other items listed here which results in high electrical safety risk	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Installation failed safety electrical testing or present a safety risk from high Ze value in excess of the maximum allowable.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Cables that have failed safety electrical testing or present a safety risk from high earth loop impedance (Zs) value in excess of the maximum allowable for the protective device.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Failure of insulation test between live conductor and earth, and disconnection of earthing and bonding conductors.			
Exposed or extraneous conductive parts of electrical apparatus made live under fault conditions	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Electrical Check failure as BS7671 GN3 Section & 3.5 Table 3.2	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Hazardous electrical Defect	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Inspections

Roadside Services - Periodic Electrical Inspection and Testing - BS7671

Inspection Name	Roadside Services - Periodic Electrical Inspection and Testing - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded in the register, by adding and end dating assets as appropriate, • that the attributes of every asset shall be validated to ensure that they accurately represent each asset, • and all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.

Roadside Services - Routine Electrical Inspection

Inspection Name	Roadside Services - Routine Electrical Inspection
Inspection Group	Routine Electrical Inspection & TR22
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>Routine Electrical Inspections of all electrical assets shall be carried out in accordance with LDS8023.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded and located in the register, by moving, adding and end dating assets as appropriate, • that all attributes accurately represent every asset, • and all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	On completion of each Inspection a record shall be recorded against each asset including date/time/user stamps. Any Defects shall be recorded and associated with the relevant asset.
Comments	References include LDS8023 - EMG013

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Roadside Services - Electrical components - Cleaning

Cyclic Maintenance Name	Roadside Services - Electrical components - Cleaning
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	<p>All electrical components shall be cleaned in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023.</p> <p>Operatives carrying out these activities should be competent to carry out operations on electrical apparatus.</p>
Cyclic Maintenance	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.

Operation Records	
Comments	<p>References include LDS8023</p> <ul style="list-style-type: none"> EMG013 Task 1 (clean & check), 4, 5, 8 & 9

Roadside Services - Electrical - RCD

Cyclic Maintenance Name	Roadside Services - Electrical - RCD
Cyclic Maintenance Operation Interval	As required and at intervals not exceeding 3 months.
Cyclic Maintenance Operation Requirement	Where the installation is installed with a Residual Current Device (RCD) the Contractor shall carry out an RCD test using the RCD integral TEST push button quarterly or as otherwise stated in BS7671.
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	References include LDS8023 - EMG013 - Task 10

Roadside Services - Electrical - Lamp Change & Clean

Cyclic Maintenance Name	Roadside Services - Electrical - Lamp Change & Clean																						
Cyclic Maintenance Operation Interval	At intervals not exceeding those stated in the Maximum lamp change intervals table below.																						
Cyclic Maintenance Operation Requirement	<p>All lamps shall be changed/replaced in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023 and at intervals not exceeding those listed in the table below. During each lamp change the associated EMG activities shall also be carried out.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Maximum lamp change intervals</th> </tr> <tr> <th>Lamp Type</th> <th>Nomenclature as TD 23</th> <th>Bulk Change Interval for Dusk to Dawn Operation</th> <th>Bulk Change Interval for 24 Hour Per Day Operation</th> </tr> </thead> <tbody> <tr> <td>Fluorescent, Filament</td> <td></td> <td>24 months</td> <td>12 months</td> </tr> <tr> <td>LED</td> <td>LED</td> <td>No bulk lamp change required</td> <td>No bulk lamp change required</td> </tr> <tr> <td>Any other lamp type</td> <td>?/Unknown</td> <td>24 months</td> <td>12 months</td> </tr> </tbody> </table> <p>Operatives carrying out these inspections should be competent to carry out operations on electrical apparatus.</p>			Maximum lamp change intervals				Lamp Type	Nomenclature as TD 23	Bulk Change Interval for Dusk to Dawn Operation	Bulk Change Interval for 24 Hour Per Day Operation	Fluorescent, Filament		24 months	12 months	LED	LED	No bulk lamp change required	No bulk lamp change required	Any other lamp type	?/Unknown	24 months	12 months
Maximum lamp change intervals																							
Lamp Type	Nomenclature as TD 23	Bulk Change Interval for Dusk to Dawn Operation	Bulk Change Interval for 24 Hour Per Day Operation																				
Fluorescent, Filament		24 months	12 months																				
LED	LED	No bulk lamp change required	No bulk lamp change required																				
Any other lamp type	?/Unknown	24 months	12 months																				
Cyclic Maintenance	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.																						

Operation Records	
Comments	References include LDS8023 <ul style="list-style-type: none">• EMG013

Salt Bin



A bin containing salt or grit to enable self-help by road users during winter conditions.

Asset Attributes

Asset Shape	Point
Asset Service Level	Salt Bins will be provided and maintained as set out in the Winter Maintenance Plan.
Common Attributes	Salt Bin Attributes shall include the Common Attributes .
Parent/Child Assets	Salt Bins are not associated with any other asset.

Asset Specific Attributes

There are no Asset specific attributes.

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
;	

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

There are no Inspections associated with this Asset.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

SCRIM Site Category



A SCRIM Site Category as defined by HD28/15.

Asset Attributes

Asset Shape	Linear
Asset Service Level	SCRIM Site Categories are required to be defined for all parts of the network to facilitate the measurement and management of skid resistance properties of the Network and be reviewed to ensure its continued validity at regular intervals.
Common Attributes	SCRIM Site Category Attributes shall include the Common Attributes .
Parent/Child Assets	SCRIM Site Category Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
SCRIM Site Category	Lookup <ul style="list-style-type: none"> • ? (Default) • AL (Motorway Low) • AH (Motorway High) • BL (Dual C/way Low) • BM (Dual C/way Medium) • BH (Dual C/way High) • CL (Single C/way Low) • CM (Single C/way Medium) • CH (Single C/way High) • QL (Approach to junctions Low) • QM (Approach to junctions Medium) • QH (Approach to junctions High) • KL (Approach to crossings Low) • KH (Approach to crossings High) • RL (Roundabout - Low) • RH (Roundabout - High) • G1L (Gradient 5-10% - Low) • G1H (Gradient 5-10% - High) • G2L (Gradient >10% - Low) • G2M (Gradient >10% - Medium) • G2H (Gradient >10% - High) • S1L (Bend <500m Dual C/Way - Low) 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> S1H (Bend <500m Dual C/Way - High) S2L (Bend <500m Single C/Way - Low) S2M (Bend <500m Single C/Way - Medium) S2H (Bend <500m Single C/Way - High) 		
Start Date	Date	Mandatory	
End Date	Date	Mandatory	
Start Chainage	Number (int)	Mandatory	
End Chainage	Number (int)	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
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Category 1a Attend and make safe as per incident response timescales.

Category 1b Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.

Category 2 High Repair within 28 days of being ordered.

Category 2 Low Analyse data prioritise and schedule for programmed Operations or Works.

;

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

SCRIM Site Category Review

Inspection Name	SCRIM Site Category Review
Inspection Group	SCRIM Site Category Review

Inspection Interval	At intervals not exceeding 36 months and on approximately 1/3 of the network each year
Inspection Requirement	<p>The SCRIM Site Category shall be reviewed as a desktop exercise using available data including:</p> <ul style="list-style-type: none"> • Reviewing current network video and mapping to identify junctions, crossings and network characteristics • Reviewing and check measured curvature and gradient data • Calculating accident rates <p>The continued validity of each SCRIM Site Category shall be assessed and any errors or omissions corrected. If necessary, a site visit shall be carried out to confirm any discrepancies.</p>
Inspection Records	On completion of each inspection an inspection record shall be recorded against each asset along with a date/time/user stamp.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Scrub



An area of self-seeded vegetation often but not exclusively comprising gorse, broom, birch, alder and/or bramble up to a height of approximately 3.0m.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>Scrub areas are generally self-supporting and require occasional and irregular maintenance. Cyclic Maintenance is not required and the need for maintenance shall be identified through inspections.</p> <p>High priority defects for the majority of Scrub Areas are likely to be visible from the carriageway and should normally be identified from safety inspections or through other sources such as customer care or incident response and sometimes through annual Detailed Inspections.</p> <p>Recurring Comprehensive Inspections shall be carried out by a suitable landscape specialist inspector during the Scrub growing season to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p>
Common Attributes	Scrub Attributes shall include the Common Attributes .
Parent/Child Assets	Other assets may be linked by Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
First Scrub Species	Lookup <ul style="list-style-type: none"> • ? (Default) • Alder • Alder • Birch • Sycamore • Elder • Gorse • Broom • Brambles • Other 	Mandatory	

Field Name	Field Format	Field Required	Comments
Second Scrub Species	Lookup <ul style="list-style-type: none"> • ? (Default) • Alder • Alder • Birch • Sycamore • Elder • Gorse • Broom • Brambles • Other 	Optional	
Density	Lookup <ul style="list-style-type: none"> • ? (Default) • High • Medium • Low 	Mandatory	
Ground Cover	Lookup <ul style="list-style-type: none"> • ? (Default) • Ferns/grasses/ sedges etc • Mosses/ivy/lichens/ fungi • Woodland flora • Dry heath • Bog/mire (wet) • Hard material (e.g. gravel etc) • Low Level Scrub • Other 	Mandatory	
Boundary	Text	Optional	
Notes	Text	Optional	
Value			
Ecological value	Yes/No	Mandatory	
Landscape value	Yes/No	Mandatory	
Adjacent scrub	Yes/No	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the vegetation obscure regulatory signs or lines?
Does the vegetation force pedestrians to step in to the carriageway?
Could the vegetation cause a pedestrian to trip or be injured?
Is there a risk of a tree or branch falling in to the footway, carriageway or private property?
Does the vegetation obscure visibility for network users?
Does the vegetation have a detrimental impact on the landscape or ecological resource of the area?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Overgrowing or overhanging the footway or carriageway	Any overgrowing or overhanging vegetation	Vegetation which narrows the width of the footway by 50%, poses a trip hazard, or other risk injury (including head/facial), damage to a vehicle, or obscures road markings or signs.	Any overgrowing or overhanging vegetation
Obstructed sightline	Any obstructed sightline	Obstruction which limits the view of network users	Any obstructed sightline
Fly tipping/illegal dumping	Any fly tipping or illegal dumping	Any fly tipping or illegal dumping which poses a risk to people, wildlife or the environment	Any fly tipping or illegal dumping
Other	Any other Defects		
Falling tree or branch affecting road user, operative, vehicle or road infrastructure.	Any falling tree or branch, or one at risk of falling.	Where such an event may impact the safety of road users, operatives, vehicle or road infrastructure.	Any other such event.

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Scrub areas in poor condition.	Any scrub in poor condition.	Where dead, dying or overcrowded vegetation may impact the safety of road users or operatives (e.g. damaged branches etc).	Where dead, dying or overcrowded vegetation may detrimentally impact the appearance or ecological value of the network.

Inspections

Scrub - Visual Assessment Inspection

Inspection Name	Scrub - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	Each year during their growing season
Inspection Requirement	<p>The full extents of each Scrub asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.</p> <p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.
Comments	<p>The growing season for Scrub assets shall be considered to be from April through to September.</p> <p>The Inspection shall consider if any Scrub areas have developed since initial classification and should be reclassified as another asset e.g. Woodland or Trees etc.</p>

Scrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection

Inspection Name	Scrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Group	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Interval	Each year between September to end of February each year
Inspection Requirement	Between September and the end of February each year the full extents of the network shall be inspected to identify any vegetation which may develop during the coming growing season with the potential to detrimentally effect the road envelope visibility. This shall include vegetation encroaching upon or otherwise effecting:

	<ul style="list-style-type: none"> the forward visibility of drivers and other road users, the sight lines for traffic signs, bollards and other road infrastructure, the sight lines for junctions, accesses, bends etc. or the carriageway, footway, cycleway <p>Any identified vegetation shall be recorded for remedial action by the "Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance" Cyclic Maintenance Operations and shall be completed before the end of March in the same period.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be updated during each Inspection.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time/user stamps. Any Defects shall be recorded against the relevant inventory item.
Comments	The aim of this inspection and associated Cyclic Maintenance Operation is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured or driver visibility is compromised. It is important that the required Cyclic Maintenance is carried out before the commencement of the bird nesting season each year. When remedial maintenance is identified it is expected, where practicable and without having a detrimental impact on the local landscape character or any important landscape features, that the relevant vegetation be trimmed back sufficiently to allow several years growth before trimming would be required again in accordance with clause 4.3.3.2 of this Manual.

Scrub - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Scrub - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	<p>The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.</p> <p>This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against the network along with a GPS breadcrumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.

Defects

Condition Rating

Scrub - Condition Rating

Condition	Description
A - Excellent	Not Applicable


Condition	Description
B - Good	Asset is healthy, growing well and free from defects.
C - Fair	Asset is generally healthy and growing reasonably well although there are signs of minor damage/decay.
D - Poor	Asset is showing significant signs of decay or damage, or is dead/dying. Asset close to or encroaching into sightlines.
E - Very Poor	Not applicable
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

Scrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance

Cyclic Maintenance Name	Scrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance
Cyclic Maintenance Operation Interval	As necessary
Cyclic Maintenance Operation Requirement	<p>All:</p> <ul style="list-style-type: none"> sightlines and forward visibility areas; road signs and; areas with Encroaching Vegetation that may cause difficulties for maintenance operations, such grass cutting adjacent to the carriageway, the inspection of barriers, cabinets and other equipment etc. and/or the management of other elements of network infrastructure, such as lighting and roadside cameras etc <p>shall be treated and/or cut back by the Operating Company to maintain forward visibility, prevent signs etc being obscured or to maintain safe access to equipment. Such areas shall be as defined in the inventory or that required to maintain minimum forward visibility as specified in TD 26/17. The Operating Company shall comply with section 4 of this Manual.</p> <p>Visibility splays and the like shall be cut in accordance with Schedule 5 Specification Clause 3002, 3006, 3007, 3009 & 3010 and Appendix 30/7.</p>
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item and any associated Defects along with a date/time/user stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> Potential landscape opportunities (see 4 of this Manual) Asset Shape not matching cut areas. Any other notes <p>Any additional Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	The aim of this maintenance Operation and associated Inspection Operation (Road Envelope Visibility Inspections) is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured and to ensure preventative maintenance is carried out before the bird nesting season each year. When maintenance is carried out it is expected that trimming of vegetation should be



trimmed back far enough to allow several years growth before trimming would be required again.

Shrub



An area of small to medium-sized woody plants that are generally smaller than trees and encompass ornamental, informal and wetland types.

- Ornamental shrub areas are normally planted as a visual element of the road corridor usually associated with cities, towns, villages and urban roundabouts.
- Informal shrub areas are generally native shrub species (excluding gorse and broom) informally planted or developing along the road corridor up to a height of approximately 3.5m.
- Wetland shrub areas are planted or developing areas immediately associated with water margins and may include native and non-native species.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>Shrub maintenance is undertaken in accordance with its type. Ornamental shrub areas are intended to be maintained annually under high/medium/low frequency regimes depending on location and circumstance. All other maintenance shall be identified through inspections.</p> <p>High priority defects for the majority of Shrub Areas are likely to be visible from the carriageway and should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Recurring Comprehensive Inspections shall be carried out by a suitable landscape specialist inspector during the Shrub growing season to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p>
Common Attributes	<p>Shrub Attributes shall include the Common Attributes but with the following amendments.</p> <p>Some Shrub areas are planted within the Trunk Road Boundary by 3rd parties e.g. local councils and developers etc. All Shrub areas within the Trunk Road Boundary shall be recorded and their ownership correctly assigned and documents detailing any agreements attached to the documents section.</p>
Parent/Child Assets	Other assets may be linked by Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Mixed species • Single species • Linear strip • Coniferous 	Desirable	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Groundcover • Climbers • Native • Non-native • Coloured stems • Other 		
Category	Lookup <ul style="list-style-type: none"> • ? (Default) • Ornamental – High maintenance • Ornamental – Medium maintenance • Ornamental – Low maintenance • Informal Shrubs • Wetland/marginal 	Mandatory	
Density	Lookup <ul style="list-style-type: none"> • ? (Default) • High • Medium • Low 	Desirable	
Height (m)	Number (decimal)	Desirable	
Boundary	Text	Optional	Comment Relevant information on surrounding borders.
Notes	Text	Optional	
Shrub - Main Objectives			
Nature conservation	Yes/No	Mandatory	
Safety	Yes/No	Mandatory	
Screening	Yes/No	Mandatory	
Shelter	Yes/No	Mandatory	
Other	Yes/No	Mandatory	
Main Objective Other - Description	Text	Conditional (Mandatory)	Comment Mandatory when Main Objective - Other = Yes.
Shrub Area - Age Category			

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the vegetation obscure regulatory signs or lines?
Does the vegetation force pedestrians to step in to the carriageway?
Could the vegetation cause a pedestrian to trip or be injured?
Does the vegetation obscure visibility for network users?
Does the vegetation detrimentally impact on other required operations?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Overgrowing or overhanging the footway or carriageway	Any overgrowing or overhanging vegetation	Vegetation which narrows the width of the footway by 50%, poses a trip hazard, or other risk injury (including head/facial), damage to a vehicle, or obscures road markings or signs.	Any overgrowing or overhanging vegetation
Obstructed sightline	Any obstructed sightline	Obstruction which limits the view of network users	Any obstructed sightline
Fly tipping/illegal dumping	Any fly tipping or illegal dumping	Any fly tipping or illegal dumping which poses a risk to people, wildlife or the environment	Any fly tipping or illegal dumping
Other	Any other Defects		
Impact on other required operations.	Any area of shrubs that detrimentally affects the ability for carrying out other maintenance.	Where such a restriction poses a risk to people, the environment, or infrastructure.	Where such a restriction detrimentally affects the appearance of the network.

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Shrub areas, or selected species therein, in poor condition.	Any areas or species in poor condition.	Where dead, dying or damaged shrubs may impact the safety of road users or operatives (e.g. damaged branches etc).	Any dead, dying or missing vegetation that may detrimentally impact the appearance of the network – particularly when associated with Ornamental shrub areas.

Inspections

Shrub - Visual Assessment Inspection

Inspection Name	Shrub - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	Each year during their growing season
Inspection Requirement	<p>The full extents of all Shrub asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.</p> <p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.
Comments	The growing season for Shrub assets shall be considered to be from April through to September.

Shrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection

Inspection Name	Shrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Group	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Interval	Each year between September to end of February each year
Inspection Requirement	Between September and the end of February each year the full extents of the network shall be inspected to identify any vegetation which may develop during the coming growing

	<p>season with the potential to detrimentally effect the road envelope visibility. This shall include vegetation encroaching upon or otherwise effecting:</p> <ul style="list-style-type: none"> • the forward visibility of drivers and other road users, • the sight lines for traffic signs, bollards and other road infrastructure, • the sight lines for junctions, accesses, bends etc. or • the carriageway, footway, cycleway <p>Any identified vegetation shall be recorded for remedial action by the "Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance" Cyclic Maintenance Operations and shall be completed before the end of March in the same period.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be updated during each Inspection.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time/user stamps. Any Defects shall be recorded against the relevant inventory item.
Comments	The aim of this inspection and associated Cyclic Maintenance Operation is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured or driver visibility is compromised. It is important that the required Cyclic Maintenance is carried out before the commencement of the bird nesting season each year. When remedial maintenance is identified it is expected, where practicable and without having a detrimental impact on the local landscape character or any important landscape features, that the relevant vegetation be trimmed back sufficiently to allow several years growth before trimming would be required again in accordance with clause 4.3.3.2 of this Manual.

Shrub - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Shrub - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	<p>The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.</p> <p>This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against the network along with a GPS bread crumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.

Defects

Condition Rating

Shrub - Condition Rating

Condition	Description
A - Excellent	Not Applicable
B - Good	Asset is healthy, growing well and free from defects.
C - Fair	Asset is generally healthy and growing reasonably well although there are signs of minor damage/decay.
D - Poor	Asset is showing significant signs of decay or damage, or is dead/dying. Asset close to or encroaching into sightlines.
E - Very Poor	Not applicable
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

Shrub Ornamental High maintenance

Cyclic Maintenance Name	Shrub Ornamental High maintenance
Cyclic Maintenance Operation Interval	Monthly during the growing season
Cyclic Maintenance Operation Requirement	Ornamental High maintenance Shrub Areas shall be maintained in accordance with Schedule 5 Specification Clause 3010.
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • areas not maintained and the reasons why, • any dead, damaged, missing or otherwise Defective plants or areas, • any areas or plants that are becoming overgrown for the location, • any areas of mulch that may require topping up or refreshing, • weed development observations, • any other notes. <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	<p>This Operation shall only apply to Shrub areas recorded as Category "Ornamental - high maintenance".</p> <p>For the purposes of the KPI the growing season shall be considered to be April to September.</p>

Shrub Ornamental Medium maintenance

Cyclic Maintenance Name	Shrub Ornamental Medium maintenance
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Cyclic Maintenance Operation Interval	Three times during the growing season
Cyclic Maintenance Operation Requirement	Ornamental Medium maintenance Shrub Areas shall be maintained in accordance with Schedule 5 Specification Clause 3010.
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • areas not maintained and the reasons why, • any dead, damaged, missing or otherwise Defective plants or areas, • any areas or plants that are becoming overgrown for the location, • any areas of mulch that may require topping up or refreshing, • weed development observations, • any other notes. <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	<p>This Operation shall only apply to Shrub areas recorded as Category "Ornamental - medium maintenance".</p> <p>For the purposes of the KPI the growing season shall be considered to be April to September.</p>

Shrub Ornamental Low maintenance

Cyclic Maintenance Name	Shrub Ornamental Low maintenance
Cyclic Maintenance Operation Interval	Once during the growing season
Cyclic Maintenance Operation Requirement	Ornamental Low maintenance Shrub Areas shall be maintained in accordance with Schedule 5 Specification Clause 3010.
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • areas not maintained and the reasons why, • any dead, damaged, missing or otherwise Defective plants or areas, • any areas or plants that are becoming overgrown for the location, • any areas of mulch that may require topping up or refreshing, • weed development observations, • any other notes. <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	This Operation shall only apply to Shrub areas recorded as Category "Ornamental - low maintenance".

	For the purposes of the KPI the growing season shall be considered to be April to September.
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Shrub Area - 3 year establishment Maintenance

Cyclic Maintenance Name	Shrub Area - 3 year establishment Maintenance
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	All newly planted Shrub Areas shall be maintained in accordance with Schedule 5 Specification Clause 3005, 3006 and 3007
Cyclic Maintenance Operation Records	<p>On completion of each Cyclic Maintenance Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • activities not undertaken and the reasons why • any dead, damaged, missing or otherwise Defective vegetation • weed development observations and any signs of animal browsing • observations regarding vegetation support performance (stakes, ties and shelters) • any vegetation re-firming requirements • Any other notes <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	For the purposes of the KPI this Cyclic Maintenance Activity shall apply to all Shrub Area assets with an age Category of "New" or "?"

Shrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance

Cyclic Maintenance Name	Shrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance
Cyclic Maintenance Operation Interval	As necessary
Cyclic Maintenance Operation Requirement	<p>All:</p> <ul style="list-style-type: none"> • sightlines and forward visibility areas; • road signs and; • areas with Encroaching Vegetation that may cause difficulties for maintenance operations, such grass cutting adjacent to the carriageway, the inspection of barriers, cabinets and other equipment etc. and/or the management of other elements of network infrastructure, such as lighting and roadside cameras etc <p>shall be treated and/or cut back by the Operating Company to maintain forward visibility, prevent signs etc being obscured or to maintain safe access to equipment. Such areas shall be as defined in the inventory or that required to maintain minimum forward visibility as specified in TD 26/17. The Operating Company shall comply with section 4 of this Manual.</p>

	<p>Visibility splays and the like shall be cut in accordance with Schedule 5 Specification Clause 3002, 3006, 3007, 3009 & 3010 and Appendix 30/7.</p> <p>For avoidance of doubt, this cyclic maintenance activity applies to all shrub types.</p>
<p>Cyclic Maintenance Operation Records</p>	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item and any associated Defects along with a date/time/user stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • Potential landscape opportunities (see 4 of this Manual) • Asset Shape not matching cut areas. • Any other notes <p>Any additional Defects noted shall also be recorded against the relevant inventory item.</p>
<p>Comments</p>	<p>The aim of this maintenance Operation and associated Inspection Operation (Road Envelope Visibility Inspections) is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured and to ensure preventative maintenance is carried out before the bird nesting season each year. When maintenance is carried out it is expected that trimming of vegetation should be trimmed back far enough to allow several years growth before trimming would be required again.</p>

Small Culvert



An enclosed channel or large pipe for conveying water under or alongside the trunk road and are structures with either spans or diameters of less than or equal to 0.9 metres (corrugated steel) or 2.0 metres (any other material). Culverts may also make provision for pedestrian, wildlife or livestock movements.

Culverts of larger dimensions shall be considered as Structures and recorded in the Structures Management System (SMS) and also be recorded as Structures in RMS.

Small Culverts larger than 2.0 metres have previously been recorded as Small Culverts but should be transferred to SMS, however, they shall remain recorded and inspected/maintained as a Small Culvert and shall not be end dated/deleted until the culvert has been accepted by Structures section and its entry into SMS has been confirmed.

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>Small Culverts should only require occasional and irregular maintenance. The need for maintenance shall be identified through inspections.</p> <p>Relatively minor Defects such as silting, debris, erosion or blockages in the culvert or its approaches or outfall can, however, have a significantly impact. Small Culverts will often not be visible from the road and are therefore unlikely to be inspected by regular safety inspections.</p> <p>An enhanced frequency of Comprehensive Inspections will be carried out. Recurring Detailed Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	Small Culvert Attributes shall include the Common Attributes .
Parent/Child Assets	Small Culvert Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Diameter	Number (decimal)	Mandatory	<p>Comment</p> <p>Diameter measured to the nearest 0.1 metres.</p>
Material Type	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Corrugated Steel • Concrete • Plastic • Clay/Ceramic • Other 	Desirable	

Asset Specific Rules

Rule No.	Rule Description
Rule-CV-1	A Small Culvert (other than corrugated steel) with a diameter greater than 2.0m shall not be recorded as Small Culvert (CV) inventory but shall be recorded separately in the Structures Database and as inventory item Structures (ST).
Rule-CV-2	A corrugated steel culvert with a diameter greater than 0.9m shall not be recorded as Small Culvert (CV) inventory but shall be recorded separately in the Structures Database and as inventory item Structures (ST).
Rule-CV-3	Culverts which occur in the central reserve or pass under dual carriageways and motorways and are common to both sections are recorded only once.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the defect likely to cause the culvert to collapse?
Is the defect affecting the drainage capacity?
Is the defect likely to cause flooding?
Would the flooding cause a hazard or damage to property or services?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Scour	Evidence of scour	Excessive scour	Any evidence of scour leading to the culvert being undermined

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Free flow impeded	Any situation where the free low is impeded	Where the free flow of water is sufficiently impeded it could lead to flooding, or damage to other assets	
Cracking	Any cracking	Cracking which is causing, or could lead to deficiencies in the culvert, or pose a hazard to network users	
Deformation	Any deformation	Deformation which is causing, or could lead to deficiencies in the culvert, or pose a hazard to network users	
Collapsed	Any collapse in any part of the culvert	A collapse which undermines the stability of the culvert, represents a hazard to network users, or which is, or could impede the flow of water, or could lead to flooding, or damage to other assets	
Flooding	Any water lying on, or running along/across the carriageway	Sufficient amount of water lying on or running along or across the carriageway which represents a hazard to road users, may interrupt the free flow of traffic, or cause damage to the carriageway, structures or services, or an indication that flooding of any private property is imminent.	Any water lying on, or running along/across the carriageway between October and April inclusive
Other	All other Defects		

Inspections

Culvert - Visual Assessment Inspection



Inspection Name	Culvert - Visual Assessment Inspection
Inspection Group	Visual Assessment Inspection- Drainage Assets Spring/Autumn
Inspection Interval	During September/October and February/March each year
Inspection Requirement	<p>The Culvert shall be inspected from both ends including its approaches, departures and pipe. An overall assessment of its condition and any Defects present shall be noted.</p> <p>During each inspection the accuracy of the inventory item recorded in IRIS shall be checked, including its location and attributes and all errors corrected.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.



Comments	<p>Many Small Culverts will also include other Ancillary Drainage assets such as headwalls, aprons or grilles. The inspection Operation of these items has a similar inspection frequency and it is anticipated that they will be inspected at the same time.</p> <p>Missing Culverts can easily be missed. Prior to each inspection cycle the Operating Company shall actively seek to identify any missing Culverts. Sources may include, knowledge of newly built roads, investigations etc.</p>
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Defects

Condition Rating

Culvert - Condition Rating

Condition	Description
A - Excellent	<p>New or nearly new condition with no obvious visual Defects. Signs that the constructed areas of the structure are new in condition i.e. no discolouration to the surfaces. Signs of disturbance to the surrounding areas, indicating construction Operations or Works have recently taken place.</p> 
B - Good	<p>No visual Defects and with few visible signs of surface deterioration. Grassed areas around the structure have returned to vegetation.</p> 
C - Fair	<p>Evidence of initial deterioration, including superficial cracking to the pipes or structure. Minor silting or vegetation growth around the structure. Slight discolouration to the constructed areas of the structure.</p>

Condition	Description
	
D - Poor	<p>Moderate cracking or deformation of pipes or structure. Some silting and vegetation growth with free flow of water through structure impeded due to minor blockages. Blockages to any fitted grills across the entrances to the culvert.</p> 
E - Very Poor	<p>Requires replacement/rehabilitation, life expired. Severe cracking and or deformation to the pipes or structure. Structure in danger of collapse. Major blockages restricting the free flow of water leading to flooding in surrounding areas.</p> 
R - Routine Maintenance	Not applicable.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Snow Pole



Poles mounted at the side of the road to aid snow clearing operations.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Snow Poles need to be in place throughout the winter period with the need for maintenance identified by Inspection.</p> <p>Snow Poles will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Comprehensive Inspections shall be carried out prior to winter to record asset condition and Defects.</p>
Common Attributes	Snow Pole Attributes shall include the Common Attributes .
Parent/Child Assets	Snow Pole Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Plastic • Metal • Other 	Desirable	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
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- Category 1a Attend and make safe as per incident response timescales.
- Category 1b Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
- Category 2 High Repair within 28 days of being ordered.
- Category 2 Low Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the pole leaning into the carriageway?
How many consecutive snow poles are damaged or missing?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Missing snow pole	Any missing snow pole	2 or more consecutive missing snow poles	Any missing snow pole during the Winter Service Period
Damaged snow pole	Any damaged snow pole	Damage causing a hazard to a network user	Any damaged snow pole during the Winter Service Period
Other	All other Defects		

Inspections

Snow Pole - Visual Assessment Inspection

Inspection Name	Snow Pole - Visual Assessment Inspection
Inspection Group	Visual Assessment Inspection - Snow Poles
Inspection Interval	During June/July each year
Inspection Requirement	Each snow poles shall be inspected, an overall assessment of its condition and any Defects present noted. During each inspection the accuracy of the inventory item recorded in IRIS shall be checked, including its location and attributes and all errors corrected.
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.

Defects

Condition Rating

Snow Pole - Condition Rating

Condition	Description
A - Excellent	May show obvious signs that the Snow Pole is new i.e. no discolouration of the surface finish. Obvious signs of disturbance in the surrounding grassed areas. Footway or constructed verge areas around base of posts are in new condition compared with surrounding areas.
B - Good	No visual Defects and with few visible signs of surface deterioration. Surface finish may show signs of weathering.
C - Fair	Evidence of initial deterioration including minor colour fade but otherwise in good overall condition.
D - Poor	Misalignment or major obscuration to the road user. Poor condition of associated post
E - Very Poor	Defects represent immediate or imminent failure, i.e. life expired. Structural failure of the Snow Pole. Missing Snow Pole.
R - Routine Maintenance	Not applicable.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Soakaway



A chamber provided in a drainage system, normally with perforated walls or gravel filled chamber, enabling water to dissipate into the ground while collecting silt or solid material in its chamber. The Soakaway may be buried with no visible surface features or it may have a manhole cover or metal grating cover, similar to a Catchpit or Separator but Soakaways generally have large chambers with perforated walls and no outflow pipework.

Asset Attributes

Asset Shape	Point
Asset Service Level	Soakaway by design include a large silt/debris trap, do not tend to have a connection to the drainage system and should only require occasional and irregular maintenance. The need for maintenance shall be identified through inspections. Soakaways are can be located where they may not be visible and be inspected by regular Safety Inspection although consequences of blocked Soakaways may result in flooding which can be identified from safety inspections or through other sources such as customer care or incident response. Regular Detailed Inspections shall be carried out to record asset condition and Defects.
Common Attributes	Soakaway Attributes shall include the Common Attributes .
Parent/Child Assets	Soakaway Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Cleansing Interval (Months)	Number (int)	Mandatory	Comment The Cleansing interval shall not be greater than 12 months. Where Soakaways require more frequent cleansing, the cleansing interval shall be reduced and a comment to record when and why the interval has been changed recorded in the "Cleansing Interval Change Reason" field.
Cleansing Interval Change Reason	Text	Conditional (Mandatory)	Comment Mandatory when the Cleaning Interval is a value other than 12 a reason for the change must be entered.

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the difference in level = 40mm on a carriageway?
Could the defect cause a vehicle to swerve and collide?
Is the carriageway open to cyclists?
Where is the defect positioned within the carriageway?
Is the defect at a designated crossing point?
What is the speed and volume of traffic?
Is the difference in level = 20mm on a footway or cycle track?
Is the footway used by a high proportion of vulnerable members of the public?
Is a cover rocking under load causing a noise nuisance in a built up area?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Difference in level	Any abrupt difference in level of ≥ 20 mm on a carriageway or ≥ 13 mm on a footway	Any abrupt difference in level of ≥ 40 mm on a carriageway or ≥ 20 mm on a footway	
Rocking under load	Rocking grating or covers	Rocking grating or covers in urban areas causing intrusive noise	
Broken	Broken or damaged covers in the footway or carriageway	Broken or damaged covers in the footway or carriageway which are likely to constitute a hazard to road users, pedestrians or cyclists	
Cracked	Cracked covers in the footway or carriageway	Cracked covers in the footway or carriageway which are likely to constitute a hazard to road users, pedestrians or cyclists	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Missing cover	Missing covers in the footway or carriageway	Missing covers in the footway or carriageway which are likely to constitute a hazard to road users, pedestrians or cyclists	Missing covers in the footway or carriageway
Parallel gratings	Incorrectly fitted gratings where the water bars are parallel to the direction of traffic flow	Incorrectly fitted gratings where the water bars are parallel to the direction of traffic flow which are likely to constitute a hazard to cyclists	
Smooth surface	Smooth surface (visual assessment) on manhole covers in footways or carriageway	Smooth surface on manhole covers in footways or carriageway which are likely to constitute a hazard to road users, pedestrians or cyclists	
Blockage	Any significant loss of capacity in any part of the drainage system.	Sufficient amount of water lying on or running along/across the carriageway which represents a hazard to road users, may interrupt the free flow of traffic, or cause damage to other structures or the carriageway.	
Weed growth	Any weed growth	Sufficient weed growth which is, or could lead to deficiencies in the drainage system	
Filter material displaced	Displaced filter material	Significant displacement of filter material	Any displaced filter material
Flooding*	Water lying on, or running along/across the carriageway	Sufficient amount of water lying on, or running along/across the carriageway which represents a hazard to road users, may interrupt the free flow of traffic, or cause damage to other structures or the carriageway.	Water lying on, or running along/across the carriageway between October and April inclusive
Seized	Seized covers, gratings or frames	Seized open covers, gratings or frames which are likely to constitute a hazard to road users, pedestrians or cyclists	
Other	All other Defects		

Inspections

Soakaway - Surface Visual Assessment Inspection

Inspection Name	Soakaway - Surface Visual Assessment Inspection
Inspection Group	Visual Assessment Inspection - Off Carriageway Assets
Inspection Interval	At intervals not exceeding 12 months

Inspection Requirement	During each Inspection the cover of every Soakaway shall be inspected from the surface, an overall assessment of its condition and any Defects present shall be noted. During each inspection the accuracy of the inventory item recorded in IRIS shall be checked, including its location and attributes and all errors corrected.
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.
Comments	All Soakaway shall be inspected irrespective of ownership. Any Defects associated with third party assets shall be notified to their owner. Assets situated in the central reserve or more than 1 lane away from the Inspection position will require a separate visit with appropriate traffic management to adequately assess the condition of the asset.

Soakaway - Internal Visual Assessment Inspection

Inspection Name	Soakaway - Internal Visual Assessment Inspection
Inspection Group	Drainage Assets - Internal Visual Condition
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	During each inspection the cover of each Soakaway shall be removed and the internal structure of the Soakaway Inspected, an overall assessment of its condition and any Defects present shall be noted. During each inspection the accuracy of the inventory item recorded in IRIS shall be checked, including its location and attributes and all errors corrected.
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.
Comments	Soakaways by design will slowly build up silt in the chamber and this Inspection should identify when cleaning of the chamber will be required. The need for traffic management to access all assets shall be considered by the Operating Company for each asset.

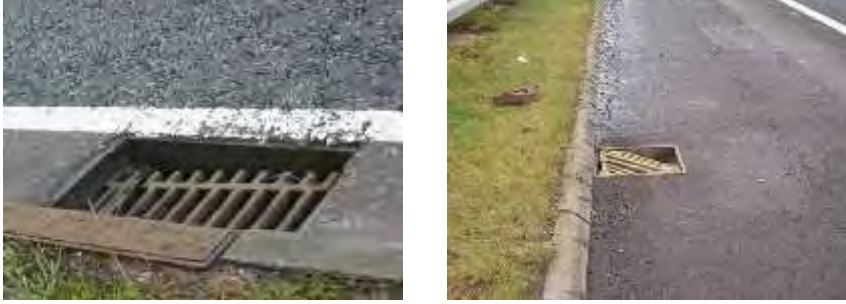

Defects

Condition Rating

Soakaway - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition. May show obvious signs of new construction and difference in condition and colour of the gully surround to the main carriageway surface.

Condition	Description
	
<p>B - Good</p>	<p>No visual Defects and with few visible signs of surface deterioration. Very minor signs of weathering.</p> 
<p>C - Fair</p>	<p>Minor rocking and projections. Level difference with carriageway not exceeding 10 mm. Relative movements under load not exceeding 10mm. Minor differential between component levels. Minor corrosion of ironwork. Minor deterioration of the surface around the cover.</p> 
<p>D - Poor</p>	<p>Projections greater than specified maximum (20mm). Level difference with carriageway exceeding 10mm. Rocking under load. Worn covers. Major differential in component levels. Moderate corrosion of ironwork. Longitudinal gaps of greater than 20mm that could cause danger to cyclists or pedestrians.</p> 

Condition	Description
E - Very Poor	<p>Missing, cracked or broken covers. Rocking grating or cover causing intrusive noise in urban areas. Major corrosion of ironwork. Collapse of chamber, gully frame and/or major deterioration of the surface around the cover.</p> 
R - Routine Maintenance	<p>Acceptable structural condition but requires unblocking.</p> 

Maintenance

Cyclical Maintenance Activities

Soakaway - Cleaning

Cyclic Maintenance Name	Soakaway - Cleaning
Cyclic Maintenance Operation Interval	As necessary and at intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	Soakaways shall be cleaned in accordance with Clause 6102AR. During each Maintenance visit the cover shall be removed and all silt/debris removed from the soakaway. A note of the how full the Soakaway silt trap was and any Defects shall be made.
Cyclic Maintenance Operation Records	On completion of each maintenance visit a maintenance record shall be recorded against each asset along with a date/time stamp and a trap fullness condition record. Any Defects shall be recorded and associated with the asset.

Special Geotechnical Measure - Anchors/Bolts/Dowels



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

The asset group SGM Anchors/Bolts/Dowels comprises anchors/bolts/dowels used on their own to stabilise Rock Slopes typically. Anchors may also be used to provide support or fixings for Structures or other Special Geotechnical Measures, and such occurrences should be recorded as part of that asset.

Anchors and bolts are tensioned to provide active support. Anchors have a wide range of structural applications and tend to be longer and stronger than bolts which are primarily confined to rock stabilisation.

Dowels are not tensioned and provide passive support.

Anchors/bolts/dowels are designed to sustain a specific load for a specific design life. Some may require maintenance and all should be subjected to specialist inspection after any event.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Anchors/Bolts/Dowels assets should only require occasional and irregular maintenance. The need for all maintenance, however, shall be identified through Inspections.</p> <p>SGM Anchors/Bolts/Dowels assets below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while Rock Sloped above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Anchors/Bolts/Dowels assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Anchors/Bolts/Dowels Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Anchors/Bolts/Dowels assets within the Trunk Road Boundary and all SGM Anchors/Bolts/Dowels assets owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Anchors/Bolts/Dowels Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Type	Lookup <ul style="list-style-type: none"> ? (Default) Anchors 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Bolts • Dowels • Soil Nails 		
Position	Lookup <ul style="list-style-type: none"> • ? (Default) • Above road • Below road 	Mandatory	
Supplier	Text	Required	Comment Where known, the Supplier/Manufacturer name, product name etc. shall be entered.
Installer	Text	Required	Comment Where known, the Installer, Contract reference etc. shall be entered.
Design Life (years)	Number (int)	Required	Comment Where known, the Design Life in years shall be entered.

SGM Anchors/Bolts/Dowels - Components

Bar - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Bar=Yes
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Field Name	Field Format	Field Required	Comments
Strand	Yes/No	Mandatory	
Strand - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Strand=Yes
Nuts	Yes/No	Mandatory	
Nuts - Material	Text	Required	Comment Mandatory if Nuts=Yes
Faceplates	Yes/No	Mandatory	
Faceplates - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid 	Required	Comment Mandatory if Faceplates=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Other Components	Yes/No	Mandatory	
Other Components - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Other=Yes
Other - Description	Text	Required	Comment Mandatory if Other=Yes Description of any accessories or other components
SGM Anchors/Bolts/Dowels - Spacing			
Regular Horizontal Spacing	Number (decimal)	Mandatory	Comment Average or most common horizontal spacing in meters, to nearest 0.5m
Number (Approx.)	Number (int)	Mandatory	Comment

Field Name	Field Format	Field Required	Comments
			Approximate number of SGM Anchors/Bolts/Dowels in asset area
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMA-1	SGM Anchors/Bolts/Dowels installed as a component part of another Special Geotechnical Measures system recorded in IRIS do not need to be recorded. SGM Anchors/Bolts/Dowels used in isolation to stabilise slope assets shall be recorded.
Rule-SGMA-2	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMA-3	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
;	

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Anchors/Bolts/Dowels System - Visual Assessment Inspection

Inspection Name	SGM Anchors/Bolts/Dowels System - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Anchors/Bolts/Dowel assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Anchors/Bolts/Dowel assets shall be maintained.</p> <p>The full area of each SGM Anchors/Bolts/Dowel assets shall be inspected by walking along the extents of the asset. Wherever possible inspectors shall also walk along the top/toe of the slope and inspect the slope area. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. The full length of any drainage assets associated with the top, toe or face of the slope shall be inspected. It is recommended that sufficient photographs are also taken of all aspects of the Earthwork Slope to assist the Principal Engineers review. The Inspection part of the SGM Anchors/Bolts/Dowel - Condition Inspection Checklist shall be completed and any Defects noted.</p> <p>During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.</p> <p>Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities</p>

	<p>Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:</p> <ul style="list-style-type: none"> • Review the Inspection checklist and photograph. • Consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset. • Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required. • Determine an overall condition rating for the asset. • Determine the appropriate on-going inspection interval for the asset. • Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended. • Complete the Desktop Review section of SGM Anchors/Bolts/Dowel - Condition Inspection Checklist. <p>The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.</p> <p>Some SGM Anchors/Bolts/Dowel assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:</p> <ul style="list-style-type: none"> • Required frequency (in months) • Description of the monitoring activities to be carried out • Description of the required reporting requirements
Inspection Records	<p>On completion of each Inspection the Inspection section of the SGM Anchors/Bolts/Dowel - Condition Inspection Checklist shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.</p> <p>On completion of the Desktop review by Principal Engineer, the Desktop Review section of the SGM Anchors/Bolts/Dowel - Condition Inspection Checklist shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.</p>

SGM Anchors/Bolts/Dowel - Specialist Inspection

Inspection Name	SGM Anchors/Bolts/Dowel - Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Anchors/Bolts/Dowel - Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> • incidents • as a result of issues being identified by visual condition inspections or other inspections

	All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Anchors/Bolts/Dowels System - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage incomplete.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Barrier Fencing System



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

Barrier Fencing Systems are freestanding fences used to contain rockfalls and landslides to prevent them reaching the road or other asset. They may be located on the slope, on a berm on the slope, at or near the toe of the slope or sometimes at or near the crest of the slope.

Many are proprietary engineered systems designed to retain specific forces over a specific design life but ad-hoc barriers with a containment function also occur. All require maintenance, including debris removal, and all should be subjected to specialist inspection after any event.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Barrier Fencing Systems are propriety systems and should be inspected and maintained in accordance with the manufacturers recommendations. All manufacturer recommended inspections and maintenance activities are recorded under the special Inspection/maintenance asset.</p> <p>Rock Netting below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while Rock Sloped above the road will generally be visible to Safety Inspectors.</p> <p>Additional Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Barrier Fencing Systems assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Barrier Fencing System Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Barrier Fencing Systems within the Trunk Road Boundary and all SGM Barrier Fencing Systems owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Barrier Fencing System Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Position	Lookup <ul style="list-style-type: none"> • ? (Default) • Above road • Below road 	Mandatory	

Field Name	Field Format	Field Required	Comments
Design Life (years)	Text	Mandatory	Comment Where known, the Design Life in years shall be entered.
Supplier	Text	Mandatory	Comment Where known, the Installer, Contract reference etc. shall be entered.
Installer	Text	Mandatory	Comment Where known, the Supplier/Manufacturer name, product name etc. shall be entered.
SGM Barrier Fencing - Component Attributes			
Height	Number (decimal)	Mandatory	Comment Most common or average SGM Barrier Fencing height in meters to nearest 0.5m
Posts	Yes/No	Mandatory	
Posts - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Post=Yes
Post - Spacing	Number (decimal)	Required	Comment

Field Name	Field Format	Field Required	Comments
			Mandatory if Post=Yes. Most common or average post spacing on face in meters to nearest 0.5m
Foundations	Yes/No	Mandatory	
Foundations - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Foundations=Yes
Rails	Yes/No	Mandatory	
Rails - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid 	Required	Comment Mandatory if Rails=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Wires	Yes/No	Mandatory	
Wires - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Wires=Yes
Mesh	Yes/No	Mandatory	
Mesh - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone 	Required	Comment Mandatory if Mesh=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Ropes	Yes/No	Mandatory	
Ropes - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Ropes=Yes
Anchors	Yes/No	Mandatory	
Anchors - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain 	Required	Comment Mandatory if Anchors=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Anchor - Spacing	Number (decimal)	Required	<p>Comment</p> <p>Mandatory if Anchors=Yes Most common or average anchor spacing on face in meters to nearest 0.5m</p>
Fixings	Yes/No	Mandatory	
Fixings - Material	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre 	Required	<p>Comment</p> <p>Mandatory if Fixings=Yes</p>

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
SGM Barrier Fencing - Dimension Attributes			
Position of Highest Extent: Height above Toe (At Crest = Slope Height)	Number (decimal)	Mandatory	Comment Height in meters above toe (toe=0), to nearest 0.5m
Minimum Separation between Slope and Asset (At Toe/Crest =0)	Number (decimal)	Mandatory	Comment Minimum separation in meters above toe (toe=0), to nearest 0.5m
Maximum Separation between Slope and Asset	Number (decimal)	Mandatory	Comment Maximum separation in meters above toe (toe=0), to nearest 0.5m
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMB-1	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMB-2	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
;	

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Fencing Barrier System - Visual Condition

Inspection Name	SGM Fencing Barrier System - Visual Condition
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Fencing Barrier System assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Anchors/Bolts/Dowel assets shall be maintained.</p> <p>The full area of each SGM Fencing Barrier System assets shall be inspected by walking along the extents of the asset. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. The full length of any drainage assets</p>

associated with the slope shall be inspected. It is recommended that sufficient photographs are also taken of all aspects of the Earthwork Slope to assist the Principal Engineers review. The Inspection part of the [SGM Fencing Barrier - Condition Inspection Checklist](#) shall be completed and any Defects noted.

During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.

Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities

Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:

- Review the Inspection checklist and photograph.
- Consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset.
- Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required.
- Determine an overall condition rating for the asset.
- Determine the appropriate on-going inspection interval for the asset.
- Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended.
- Complete the Desktop Review section of [SGM Fencing Barrier - Condition Inspection Checklist](#).

The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.

Some SGM Anchors/Bolts/Dowel assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:

- Required frequency (in months)
- Description of the monitoring activities to be carried out
- Description of the required reporting requirements

Inspection Records

On completion of each Inspection the Inspection section of the [SGM Fencing Barrier - Condition Inspection Checklist](#) shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.

On completion of the Desktop review by Principal Engineer, the Desktop Review section of the [SGM Fencing Barrier - Condition Inspection Checklist](#) shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.

SGM Fencing/Barrier- Specialist Inspection

Inspection Name	SGM Fencing/Barrier- Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Fencing/Barrier- Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> • incidents • as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Barrier Fencing System - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage incomplete.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Debris Traps



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

SGM Debris Traps comprise earthwork bunds, ditches or pits constructed to contain rock falls, landslides or debris flows and prevent them reaching the road. Some may have additional functions such as drainage, but any with a containment function should be included.

More recent SGM Debris traps are designed to accommodate a specific volume/mass/energy of material but older examples may have been designed by rule of thumb or be ad hoc features. All require maintenance, including debris removal, and all should be subjected to specialist inspection after any major event.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Debris Traps should only require occasional and irregular maintenance. The need for all maintenance shall be identified through Inspections.</p> <p>SGM Debris Traps below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while SGM Debris Traps above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Debris Traps assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Debris Traps Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Debris Traps within the Trunk Road Boundary and all SGM Debris Traps owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Debris Traps Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Ditch • Bund 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Pit / Catchpit 		
Depth/Height	Number (decimal)	Mandatory	Comment Width/Height to the nearest 0.5 metres.
Width	Number (decimal)	Mandatory	Comment Width to the nearest 0.5 metres.
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMD-1	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMD-2	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
	;

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Debris Traps - Visual Assessment Inspection

Inspection Name	SGM Debris Traps - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<ul style="list-style-type: none"> Onsite Inspection Requirements <p>Personnel carrying out Visual Condition Inspections of SGM Debris Trap assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Debris Trap assets shall be maintained.</p> <p>The full area of each SGM Debris Trap assets shall be inspected by walking along the extents of the asset. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. It is recommended that sufficient photographs are also taken of all aspects of the SGM Debris Trap to assist the Principal Engineers review. The Inspection part of the SGM Debris Trap - Condition Inspection Checklist shall be completed and any Defects noted.</p> <p>During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.</p> <p>Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities</p>

	<p>Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:</p> <ul style="list-style-type: none"> ○ Review the Inspection checklist and photograph. ○ Consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset. ○ Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required. ○ Determine an overall condition rating for the asset. ○ Determine the appropriate on-going inspection interval for the asset. ○ Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended. ○ Complete the Desktop Review section of SGM Debris Trap - Condition Inspection Checklist. <p>The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.</p> <p>Some SGM Debris Traps assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:</p> <ul style="list-style-type: none"> ○ Required frequency (in months) ○ Description of the monitoring activities to be carried out ○ Description of the required reporting requirements
Inspection Records	<p>On completion of each Inspection the Inspection section of the SGM Debris Trap - Condition Inspection Checklist shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.</p> <p>On completion of the Desktop review by Principal Engineer, the Desktop Review section of the SGM Debris Trap - Condition Inspection Checklist shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.</p>

SGM Debris Trap - Specialist Inspection

Inspection Name	SGM Debris Trap - Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Debris Trap - Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> ● incidents ● as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>

Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.
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Defects

Condition Rating

SGM Debris Trap - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Granular Replacement



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

SGM Granular Replacement is typically used to remediate a slope failure temporarily or where other solutions are not practicable. The failed or weakened slope material is excavated and replaced with a coarse granular fill having a higher friction angle to restore stability.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Granular Replacement assets should only require occasional and irregular maintenance. The need for all maintenance, however, shall be identified through Inspections.</p> <p>SGM Granular Replacement assets below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while Rock Sloped above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Granular Replacement assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Granular Replacement Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Granular Replacement assets within the Trunk Road Boundary and all SGM Granular Replacement assets owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Granular Replacement Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Position	Lookup <ul style="list-style-type: none"> ? (Default) Above road Below road 	Mandatory	Comment ????? Question Paul about the other attributes, what are their purpose ??
SGM Granular Replacement - Components			
Lining - Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed 	Required	Comment Mandatory if Lining=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Rockfill	Yes/No	Mandatory	
Rockfill - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Rockfill=yes
Reinforcement	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Reinforcement - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Reinforcement =Yes
Drainage	Yes/No	Mandatory	
Drainage - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive 	Required	Comment Mandatory if Drainage-Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Rock Other 		
Other components	Yes/No	Mandatory	
Other components - Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar Render/plaster Metal-wire Metal-section Timber Geotextile Geogrid Geocellular Polymer-other FRC Natural fibre Bitumen Soil-granular Soil-cohesive Rock Other 	Required	Comment Mandatory if Other components=Yes
Other components description	Text	Required	Comment Mandatory if Other components=Yes. A full description of any other components.
SGM Granular Replacement - Position Attributes			
Position of Highest Extent: Height above Toe (At Crest = Slope Height)	Number (decimal)	Mandatory	Comment Height in meters above toe (toe=0), to nearest 0.5m
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMG-1	Riprap/armourstone as toe ballast or erosion protection shall not be recorded as SGM Granular Replacement (see SGM – Rigid Support/Protection)

Rule No.	Rule Description
Rule-SGMG-2	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMG-3	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Granular Replacement - Visual Assessment Inspection

Inspection Name	SGM Granular Replacement - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Granular Replacement assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Granular Replacement assets shall be maintained.</p> <p>The full area of each SGM Granular Replacement assets shall be inspected by walking along the extents of the asset. Wherever possible inspectors shall also walk along the top/toe of the SGM Granular Replacement area and inspect the slope area. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. It is recommended that sufficient photographs are also taken of all aspects of the Earthwork Slope to assist the Principal Engineers review. The Inspection part of the SGM Granular Replacement - Condition Inspection Checklist shall be completed and any Defects noted.</p> <p>During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.</p> <p>Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities</p> <p>Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:</p> <ul style="list-style-type: none"> • review the Inspection checklist and photograph. • consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset. • Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required. • determine an overall condition rating for the asset. • determine the appropriate on-going inspection interval for the asset. • Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended.

	<ul style="list-style-type: none"> complete the Desktop Review section of SGM Granular Replacement - Condition Inspection Checklist. <p>The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.</p> <p>Some SGM Granular Replacement assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:</p> <ul style="list-style-type: none"> Required frequency (in months) Description of the monitoring activities to be carried out Description of the required reporting requirements
Inspection Records	<p>On completion of each Inspection the Inspection section of the SGM Granular Replacement - Condition Inspection Checklist shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.</p> <p>On completion of the Desktop review by Principal Engineer, the Desktop Review section of the SGM Granular Replacement - Condition Inspection Checklist shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.</p>

SGM Granular Replacement - Specialist Inspection

Inspection Name	SGM Granular Replacement - Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Granular Replacement - Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> incidents as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Granular Replacement - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Monitoring Equipment



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

SGM Monitoring Equipment is normally installed to measure and collect data about characteristics of slopes and/or provide warnings of certain activities.

Asset Attributes

Asset Shape	Point
Asset Service Level	The majority of SGM Monitoring Equipment Systems are proprietary systems and should be inspected and maintained in accordance with the manufacturers recommendations or at intervals not exceeding 12 months, whichever is shorter.
Common Attributes	Special Geotechnical Measure - Monitoring Equipment Attributes shall include the Common Attributes but with the following amendments. SGM Monitoring Equipment Systems may be installed at locations outside the Trunk Road Boundary. All SGM Monitoring Equipment Systems owner/maintained by Scottish Ministers shall be recorded.
Parent/Child Assets	Special Geotechnical Measure - Monitoring Equipment Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Instrument Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Groundwater - Standpipe piezometer • Groundwater - Vibrating wire piezometer • Groundwater - Resistivity • Groundwater - other moisture probe • Movement - Inclinator • Movement - Tiltmeter • Movement - Satellite receiver • Movement - Microseismic • Movement - Acoustic • Weather - Raingauge 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Weather - Thermometer Weather - Anemometer Survey base station LIDAR/INSAR Reflector Other - State 		
Instrument Type - Other	Text	Required	Comment Mandatory if Instrument Type=Other
Readings	Lookup <ul style="list-style-type: none"> ? (Default) Manual Auto/Data-logger 	Mandatory	
Data Download	Lookup <ul style="list-style-type: none"> ? (Default) On-site Remote/Telemetry 	Mandatory	Comment Only required and Mandatory when Readings=Auto/Data-logger
Power attributes			
Power Source	Lookup <ul style="list-style-type: none"> ? (Default) Battery Mains 	Mandatory	Comment Mandatory when Electrically Powered=Yes
Condition Inspection Interval			
Manufacturer Recommended Inspection Requirements	Text	Mandatory	Comment Details of Inspection requirements to be carried out or reference to equipment maintenance manual.
Manufacturer Recommended Maintenance Interval	Number (int)	Mandatory	Comment Maximum maintenance Interval in months. Default value = 12 months, Maximum value = 12 months. Where there are no maintenance requirements, 0 shall be entered
Manufacturer Recommended Maintenance Requirements	Text	Mandatory	Comment Details maintenance to be carried out or reference to equipment maintenance manual.

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMM-1	Each monitoring point shall be recorded as a separate asset record.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Other	All other Defects		

Inspections

SGM Monitoring Equipment - Visual Assessment Inspection

Inspection Name	SGM Monitoring Equipment - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding that stated in the Manufacturer Recommended Inspection Interval field
Inspection Requirement	<p>During each Inspection each monitoring equipment asset shall be inspected in accordance with the Inspection requirements or asset inspection manual and any Defects noted.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Geotechnical - Monitoring Equipment

Cyclic Maintenance Name	Geotechnical - Monitoring Equipment
Cyclic Maintenance Operation Interval	As necessary and at intervals not exceeding that stated in the Maintenance interval field
Cyclic Maintenance Operation Requirement	<p>Maintenance shall be carried out in accordance with the requirements stated in each assets "Maintenance Requirements" field.</p> <p>During each Maintenance visit any Defects shall be noted</p>
Cyclic Maintenance Operation Records	On completion of each maintenance visit a maintenance record shall be recorded against each asset along with a date/time stamp. Any Defects shall be recorded and associated with the asset.

Special Geotechnical Measure - Protection/Rigid Support



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

This asset group covers a range of rigid support/protection constructions including:

- Retaining walls <1.5m (taller retaining walls are deemed to be Structures)
- Buttresses
- Beams, columns, props
- Dentition
- Revetments
- Sprayed concrete facings (except where part of a Soil Nailing System)
- Riprap and armourstone as toe ballast or erosion protection.

Any rigid construction (not deemed to be a Structure) which has a supporting or protecting function should be included.

More recent applications are designed to appropriate codes for a specific design life but older examples may be designed to outdated codes or none at all.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Rigid Support/Protection Systems should only require occasional and irregular maintenance. The need for all maintenance, however, shall be identified through Inspections.</p> <p>SGM Rigid Support/Protection Systems below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while SGM Rigid Support/Protection Systems above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Rigid Support/Protection assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Protection/Rigid Support Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Rigid Support/Protection Systems within the Trunk Road Boundary and all SGM Rigid Support/Protection Systems owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Protection/Rigid Support Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Position	Lookup <ul style="list-style-type: none"> • ? (Default) • Above road • Below road 	Mandatory	
Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Retaining wall • Buttress • Dentition • Revetment • Riprap/Armourstone • Other Rigid Facing • Beam • Column • Prop • Waling/strapping • Scaling/removal • Gabion Basket • Other 	Mandatory	
SGM Rigid Support/Protection - Components			
Foundation - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Foundation=Yes
Concrete	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Concrete - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Concrete=Yes
Masonry	Yes/No	Mandatory	
Masonry - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock 	Required	Comment Mandatory when Masonry=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
Jointing	Yes/No	Mandatory	
Jointing- Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar Render/plaster Metal-wire Metal-section Timber Geotextile Geogrid Geocellular Polymer-other FRC Natural fibre Bitumen Soil-granular Soil-cohesive Rock Other 	Required	Comment Mandatory when Jointing=Yes
Sheetpile	Yes/No	Mandatory	
Sheetpile- Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar Render/plaster Metal-wire Metal-section Timber Geotextile Geogrid Geocellular Polymer-other FRC Natural fibre 	Required	Comment Mandatory when Sheetpile=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Concrete pile	Yes/No	Mandatory	
Concrete pile- Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Concrete pile=Yes
Crib	Yes/No	Mandatory	
Crib- Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid 	Required	Comment Mandatory when Crib=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Gabion-cage	Yes/No	Mandatory	
Gabion-cage - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Gabion-cage=Yes
Gabion-fill	Yes/No	Mandatory	
Gabion-fill- Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire 	Required	Comment Mandatory when Gabion-fill=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Riprap/Armourstone	Yes/No	Mandatory	
Riprap/Armourstone-Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Riprap/Armourstone=Yes
Structural steelwork	Yes/No	Mandatory	
Structural steelwork - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit 	Required	Comment Mandatory when Structural steelwork=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Expansion Joints	Yes/No	Mandatory	
Expansion Joints - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Expansion Joints=Yes
Expansion Joints - Spacing	Number (decimal)	Required	Comment Mandatory when Expansion Joints=Yes. Average or most common Joint spacing in meters.
Anchors	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Anchors- Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory when Anchors=Yes
Anchors - Spacing	Number (decimal)	Required	Comment Mandatory when Anchors=Yes. Average or most common anchor spacing in meters.
Connectors	Yes/No	Mandatory	
Connectors - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC 	Required	Comment Mandatory when Connectors=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Natural fibre Bitumen Soil-granular Soil-cohesive Rock Other 		
Drainage	Yes/No	Mandatory	
Drainage - Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar Render/plaster Metal-wire Metal-section Timber Geotextile Geogrid Geocellular Polymer-other FRC Natural fibre Bitumen Soil-granular Soil-cohesive Rock Other 	Required	Comment Mandatory when Drainage=Yes
Drainage - Spacing	Number (decimal)	Required	Comment Mandatory when Drainage=Yes. Average or most common drain spacing in meters.
Accessories/Other	Yes/No	Mandatory	
Accessories/Other - Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar 	Required	Comment Mandatory when Accessories/Other=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Accessories/Other - Description	Text	Required	Comment Mandatory when Accessories/Other=Yes
SGM Rigid Support/Protection - Position			
Position of Highest Extent: Height above Toe (At Crest = Slope Height)	Number (decimal)	Mandatory	Comment Height in meters above toe (toe=0), to nearest 0.5m
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMP-1	Only retaining walls less than 1.5m high should be recorded. Retaining walls Greater than or equal to 1.5 meters should be recorded in SMS.
Rule-SGMP-2	Anchor/facing combinations forming part of a Reinforced Soil System do not need to be recorded
Rule-SGMP-3	Rigid Support/protection components forming part of freestanding barriers/traps with a containment function and recorded in other Special Geotechnical Measure assets need not be recorded.
Rule-SGMP-4	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMP-5	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Rigid Support/Protection Systems -Visual Assessment Inspection

Inspection Name	SGM Rigid Support/Protection Systems -Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection

Inspection Interval	<p>At intervals not exceeding 60 months</p>
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Rigid Support/Protection assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Rigid Support/Protection assets shall be maintained.</p> <p>The full area of each SGM Rigid Support/Protection assets shall be inspected by walking along the extents of the asset. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. It is recommended that sufficient photographs are also taken of all aspects of the Rigid Support/Protection to assist the Principal Engineers review. The Inspection part of the SGM Rigid Support/Protection - Condition Inspection Checklist shall be completed and any Defects noted.</p> <p>During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.</p> <p>Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities</p> <p>Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:</p> <ul style="list-style-type: none"> • review the Inspection checklist and photograph. • consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset. • Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required. • determine an overall condition rating for the asset. • determine the appropriate on-going inspection interval for the asset. • Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended. • complete the Desktop Review section of SGM Rigid Support/Protection - Condition Inspection Checklist. <p>The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.</p> <p>Some SGM Rigid Support/Protection assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:</p> <ul style="list-style-type: none"> • Required frequency (in months) • Description of the monitoring activities to be carried out

	<ul style="list-style-type: none"> Description of the required reporting requirements
Inspection Records	<p>On completion of each Inspection the Inspection section of the SGM Rigid Support/Protection - Condition Inspection Checklist shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.</p> <p>On completion of the Desktop review by Principal Engineer, the Desktop Review section of the SGM Rigid Support/Protection - Condition Inspection Checklist shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.</p>

SGM Rigid Support/Protection - Specialist Inspection

Inspection Name	SGM Rigid Support/Protection - Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Rigid Support/Protection Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> incidents as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Rigid Support/Protection - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage incomplete.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Reinforced Soil System



Special Geotechnical Measures (SGM) are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

SGM Reinforced Soil Systems consist of fill with reinforcing bars/strips/sheets, usually attached to a stabilising facing, which together permit a steeper slope angle than could be achieved with unreinforced fill.

Many are proprietary engineered systems with a specific design life, but ad hoc mesh/geotextile-based reinforcing/facing systems should be included. Reinforced soil slopes steeper than 70 degrees and with hard facings are not included as they are deemed to be Structures.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Reinforced Soil System should only require occasional and irregular maintenance. The need for all maintenance shall be identified through Inspections.</p> <p>SGM Reinforced Soil System below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while SGM Reinforced Soil System above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Reinforced Soil System assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Reinforced Soil System Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Reinforced Soil System within the Trunk Road Boundary and all SGM Reinforced Soil System owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Reinforced Soil System Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Position	Lookup <ul style="list-style-type: none"> • ? (Default) • Above road • Below road 	Mandatory	

Field Name	Field Format	Field Required	Comments
Supplier	Text	Required	Comment Where known, the Supplier/Manufacturer name, product name etc. shall be entered.
Installer	Text	Required	Comment Where known, the Installer, Contract reference etc. shall be entered.
Design Life (years)	Number (int)	Required	Comment Where known, the Design Life in years shall be entered.
SGM Reinforced Soil System - Components			
Fill - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Fill=Yes
Reinforcement	Yes/No	Mandatory	
Reinforcement - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed 	Required	Comment Mandatory if Reinforcement=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Facing-Flexible	Yes/No	Mandatory	
Facing-Flexible - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Facing-Flexible=Yes
Facing-Gabion	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Facing-Gabion - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Facing-Gabion=Yes
Facing-Rigid	Yes/No	Mandatory	
Facing-Rigid - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen 	Required	Comment Mandatory if Facing-Rigid=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Soil-granular • Soil-cohesive • Rock • Other 		
Facing-Connectors	Yes/No	Mandatory	
Facing-Connectors - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Mandatory	Comment Mandatory if Facing-Connectors=Yes
Facing-Joints	Yes/No	Mandatory	
Facing-Joints - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber 	Required	Comment Mandatory if Facing-Joints=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Ropes	Yes/No	Mandatory	
Ropes - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Ropes=Yes
Drainage - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit 	Mandatory	Comment Mandatory if Drainage=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Drain Spacing	Number (decimal)	Required	<p>Comment</p> <p>Average or most common drain spacing in meters above toe (toe=0), to nearest 0.5m</p>
Accessories/Other components	Yes/No	Mandatory	
Accessories/Other components - Material	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock 	Required	<p>Comment</p> <p>Mandatory if Accessories/Other components-Yes. Description of any Accessories and or other components.</p>

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
Facing Panel/unit Height	Number (decimal)	Mandatory	Comment Height in meters of facing panel/unit, to nearest 0.5m
Facing Panel/unit Width	Number (decimal)	Mandatory	Comment Width in meters of facing panel/unit, to nearest 0.5m
SGM Reinforced Soil System - Position			
Position of Highest Extent: Height above Toe (At Crest = Slope Height)	Text	Mandatory	Comment Height in meters above toe (toe=0), to nearest 0.5m
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMRS-1	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMRS-2	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
	;

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Reinforced Soil - Visual Assessment Inspection

Inspection Name	SGM Reinforced Soil - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Reinforced Soil assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Reinforced Soil assets shall be maintained.</p> <p>The full area of each SGM Reinforced Soil assets shall be inspected by walking along the extents of the asset. Wherever possible inspectors shall also walk along the top/toe of the SGM Reinforced Soil area and inspect the slope area. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. The full length of any drainage assets associated with the top, toe or face of the slope shall be inspected. It is recommended that sufficient photographs are also taken of all aspects of the Earthwork</p>

	<p>Slope to assist the Principal Engineers review. The Inspection part of the SGM Reinforced Soil - Condition Inspection Checklist shall be completed and any Defects noted.</p> <p>During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.</p> <p>Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities</p> <p>Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:</p> <ul style="list-style-type: none"> • review the Inspection checklist and photograph. • consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset. • Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required. • determine an overall condition rating for the asset. • determine the appropriate on-going inspection interval for the asset. • Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended. • complete the Desktop Review section of SGM Reinforced Soil - Condition Inspection Checklist. <p>The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.</p> <p>Some SGM Reinforced Soil assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:</p> <ul style="list-style-type: none"> • Required frequency (in months) • Description of the monitoring activities to be carried out • Description of the required reporting requirements
<p>Inspection Records</p>	<ul style="list-style-type: none"> • On completion of each Inspection the Inspection section of the SGM Reinforced Soil - Condition Inspection Checklist shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item. <p>On completion of the Desktop review by Principal Engineer, the Desktop Review section of the SGM Reinforced Soil - Condition Inspection Checklist shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.</p>

SGM Reinforced Soil - Specialist Inspection

<p>Inspection Name</p>	<p>SGM Reinforced Soil - Specialist Inspection</p>
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Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Anchors/Bolts/Dowel - Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> incidents as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Reinforced Soil - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage incomplete.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Rock Netting



Special Geotechnical Measures are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

Rock Netting Systems comprise netting fixed with anchors and ropes and are designed to manage rock falls in two ways:

- Draped netting allows falls to occur but contains them close to the face and toe
- Fixed netting retains detached rock on the face and prevents it from falling

Many are proprietary engineered systems designed to contain or retain specific particle sizes for a specific design life but ad-hoc netting with a containment function should be included. All require maintenance, including debris removal, and all should be subjected to specialist inspection after any major event.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of Rock Netting should only require occasional and irregular maintenance although there may be the need for occasional clearing of fallen rocks from the bottom of the netting. The need for all maintenance, however, shall be identified through Inspections.</p> <p>Rock Netting below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while Rock Sloped above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition Rock netting assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Rock Netting Attributes shall include the Common Attributes but with the following amendments.</p> <p>All Rock Netting within the Trunk Road Boundary and all Rock netting owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Rock Netting Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Position	Text	Mandatory	
Supplier	Text	Required	Comment

Field Name	Field Format	Field Required	Comments
			Where known, the Supplier/Manufacturer name, product name etc. shall be entered.
Installer	Text	Required	Comment Where known, the Installer, Contract reference etc. shall be entered.
Design Life (years)	Number (int)	Required	Comment Where known, the Design Life in years shall be entered.
Rock Netting - Components			
Facing-Mesh - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Mandatory	
Facing-Mesh - Mesh Panel Width	Number (decimal)	Mandatory	Comment width in meters of mesh panels to nearest 0.5m
Facing-Mesh Connectors	Yes/No	Mandatory	
Facing-Mesh Connectors - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Anchors-Crest	Yes/No	Mandatory	
Anchors-Crest - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Other 		
Anchor-Crest - Spacing	Number (decimal)	Mandatory	<p>Comment</p> <p>Most common or average anchor spacing at crest in meters to nearest 0.5m</p>
Anchors-Face	Yes/No	Mandatory	
Anchors-Face - Material	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Mandatory	
Anchor-Face - Spacing	Number (decimal)	Mandatory	<p>Comment</p> <p>Most common or average anchor spacing on the face in meters to nearest 0.5m</p>
Anchors-Toe	Yes/No	Mandatory	
Anchors-Toe - Material	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Anchor-Toe - Spacing	Number (decimal)	Mandatory	<p>Comment</p> <p>Most common or average anchor spacing at toe in meters to nearest 0.5m</p>
Ropes-Crest	Yes/No	Mandatory	
Ropes-Crest - Material	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
Ropes-Face	Yes/No	Mandatory	
Ropes-Face - Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar Render/plaster Metal-wire Metal-section Timber Geotextile Geogrid Geocellular Polymer-other FRC Natural fibre Bitumen Soil-granular Soil-cohesive Rock Other 	Mandatory	
Rope-Face - Spacing	Number (decimal)	Mandatory	Comment Most common or average rope spacing on face in meters to nearest 0.5m
Ropes-Toe	Yes/No	Mandatory	
Ropes-Toe - Material	Lookup <ul style="list-style-type: none"> ? (Default) Concrete-plain Concrete-reinforced Concrete-sprayed Brick Concrete block/slab/unit Stone Mortar Render/plaster 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Toe Weight	Yes/No	Mandatory	
Toe Weight - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Mandatory	
Caps/covers	Yes/No	Mandatory	
Caps/covers - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced 	Required	Comment Mandatory if Caps/covers=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Accessories	Yes/No	Mandatory	
Accessories - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Mandatory	

Field Name	Field Format	Field Required	Comments
Accessories - Description	Text	Mandatory	Comment Description of any accessories or other components
SGM Rock Netting - Position Attributes			
Position of Highest Extent: Height above Toe (At Crest = Slope Height)	Text	Mandatory	Comment Height in meters above toe (toe=0), to nearest 0.5m
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMRN-1	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMRN-2	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Rock Netting - Visual Assessment Inspection

Inspection Name	SGM Rock Netting - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Rock Netting assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Rock Netting assets shall be maintained.</p> <p>The full area of each SGM Rock Netting assets shall be inspected by walking along the extents of the asset. Any areas which cannot be adequately inspected shall be noted for review by the Principal Engineer. It is recommended that sufficient photographs are also taken of all aspects of the Earthwork Slope to assist the Principal Engineers review. The Inspection part of the SGM Rock Netting - Condition Inspection Checklist shall be completed and any Defects noted.</p> <p>During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.</p>

	<p>Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities</p> <p>Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:</p> <ul style="list-style-type: none"> • review the Inspection checklist and photograph. • consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset. • Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required. • determine an overall condition rating for the asset. • determine the appropriate on-going inspection interval for the asset. • Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended. • complete the Desktop Review section of SGM Rock Netting - Condition Inspection Checklist. <p>The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.</p> <p>Some SGM Rock Netting assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:</p> <ul style="list-style-type: none"> • Required frequency (in months) • Description of the monitoring activities to be carried out • Description of the required reporting requirements
<p>Inspection Records</p>	<p>On completion of each Inspection the Inspection section of the SGM Rock Netting - Condition Inspection Checklist shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.</p> <p>On completion of the Desktop review by Principal Engineer, the Desktop Review section of the SGM Rock Netting - Condition Inspection Checklist shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.</p>

Rock Netting - rock Debris Visual Assessment Inspection

<p>Inspection Name</p>	<p>Rock Netting - rock Debris Visual Assessment Inspection</p>
<p>Inspection Group</p>	<p>Rock Netting - Debris Visual Assessment Inspection</p>
<p>Inspection Interval</p>	<p>At intervals not exceeding 12 months</p>
<p>Inspection Requirement</p>	<p>The full length of each Rock Netting asset shall be inspected to identify if there are any fallen rocks trapped within the netting which require removal or any other obvious Defects. Any Defects shall be noted.</p>

Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. Any Defects shall be recorded and associated with the relevant asset item.
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SGM Rock Netting - Specialist Inspection

Inspection Name	SGM Rock Netting - Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Rock Netting - Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> • incidents • as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Rock Netting - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Geotechnical Measure - Soil Nailing



Special Geotechnical Measures are engineering techniques which enhance the natural stability of Earthwork, Rock or Land Slopes, either as part of the initial design or as a remedial measure. They are always associated with an Earthworks Slope, Land Slope or Rock Slope.

Soil Nailing Systems comprise an array of soil nails (similar to anchors) usually with a protective facing which together permit a steeper slope angle than could be achieved by the unreinforced slope.

Many are engineered systems designed to codes and based on proprietary nails, with a specific design life.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>The majority of SGM Soil Nailing Systems should only require occasional and irregular maintenance. The need for all maintenance, however, shall be identified through Inspections.</p> <p>SGM Soil Nailing Systems below the road will generally not be visible to regular Safety Inspection but represent generally lower risk while SGM Soil Nailing Systems above the road will generally be visible to Safety Inspectors.</p> <p>Comprehensive Inspections shall be carried out to record asset condition, Defects and assess risk. Some high risk or poor condition SGM Soil Nailing Systems assets will require more frequent and/or specialist Inspections and shall be identified in the Asset Register.</p>
Common Attributes	<p>Special Geotechnical Measure - Soil Nailing Attributes shall include the Common Attributes but with the following amendments.</p> <p>All SGM Soil Nailing Systems within the Trunk Road Boundary and all SGM Soil Nailing Systems owner/maintained by Scottish Ministers shall be recorded.</p>
Parent/Child Assets	Special Geotechnical Measure - Soil Nailing Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Position	Lookup <ul style="list-style-type: none"> • ? (Default) • Above road • Below road 	Mandatory	

Field Name	Field Format	Field Required	Comments
Supplier	Text	Mandatory	Comment Where known, the Supplier/Manufacturer name, product name etc. shall be entered.
Installer	Text	Mandatory	Comment Where known, the Installer, Contract reference etc. shall be entered.
Design Life (years)	Number (int)	Mandatory	Comment Where known, the Design Life in years shall be entered.
SGM Soil Nailing System - Components			
Nails - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Nails=Yes
Nail spacing - Vertical	Number (decimal)	Required	Comment Mandatory if Nails=Yes. Average or most common spacing in meters.
Nail spacing - Horizontal	Number (decimal)	Required	Comment Mandatory if Nails=Yes. Average or most common spacing in meters.

Field Name	Field Format	Field Required	Comments
Facing-Flexible	Yes/No	Mandatory	
Facing-Flexible - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Facing-Flexible=Yes
Facing-Rigid	Yes/No	Mandatory	
Facing-Rigid - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC 	Required	Comment Mandatory if Facing-Rigid=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Facing-Connectors	Yes/No	Mandatory	
Facing-Connectors - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Facing-Connectors=Yes
Facing-Joints	Yes/No	Mandatory	
Facing-Joints - Material	Text	Required	Comment Mandatory if Facing-Joints=Yes
Ropes	Yes/No	Mandatory	
Ropes - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick 	Required	Comment Mandatory if Ropes=Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 		
Drainage	Yes/No	Mandatory	
Drainage - Material	Lookup <ul style="list-style-type: none"> • ? (Default) • Concrete-plain • Concrete-reinforced • Concrete-sprayed • Brick • Concrete block/slab/unit • Stone • Mortar • Render/plaster • Metal-wire • Metal-section • Timber • Geotextile • Geogrid • Geocellular • Polymer-other • FRC • Natural fibre • Bitumen • Soil-granular • Soil-cohesive • Rock • Other 	Required	Comment Mandatory if Drainage=Yes
Drain Spacing	Number (decimal)	Required	Comment

Field Name	Field Format	Field Required	Comments
			Mandatory if Drainage=Yes. Average or most common drain spacing in meters above toe (toe=0), to nearest 0.5m
Accessories/Other components	Yes/No	Mandatory	
Accessories/Other components - Material	Text	Required	Comment Mandatory if Accessories/Other components-Yes. Description of any Accessories and or other components.
Drainage	Yes/No	Mandatory	
Facing panel width	Number (decimal)	Mandatory	Comment Average or most common width in meters.
SGM Soil Nailing Systems - Position Attributes			
Position of Highest Extent: Height above Toe (At Crest = Slope Height)	Number (decimal)	Mandatory	Comment Height in meters above toe (toe=0), to nearest 0.5m
Condition Inspection Interval			

Asset Specific Rules

Rule No.	Rule Description
Rule-SGMSN-1	The Default value for the "Inspection Interval" field shall be 60 months, The Maximum value for Inspection Interval shall be 60 months.
Rule-SGMSN-2	The Inspection Interval shall only be changed by a Principal Geotechnical Engineer or Principal Engineering Geologist following review of the slope condition.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

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Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

Has the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is there a risk of the slip/slide have an impact on the stability or accessibility of the carriageway or footway?
Is the affected area in an area known to be susceptible to slips or slides?
Is a specialist inspection required for further investigation?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Slip/Slide	Any slip or slide	There is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Initiate specialist inspection	A slip or slide	The slip or slide is in an area not previously susceptible to slips or slides, or there is a risk the slip or slide may have an impact on the stability or accessibility of the carriageway or footway	
Other Erosion	Any erosion		
Other	All other Defects		

Inspections

SGM Soil Nailing - Visual Assessment Inspection

Inspection Name	SGM Soil Nailing - Visual Assessment Inspection
Inspection Group	Geotechnical Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 60 months
Inspection Requirement	<p>Onsite Inspection Requirements</p> <p>Personnel carrying out Visual Condition Inspections of SGM Soil Nailing assets may not be Geotechnical Engineers or Engineering Geologist status but shall be sufficient trained to identify Defects or potential Defects of Geotechnical Assets. The Principal Geotechnical Engineer or Principal Engineering Geologist shall be responsible for approving the competency and training records of Geotechnical Inspection staff and retaining training records of all staff carrying out Visual Condition Inspections of SGM Soil Nailing assets shall be maintained.</p> <p>The full area of each SGM Soil Nailing assets shall be inspected by walking along the extents of the asset. Wherever possible inspectors shall also walk along the top/toe of the slope and inspect the slope area. Any areas which cannot be adequately inspected shall be</p>

noted for review by the Principal Engineer. The full length of any drainage assets associated with the top, toe or face of the slope shall be inspected. It is recommended that sufficient photographs are also taken of all aspects of the Earthwork Slope to assist the Principal Engineers review. The Inspection part of the [SGM Soil Nailing - Condition Inspection Checklist](#) shall be completed and any Defects noted.

During each inspection the accuracy of the asset record shall be checked, including its location and attributes, and all errors corrected, any missing assets added and removed assets end dated in the Asset Register. Inspectors shall also identify any other geotechnical assets (Earthwork Slopes, Rock Slopes or Special Geotechnical Measures) and associated drainage assets (Filter drains, counterfort drains, ditches or channels) and verify that they are recorded in the asset register.

Desktop review by Principal Engineer, Condition Rating and Special Monitoring Activities

Within 3 months of the Inspection, the Inspection records shall be reviewed by a Principal Geotechnical Engineer or Principal Engineering Geologist Specialist along with the Inspector. The Principal Engineer shall:

- review the Inspection checklist and photograph.
- consider if there is sufficient information available from the inspection, including assessing the importance/risk of any areas not inspected, to adequately assess the condition of the asset.
- Consider if further re-inspections or Specialist Inspection (by a Geotechnical Engineer or Engineering Geologist) are required.
- determine an overall condition rating for the asset.
- determine the appropriate on-going inspection interval for the asset.
- Determine if any Special Inspection Requirements or Special Maintenance Requirements should be added or amended.
- complete the Desktop Review section of [SGM Soil Nailing - Condition Inspection Checklist](#).

The maximum Inspection interval shall be 5 years. It is anticipated that the inspection interval for most Excellent, Good or Fair assets would remain at 5 years but that the Inspection Interval for Poor and Very Poor condition assets would be reduced with the exact interval being determined by the Principal Engineer based on the condition and risk assessment of each individual slope.

Some SGM Soil Nailing assets may benefit from a more frequent and targeted inspection or maintenance regime to manage specific risk/issues. Any specific inspection or maintenance regimes shall be recorded under the Special Inspection Requirements or Special Maintenance Requirements assets including:

- Required frequency (in months)
- Description of the monitoring activities to be carried out
- Description of the required reporting requirements

Inspection Records

On completion of each Inspection the Inspection section of the [SGM Soil Nailing - Condition Inspection Checklist](#) shall be recorded against each asset item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.

On completion of the Desktop review by Principal Engineer, the Desktop Review section of the [SGM Soil Nailing - Condition Inspection Checklist](#) shall be recorded against each asset along with a date/time stamp, reviewer name and any comments.

SGM Soil Nailing - Specialist Inspection

Inspection Name	SGM Soil Nailing - Specialist Inspection
Inspection Group	Geotechnical Assets - Specialist Inspection
Inspection Interval	As required
Inspection Requirement	<p>SGM Soil Nailing - Specialist Inspection shall generally be carried out by a qualified Geotechnical Engineer or Engineering Geologist in response to:</p> <ul style="list-style-type: none"> • incidents • as a result of issues being identified by visual condition inspections or other inspections <p>All Specialist Inspections shall be recorded against all assets inspected and on completion of each inspection a report shall be made and attached to each asset.</p>
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

SGM Soil Nailing - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Obvious signs of construction to Rock Netting, with no or minimal vegetation growth.
B - Good	No visual Defects, with few visible signs of surface deterioration. Banks areas returned to vegetation.
C - Fair	No deformation of profile, No visible issues.
D - Poor	Minor deformation of profile, some vegetation coverage incomplete.
E - Very Poor	Significant deformation of profile.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Inspection Requirements



An area denoting where Special Inspection Requirements exist which are not covered by other inventory items. The intent of this item is to capture special inspections that are not covered by the existing inventory inspections and ensure that where required the inspection activities continue to be ordered, carried out, reported and recorded. Examples may include:

- Trial panels of pavement construction where a long monitoring and reporting regime has been implemented.
- Trial or comparison panels of pavement where no monitoring and reporting regime has been implemented but need to be recorded for future reference.
- Items where specific inspection manuals have been created with inspection activities not covered by the Inspection Manual.

Asset Attributes

Asset Shape	Area
Asset Service Level	The requirements for Special Inspections are specific to each Special Inspection asset.
Common Attributes	Special Inspection Requirements Attributes shall include the Common Attributes .
Parent/Child Assets	Special Inspection Requirements Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Inspection Title	Text	Mandatory	
Inspection Requirements	Text	Mandatory	Comment A full description of the inspection requirements and reporting must be provided such that any other user/organisation can understand what needs to be carried out. The description should also include a description of why the inspection is required so that its on-going need can be reviewed in the future.
Inspection Interval	Number (int)	Mandatory	Comment If the Inspection is to be carried out "As necessary" or in response to a specific event "0" shall be entered.

Asset Specific Rules

Rule No.	Rule Description
Rule-SI-1	A separate asset shall be created for each Inspection requirement.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

Special Inspection

Inspection Name	Special Inspection
Inspection Group	Specialist & Adhoc Inspections
Inspection Interval	As recorded in "Inspection Interval" field
Inspection Requirement	The Special Inspection shall be carried out in accordance with the requirements listed in the Inspection Requirements field
Inspection Records	On completion of each Inspection a date/time stamp shall be recorded against each asset. On completion of the reporting requirements, a copy of the report shall be attached to the relevant asset.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Special Maintenance Requirements



An area denoting where Special Maintenance Requirements exist which are not covered by other inventory items. The intent of this item is to capture special maintenance activities that are not covered by the existing Contract requirements and ensure that where required maintenance activities continue to be ordered, carried out, reported and recorded. Examples may include:

- Geotechnical assets that require regular cleaning, e.g. rock netting or debris traps that require cleaning more frequently than every 5 years.

Asset Attributes

Asset Shape	Area
Asset Service Level	The requirements for Special Inspections are specific to each Special Inspection asset.
Common Attributes	Special Maintenance Requirements Attributes shall include the Common Attributes .
Parent/Child Assets	Special Maintenance Requirements Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Maintenance Title	Text	Mandatory	
Maintenance Requirements	Text	Mandatory	Comment A full description of the maintenance requirements and reporting must be provided such that any other user/organisation can understand what needs to be carried out. The description should also include a description of why the maintenance is required so that its on-going need can be reviewed in the future.
Maintenance Interval	Number (int)	Mandatory	Comment If the maintenance is to be carried out "As necessary" or in response to a specific event "0" shall be entered.

Asset Specific Rules

Rule No.	Rule Description
Rule-SM-1	A separate asset shall be created for each maintenance requirement.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

There are no Inspections associated with this Asset.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Special Maintenance

Cyclic Maintenance Name	Special Maintenance
Cyclic Maintenance Operation Interval	As recorded in "Maintenance Interval" field
Cyclic Maintenance Operation Requirement	The Special Maintenance shall be carried out in accordance with the requirements listed in the Maintenance Requirements field
Cyclic Maintenance Operation Records	On completion of each maintenance visit a maintenance record shall be recorded against each asset along with a date/time stamp. Any Defects shall be recorded and associated with the asset.

Structure



A construction that supports itself and carries a load.

Asset Attributes

Asset Shape	Linear
Asset Service Level	Structures shall be maintained as detailed in the Structures Management requirements.
Common Attributes	Structure Attributes shall include the Common Attributes but with the following amendments. This item should be extracted from SMS
Parent/Child Assets	Structure Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Structure Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Bridge Over • Bridge Under • High Mast • Gantry • Culvert • Retaining Wall • Other 	Mandatory	
Bridge Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Road • River • Rail • Canal • Swing / Raising • Footway • Ravine/Valley 	Conditional (Desirable)	Comment Conditional of Structure Type being a bridge

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged	Any damage to a structure		
Damaged Parapet	Any damage to a parapet		
Damaged Expansion Joint	Any damage to an Expansion Joint		
Other	Any other Defects		

Inspections

There are no Inspections associated with this Asset.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Structure - Electrical



Electrically powered elements of a structure such as cathodic protection, gantry, movable bridge mechanism.

Internal/ external illumination shall be recorded as Lighting Point Assets.

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>Electrically powered elements of Structures shall require regular Inspection and Maintenance to be carried out to ensure that all parts of the barrier remain operational. All other maintenance shall be identified by Inspection.</p> <p>Electrically powered elements of Structures are not normally visible to regular Safety Inspection but regular Comprehensive Inspections shall be carried out to record asset condition and Defects.</p> <p>Where applicable, the requirements of Transport Scotland's guidance document LDS8023 – Electrical Maintenance Guidelines shall be applied to this item. The EMG equipment type(s) covered by this inventory item are: 006, 011 & 029.</p>
Common Attributes	<p>Structure - Electrical Attributes shall include the Common Attributes but with the following amendments.</p> <p>Item Identity Code and Location Description shall be Mandatory fields.</p> <p>All Electrically energised Structures shall also be recorded.</p>
Parent/Child Assets	All Structures - Electrical assets shall only exist as a child item of a Structures asset.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Identity Code	Text	Mandatory	<p>Comment</p> <p>From Common Attributes. Every Electrically powered asset should have a yellow sticker with a legible Identity Code.</p>
Electrically Powered	Yes/No	Mandatory	<p>Comment</p> <p>Default = No</p>
Power Supply Attributes			
Supply Type	Lookup <ul style="list-style-type: none"> ? (Default) 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • 230v Underground Private Network • 230v Overhead Private Network • 230v DNO 5th Core • 230v DNO Direct Underground Feed • 230v DNO Direct Overhead Feed • 400v Underground Private Network • Overhead Private Network • 400v DNO 5th Core • 400v DNO Direct Underground Feed • 400v DNO Direct Overhead Feed • Solar • Wind • Solar and Wind • SELV • Other 		
Distribution Network Operator	Lookup <ul style="list-style-type: none"> • ? (Default) • Scottish Power • Scottish & Southern Energy • Other 	Mandatory	
Electrical Protection Device	Lookup <ul style="list-style-type: none"> • ? (Default) • MCB • FUSE • RCD • None • N/A 	Mandatory	Comment Where asset has no electrical power, Electrical Protection Device shall be "N/A". Where the asset has electrical power but no protection device is provided Electrical Protection Device shall be "None".
Cathodic Protection - Electrical Power Attributes			
Cathodic Protection Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	

Field Name	Field Format	Field Required	Comments
Cathodic Protection Circuit Wattage	Number (decimal)	Conditional (Mandatory)	Comment Derived from Elexon Code
Cathodic Protection Regime Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	
Cathodic Protection Operating Hours	Number (int)	Conditional (Mandatory)	Comment Derived from Regime Code
Movable Gantry - Electrical Power Attributes			
Moveable Gantry Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	
Moveable Gantry Circuit Wattage	Text	Conditional (Mandatory)	Comment Derived from Elexon Code
Moveable Gantry Regime Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	
Moveable Gantry Operating Hours	Number (int)	Conditional (Mandatory)	Comment Derived from Regime Code
Movable Bridge - Electrical Power Attributes			
Moveable Bridge Regime Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	
Moveable Bridge Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	
Moveable Bridge Circuit Wattage	Number (decimal)	Conditional (Mandatory)	Comment Derived from Elexon Code
Moveable Bridge Operating Hours	Number (int)	Conditional (Mandatory)	Comment Derived from Regime Code
Maintenance Safety			
Safe Maintenance Access	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Location & Environmental Risk Issues			
Salting of the Road	Yes/No	Mandatory	
Road Environment	Yes/No	Mandatory	
Environment Situation	Yes/No	Mandatory	
Wind Exposure	Yes/No	Mandatory	
Designed for Fatigue	Yes/No	Mandatory	
Traffic Flow	Yes/No	Mandatory	
Traffic Speed	Yes/No	Mandatory	
On a Bridge	Yes/No	Mandatory	
Traffic Disruption Caused By Failure	Yes/No	Mandatory	
Pedestrian Density	Yes/No	Mandatory	
Effect of Location (Missing)	Yes/No	Mandatory	
Overhead Cable Restriction	Yes/No	Mandatory	
Site Access, Hard Standing ETC	Yes/No	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Other			
Damaged Structures electrical component	Any damage to Structures electrical component		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring with	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
high risk of pedestrian access		a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring but low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Component or other miscellaneous failure not covered in other items listed here which results in high electrical safety risk	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Installation failed safety electrical testing or present a safety risk from high Ze value in excess of the maximum allowable.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Cables that have failed safety electrical testing or present a safety risk from high earth loop impedance (Zs) value in excess of the maximum allowable for the protective device.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Failure of insulation test between live conductor and earth, and disconnection of earthing and bonding conductors.			
Exposed or extraneous conductive parts of electrical apparatus made live under fault conditions	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Electrical Check failure as BS7671 GN3 Section & 3.5 Table 3.2	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Hazardous electrical Defect	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Inspections

Structures - Periodic Electrical Inspection and Testing - BS7671

Inspection Name	Structures - Periodic Electrical Inspection and Testing - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> all assets are accurately recorded in the register, by adding and end dating assets as appropriate, all attributes of every asset shall be validated to ensure that they accurately represent each asset, all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.
Comments	References include LDS8023 - EMG011, EMG029 & EMG030

Structures - Electrical - Routine Electrical Inspection

Inspection Name	Structures - Electrical - Routine Electrical Inspection
Inspection Group	Routine Electrical Inspection & TR22

Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	<p>Routine Electrical Inspections of all electrical assets shall be carried out in accordance with LDS8023.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded and located in the register, by moving, adding and end dating assets as appropriate, • that all attributes accurately represent every asset, • and all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	On completion of each Inspection a record shall be recorded against each asset including date/time/user stamps. Any Defects shall be recorded and associated with the relevant asset.
Comments	References include LDS8023 - EMG011, EMG029 & EMG030

Defects

Condition Rating


There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Structures - Electrical components - Cleaning

Cyclic Maintenance Name	Structures - Electrical components - Cleaning
Cyclic Maintenance Operation Interval	At intervals not exceeding 24 months
Cyclic Maintenance Operation Requirement	<p>All electrical components shall be cleaned in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023.</p> <p>Operatives carrying out these activities should be competent to carry out operations on electrical apparatus.</p>
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	<p>References include LDS8023</p> <ul style="list-style-type: none"> • EMG006 - lit gantries - Task 1 (clean & check), 5, 6,9 & 10 • EMG011 - moveable bridge apparatus - Task 1 (clean & check), 5, 6, 9 & 10

- 
- EMG029 - Cathodic Protection Equipment - Task 1, 2, 4, 5, 8 & 9
 - EMG030 - Electrically operated apparatus for maintenance access into structures

Traffic Control Barrier



A moveable barrier or gate which can control the flow of traffic or close sections of the road in severe weather conditions.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Traffic Control Barriers should only require occasional and irregular maintenance. The need for all maintenance shall be identified through inspections.</p> <p>Traffic Control Barriers should normally be visible to regular Safety Inspection, high priority Defects can be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Regular Comprehensive Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	Traffic Control Barrier Attributes shall include the Common Attributes .
Parent/Child Assets	Traffic Control Barrier Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Traffic Control Barrier Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Snow Gate • Rail Crossing • Swing Bridge • Toll Barrier • Other 	Mandatory	
Traffic Control Barrier Equipment	Lookup <ul style="list-style-type: none"> • ? (Default) • Barrier (Raise / Lower) • Gate • Other 	Desirable	
Arrangement	Lookup <ul style="list-style-type: none"> • ? (Default) 	Desirable	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Single Carriageway One Direction • Single Carriageway Both Directions • Other 		
Electrically Powered	Yes/No	Mandatory	
Control	Lookup <ul style="list-style-type: none"> • ? (Default) • Automatic Local • Automatic Remote • Manual With Attendant • Manual User Operated • Other 	Desirable	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the barrier obstructing any part of the carriageway?
Is the barrier still functional?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged gate	Any damaged gate	Damage to gate which is impairing functionality or creating a risk to network users	
Mechanical or electrical failure	Any mechanical or electrical failure	Mechanical or electrical failure which is impairing functionality or creating a risk to network users	
Exposed wiring	Any exposed wiring	Any exposed wiring	
Loss of Surface or Paint Covering	Any loss of surface or paint covering		
Other	Any other Defect		

Inspections

Traffic Control Barrier - Visual Assessment Inspection





Inspection Name	Traffic Control Barrier - Visual Assessment Inspection
Inspection Group	Visual Assessment Inspection - Carriageway (Nearside)
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	All Traffic Control Barriers shall be inspected at close quarters and the operation of the barrier checked. An overall assessment of its condition and any Defects present shall be noted. During each inspection the accuracy of the inventory item recorded in IRIS shall be checked, including its location and attributes and all errors corrected.
Inspection Records	On completion of each Inspection the condition rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant asset item.
Comments	<p>This Inspection should be a general visual inspection of traffic control barriers and is not intended to include the electrical/mechanical/remote control aspect of Traffic Control Barriers although the Inspection shall visually verify that they are operating satisfactorily. For Manually operated barriers, the Inspection should check that the barrier can be manually operated.</p> <p>Assets situated in the central reserve will require a separate visit with appropriate traffic management to adequately assess the condition of the asset.</p>


Defects

Condition Rating

Traffic Control Barrier - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. Surrounding grassed verge areas showing obvious signs disturbance due to construction Operations or Works. Footway

Condition	Description
	<p>or constructed verge areas around base of posts are in new condition compared with surrounding areas (unless also replaced).</p> 
B - Good	<p>No visual Defects and with few visible signs of surface deterioration. Grassed verge areas surrounding posts returned to vegetation. Minimal weathering or pollution from passing traffic.</p> 
C - Fair	<p>Evidence of initial deterioration, including minor corrosion, superficial accident damage. Loss of paint, galvanising or other protective system. Minor damage or individual missing rails on fences in rural areas or minor damage to infill panels in pedestrian guardrails.</p> 
D - Poor	<p>Poor structural condition. Corroded metal that affects function or promotes deterioration. Rotten or missing panels/posts. Cracking or spalling of brickwork or concrete that affects the function. Lack of tension in a strained wire fence. Fences non stock proof. Vandalism or minor accident damage that does not affect the safety or workings of the structure.</p> 

Condition	Description
E - Very Poor	<p>Accident damage or vandalism that makes the item structurally unsound or makes the item unsafe to road users. Sections of missing fence. Severely corroded so as to make the unit structurally unsafe.</p> 
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Traffic Control Barrier - Electrical



Electrically powered elements of a traffic control barrier.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Traffic Control Barrier - Electrical items require regular Inspection and Maintenance to be carried out to ensure that all parts of the barrier remain operational. All other maintenance shall be identified by Inspection.</p> <p>Traffic Control Barrier - Electrical items should normally be visible to regular Safety Inspection, high priority Defects can be identified from safety inspections or through other sources such as customer care or incident response. Regular Comprehensive Inspections shall be carried out to record asset condition and Defects.</p> <p>Where applicable, the requirements of Transport Scotland's guidance document LDS8023 – Electrical Maintenance Guidelines shall be applied to this item. The EMG equipment type(s) covered by this inventory item are: 031.</p>
Common Attributes	<p>Traffic Control Barrier - Electrical Attributes shall include the Common Attributes but with the following amendments.</p> <p>Item Identity Code, Location Description, Ownership & Maintenance Responsibility fields shall be Mandatory fields.</p> <p>All Electrically energised Traffic Control Barriers within the trunk road boundary shall be recorded and all Traffic Control Barriers which are the responsibility of Scottish Ministers outside the Trunk Road Boundary shall also be recorded.</p>
Parent/Child Assets	All Traffic Control Barrier - Electrical assets shall only exist as a child item of a Traffic Control Barrier asset.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Identity Code	Text	Mandatory	<p>Comment</p> <p>From Common Attributes. Every Electrically powered asset should have a yellow sticker with a legible Identity Code.</p>
Electrically Powered	Yes/No	Mandatory	<p>Comment</p> <p>Default = No</p>

Associated Wig Wag attributes

Field Name	Field Format	Field Required	Comments
Associated WigWags - Asset ID	Number (int)	Conditional (Desirable)	Comment Asset ID of associated Wig Wags
Traffic Control Barrier - Power Supply Attributes			
Supply Type	Lookup <ul style="list-style-type: none"> • ? (Default) • 230v Underground Private Network • 230v Overhead Private Network • 230v DNO 5th Core • 230v DNO Direct Underground Feed • 230v DNO Direct Overhead Feed • 400v Underground Private Network • Overhead Private Network • 400v DNO 5th Core • 400v DNO Direct Underground Feed • 400v DNO Direct Overhead Feed • Solar • Wind • Solar and Wind • SELV • Other 	Mandatory	
Distribution Network Operator	Lookup <ul style="list-style-type: none"> • ? (Default) • Scottish Power • Scottish & Southern Energy • Other 	Mandatory	
Electrical Protection Device	Lookup <ul style="list-style-type: none"> • ? (Default) • MCB • FUSE • RCD • None 	Mandatory	Comment Where asset has no electrical power, Electrical Protection Device shall be "N/A". Where the asset has electrical power but no protection device is provided Electrical Protection Device shall be "None".

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> N/A 		
Upstream Asset ID	Number (int)	Desirable	Comment Asset ID of upstream cable connection (Asset nearer Control Cabinet)
TCB - Power consumption attributes			
Traffic Control Barrier Circuit Wattage	Number (decimal)	Mandatory	Comment Derived from Elexon Code
Traffic Control Barrier Regime Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Mandatory	
Traffic Control Barrier Operating Hours	Number (int)	Mandatory	Comment Derived from Regime Code
Maintenance Safety			
Warning Notices	Yes/No	Mandatory	
Safe Maintenance Access	Yes/No	Mandatory	
Behind Safety Barrier	Yes/No	Mandatory	
Location & Environmental Risk Issues			
Salting of the Road	Yes/No	Mandatory	
Road Environment	Yes/No	Mandatory	
Environment Situation	Yes/No	Mandatory	
Wind Exposure	Yes/No	Mandatory	
Designed for Fatigue	Yes/No	Mandatory	
Traffic Flow	Yes/No	Mandatory	
Traffic Speed	Yes/No	Mandatory	
On a Bridge	Yes/No	Mandatory	
Traffic Disruption Caused By Failure	Yes/No	Mandatory	
Pedestrian Density	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Effect of Location (Missing)	Yes/No	Mandatory	
Overhead Cable Restriction	Yes/No	Mandatory	
Site Access, Hard Standing ETC	Yes/No	Mandatory	

Asset Specific Rules

Rule No.	Rule Description
Rule-CB_Elec-1	Traffic Signs including Wig-Wags or flashers associated with Traffic Control Barriers shall be recorded as Traffic Signs.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe (by TRISS/Incident response) as per incident response timescales. Where a defect requires the attendance of an Electrical Specialist within 4 hours, unless a longer timescale is stated for the defect,
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the exposed wiring have a high risk of pedestrian access?
Is the damaged column or post projecting into the carriageway or footway?
Is the damaged column or component unstable and could fall into the carriageway, footway or private land?
Is the barrier obstructing any part of the carriageway?
Is the barrier still functional?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged gate	Any damaged gate	Damage to gate which is impairing functionality or creating a risk to network users	
Mechanical or electrical failure	Any mechanical or electrical failure	Mechanical or electrical failure which is impairing functionality or creating a risk to network users	
Exposed wiring	Any exposed wiring	Any exposed wiring	
Loss of Surface or Paint Covering	Any loss of surface or paint covering		
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring with	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
high risk of pedestrian access			
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring but low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Component or other miscellaneous failure not covered in other items listed here which results in high electrical safety risk	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Installation failed safety electrical testing or present a safety risk from high Ze value in excess of the maximum allowable.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Cables that have failed safety electrical testing or present a safety risk from high earth loop impedance (Zs) value in excess of the maximum allowable for the protective device.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Failure of insulation test between live conductor and earth, and disconnection of earthing and bonding conductors.			
Exposed or extraneous conductive parts of electrical apparatus made live under fault conditions	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Electrical Check failure as BS7671 GN3 Section & 3.5 Table 3.2	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Hazardous electrical Defect	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Inspections

Traffic Control Barrier - Periodic Electrical Inspection and Testing - BS7671

Inspection Name	Traffic Control Barrier - Periodic Electrical Inspection and Testing - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> all assets are accurately recorded in the register, by adding and end dating assets as appropriate, all attributes of every asset shall be validated to ensure that they accurately represent each asset, all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.
Comments	References include LDS8023 - EMG031

Traffic Control Barrier - Routine Electrical Inspection

Inspection Name	Traffic Control Barrier - Routine Electrical Inspection
Inspection Group	Routine Electrical Inspection & TR22

Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>Routine Electrical Inspections of all electrical assets shall be carried out in accordance with LDS8023.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded and located in the register, by moving, adding and end dating assets as appropriate, • that all attributes accurately represent every asset, • and all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	On completion of each Inspection a record shall be recorded against each asset including date/time/user stamps. Any Defects shall be recorded and associated with the relevant asset.
Comments	References include LDS8023 - EMG031

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Traffic Control Barrier - Electrical components - Cleaning

Cyclic Maintenance Name	Traffic Control Barrier - Electrical components - Cleaning
Cyclic Maintenance Operation Interval	As required and at intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	<p>All electrical components shall be cleaned in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023.</p> <p>Operatives carrying out these activities should be competent to carry out operations on electrical apparatus.</p>
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	<p>References include LDS8023</p> <ul style="list-style-type: none"> • EMG031

Traffic Signals - Controller



A controller unit controlling a number of associated Traffic Signal elements

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Traffic Signal - Controller assets only require occasional and irregular maintenance with the need for all maintenance identified through Inspections.</p> <p>The majority of Traffic Signal - Controllers will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response. Safety Inspections shall also be used to identify higher priority CAT2A Defects.</p> <p>Recurring Comprehensive Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	<p>Traffic Signals - Controller Attributes shall include the Common Attributes but with the following amendments.</p> <p>All Traffic Signal - Controller associated with Traffic Signal Locations on the Trunk Road Network shall be recorded, This will mean that some Traffic Signal - Controller outside the Trunk Road Boundary will need to be recorded.</p>
Parent/Child Assets	A Traffic Signal Controller shall be a child asset of Cabinet & Pillar assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Traffic Signal - Controller - Type	Lookup <ul style="list-style-type: none"> • Master (Default) • Slave 	Mandatory	
Traffic Signal - Controller - Manufacturer	Lookup <ul style="list-style-type: none"> • ? (Default) • Plessey • GEC • Siemens • Peek • Microsense/Telent 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
Traffic Signal - Controller - Control Method	Lookup <ul style="list-style-type: none"> ? (Default) MOVA SCOOT Vehicle Actuation No specific detection 	Mandatory	Comment Options = ?, MOVA, SCOOT, Vehicle Actuation, no specific detection
Traffic Signal - Controller - Comms owner	Text	Mandatory	Comment Organisation with fault reporting, UTC etc. May be LA or OCs
Traffic Signal - Controller - Comms other information	Text	Mandatory	Comment Enter details of communication equipment, if present
Associated Assets			
Master Controller cabinet ID	Number (int)	Required	Comment If the Controller is a slave, Asset ID of the Master Controller shall be entered.
Feeder Pillar ID	Number (int)	Mandatory	Comment Asset ID of Feeder Pillar
Electrical Power Consumption Attributes			
Traffic Signal - Controller - Circuit Wattage	Number (decimal)	Mandatory	
Traffic Signal - Controller - Documentation			
As-built information	Document	Mandatory	Comment All as-built information available

Asset Specific Rules

Rule No.	Rule Description
Rule-TSC-1	There shall be only one "Master" controller for each traffic signal location. Occasionally there may be additional controllers on large junctions which must be recorded as Type=Slave

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

Traffic Signal - Controller - TD24 Monthly Visual Assessment Inspection

Inspection Name	Traffic Signal - Controller - TD24 Monthly Visual Assessment Inspection
Inspection Group	Traffic Signals - TD24 Monthly Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 1 month
Inspection Requirement	Detailed Inspections of Traffic Signals shall be carried out in accordance with TD24/97 except that items 1-12 of Table 2.2 of TD24/97 shall be inspected at intervals not exceeding 12 months. During each inspection the TD24/97 checklist shall be completed and any Defects noted. Inspectors carrying out these inspections should be competent to carry out inspections of Traffic Signal equipment.
Inspection Records	The Traffic Signal TD24/97 Checklist shall be recorded against the Traffic Signal controller asset. Any Traffic Signal Defects shall be recorded against the relevant Traffic Signal or cabinet asset.

Traffic Signal - Controller - TD24 and Visual Assessment Inspection

Inspection Name	Traffic Signal - Controller - TD24 and Visual Assessment Inspection
Inspection Group	Traffic Signals - TD24 Visual Assessment Inspection
Inspection Interval	At intervals net exceeding 12 month

Inspection Requirement	<p>Detailed Inspections of Traffic Signal Locations shall be carried out in accordance with TD24/97. A complete site inspection of each installation covering all aspects listed in Table 2.2 of TD24/97 shall be carried out and any Defects noted.</p> <p>An overall assessment of the physical condition of each Traffic Signal controller cabinet shall be noted.</p> <p>Inspectors carrying out these inspections should be competent to carry out inspections of Traffic Signal equipment.</p>
Inspection Records	<p>The Traffic Signal TD24/97 Checklist shall be recorded against the Traffic Signal Controller asset.</p> <p>Any Traffic Signal Defects shall be recorded against the relevant Traffic Signal or cabinet asset.</p> <p>A Condition rating shall be recorded against each Traffic Signal asset. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.</p>

Traffic Signal - Annual Phasing & Operation

Inspection Name	Traffic Signal - Annual Phasing & Operation
Inspection Group	Traffic Signals - Phasing, Operation, Equipment and Strategy Review
Inspection Interval	At intervals not exceeding 12 month
Inspection Requirement	<p>The annual operational review shall be carried out by suitably experienced persons and shall include the following:</p> <ol style="list-style-type: none"> i. Operation of the traffic signal settings for control of traffic, including any additional control systems ii. on-street assessment including measurement of queue lengths, iii. updating traffic models, using LINSIG or TRANSYT as specified, iv. updating controller settings, v. validation of SCOOT and MOVA control systems as specified, and vi. production of a performance report summarising the performance of each installation including the methodology adopted, issues identified and the actions taken shall be completed within 3 weeks.
Inspection Records	The completion date of the annual operation review shall be recorded against each Traffic Signal Controller. The completed report shall be loaded against each asset and the inspection record updated with completion date and inspection report link.

Traffic Signal - MOVA SCOOT validation

Inspection Name	Traffic Signal - MOVA SCOOT validation
Inspection Group	Traffic Signal - MOVA SCOOT review
Inspection Interval	At intervals not exceeding 36 month

Inspection Requirement	<p>Traffic Signals controlled by SCOOT or MOVA shall be validated at intervals not exceeding 36 months. In the event of a significant change to the road layout occurring outwith the validation periods for SCOOT and MOVA, the Operating Company shall revalidate the control system at the affected junctions as required.</p> <p>Where Traffic Signals have no previous record of a SCOOT or MOVA validation, the first validation shall be carried out during the first annual period of the Contract</p> <p>Where the urban traffic control facility is provided by a local roads authority, the Operating Company shall give a minimum of 10 Working Days' notice of any validation works and comply with the local roads authority's requirements for access to the urban traffic control facility.</p>
Inspection Records	The completion date of the validation shall be recorded against each Traffic Signal Controller.

Traffic Signal Controller - Periodic Electrical Inspection and Testing - BS7671

Inspection Name	Traffic Signal Controller - Periodic Electrical Inspection and Testing - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded in the register, by adding and end dating assets as appropriate, • all attributes of every asset shall be validated to ensure that they accurately represent each asset, • all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.

Traffic Signal - Equipment review

Inspection Name	Traffic Signal - Equipment review
Inspection Group	Traffic Signals - Phasing, Operation, Equipment and Strategy Review

Inspection Interval	At intervals not exceeding 12 month
Inspection Requirement	<p>Traffic Signals equipment reviews shall be carried out to collate and maintain the following records for each installation:</p> <ol style="list-style-type: none"> i. installation drawing, ii. electrical supply and distribution details, iii. designer's Specification for Traffic Signal Controller TR2500, (or equivalent), iv. final Specification for Traffic Signal Controller TR2500 (or equivalent), v. communications details, vi. detector location plans, vii. operational strategy, viii. valid electrical test certificate, ix. valid detector test certificate, x. outstation transmission unit and or remote equipment wiring schedule, and xi. Site maintenance log book. <p>All information shall be attached to the Traffic Signal Controller asset as a digital copy and a physical copy placed in the controller cabinet, with the exception of the Site maintenance log book which shall be retained only within the controller cabinet and updated on every visit. During each inspection, or within 3 weeks of the inspection, any required changes to the records shall be made to all copies. All missing records shall be sourced or created within 2 weeks of the inspection.</p>
Inspection Records	The completion date of the review shall be recorded against each Traffic Signal Controller.

Traffic Signal - Operational Strategy review

Inspection Name	Traffic Signal - Operational Strategy review
Inspection Group	Traffic Signals - Phasing, Operation, Equipment and Strategy Review
Inspection Interval	At intervals not exceeding 12 month
Inspection Requirement	<p>Each traffic signal location shall have an Operational Strategy document which will link to an overall Network Operational Strategy. The Operational Strategy document will consist of two elements:</p> <ol style="list-style-type: none"> i. a high level strategy detailing: (a) control strategies to be used, such as MOVA or SCOOT control systems and the like, and locations where these are currently in use, ii. a low level strategy to address the operational issues for each individual installation including: <ol style="list-style-type: none"> (a) control strategy hierarchy, (b) operational plans, (c) vehicle priority actions, and (d) any maintenance restrictions. <p>The Operational Strategy of each individual installation shall be reviewed during each Inspection and any amendments made. Where there is no Operational Strategy available for any Traffic Signal location, one shall be created.</p> <p>Any amendments required, or confirmation that no changes are necessary, arising from the review , or new strategy shall be submitted to the Director for consent no later than 25 Working Days after the Inspection.</p>

Inspection Records	The completion date of the Operational Strategy review shall be recorded against each Traffic Signal Controller. The completed Operational Strategy shall be loaded against each asset and the inspection record updated with completion date and report link.
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Defects

Condition Rating

Traffic Signal - Controller - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition. May show obvious signs that the signals are new i.e. no discolouration of the surface finishes. Obvious signs of disturbance in the surrounding grassed areas. Footway or constructed verge areas around base of posts are in new condition compared with surrounding areas.
B - Good	No visual Defects and with few visible signs of surface deterioration. Surface finishes may show signs of weathering.
C - Fair	Evidence of initial deterioration including minor visible deterioration, signal element still functioning, still fit for purpose.
D - Poor	Ongoing deterioration. Works likely to be required imminently. Minor intervention required and cost to rise substantially if works delayed. Misalignment to the road user.
E - Very Poor	Damage due to vandalism or road traffic accident. Equipment nearing end of serviceable life/signal failure. Inadequate light phasing.
R - Routine Maintenance	Acceptable structural condition but requires urgent cleaning or pruning of vegetation.

Maintenance

Cyclical Maintenance Activities

Traffic Signals - Electro-Mechanical Parts

Cyclic Maintenance Name	Traffic Signals - Electro-Mechanical Parts
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months (or as specified by the manufacturer, whichever is the sooner)
Cyclic Maintenance Operation Requirement	Electro-mechanical parts including relays shall be inspected yearly (or as specified by the manufacturer, whichever is the sooner) and worn parts adjusted or replaced. Electro mechanical lamp relays must be replaced yearly. Residual Current Devices shall be test tripped at least yearly, or as directed by the manufacturer; and always before installation.
Cyclic Maintenance Operation Records	On completion of each Operation a date and time stamp shall be recorded against each Traffic Signal asset. Any Defects shall be recorded against the relevant asset.
Comments	References include TD 24 & LDS8023 - EMG007

Traffic Signals - Backup Batteries

Cyclic Maintenance Name	Traffic Signals - Backup Batteries
Cyclic Maintenance Operation Interval	At intervals not exceeding 36 months (or as specified by the manufacturer, whichever is the sooner)
Cyclic Maintenance Operation Requirement	Backup batteries shall be replaced at intervals not exceeding 36 months or in accordance with the manufacturers, whichever is the sooner
Cyclic Maintenance Operation Records	On completion of each Operation a date and time stamp shall be recorded against each Traffic Signal asset. Any Defects shall be recorded against the relevant asset.
Comments	References include TD 24 & LDS8023 - EMG007

Traffic Signals - Signal apparatus



A location point where Traffic signal apparatus exists. Normally a pole holding one or more of the following assets:

- Traffic Signal - Traffic Signal Head.
- Traffic Signal - Traffic detector.
- Traffic Signal - Pedestrian Signal Head.
- Traffic Signal - Pedestrian push button.
- Traffic Signal - Pedestrian detector.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Traffic Signals only require occasional and irregular maintenance with the need for all maintenance identified through Inspections.</p> <p>The majority of Traffic Signals will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response. Safety Inspections shall also be used to identify higher priority CAT2A Defects.</p> <p>Recurring Detailed Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	<p>Traffic Signals - Signal apparatus Attributes shall include the Common Attributes but with the following amendments.</p> <p>All Traffic Signals locations on the Trunk Road Network shall be recorded, This will mean that some Traffic Signals outside the Trunk Road Boundary will need to be recorded,</p> <p>Some Traffic Signals are controlled by other parties such as local authorities or Traffic Scotland so that their timings can be adjusted remotely or can be synchronised with wider traffic control measures. All Traffic Signals on the Trunk Road Network shall be recorded and unless notified otherwise by the Director shall be maintained by the Operating Companies.</p>
Parent/Child Assets	<p>Mandatory that All Traffic Signals are associated with:</p> <ul style="list-style-type: none"> • A Traffic Signal Controller

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Associated Assets			
Master Controller ID	Text	Mandatory	<p>Comment</p> <p>Asset ID of the Master Traffic Signal Controller the Signal Head is associated with.</p>
Item Identity Code (Yellow sticker)	Text	Mandatory	

Field Name	Field Format	Field Required	Comments
Mounting Arrangement	Lookup <ul style="list-style-type: none"> • ? (Default) • Post • Arm • xx • Bracket on other asset • Other 	Desirable	
passively safe	Yes/No	Mandatory	
SELV Supply	Yes/No	Desirable	
Traffic Signal Pole			
Pole type	Lookup <ul style="list-style-type: none"> • ? (Default) • Straight • cranked/swan • Mast 	Conditional (Desirable)	Comment Conditional on Mounting Arrangement = Pole
Traffic Signal Head			
No. Traffic Signal Heads	Number (int)	Conditional (Mandatory)	Comment Number of Traffic Signal Heads on pole/location. Conditional on Has Traffic Signal Head = true
Traffic Signal Head - Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	Comment Conditional on Has Traffic Signal Head = true
Traffic Signal Head - Wattage	Number (decimal)	Conditional (Mandatory)	Comment Conditional on Has Traffic Signal Head = true
Vehicle Detection			
No. Vehicle Detection Sensor	Number (int)	Conditional (Mandatory)	Comment Number of Vehicle Detection Sensor on pole/location. Conditional on Has Vehicle Detection Sensor = true
Vehicle Detection Sensor - Elexon Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Conditional (Mandatory)	Comment Conditional on Has Vehicle Detection Sensor = true
Vehicle Detection Sensor - Wattage	Number (decimal)	Conditional (Mandatory)	Comment

Field Name	Field Format	Field Required	Comments
			Conditional on Has Vehicle Detection Sensor = true
Traffic Signals - Pedestrian Push Button Unit			
No. Pedestrian Push Button Units	Number (int)	Conditional (Mandatory)	Comment Number of Pedestrian Push Button Units on pole/location. Conditional on Has Pedestrian Push Button Unit = true
Pedestrian Push Button Unit - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on Has Pedestrian Push Button Unit = true
Pedestrian Push Button - Wattage	Number (decimal)	Conditional (Mandatory)	Comment Conditional on Has Pedestrian Push Button Unit = true
Traffic Signal - Pedestrian Signal Head			
No. Pedestrian Signal Heads	Number (int)	Conditional (Mandatory)	Comment Number of Pedestrian Signal Head on pole/location. Conditional on Has Pedestrian Signal Head = true
Pedestrian Signal Head - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on Has Pedestrian Signal Head = true
Pedestrian Signal Head - Wattage	Number (decimal)	Conditional (Mandatory)	Comment Conditional on Has Pedestrian Signal Head = true
Traffic Signal - Pedestrian Detector			
No. Pedestrian Detectors	Number (int)	Conditional (Mandatory)	Comment Number of Pedestrian Detectors on pole/location. Conditional on Has Pedestrian Detector = true
Pedestrian Detector - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on Has Pedestrian Detector = true
Pedestrian Detector - Wattage	Number (decimal)	Conditional (Mandatory)	Comment Conditional on Has Pedestrian Detector = true

Asset Specific Rules

Rule No.	Rule Description
Rule-TSP-1	Normally only one asset shall be recorded for each traffic signal pole irrespective of how many items may be attached to it.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the exposed wiring have a high risk of pedestrian access?
Is the damaged column or post projecting into the carriageway or footway?
Is the damaged column or component unstable and could fall into the carriageway, footway or private land?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged	Any damage	Fallen or leaning roadside electrical apparatus	
Damage to columns, cabinets or other roadside electrical apparatus which exposes wiring/internal equipment	Any damage to columns, cabinets or other roadside electrical apparatus	Any exposed wiring/ internal equipment	
Missing or unsecured doors on columns or feeder pillars which exposes wiring	Any missing or unsecured doors	Any exposed wiring	Any missing or unsecured doors
Difficult access to column or cabinet	Any difficult access to column or cabinet		

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Lamp failures	Any lamp failure	Lamp failures on a road subject to a speed limit of 30 mph or less. Any lamp failure at a pedestrian crossing or near a junction	Any lamp failure
Lamp on during day	Any lamp on during the day		Any lamp on during the day
Need for tree pruning	Any need for tree pruning	Where luminaires or access routes are obscured by trees	Any need for tree pruning
Missing or illegible reference number	Lighting columns reference numbers not at a height of 1.5 ÷ 2.0m from the ground or not visible from a moving vehicle		Missing or illegible reference number
Other	Any other Defect		

Inspections

Traffic Signals - TD24 Monthly Visual Assessment Inspection

Inspection Name	Traffic Signals - TD24 Monthly Visual Assessment Inspection
Inspection Group	Traffic Signals - TD24 Monthly Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 1 month
Inspection Requirement	<p>Detailed Inspections of Traffic Signals shall be carried out in accordance with TD24/97 except that items 1-12 of Table 2.2 of TD24/97 shall be inspected at intervals not exceeding 1 month. During each inspection the TD24/97 checklist shall be completed and any Defects noted.</p> <p>Inspectors carrying out these inspections should be competent to carry out inspections of Traffic Signal equipment.</p>
Inspection Records	<p>The Traffic Signal TD24/97 Checklist shall be recorded against the Traffic Signal controller asset.</p> <p>Any Traffic Signal Defects shall be recorded against the relevant Traffic Signal or cabinet asset.</p>

Traffic Signals - TD24 and Visual Assessment Inspection

Inspection Name	Traffic Signals - TD24 and Visual Assessment Inspection
Inspection Group	Traffic Signals - TD24 Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 12 month

Inspection Requirement	<p>Detailed Inspections of Traffic Signal Locations shall be carried out in accordance with TD24/97. A complete site inspection of each installation covering all aspects listed in Table 2.2 of TD24/97 shall be carried out and any Defects noted.</p> <p>An overall assessment of the physical condition of each Traffic Signal apparatus shall be noted.</p> <p>Inspectors carrying out these inspections should be competent to carry out inspections of Traffic Signal equipment.</p>
Inspection Records	<p>The Traffic Signal TD24/97 Checklist shall be recorded against the Traffic Signal Controller asset.</p> <p>Any Traffic Signal Defects shall be recorded against the relevant Traffic Signal or cabinet asset.</p> <p>A Condition rating shall be recorded against each Traffic Signal asset. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.</p>

Traffic Signals - Periodic Electrical Inspection and Testing - BS7671



Inspection Name	Traffic Signals - Periodic Electrical Inspection and Testing - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded in the register, by adding and end dating assets as appropriate, • all attributes of every asset shall be validated to ensure that they accurately represent each asset, • all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of Traffic Signal and electrical equipment.</p>
Inspection Records	BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.

Defects

Condition Rating

Signal Pole - Condition Rating

Condition	Description
<p>A - Excellent</p>	<p>New or nearly new condition. May show obvious signs that the signals are new i.e. no discolouration of the surface finishes. Obvious signs of disturbance in the surrounding grassed areas. Footway or constructed verge areas around base of posts are in new condition compared with surrounding areas.</p> 
<p>B - Good</p>	<p>No visual Defects and with few visible signs of surface deterioration. Surface finishes may show signs of weathering.</p> 
<p>C - Fair</p>	<p>Evidence of initial deterioration including minor visible deterioration, signal element still functioning, still fit for purpose.</p> 
<p>D - Poor</p>	<p>Ongoing deterioration. Works likely to be required imminently. Minor intervention required and cost to rise substantially if works delayed. Misalignment to the road user.</p> 

Condition	Description
E - Very Poor	<p>Damage due to vandalism or road traffic accident. Equipment nearing end of serviceable life/signal failure. Inadequate light phasing.</p> 
R - Routine Maintenance	<p>Acceptable structural condition but requires urgent cleaning or pruning of vegetation.</p> 

Maintenance

Cyclical Maintenance Activities

Traffic Signals - Electro-Mechanical Parts

Cyclic Maintenance Name	Traffic Signals - Electro-Mechanical Parts
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months (or as specified by the manufacturer, whichever is the sooner)
Cyclic Maintenance Operation Requirement	<p>Electro-mechanical parts including relays shall be inspected yearly (or as specified by the manufacturer, whichever is the sooner) and worn parts adjusted or replaced. Electro mechanical lamp relays must be replaced yearly. Residual Current Devices shall be test tripped at least yearly, or as directed by the manufacturer; and always before installation.</p> <p>Operatives carrying out these activities should be competent to carry out operations on electrical and Traffic Signal apparatus.</p>
Cyclic Maintenance Operation Records	On completion of each Operation a date and time stamp shall be recorded against each Traffic Signal asset. Any Defects shall be recorded against the relevant asset.
Comments	References include TD 24 & LDS8023 - EMG007

Traffic Signals - Backup Batteries

Cyclic Maintenance Name	Traffic Signals - Backup Batteries
Cyclic Maintenance Operation Interval	At intervals not exceeding 36 months (or as specified by the manufacturer, whichever is the sooner)
Cyclic Maintenance Operation Requirement	Backup batteries shall be replaced at intervals not exceeding 36 months or in accordance with the manufacturers, whichever is the sooner. Operatives carrying out these activities should be competent to carry out operations on electrical and Traffic Signal apparatus.
Cyclic Maintenance Operation Records	On completion of each Operation a date and time stamp shall be recorded against each Traffic Signal asset. Any Defects shall be recorded against the relevant asset.
Comments	References include TD 24 & LDS8023 - EMG007

Traffic Signals - Lamp changes

Cyclic Maintenance Name	Traffic Signals - Lamp changes
Cyclic Maintenance Operation Interval	At intervals not exceeding 6 months
Cyclic Maintenance Operation Requirement	All filament lamps shall be changed at intervals not exceeding 6 months. Operatives carrying out these activities should be competent to carry out operations on electrical and Traffic Signal apparatus.
Cyclic Maintenance Operation Records	On completion of each Operation a date and time stamp shall be recorded against each Traffic Signal asset. Any Defects shall be recorded against the relevant asset.
Comments	References include TD 24 & LDS8023 - EMG007

Traffic Signals - Lens cleaning

Cyclic Maintenance Name	Traffic Signals - Lens cleaning
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	All traffic signal lens, regulatory signs and variable message signs shall be cleaned at intervals not exceeding 12 months. Operatives carrying out these activities should be competent to carry out operations on electrical and Traffic Signal apparatus.

Cyclic Maintenance Operation Records	On completion of each Operation a date and time stamp shall be recorded against each Traffic Signal asset. Any Defects shall be recorded against the relevant asset.
Comments	References include TD 24 & LDS8023 - EMG007

Traffic Signs



A sign, signal or other device for the purpose of regulating, warning, guiding or informing traffic.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Traffic Signs convey a variety of information to drivers including providing regulatory or direction information as well as warning of hazards. Traffic Signs conveying regulatory direction shall be maintained to a high standard. Other Traffic Signs can also convey important information and contribute to the visual appearance of the network and shall, subject to available budget, be maintained to an elevated standard.</p> <p>Regular Cyclic Maintenance shall be carried out at regular intervals to clean Traffic Signs and ensure they remain visible in both day and night conditions and preserve their lifespan. All other maintenance shall be identified through inspections.</p> <p>The majority of Traffic Signs will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response. Safety Inspections shall also be used to identify higher priority CAT2A Defects.</p> <p>Most Traffic Signs include features to ensure that they are visible in both daytime and night time conditions. Recurring Comprehensive Inspections shall be carried out during both daytime and night time to record asset condition and Defects.</p>
Common Attributes	<p>Traffic Signs Attributes shall include the Common Attributes but with the following amendments.</p> <p>All Traffic Signs within the Trunk Road Boundary shall be recorded irrespective of ownership and the owner attributes used to record ownership.</p>
Parent/Child Assets	Traffic Signs Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Diagram Number (TSRGD 2016/2002)	Text	Mandatory	<p>Comment</p> <p>Diagram Number from the TSRGD 2016/2002.</p>
Category	<p>Lookup</p> <ul style="list-style-type: none"> ? (Default) 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Regulatory Warning Informatory Other 		
Sign Face Material	Lookup <ul style="list-style-type: none"> ? (Default) Diamond Grade Aluminium Back Lit Plastic Matrix Other 	Mandatory	
Standard Sign size	Lookup <ul style="list-style-type: none"> ? (Default) 	Desirable	Comment Picklist of standard signs sizes populated from standard sizes from TSRGD, based on Diag. No.
Backing board attributes			
Sign Board Width (mm)	Number (decimal)	Desirable	Comment Overall width of the backing board plate to the nearest 10mm
Traffic sign - post/Support attributes			
No. Posts	Number (int)	Conditional (Desirable)	Comment Number of posts. Conditional on Mounting Method = Post(s)
Post Size/Diameter (mm)	Number (int)	Conditional (Desirable)	Comment Size/Diameter of traffic sign post in mm. Conditional on Mounting Method = Post(s)
Post Type	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Desirable)	Comment Conditional on Mounting Method = Post(s)
Post Passive Safety Category	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Desirable)	Comment Conditional on Mounting Method = Post(s)
Traffic Sign - Foundation			
Foundation Length (mm)	Number (int)	Required	Comment Required for all new/replaced installations

Field Name	Field Format	Field Required	Comments
Foundation Depth (mm)	Number (int)	Required	Comment Required for all new/replaced installations
Traffic Signs - Electrically powered			

Asset Specific Rules

Rule No.	Rule Description
Rule-SG-1	A separate Traffic Sign record shall be created for each sign, including a separate record for supplementary and additional plates.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
;	

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the sign a warning or regulatory?
Is the defect a causing a breach of statutory duty?
Is the information on the sign correct?
Does the sign comply with the Traffic Signs regulations?
Is the sign temporary and can now be removed?
Is the sign a warning or regulatory?
Is the defect a causing a breach of statutory duty?
Does the sign comply with the Traffic Signs regulations?
Is the sign required and could be removed?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged	Any damage	Fallen or leaning roadside electrical apparatus	
Damage to columns, cabinets or other roadside electrical apparatus which exposes wiring/internal equipment	Any damage to columns, cabinets or other roadside electrical apparatus	Any exposed wiring/ internal equipment	
Missing or unsecured doors on columns or feeder pillars which exposes wiring	Any missing or unsecured doors	Any exposed wiring	Any missing or unsecured doors
Difficult access to column or cabinet	Any difficult access to column or cabinet		
Lamp failures	Any lamp failure	Lamp failures on a road subject to a speed limit of 30 mph or less. Any lamp failure at a pedestrian crossing or near a junction	Any lamp failure
Lamp on during day	Any lamp on during the day		Any lamp on during the day
Need for tree pruning	Any need for tree pruning	Where luminaires or access routes are obscured by trees	Any need for tree pruning
Missing or illegible reference number	Lighting columns reference numbers not at a height of 1.5 û 2.0m from the ground or not visible from a moving vehicle		Missing or illegible reference number
Other	Any other Defect		
Faded	Fading causing visual impairment	Faded warning or regulatory sign	
Missing sign	Any missing sign	Missing regulatory or warning signs	Any missing sign
Exposed Wiring	Any exposed wiring	Any exposed wiring	
Wrong Facing	Any wrong facing sign	Any wrong facing warning or regulatory sign	All other wrong facing signs
Dirty	Accumulation of dirt causing visual impairment of directional signs	Visual impairment of a warning or regulatory sign	All other dirty signs
Lamp on during day	Any lamp on during the day		Any lamp on during the day
Damage to sign	Any damaged sign	Damage to a warning or regulatory sign affecting the visibility	
Missing or insecure door	Missing or insecure door	Any exposed wiring	All other missing or insecure door Defects

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Difficult access	Any difficult access		
Need for vegetation management	Any need for vegetation management	Obscuration of a warning or regulatory sign where the visibility is affected	Any need for pruning that affects the visibility of a sign
Physical condition of the post	Any damage to the post	Instability of the post which has, or may cause it to fall on to the carriageway, footway or private property	
Missing or illegible reference number (if provided)	Missing or illegible reference number (if provided)		Missing or illegible reference number (if provided)
Obsolete	Any obsolete sign		Any obsolete sign
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Inadequate reflectivity	Any inadequate reflectivity		Reflectivity test failure of a Regulatory or Warning sign

Accessibility Defect List

The following accessibility Defects shall be identified and recorded during any Accessibility Audit Inspection Operation.

Defect Description
Obstacle free width is < 1300mm
Unobstructed height above footway is < 2300mm, including overhanging vegetation
Inconsistent position of a succession of obstacles necessitates weaving
Width at footway is restricted locally to < 1000mm
Pole at front of footway outwith 500-600mm offset from c/way
Crossing point not on obvious pedestrian desire line
Crossing point at junction bellmouth not at ideal location
Lack of refuge at crossing
Refuge at crossing is < 1500mm wide
Pedestrian crossing is zebra type
Controlled crossing has no infra-red detectors
Controlled crossing has no audible signals
Control unit at crossing has no rotating knurled cones

Defect Description
Control unit at crossing doesn't have red/green person indicator
Control unit at crossing not directed to oncoming traffic
Control unit at crossing has incorrect push button
Control unit at crossing not close to tactile surface
Control unit at crossing not at 1000-1100mm height
Control unit at crossing not placed at the RHS of the crossing
Green man shows for < 4 secs on a crossing up to 7.5m
Green man shows for < 7 secs on a crossing wider than 12.5m

Inspections

Traffic Sign - Physical Visual Assessment Inspection

Inspection Name	Traffic Sign - Physical Visual Assessment Inspection
Inspection Group	Visual Assessment Inspection - Carriageway (Nearside)
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>During each Inspection each Traffic Signs shall be inspected at close quarters. An overall assessment of its physical condition and any Defects present shall be noted.</p> <p>During each inspection the accuracy of the inventory item recorded in IRIS shall be checked, including its location and attributes and all errors corrected.</p>
Inspection Records	On completion of each Inspection the condition rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item.
Comments	Assets situated in the central reserve will require a separate visit with appropriate traffic management to adequately assess the condition of the asset.

Traffic Sign - Reflectivity Condition

Inspection Name	Traffic Sign - Reflectivity Condition
Inspection Group	Traffic Signs - Measured Reflectivity and Condition
Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	<p>The retro-retroreflectivity of all retro-reflective Traffic Signs shall be measured and a condition rating determined. Retro-reflectivity can either be measured by a vehicle mounted survey or by hand held measurement device. Where a machine based survey is undertaken, measured values must be matched to asset IDs, either before loading into IRIS or after.</p> <p>Machine based surveys will substantially reduce, cost, disruption and improve health and safety risks to Inspector but may require processing by the Operating Company to match</p>

	retro-retroreflectivity readings to APMS asset records and convert the data into a suitable format for loading into APMS.
Inspection Records	On completion of each Inspection the measured retroreflectivity value shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item.
Comments	Where handheld measurements are taken assets situated in the central reserve will require a separate visit with appropriate traffic management to adequately measure the retroreflectivity and assess the condition of the asset.

Traffic Signs - Night Time Reflectivity Safety Inspections

Inspection Name	Traffic Signs - Night Time Reflectivity Safety Inspections
Inspection Group	Night Time Reflectivity Safety Inspections
Inspection Interval	At intervals not exceeding 6 months
Inspection Requirement	During each Inspection the reflective or illumination properties of Traffic Signs shall be assessed during the hours of darkness to ensure it is visible and delivers its intended message to drivers and any Defects noted. This Inspection will generally be carried out from a slow moving vehicle with an Inspector and Driver.
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Traffic Signs - Accessibility Inspection






Inspection Name	Traffic Signs - Accessibility Inspection
Inspection Group	Accessibility Inspection
Inspection Interval	Within 2 years of Commencement of Service and then at Intervals not exceeding 5 years
Inspection Requirement	<p>During each Inspection all assets on the Network shall be inspected to identify all situations where the network fails to make provision for disabilities and specific age groups (elderly and children) in accordance with the Public Sector Equality Duty of the Equality Act 2010.</p> <p>The Inspection shall be carried out by Specialist Inspectors with specific training and be approved by Transport Scotland.</p> <p>The Inspection shall assess all assets, including third party assets such as bus stops, cabinets etc. and access points onto the Trunk Road Network. The defects listed in this manual reflect the requirements of Roads for all Good Practice for Roads (TS), Inclusive Mobility (DfT) and Guidance on the Use of Tactile Paving (DfT).</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Defects

Condition Rating

Traffic Sign - Condition Rating

Condition	Description
<p>A - Excellent</p>	<p>New or nearly new condition. May show obvious signs that the sign is new i.e. no discolouration of the surface finish. Obvious signs of disturbance in the surrounding grassed areas. Footway or constructed verge areas around base of posts are in new condition compared with surrounding areas.</p> <div>  </div> <div>  </div> <div>  </div>
<p>B - Good</p>	<p>No visual Defects and with few visible signs of surface deterioration. Surface finish may show signs of weathering.</p> <div>  </div> <div>  </div> <div>  </div>
<p>C - Fair</p>	<p>Evidence of initial deterioration including minor colour fade but otherwise in good overall condition. Coefficient of retroreflectivity (CofR) close to required minimum levels.</p>

Condition	Description
	
D - Poor	<p>CofR below 144 cd/lx/m² for Class 1 or below 40 cd/lx/m² for Class 2. Misalignment or major obscuration to the road user. Poor condition of associated post and fixings.</p> 
E - Very Poor	<p>Defects represent immediate or imminent failure, i.e. life expired. Structural failure of the sign or fixings. Missing sign. Warning/regulatory sign damaged Defective or displaced. Update of the TSRGD making the sign obsolete.</p>   
R - Routine Maintenance	<p>Acceptable structural condition but obstructed by vegetation or requires urgent cleaning.</p>

Condition	Description
	

Maintenance

Cyclical Maintenance Activities

Traffic Signs - Cleaning

Cyclic Maintenance Name	Traffic Signs - Cleaning
Cyclic Maintenance Operation Interval	As necessary and at intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	Traffic Signs faces shall be cleaned in accordance with Schedule 5 Specification Clause 6119AR. During each Maintenance visit the face of every traffic sign shall be cleaned . A note of the Traffic Sign cleanliness along with any Defects shall be made.
Cyclic Maintenance Operation Records	On completion of each maintenance visit a maintenance record shall be recorded against each asset along with a date/time stamp and cleanliness record. Any Defects shall be recorded and associated with the asset.

Traffic Signs - Electrical



Illuminated or electrically powered elements of a traffic sign such as lamps, variable message signs, rotating prism signs etc.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Regular Cyclic Maintenance shall be carried out to replace lamps on illuminated Traffic Signs before the expiry of the expected lifespan of the lamp and reduce dark lamps and clean all electrical apparatus. All other maintenance shall be identified through inspections.</p> <p>The majority of electrically powered Traffic Signs will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response. Safety Inspections shall also be used to identify higher priority Category 2 High Defects.</p> <p>Regular Comprehensive Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	<p>Traffic Signs - Electrical Attributes shall include the Common Attributes but with the following amendments.</p> <p>Item Identity Code, Location Description, Ownership & Maintenance Responsibility fields shall be Mandatory fields.</p> <p>All Electrically energised Traffic Signs within the trunk road boundary shall be recorded and the Ownership and maintenance fields used to record ownership. All Traffic Signs which are the responsibility of Scottish Ministers outside the Trunk Road Boundary shall also be recorded. It may also be beneficial to record locations of other cabinets close to the Trunk Road Boundary, particularly where assets of differing ownership are in close proximity i.e. at remote illuminated junctions.</p> <p>A small number of traffic signs will be owned by Scottish Ministers and maintained by the Traffic Scotland Operator, unless it is specifically known that a Traffic Signs is the responsibility of another party, the Operating Company shall assume they are responsible for its maintenance. The Ownership and Maintenance responsibility fields shall be used to record ownership/maintenance responsibilities.</p>
Parent/Child Assets	All Traffic Signs - Electrical assets shall only exist as a child item of a Traffic Sign asset

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Identity Code	Text	Mandatory	Comment From Common Attributes. Every Electrically powered asset should have a yellow sticker with a legible Identity Code.
Electrically Powered	Lookup <ul style="list-style-type: none"> • ? (Default) • Yes • No 	Mandatory	Comment Default = ?
Traffic Sign - Power Supply Attributes			
Supply Type	Lookup <ul style="list-style-type: none"> • ? (Default) • 230v Underground Private Network • 230v Overhead Private Network • 230v DNO 5th Core • 230v DNO Direct Underground Feed • 230v DNO Direct Overhead Feed • 400v Underground Private Network • Overhead Private Network • 400v DNO 5th Core • 400v DNO Direct Underground Feed • 400v DNO Direct Overhead Feed • Solar • Wind • Solar and Wind • SELV • Other 	Mandatory	
Distribution Network Operator	Lookup <ul style="list-style-type: none"> • ? (Default) • Scottish Power 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Scottish & Southern Energy Other 		
Electrical Protection Device	Lookup <ul style="list-style-type: none"> ? (Default) MCB FUSE RCD None N/A 	Mandatory	Comment Where asset has no electrical power, Electrical Protection Device shall be "N/A". Where the asset has electrical power but no protection device is provided Electrical Protection Device shall be "None".
Upstream Asset ID	Number (int)	Mandatory	Comment Asset ID of upstream cable connection (Asset nearer Control Cabinet)
Traffic Sign - Lamp - Power consumption attributes			
Traffic Sign - Lamp - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes Derived from Elexon Code
Traffic Sign - Lamp - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes
Traffic Sign - Lamp - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes Derived from Regime Code
Traffic Sign - Lamp - No. of Lamps	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes Default = 1
Traffic Sign - Lamp - Regime Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes
Traffic Sign - Lamp - Type of Lamps	Lookup <ul style="list-style-type: none"> ? (Default) MBFU MCFE SL PL SON SON-T CMH 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • LED • Other 		
Luminaire Mounting Method	Lookup <ul style="list-style-type: none"> • ? (Default) • Single Downlight • Twin Downlight • Single Uplight • Twin Uplight • Integral Download • Other 	Conditional (Desirable)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes
Luminaire Manufacturer	Lookup <ul style="list-style-type: none"> • ? (Default) • Simmon Signs • Pudsey Diamond • Glasdon • Signature (Dee Organ) • Eurosign • Coval • Swarco (Dambach) • Other 	Mandatory	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes
Luminaire Mounting Height (m)	Number (decimal)	Desirable	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes Luminaire Mounting Height in metres
Bracket Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Single • Double • Triple • Post Top • Wall Mounted • Gantry Mounted • None 	Conditional (Desirable)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes
Bracket Projection (m)	Number (decimal)	Conditional (Desirable)	Comment Conditional on "Traffic Sign - Illuminated Sign" = Yes Bracket Projection distance in metres

Field Name	Field Format	Field Required	Comments
Vehicle Activation - Power consumption attributes			
Traffic Sign - Vehicle Activation - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Vehicle Activation " = Yes
Traffic Sign - - Vehicle Activation - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Vehicle Activation " = Yes Derived from Elexon Code
Traffic Sign - Vehicle Activation - Regime Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Vehicle Activation " = Yes
Traffic Sign - Vehicle Activation - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Vehicle Activation " = Yes Derived from Regime Code
Mechanical (electrical) parts - Power consumption			
Traffic Sign - Mechanical (electrical) parts - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Mechanical (electrical) parts" = Yes
Traffic Sign - Mechanical (electrical) parts - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Mechanical (electrical) parts" = Yes Derived from Elexon Code
Traffic Sign - Mechanical (electrical) parts - Regime Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Mechanical (electrical) parts" = Yes
Traffic Sign - Mechanical (electrical) parts - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Mechanical (electrical) parts" = Yes Derived from Regime Code
Sign Matrix/Flasher - Power consumption attributes			
Traffic Sign - Sign Matrix/Flasher - Elexon Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Sign Matrix/Flasher" = Yes
Traffic Sign - Sign Matrix/Flasher - Circuit Wattage	Number (int)	Conditional (Mandatory)	Comment

Field Name	Field Format	Field Required	Comments
			Conditional on "Traffic Sign - Sign Matrix/Flasher" = Yes Derived from Elexon Code
Traffic Sign - Sign Matrix/Flasher - Regime Code	Lookup <ul style="list-style-type: none"> ? (Default) 	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Sign Matrix/Flasher" = Yes
Traffic Sign - Sign Matrix/Flasher - Operating Hours	Number (int)	Conditional (Mandatory)	Comment Conditional on "Traffic Sign - Sign Matrix/Flasher" = Yes Derived from Regime Code
Maintenance Safety			
Behind Safety Barrier	Yes/No	Mandatory	
Conspicuity Bands	Yes/No	Mandatory	
Location & Environmental Risk Issues			
Salting of the Road	Yes/No	Mandatory	
Road Environment	Yes/No	Mandatory	
Environment Situation	Yes/No	Mandatory	
Wind Exposure	Yes/No	Mandatory	
Designed for Fatigue	Yes/No	Mandatory	
Traffic Flow	Yes/No	Mandatory	
Traffic Speed	Yes/No	Mandatory	
On a Bridge	Yes/No	Mandatory	
Traffic Disruption Caused By Failure	Yes/No	Mandatory	
Pedestrian Density	Yes/No	Mandatory	
Effect of Location (Missing)	Yes/No	Mandatory	
Overhead Cable Restriction	Yes/No	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
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- Category 1a Attend and make safe as per incident response timescales.
- Category 1b Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
- Category 2 High Repair within 28 days of being ordered.
- Category 2 Low Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the exposed wiring have a high risk of pedestrian access?
Is the damaged column or post projecting into the carriageway or footway?
Is the damaged column or component unstable and could fall into the carriageway, footway or private land?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged	Any damage	Fallen or leaning roadside electrical apparatus	
Damage to columns, cabinets or other roadside electrical apparatus which exposes wiring/internal equipment	Any damage to columns, cabinets or other roadside electrical apparatus	Any exposed wiring/ internal equipment	
Missing or unsecured doors on columns or feeder pillars which exposes wiring	Any missing or unsecured doors	Any exposed wiring	Any missing or unsecured doors
Difficult access to column or cabinet	Any difficult access to column or cabinet		
Lamp failures	Any lamp failure	Lamp failures on a road subject to a speed limit of 30 mph or less. Any lamp failure at a pedestrian crossing or near a junction	Any lamp failure
Lamp on during day	Any lamp on during the day		Any lamp on during the day
Need for tree pruning	Any need for tree pruning	Where luminaires or access routes are obscured by trees	Any need for tree pruning
Missing or illegible reference number	Lighting columns reference numbers not at a height of 1.5 û 2.0m from the ground or not		Missing or illegible reference number

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
	visible from a moving vehicle		
Other	Any other Defect		
Faded	Fading causing visual impairment	Faded warning or regulatory sign	
Missing sign	Any missing sign	Missing regulatory or warning signs	Any missing sign
Exposed Wiring	Any exposed wiring	Any exposed wiring	
Wrong Facing	Any wrong facing sign	Any wrong facing warning or regulatory sign	All other wrong facing signs
Dirty	Accumulation of dirt causing visual impairment of directional signs	Visual impairment of a warning or regulatory sign	All other dirty signs
Lamp on during day	Any lamp on during the day		Any lamp on during the day
Damage to sign	Any damaged sign	Damage to a warning or regulatory sign affecting the visibility	
Missing or insecure door	Missing or insecure door	Any exposed wiring	All other missing or insecure door Defects
Difficult access	Any difficult access		
Need for tree pruning	Any need for pruning	Obscuration of a warning or regulatory sign where the visibility is affected	Any need for pruning that affects the visibility of a directional sign
Physical condition of the post	Any damage to the post	Instability of the post which has, or may cause it to fall on to the carriageway, footway or private property	
Missing or illegible reference number (if provided)	Missing or illegible reference number (if provided)		Missing or illegible reference number (if provided)
Obsolete	Any obsolete sign		Any obsolete sign
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
high risk of pedestrian access			
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring but low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Component or other miscellaneous failure not covered in other items listed here which results in high electrical safety risk	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Installation failed safety electrical testing or present a safety risk from high Ze value in excess of the maximum allowable.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Cables that have failed safety electrical testing or present a safety risk from high earth loop impedance (Zs) value in excess of the maximum allowable for the protective device.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Failure of insulation test between live conductor and earth, and disconnection of earthing and bonding conductors.			
Exposed or extraneous conductive parts of electrical apparatus made live under fault conditions	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Electrical Check failure as BS7671 GN3 Section & 3.5 Table 3.2	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Any one lamp out where the sign is regulatory/mandatory		All Defects. Maximum response time for a deferred permanent repair shall be 24 hours.	
Hazardous electrical Defect	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	

Inspections

Traffic Signs - Routine Electrical Inspection & TR22

Inspection Name	Traffic Signs - Routine Electrical Inspection & TR22
Inspection Group	Routine Electrical Inspection & TR22
Inspection Interval	At intervals not exceeding 24 months

Inspection Requirement	<p>Routine Electrical Inspections of all electrical assets shall be carried out in accordance with LDS8023 including TR22.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded and located in the register, by moving, adding and end dating assets as appropriate, • all attributes accurately represent every asset, • all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	<p>On completion of each Inspection a record shall be recorded against each asset including date/time/user stamps. The TR22 checklists shall also be recorded against each asset. Any Defects shall be recorded and associated with the relevant asset.</p>

Traffic Signs - BS7671

Inspection Name	Traffic Signs - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded in the register, by adding and end dating assets as appropriate, • all attributes of every asset shall be validated to ensure that they accurately represent each asset, • all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	<p>BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.</p>

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Traffic Signs - Electrical components - Cleaning

Cyclic Maintenance Name	Traffic Signs - Electrical components - Cleaning
Cyclic Maintenance Operation Interval	As required and at intervals not exceeding 24 months
Cyclic Maintenance Operation Requirement	All electrical components shall be cleaned in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023. Operatives carrying out these activities should be competent to carry out operations on electrical apparatus.
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	References include LDS8023 <ul style="list-style-type: none"> • EMG004 - Illuminate Traffic Signs - Task 1 (clean & check), 4, 5, 8 & 9 • EMG006 - lit gantries - Task 1 (clean & check), 5, 6, 9 & 10 • EMG012 - Inclement Weather Apparatus • EMG014 - 20mph School Zone speed limit signs - Task 1, 6, 9 & 10 • EMG015 - variable message signs - Task 1, 6, 9 & 10 • EMG016 - School Crossing Signs - Task 1, 5, 8 & 9 • EMG017 - Vehicle recognition/activated signs - Task 1, 6, 9 & 10 • EMG018 - Automated Hazard Warning signs - Task 1, 6, 9 & 10

Traffic Sign - Electrical - Lamp Change & Clean

Cyclic Maintenance Name	Traffic Sign - Electrical - Lamp Change & Clean																		
Cyclic Maintenance Operation Interval	At intervals not exceeding those stated in the Maximum lamp change intervals table below.																		
Cyclic Maintenance Operation Requirement	All lamps shall be changed/replaced in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023 and at intervals not exceeding those listed in the table below. During each lamp change the associated EMG Task 1 activities shall also be carried out.																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Maximum lamp change intervals</th> </tr> <tr> <th>Lamp Type</th> <th>Nomenclature as TD 23</th> <th>Bulk Change Interval for Dusk to Dawn Operation</th> <th>Bulk Change Interval for 24 Hour Per Day Operation</th> </tr> </thead> <tbody> <tr> <td>Low pressure Sodium</td> <td>SOX</td> <td rowspan="3" style="text-align: center; vertical-align: middle;">24 months</td> <td rowspan="3" style="text-align: center; vertical-align: middle;">12 months</td> </tr> <tr> <td>High pressure Mercury</td> <td>MBFU</td> </tr> <tr> <td>High pressure fluorescent</td> <td>MCFE, SL, PL</td> </tr> </tbody> </table>			Maximum lamp change intervals				Lamp Type	Nomenclature as TD 23	Bulk Change Interval for Dusk to Dawn Operation	Bulk Change Interval for 24 Hour Per Day Operation	Low pressure Sodium	SOX	24 months	12 months	High pressure Mercury	MBFU	High pressure fluorescent	MCFE, SL, PL
Maximum lamp change intervals																			
Lamp Type	Nomenclature as TD 23	Bulk Change Interval for Dusk to Dawn Operation	Bulk Change Interval for 24 Hour Per Day Operation																
Low pressure Sodium	SOX	24 months	12 months																
High pressure Mercury	MBFU																		
High pressure fluorescent	MCFE, SL, PL																		

	High pressure sodium	SON, SON-T	36 months	18 months
	Low pressure sodium	SOX-E		
	Ceramic Metal Halide	CMH		
	LED	LED	No bulk lamp change required	No bulk lamp change required
	Any other lamp type	?/Unknown	24 months	12 months
Operatives carrying out these inspections should be competent to carry out operations on electrical apparatus.				
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.			
Comments	References include LDS8023 <ul style="list-style-type: none"> • EMG001 Task 1 (Lamp change & clean), 4, 5, 8 & 9 • EMG002 Task 1 (clean & check), 4, 8 & 9 • EMG004, EMG006, EMG012, EMG014, EMG015, EMG016, EMG017 & EMG018 			

Traffic Signs - Electrical - RCD

Cyclic Maintenance Name	Traffic Signs - Electrical - RCD
Cyclic Maintenance Operation Interval	As required and at intervals not exceeding 3 months.
Cyclic Maintenance Operation Requirement	Where the installation is installed with a Residual Current Device (RCD) the Contractor shall carry out an RCD test using the RCD integral TEST push button quarterly or as otherwise stated in BS7671.
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	References include LDS8023 - EMG014 (task 5), EMG015 (task 5), EMG016 (task 5), EMG017 (Task 5) & EMG018 (Task 5)

Tree



A perennial plant with a woody self-supported trunk (or trunks, if multi stemmed tree) and branches including:

- Lone trees where there is no interlocking canopy with the nearest neighbour.
- Sporadic trees where there is a loose arrangement of established trees with or without occasional interlocking canopies.
- Avenue trees where there is a formal alignment of trees in a linear form, often at regular spacing.
- Informal linear tree belt.
- Individual trees within a Hedge/Hedgerow/Woodland area.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Trees will require regular maintenance during their establishment period and early life but should generally become self-supporting and only require occasional and irregular maintenance as they mature. Cyclic Maintenance shall be required for all new Trees (5 years of planting and under), the need for maintenance all other maintenance shall be identified through inspections.</p> <p>High priority defects for the majority of Trees are likely to be visible from the carriageway and should normally be identified from safety inspections or through other sources such as customer care or incident response and sometimes through annual Detailed Inspections.</p> <p>Recurring Comprehensive Inspections shall be carried out by a suitable landscape specialist inspector during the Tree growing season to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities, where appropriate, the Tree Management Strategy and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p>
Common Attributes	<p>Tree Attributes shall include the Common Attributes but with the following amendments.</p> <p>Start Date. The Start Date for each Asset shall be used to determine the age category of each asset. If the age of the Tree is less than 10 years old it is important that the Start Date reflects the age. Where an exact planting date of the Tree is not known an approximate date can be entered either as 01/mm/yyyy where the approximate month and year is known or 01/01/yyyy where an approximate year is known or where the planting date is not known its age shall be estimated and an approximate year chosen and entered as 01/01/yyyy.</p> <p>All Trees over 5 years old and/or over 3.0m height, including those outwith Scottish Ministers' land but adjacent to the Trunk Road network shall be recorded and be inspected.</p>
Parent/Child Assets	Other assets may be linked by Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Species	Lookup <ul style="list-style-type: none"> • ? (Default) • Alder - <i>Alnus glutinosa</i> • Ash - <i>Fraxinus excelsior</i> • Aspen - <i>Populus tremula</i> • Beech - <i>Fagus sylvatica</i> • Birch, downy - <i>Betula pubescens</i> • Birch, silver - <i>betula pendula</i> • Cherry, gean - <i>Prunus avium</i> • Elder - <i>Sambucus nigra</i> • Cherry, bird - <i>Prunus padus</i> • Elm, wych - <i>Ulmus glabra</i> • Hawthorn - <i>Crataegus monogyna</i> • Hazel - <i>Corylus avellana</i> • Hemlock Western - <i>Tsuga heterophylla</i> • Holly - <i>Ilex aquifolium</i> • Hornbeam - <i>Carpinus betulus</i> • Horse Chestnut - <i>Aesculus hippocastanum</i> • Juniper - <i>Juniperus communis</i> • Larch, European - <i>Larix decidua</i> • Leylandii - <i>Cupressus × leylandii</i> • Lime - <i>Tilia x europaea</i> • Maple, field - <i>Acer campestre</i> • Oak, common - <i>Quercus robur</i> • Oak, sessile - <i>Quercus patraea</i> • Pine, Austrian - <i>Pinus nigra</i> • Pine, Scots - <i>Pinus sylvestris</i> • Poplar, black - <i>Populus nigra</i> • Rowan - <i>Sorbus aucuparia</i> • Spruce, sitka - <i>Picea sitchensis</i> • Sycamore - <i>Acer pseudoplatanus</i> • Whitebeam - <i>Sorbus aria</i> • Willow, crack - <i>Salix fragilis</i> • Willow, goat - <i>Salix caprea</i> • Willow, grey - <i>Saix cinerea</i> • Willow, white - <i>Salix alba</i> • Yew - <i>Taxus baccata</i> 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
Ground Cover	Lookup <ul style="list-style-type: none"> ? (Default) Grasses Woodland flora Low level scrub Shrubs Hedge Hardstanding Tree grille Raised planter Bog Mire Dry Heath Mulch Other 	Desirable	
Form	Lookup <ul style="list-style-type: none"> ? (Default) Single tree Scattered group Clump Linear belt Hedgerow tree Formal Avenue Other 	Desirable	
Height (Metres)	Number (decimal)	Mandatory	
Spread (Metres)	Number (decimal)	Mandatory	
Notes	Text	Optional	
Tree Protection Order	Text	Conditional (Mandatory)	Comment Mandatory when a Tree Protection Order is in place.
Tree - Main Objective			
Nature conservation	Yes/No	Mandatory	
Safety	Yes/No	Mandatory	
Screening	Yes/No	Mandatory	
Shelter	Yes/No	Mandatory	
Other	Yes/No	Mandatory	
Main Objective Other - Description	Text	Conditional (Mandatory)	Comment Mandatory when Main Objective - Other = Yes.
Tree - Age Category			

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the vegetation obscure regulatory signs or lines?
Does the vegetation force pedestrians to step in to the carriageway?
Could the vegetation cause a pedestrian to trip or be injured?
Is there a risk of a tree or branch falling in to the footway, carriageway or private property?
Does the vegetation obscure visibility for network users?
Does the vegetation detrimentally impact on other required operations?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Overgrowing or overhanging the footway or carriageway	Any overgrowing or overhanging vegetation	Vegetation which narrows the width of the footway by 50%, poses a trip hazard, or risk of other injury (including head/facial), damage to a vehicle, or obscures road markings or signs.	Any overgrowing or overhanging vegetation
Obstructed sightline	Any obstructed sightline	Obstruction which limits the view of network users	Any obstructed sightline
Fly tipping/illegal dumping	Any fly tipping or illegal dumping	Any fly tipping or illegal dumping which poses a risk to people, wildlife or the environment	Any fly tipping or illegal dumping
Other	Any other Defects		

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Impact on other required operations.	Any Tree or Trees that detrimentally affect the ability for carrying out other maintenance.	Where such a restriction poses a risk to people, the environment, or infrastructure.	Where such a restriction detrimentally affects the appearance of the network.

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Any Tree or Trees in poor condition.	Any Tree or Trees in poor condition.	Where dead, dying or Defective Tree(s) may impact the safety of road users or operatives (e.g. damaged branches etc).	Where dead, dying or Defective Tree(s) may detrimentally impact the appearance of the network – particularly when associated with Ornamental shrub areas.

Inspections

Tree - Visual Assessment Inspection

Inspection Name	Tree - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	Each year during their growing season
Inspection Requirement	<p>Each tree asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.</p> <p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.
Comments	The growing season for Tree assets shall be considered to be from April through to September.

Tree - Specialist Arborist Inspection

Inspection Name	Tree - Specialist Arborist Inspection
Inspection Group	Landscape - Specialist Arborist
Inspection Interval	During the growing season at intervals not exceeding 5 years
Inspection Requirement	<p>The Arborist Inspections shall include all mature trees within the Unit and include any such Trees that may impact the trunk road area (i.e. where the Tree is within falling distance of the carriageway or where a branch/limb may fall onto the carriageway/footway or otherwise impact land within the trunk road boundary). Mature Trees shall mean any tree in the region of 10 m in height or above and/or 15 years old or more, but the Arborist Inspection must consider any tree where failure of the whole tree or a part of it could realistically significantly impact the road network, its users and/or those managing operations.</p> <p>The main purpose of the inspections is to determine the condition of the Trees and any risk they may pose to the public, the network and/or its users.</p> <p>Each tree shall be inspected by a suitably qualified Arborist, approved the Director. The inspection shall record the condition of all Mature Trees, including any Defects and advice for remedial and urgent works. A report shall be submitted to the Director within 4 weeks of the completion of the Arborist Inspection detailing the results of the inspection and any recommendations.</p>
Inspection Records	<p>On completion of each Inspection an inspection record shall be recorded against each inventory item along with a date/time stamp.</p> <p>Any Defects shall be recorded and associated with the relevant inventory item. Notes for any remedial or urgent works and proposals for possible improvement/development shall be recorded against each inventory item and included in the Tree Management Strategy and Tree Management Plan.</p>
Comments	<p>The following data should be collated during each inspect (this is not an exhaustive list):</p> <ul style="list-style-type: none"> • Species and reference • Physical attributes • General health including any indication of disease • Consideration of growth pattern and risk of failure (relevant to tree species and situation) • Visual evidence of structural Defects or physical damage • Any indication of stress or die-back • Any concerns related to tree location and the general public • Evidence of the effects of detrimental ground condition • Evidence of the effects of exposure • Evidence of the effects of any recent circumstantial changes <p>For the purposes of the Tree Inspection KPI, Tree growing season shall be considered to be from April through to September.</p>

Tree - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection

Inspection Name	Tree - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Group	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Interval	Each year between September to end of February each year

Inspection Requirement	<p>Between September and the end of February each year the full extents of the network shall be inspected to identify any vegetation which may develop during the coming growing season with the potential to detrimentally effect the road envelope visibility. This shall include vegetation encroaching upon or otherwise effecting:</p> <ul style="list-style-type: none"> • the forward visibility of drivers and other road users, • the sight lines for traffic signs, bollards and other road infrastructure, • the sight lines for junctions, accesses, bends etc. or • the carriageway, footway, cycleway <p>Any identified vegetation shall be recorded for remedial action by the "Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance" Cyclic Maintenance Operations and shall be completed before the end of March in the same period.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be updated during each Inspection.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time/user stamps. Any Defects shall be recorded against the relevant inventory item.
Comments	The aim of this inspection and associated Cyclic Maintenance Operation is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured or driver visibility is compromised. It is important that the required Cyclic Maintenance is carried out before the commencement of the bird nesting season each year. When remedial maintenance is identified it is expected, where practicable and without having a detrimental impact on the local landscape character or any important landscape features, that the relevant vegetation be trimmed back sufficiently to allow several years growth before trimming would be required again in accordance with clause 4.3.3.2 of this Manual.

Tree - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Tree - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	<p>The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.</p> <p>This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities, the Tree Management Strategy and, potentially, the Tree Management Plan.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against the network along with a GPS bread crumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.

Defects

Condition Rating

Tree - Condition Rating

Condition	Description
A - Excellent	Not Applicable
B - Good	Asset is healthy, growing well and free from defects.
C - Fair	Asset is generally healthy and growing reasonably well although there are signs of minor damage/decay.
D - Poor	Asset is showing significant signs of decay or damage, or is dead/dying. Asset close to or encroaching into sightlines.
E - Very Poor	Not applicable
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

Tree - Establishment of new

Cyclic Maintenance Name	Tree - Establishment of new
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	Trees planted as part of the Contract will automatically be subject to a 3 year establishment maintenance period in accordance with Clauses 3006, 3007 and 3009. Outwith this period and up to the age of 5 years from planting, each new tree shall be maintained in accordance with Clauses 3006, 3007 and 3009
Cyclic Maintenance Operation Records	<p>On completion of each Cyclic Maintenance Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • activities not undertaken and the reasons why • any dead, damaged, missing or otherwise Defective trees • weed development observations and any signs of animal browsing • observations regarding tree support performance (stakes, ties and shelters) • any tree re-firming requirements • Any other notes <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	This Operation applies to Woodland categories in the "Age Category" field as "New".

Tree - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance

Cyclic Maintenance Name	Tree - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance
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Cyclic Maintenance Operation Interval	As necessary
Cyclic Maintenance Operation Requirement	<p>All:</p> <ul style="list-style-type: none"> • sightlines and forward visibility areas; • road signs and; • areas with Encroaching Vegetation that may cause difficulties for maintenance operations, such grass cutting adjacent to the carriageway, the inspection of barriers, cabinets and other equipment etc. and/or the management of other elements of network infrastructure, such as lighting and roadside cameras etc <p>shall be treated and/or cut back by the Operating Company to maintain forward visibility, prevent signs etc being obscured or to maintain safe access to equipment. Such areas shall be as defined in the inventory or that required to maintain minimum forward visibility as specified in TD 26/17. The Operating Company shall comply with section 4 of this Manual.</p> <p>Visibility splays and the like shall be cut in accordance with Schedule 5 Specification Clause 3002, 3006, 3007, 3009 & 3010 and Appendix 30/7.</p> <p>For avoidance of doubt this Cyclic Maintenance Operation applies to all tree age categories.</p>
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item and any associated Defects along with a date/time/user stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • Potential landscape opportunities (see 4 of this Manual) • Asset Shape not matching cut areas. • Any other notes <p>Any additional Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	<p>The aim of this maintenance Operation and associated Inspection Operation (Road Envelope Visibility Inspections) is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured and to ensure preventative maintenance is carried out before the bird nesting season each year. When maintenance is carried out it is expected that trimming of vegetation should be trimmed back far enough to allow several years growth before trimming would be required again.</p>

VRRS - Arrester Bed



A Vehicle Road Restraint System (VRRS) Arrester Bed element the purpose of which is to stop vehicles in a controlled way and normally a bed of loose gravel, see TD19.

Arrester Beds can often be found on long gradients to catch vehicles whose brakes have failed but can also be installed in other locations instead of VRRS Safety fences to prevent vehicles reaching locations (i.e. railway lines).

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>VRRS Arrester Beds should only require occasional and irregular maintenance, often as a result of vehicle incursions. The need for all maintenance shall be identified through inspections.</p> <p>The majority of VRRS Arrester Beds will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Recurring Comprehensive Inspections shall be carried out to record asset condition and Defects.</p>
Common Attributes	VRRS - Arrester Bed Attributes shall include the Common Attributes .
Parent/Child Assets	VRRS - Arrester Bed Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Digital Length	Number (decimal)	System	<p>Comment</p> <p>Length of Arrester bed will be derived by the system from the asset shape.</p>
Arrester Bed Function	Lookup <ul style="list-style-type: none"> • ? (Default) • Gradient Runaway • Hazard Protection 	Desirable	
Arrester Bed Depth	Lookup <ul style="list-style-type: none"> • ? • <350mm • 351mm - 450mm • >451mm 	Desirable	

Asset Specific Rules

Rule No.	Rule Description
Rule-VRRS_AB-1	Arrester Beds may be located outside of the Trunk Road boundary and may be some distance from the carriageway. All Arrester Beds shall be recorded.
Rule-VRRS_AB-2	An Arrester Bed located outside the road boundary is recorded as XSP LB if outside the left-hand boundary and XSP RB if outside the right-hand boundary.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

Is the Arrester Bed still functional?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Top up level insufficient		Insufficient level of material	
Vehicle incursion	Any vehicle incursion	Vehicle incursion that prevents the arrester bed from being used in an emergency	
Other	Any other Defect		
Overgrowing or overhanging the footway or carriageway	Any overgrowing or overhanging vegetation	Vegetation which narrows the width of the footway by 50%, poses a trip hazard, or other risk of injury, damage to a vehicle, or obscures road markings or signs.	Any overgrowing or overhanging vegetation
Obstructed sightline	Any obstructed sightline	Obstruction which limits the view of network users	Any obstructed sightline

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Wildflower Areas, or selected species therein, in poor condition.		Where dead or dying plants may impact the safety of road users (e.g. slope instability).	Any dead or dying plants that may detrimentally impact the appearance of the network.
Fly tipping/illegal dumping	Any fly tipping or illegal dumping	Any fly tipping or illegal dumping which poses a risk to people, wildlife or the environment	Any fly tipping or illegal dumping
Arisings from cutting operations affecting network.	Any arisings affecting the footway or carriageway.	Any arisings which may cause a trip, slip or skid hazard.	Any arisings that may impact other operations or detrimentally affect the appearance of the network.
Other	Any other Defects		

Inspections

VRRS Arrester Bed - Visual Assessment Inspection

Inspection Name	VRRS Arrester Bed - Visual Assessment Inspection
Inspection Group	VRRS Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	VRRS Arrester Bed Inspections shall be carried out by a competent VRRS Inspector. During each Inspection, the full length of the VRRS Arrester Bed and its approaches shall be inspected in accordance with VRRS Arrester Bed Detailed Inspection checklist. An overall assessment of its condition and any Defects present shall be noted.
Inspection Records	On completion of each Inspection the checklist and a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.

Defects

Condition Rating

Arrester Bed - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. New, clean chippings with no discolouration. Maybe evidence of loose chippings within the surrounding area or signs of disturbance in the surrounding grassed areas indicating recent Operations or Works.
B - Good	No visual Defects and with few visible signs of deterioration. Maybe slight discolouration to the chippings. Showing no signs of the original construction works and all surrounding grassed areas returned to vegetation.
C - Fair	Evidence of initial deterioration, including gravel compaction or evidence of vehicle use. Minor vegetation growth. Arrester bed still functioning correctly.

Condition	Description
D - Poor	Extensive vegetation growth, extensive compaction on the surface or deterioration to the approaches. Arrester bed still functioning but capacity to stop heavy vehicles reduced.
E - Very Poor	Extensive weed growth, extensive displacement or compaction of gravel or extensive deterioration to the approaches. Substantial reduction in the capacity of the Arrester Bed to stop heavy vehicles.
R - Routine Maintenance	Not applicable.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

VRRS - Crash Cushion



A VRRS Crash Cushion (vehicle attenuator) is a device that absorbs energy at a controlled rate, thereby preventing errant vehicles from impacting fixed and rigid unprotected objects or structures adjacent to the carriageway.

They may stand alone or they may be connected to adjacent Road Restraint Systems.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>VRRS Crash Cushions should only require occasional and irregular maintenance, often as a result of collision damage. The need for all maintenance shall be identified by Inspection.</p> <p>The majority of VRRS Crash Cushions will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Recurring Comprehensive Inspections shall be carried out record asset condition and Defects.</p>
Common Attributes	VRRS - Crash Cushion Attributes shall include the Common Attributes .
Parent/Child Assets	<p>Some VRRS Crash Cushions are installed close to other VRRS assets but with no physical connection between them.</p> <p>Where a VRRS Crash Cushion is physically connected to another VRRS asset it shall be linked as the child asset .</p>

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Crash Cushion Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Circular drums • Black UPVC air bag • Sliding panels • Other 	Mandatory	
Crash Cushion Shape	Lookup <ul style="list-style-type: none"> • ? (Default) • V shaped or Taper • Parallel 	Desirable	

Field Name	Field Format	Field Required	Comments
Crash Cushion Connected	Lookup <ul style="list-style-type: none"> ? (Default) Connected Stand alone 	Desirable	
Crash Cushion Direction	Lookup <ul style="list-style-type: none"> ? (Default) Unidirectional Bidirectional 	Desirable	
Crash Cushion Manufacturer and System	Text	Required	Comment Manufacturer and system reference of crash cushion should be recorded. This is generally recorded on the rear backstop of the Crash Cushion

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the barrier still structurally sound?
Has the barrier been flattened or the height reduced?
Is the damage close to a junction or tight curve?
Is a vehicle able to stop safely in event of an emergency?
Is there a history of accidents in the area?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged or deformed fence or barrier	Any damaged or deformed fence or barrier	Damage or deformation which affects the integrity or performance of the fence or barrier	
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Corroded ù metal fence, barrier or post	Any corroded fence, barrier or post	Corrosion which affects the integrity or performance of the corroded fence, barrier or post	
Missing ù section of fence or barrier		Any missing section	
Loose panel		Any loose panel	
Loose anchor		Any loose anchor	
Loose bolt		Any loose bolt	
Safety fence ù rail too high		As per individual specification	
Safety fence ù rail too low		As per individual specification	
Loose tension bolts		Any loose tension bolts	

Inspections

VRRS Crash Cushion - Visual Assessment Inspection

Inspection Name	VRRS Crash Cushion - Visual Assessment Inspection
Inspection Group	VRRS Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	VRRS Crash Cushion Inspections shall be carried out by a competent VRRS Inspector. During each Inspection, the VRRS Crash Cushion shall be inspected in accordance with VRRS Crash Cushion Detailed Inspection checklist. An overall assessment of its condition and any Defects present shall be noted.

Inspection Records	On completion of each Inspection the checklist and a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.
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Defects

Condition Rating

Crash Cushion - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. May have obvious signs of disturbance in the surrounding grassed areas indicating recent Operations or Works. Footway or constructed verge areas around base of posts may be in new condition compared with surrounding areas.
B - Good	No visual Defects and with few visible signs of surface deterioration. Grassed verge areas surrounding posts returned to vegetation. Minimal weathering or pollution from passing traffic.
C - Fair	Evidence of initial deterioration including minor corrosion, superficial visual deterioration or superficial accident damage.
D - Poor	Poor structural condition. Corroded metal that affects function or promotes deterioration. Minor accident damage that does not affect function of barrier. Missing bolts
E - Very Poor	Accident damage that affects barrier function. Broken, deformed, missing, loose or cracked components that affect function. Structurally unsound. Missing 'tension' bolts. Road Restraint Risk Assessment Process (RRRAP) failures: Wooden posts, presence of P Terminals or 'Fishtails'.
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

VRRS - Parapets



A Vehicle Road Restraint System (VRRS) Parapet element normally in the form of a continuous concrete, steel or aluminium fence or barrier erected on a bridge or retaining structure. It may be single or double sided and may have single or multiple horizontal rails or may be closed face type. It will normally terminate with a transitions or connection or may be freestanding., see TD19/xx clause xx.

VRRS Safety Fence/Barrier, VRRS Transition and VRRS Parapet should be recorded as separate elements.

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>VRRS Parapet should only require occasional and irregular maintenance, often as a result of collision damage. The need for all maintenance shall be identified by Inspection.</p> <p>The majority of VRRS Parapets will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Recurring Comprehensive Inspections shall be carried out record asset condition and Defects.</p>
Common Attributes	VRRS - Parapets Attributes shall include the Common Attributes .
Parent/Child Assets	<p>All VRRS Parapets should be linked to a parent Structure Asset</p> <p>The majority of VRRS Parapets should be linked to 1 or 2 child VRRS transition assets.</p>

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Parapet type	Lookup <ul style="list-style-type: none"> • ? (Default) • Steel • Concrete • Alloy • Timber • Reinforced masonry or brick • Other 	Mandatory	
Parapet Structural Form	Lookup <ul style="list-style-type: none"> • ? (Default) • Horizontal Rails • Vertical Bar infill • Closed profile form • Alloy/concrete combined 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Steel/concrete combined Other 		
Parapet Protective Coating	Lookup <ul style="list-style-type: none"> ? (Default) Galvanized Painted Painted 	Mandatory	
Parapet height from foundation level	Lookup <ul style="list-style-type: none"> ? (Default) <1000mm 1001mm - 1250mm 1251mm - 1500mm 1501mm- 1800mm > 1801mm 	Mandatory	
Parapet Start Type	Lookup <ul style="list-style-type: none"> ? (Default) Freestanding Connection without transition Transition 	Mandatory	
Parapet End Type	Lookup <ul style="list-style-type: none"> ? (Default) Freestanding Connection without transition Transition 	Mandatory	
Parapet Fixing Type	Lookup <ul style="list-style-type: none"> ? Freestanding Surface mounted with baseplate Cast in posts Composite with structure Other 	Mandatory	
Parapet Containment Level	Lookup <ul style="list-style-type: none"> ? (Default) N2 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> H1 or H2 H4a Not known Other 		
Parapet Added Panels	Lookup <ul style="list-style-type: none"> ? (Default) Mesh infill Sheet infill None Other 	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the barrier still structurally sound?
Has the barrier been flattened or the height reduced?
Is the damage close to a junction or tight curve?
Is a vehicle able to stop safely in event of an emergency?
Is there a history of accidents in the area?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged or deformed fence or barrier	Any damaged or deformed fence or barrier	Damage or deformation which affects the integrity or performance of the fence or barrier	
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Corroded ù metal fence, barrier or post	Any corroded fence, barrier or post	Corrosion which affects the integrity or performance of the corroded fence, barrier or post	
Missing ù section of fence or barrier		Any missing section	
Loose panel		Any loose panel	
Loose anchor		Any loose anchor	
Loose bolt		Any loose bolt	
Safety fence ù rail too high		As per individual specification	
Safety fence ù rail too low		As per individual specification	
Loose tension bolts		Any loose tension bolts	

Inspections

VRRS Parapet - Visual Assessment Inspection

Inspection Name	VRRS Parapet - Visual Assessment Inspection
Inspection Group	VRRS Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	VRRS Parapet Inspections shall be carried out by a competent VRRS Inspector. During each Inspection, the full length of the VRRS Parapet shall be inspected in accordance with VRRS Parapet Detailed Inspection checklist. Any Defects shall be noted. For each 100m length, an overall assessment of its condition shall be noted and for galvanised steel VRRS, At least 1 measurement of the galvanising thickness shall be taken on a representative section.
Inspection Records	On completion of each Inspection the checklist and any Defects shall be recorded along with a date/time stamp. A Condition rating shall also be recorded against each 100m section of

asset along with a date/time stamp. Where a section of the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.

Defects

Condition Rating

VRRS Parapet - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. May have obvious signs of disturbance in the surrounding grassed areas indicating recent Operations or Works. Footway or constructed verge areas around base of posts may be in new condition compared with surrounding areas.
B - Good	No visual Defects and with few visible signs of surface deterioration. Grassed verge areas surrounding posts returned to vegetation. Minimal weathering or pollution from passing traffic.
C - Fair	Evidence of initial deterioration including minor corrosion, superficial visual deterioration or superficial accident damage.
D - Poor	Poor structural condition. Corroded metal that affects function or promotes deterioration. Minor accident damage that does not affect function of barrier. Missing bolts.
E - Very Poor	Broken, deformed, missing, loose or cracked components that affect function. Structurally unsound. Missing 'tension' bolts.
R - Routine Maintenance	VRRS Parapet not visible e.g. due to overhanging vegetation or CAT1 Accident damage that will be imminently repaired.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

VRRS - Safety Fence & Barrier



A vehicle restraint system in the form of a continuous fence or barrier erected alongside a carriageway or bridge. It may be single or double sided and may have single or multiple horizontal rails or may be a closed face type. It will normally terminate with a terminal end, transition, crash cushion or connection.

The terminal sections length shall be included in the asset, Transitions, crash cushions, connections should be recorded as separate elements.

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>VRRS Safety Fences and Barriers should only require occasional and irregular maintenance, often as a result of collision damage. The need for all maintenance shall be identified by Inspection.</p> <p>The majority of VRRS Safety Fences and Barriers will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Recurring Comprehensive Inspections shall be carried out record asset condition and Defects.</p>
Common Attributes	VRRS - Safety Fence & Barrier Attributes shall include the Common Attributes .
Parent/Child Assets	Many VRRS Safety Fence/Barriers are connected to a VRRS transition assets at one or both ends. Where a VRRS Safety Fence/Barriers is connected to a VRRS transition asset as the parent asset.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
VRRS Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Tensioned steel • Untensioned steel • Concrete • Wire • Other 	Mandatory	
VRRS Shape	Lookup <ul style="list-style-type: none"> • ? (Default) • Single Sided • Double Sided 	Mandatory	

Field Name	Field Format	Field Required	Comments
VRRS Post	Lookup <ul style="list-style-type: none"> • ? (Default) • Metal Z • Metal C • Metal Other • No Post • Other 	Mandatory	
VRRS Beam Profile	Lookup <ul style="list-style-type: none"> • ? (Default) • Corrugated • Box/Closed/Channel • Wire • Stepped • Other 	Mandatory	
VRRS Height	Lookup <ul style="list-style-type: none"> • ? (Default) • <900mm • 901mm - 1200mm • >= 1200mm 	Desirable	
Bike-guard fitted	Yes/No	Mandatory	Comment Default Value = No
VRRS Start Type	Lookup <ul style="list-style-type: none"> • ? (Default) • P1 Ramp • P1 Full height • P4 • Transition • Connection • Other 	Desirable	
VRRS End Type	Lookup <ul style="list-style-type: none"> • ? (Default) • P1 Ramp • P1 Full height • P4 • Transition • Connection • Other 	Desirable	
VRRS Central Reserve Crossover	Yes/No	Mandatory	Comment Default Value = No

Field Name	Field Format	Field Required	Comments
VRRS Crossover Removable	Lookup <ul style="list-style-type: none"> • ? (Default) • Not Removeable • Fence or Barrier is Removeable 	Conditional (Mandatory)	Comment Mandatory when "VRRS Central Reserve Crossover" = Yes
Anti Dazzle	Lookup <ul style="list-style-type: none"> • Not fitted (Default) • Vanes fitted 	Desirable	
Protective coating	Lookup <ul style="list-style-type: none"> • ? (Default) • Galvanized • Painted • None • Other 	Desirable	
Hazard Protected	Lookup <ul style="list-style-type: none"> • ? (Default) • Embankment • Centre median • Water • Sign/VMS • Railway • Other 	Desirable	Comment If there are several hazards, pick the main hazard.
Foundation Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Freestanding • Surface Mounted with baseplate or anchorages • Cast in or driven posts • Composite with roadway • Other 	Desirable	

Asset Specific Rules

Rule No.	Rule Description
Rule-VRRS-SF-1	Some VRRS Safety Fence & Barriers on local roads associated with bridges over the Trunk Road are the responsibility of Scottish Ministers and shall be recorded in the Asset Register.

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the barrier still structurally sound?
Has the barrier been flattened or the height reduced?
Is the damage close to a junction or tight curve?
Is a vehicle able to stop safely in event of an emergency?
Is there a history of accidents in the area?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged or deformed fence or barrier	Any damaged or deformed fence or barrier	Damage or deformation which affects the integrity or performance of the fence or barrier	
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Corroded û metal fence, barrier or post	Any corroded fence, barrier or post	Corrosion which affects the integrity or performance of the corroded fence, barrier or post	
Missing û section of fence or barrier		Any missing section	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Loose panel		Any loose panel	
Loose anchor		Any loose anchor	
Loose bolt		Any loose bolt	
Safety fence ù rail too high		As per individual specification	
Safety fence ù rail too low		As per individual specification	
Loose tension bolts		Any loose tension bolts	

Accessibility Defect List

The following accessibility Defects shall be identified and recorded during any Accessibility Audit Inspection Operation.

Defect Description
Obstacle free width is < 1300mm
Inconsistent position of a succession of obstacles necessitates weaving
Width at footway is restricted locally to < 1000mm
Pole at front of footway outwith 500-600mm offset from c/way
Free standing object does not meet min. height criteria of 1000mm
Width between handrails is < 1000mm
Width between handrails is < 1800mm (this does not allow two way movement)
Width between handrails is > 1800mm
Handrails not provided on both sides of flight
Handrails on flight not provided at height of 900-1000mm
Handrails not continuous across intermediate landings
Handrails do not extend 300mm past top and bottom of flight
End of handrail projects into route of travel
End of handrail does not return into wall/ground or have 100mm downturn (to prevent injury to users)
Handrail of material which is cold to the touch
Handrails are not tonally contrasted with background
Circular handrails does not have cross section of 40-50mm diameter
Oval handrail does not have cross section of 50 x 35mm
Staggered barriers/access control less than 1200mm apart
Lack of adequate tonal contrast
Redundant street furniture
Gate latch inoperable by person with reach difficulties e.g. wheelchair user
Clear space between handrail and adjacent wall is < 60mm

Inspections

VRRS Safety Fence/Barrier - Visual Assessment Inspection

Inspection Name	VRRS Safety Fence/Barrier - Visual Assessment Inspection
Inspection Group	VRRS Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	<p>VRRS Safety Fence/Barrier Inspections shall be carried out by a competent VRRS Inspector.</p> <p>During each inspection the full length of each VRRS shall be inspected in accordance with one of the following VRRS Detailed Inspection checklist:</p> <ul style="list-style-type: none"> • Propriety (post 2006) Steel Safety Fence Detailed Inspection Checklist • Non-Propriety (Pre 2006) Steel Safety Fence Detailed Inspection Checklist • Propriety (post 2006) Steel Safety Barrier Detailed Inspection Checklist • Non-Propriety (Pre 2006) Steel Safety Barrier Detailed Inspection Checklist • Propriety (post 2006) Concrete Safety Barrier Detailed Inspection Checklist • Non-Propriety (Pre 2006) Concrete Safety Barrier Detailed Inspection Checklist • Propriety (post 2006) Steel removable Safety Barrier Detailed Inspection Checklist - temporary or permanent installations. <p>Any Defects shall be noted. For each 100m length, an overall assessment of its condition shall be noted and for galvanised steel VRRS, At least 1 measurement of the galvanising thickness shall be taken on a representative section shall be taken.</p>
Inspection Records	On completion of each Inspection the checklist and any Defects shall be recorded along with a date/time stamp. A Condition rating shall also be recorded against each 100m section of asset along with a date/time stamp. Where a section of the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.

VRRS Safety Fence & Barrier - Accessibility Inspection

Inspection Name	VRRS Safety Fence & Barrier - Accessibility Inspection
Inspection Group	Accessibility Inspection
Inspection Interval	Within 2 years of Commencement of Service and then at Intervals not exceeding 5 years
Inspection Requirement	<p>During each Inspection all assets on the Network shall be inspected to identify all situations where the network fails to make provision for disabilities and specific age groups (elderly and children) in accordance with the Public Sector Equality Duty of the Equality Act 2010.</p> <p>The Inspection shall be carried out by Specialist Inspectors with specific training and be approved by Transport Scotland.</p> <p>The Inspection shall assess all assets, including third party assets such as bus stops, cabinets etc. and access points onto the Trunk Road Network. The defects listed in this manual reflect the requirements of Roads for all Good Practice for Roads (TS), Inclusive Mobility (DfT) and Guidance on the Use of Tactile Paving (DfT).</p>

Inspection Records

The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Defects

Condition Rating

Safety Fence - Condition Rating

Condition	Description
A - Excellent	<p>New or nearly new condition with no obvious visual Defects. May have obvious signs of disturbance in the surrounding grassed areas indicating recent Operations or Works. Footway or constructed verge areas around base of posts may be in new condition compared with surrounding areas.</p> <div></div> <div></div>

Condition	Description
	
D - Poor	<p>Poor structural condition. Corroded metal that affects function or promotes deterioration. Minor accident damage that does not affect function of barrier. Missing bolts.</p>  
E - Very Poor	<p>Broken, deformed, missing, loose or cracked components that affect function. Structurally unsound. Missing 'tension' bolts.</p>  
R - Routine Maintenance	<p>VRRS Safety Fence/Barrier not visible e.g. due to overhanging vegetation or accident damage that affects barrier function.</p>

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

VRRS - Transitions



A vehicle restraint system in the form of a continuous fence or barrier erected alongside a carriageway or bridge. It may be single height or double height or may involve a transition from single height to double height. It may have single or multiple rails or may be a closed face type in steel or concrete. It will normally terminate with a terminal end, structure connection, VRRS connection, parapet or a VRRS with a higher or lower containment level or working width

Asset Attributes

Asset Shape	Linear
Asset Service Level	<p>VRRS Transitions should only require occasional and irregular maintenance, often as a result of collision damage. The need for all maintenance shall be identified by Inspection.</p> <p>The majority of VRRS Transitions will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care or incident response.</p> <p>Recurring Comprehensive Inspections shall be carried out record asset condition and Defects.</p>
Common Attributes	VRRS - Transitions Attributes shall include the Common Attributes .
Parent/Child Assets	All VRRS Transitions should be linked to a minimum of 1 and maximum of 2 VRRS Safety Fence/Barrier or VRRS Parapet assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
VRRS Transition Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Tensioned steel • Untensioned steel • Concrete • Wire • Other 	Mandatory	
VRRS Transition Shape	Lookup <ul style="list-style-type: none"> • ? (Default) • Single Sided • Double Sided 	Mandatory	
VRRS Transition Beam Profile	Lookup <ul style="list-style-type: none"> • ? (Default) 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Corrugated • Box/Closed/Channel • Wire • Stepped • Other 		
VRRS Transition Height	Lookup <ul style="list-style-type: none"> • ? (Default) • <900mm • 901mm - 1200mm • >= 1200mm 	Mandatory	
VRRS Transition Start Type	Lookup <ul style="list-style-type: none"> • ? (Default) • P1 Ramp • P1 Full height • P4 • Transition • Connection • Other 	Mandatory	
VRRS Transition End Type	Lookup <ul style="list-style-type: none"> • ? (Default) • P1 Ramp • P1 Full height • P4 • Transition • Connection • Other 	Mandatory	
VRRS Transition Anti Dazzle	Lookup <ul style="list-style-type: none"> • Not fitted (Default) • Vanes fitted 	Mandatory	
VRRS Transition Rubbing Rail Fitted	Lookup <ul style="list-style-type: none"> • ? (Default) • Not fitted • Fitted 	Mandatory	
VRRS Transition Hazard protected	Lookup <ul style="list-style-type: none"> • ? (Default) • Embankment • Centre median 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Water • Sign/VMS • Railway • Other 		
VRRS Transition Protective coating	Lookup <ul style="list-style-type: none"> • ? (Default) • Galvanized • Painted • None • Other 	Mandatory	
VRRS Transition Foundation Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Freestanding • Surface Mounted with baseplate or anchorages • Cast in or driven posts • Composite with roadway • Other 	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the barrier still structurally sound?

Defect Category and Response Time Considerations

Has the barrier been flattened or the height reduced?
Is the damage close to a junction or tight curve?
Is a vehicle able to stop safely in event of an emergency?
Is there a history of accidents in the area?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Damaged or deformed fence or barrier	Any damaged or deformed fence or barrier	Damage or deformation which affects the integrity or performance of the fence or barrier	
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Corroded ù metal fence, barrier or post	Any corroded fence, barrier or post	Corrosion which affects the integrity or performance of the corroded fence, barrier or post	
Missing ù section of fence or barrier		Any missing section	
Loose panel		Any loose panel	
Loose anchor		Any loose anchor	
Loose bolt		Any loose bolt	
Safety fence ù rail too high		As per individual specification	
Safety fence ù rail too low		As per individual specification	
Loose tension bolts		Any loose tension bolts	

Inspections

VRRS Transition - Visual Assessment Inspection

Inspection Name	VRRS Transition - Visual Assessment Inspection
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Inspection Group	VRRS Assets - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 24 months
Inspection Requirement	<p>VRRS Transition Inspections shall be carried out by a competent VRRS Inspector.</p> <p>During each inspection the full length of each VRRS transition shall be inspected in accordance with one of the following VRRS Detailed Inspection checklist:</p> <ul style="list-style-type: none"> • Steel Transition Detailed Inspection Checklist • Concrete Transition Detailed Inspection Checklist <p>Any Defects shall be noted. An overall assessment of its condition and any Defects present shall be noted.</p>
Inspection Records	On completion of each Inspection the checklist and a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Where the asset has been rated as Condition Rating D or E, at least one Defect shall also be recorded.

Defects

Condition Rating

VRRS Transition - Condition Rating

Condition	Description
A - Excellent	New or nearly new condition with no obvious visual Defects. May have obvious signs of disturbance in the surrounding grassed areas indicating recent Operations or Works. Footway or constructed verge areas around base of posts may be in new condition compared with surrounding areas.
B - Good	No visual Defects and with few visible signs of surface deterioration. Grassed verge areas surrounding posts returned to vegetation. Minimal weathering or pollution from passing traffic.
C - Fair	Evidence of initial deterioration including minor corrosion, superficial visual deterioration or superficial accident damage.
D - Poor	Poor structural condition. Corroded metal that affects function or promotes deterioration. Minor accident damage that does not affect function of barrier. Missing bolts.
E - Very Poor	Broken, deformed, missing, loose or cracked components that affect function. Structurally unsound. Missing 'tension' bolts.
R - Routine Maintenance	VRRS Transition not visible e.g. due to overhanging vegetation or CAT1 Accident damage that will be imminently repaired.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Weather Station



A remote electronic monitoring device to detect road surface and atmospheric conditions to give early warning of ice and frost.

Asset Attributes

Asset Shape	Point
Asset Service Level	<p>Weather Stations require regular Inspection and Maintenance to be carried out to ensure that all parts of the station are calibrated and operational. All other maintenance shall be identified by Inspection.</p> <p>The majority of Weather Stations will be visible from the carriageway and high priority Defects should normally be identified from safety inspections or through other sources such as customer care, incident response or remote monitoring systems. Safety Inspections shall also be used to identify higher priority Defects.</p> <p>Recurring Comprehensive Inspections shall be carried out to record asset condition and Defects.</p> <p>Where applicable, the requirements of Transport Scotland's guidance document LDS8023 – Electrical Maintenance Guidelines shall be applied to this item. The EMG equipment type(s) covered by this inventory item are: 010.</p>
Common Attributes	<p>Weather Station Attributes shall include the Common Attributes but with the following amendments.</p> <p>Item Identity Code and Location Description shall be Mandatory fields.</p> <p>All Weather Stations owned by Scottish Ministers shall be recorded. Weather Stations which are related to winter weather will generally be the responsibility of Operating Companies to maintain. Other weather Stations (e.g. for wind, rain) may be the responsibility of either the Operating Company or the Traffic Scotland Operator, unless it is specifically known that a Weather Station is the responsibility of another party, the Operating Company shall assume they are responsible for its maintenance. The Ownership and Maintenance responsibility fields shall be used to record ownership/maintenance responsibilities.</p> <p>The Operating Company shall be responsible for ensuring all Weather Stations are recorded in the Asset Register</p>
Parent/Child Assets	Weather Station Assets are not associated with other assets.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Identity Code	Text	Mandatory	Comment

Field Name	Field Format	Field Required	Comments
			From Common Attributes. Every Electrically powered bollard should have a yellow sticker with a legible Identity Code.
Electrically Powered	Lookup <ul style="list-style-type: none"> • ? (Default) • Yes • No 	Mandatory	Comment Default = Yes
Weather Station - Attributes			
Site Type	Lookup <ul style="list-style-type: none"> • ? (Default) • ROSA • Mark 5 • Mark 6 • Other 	Mandatory	
Site Name	Text	Mandatory	
Deep Sensors	Yes/No	Mandatory	
Air Sensors	Yes/No	Mandatory	
DEW RH Sensor	Yes/No	Mandatory	
Wind Sensor	Yes/No	Mandatory	
Precipitation Sensor	Yes/No	Mandatory	
Road Surface Sensors	Yes/No	Mandatory	
CCTV Cameras	Yes/No	Mandatory	
Weather Station - Power Supply Attributes			
Supply Type	Lookup <ul style="list-style-type: none"> • ? (Default) • 230v Underground Private Network • 230v Overhead Private Network • 230v DNO 5th Core • 230v DNO Direct Underground Feed • 230v DNO Direct Overhead Feed • 400v Underground Private Network • Overhead Private Network 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • 400v DNO 5th Core • 400v DNO Direct Underground Feed • 400v DNO Direct Overhead Feed • Solar • Wind • Solar and Wind • SELV • Other 		
Distribution Network Operator	Lookup <ul style="list-style-type: none"> • ? (Default) • Scottish Power • Scottish & Southern Energy • Other 	Mandatory	
Electrical Protection Device	Lookup <ul style="list-style-type: none"> • ? (Default) • MCB • FUSE • RCD • None • N/A 	Mandatory	Comment Where asset has no electrical power, Electrical Protection Device shall be "N/A". Where the asset has electrical power but no protection device is provided Electrical Protection Device shall be "None".
Upstream Asset ID	Number (int)	Mandatory	Comment Asset ID of upstream cable connection (Asset nearer Control Cabinet)
Weather Station - Power consumption attributes			
Weather Station Circuit Wattage	Number (decimal)	Mandatory	Comment Derived from Elexon Code
Weather Station Regime Code	Lookup <ul style="list-style-type: none"> • ? (Default) 	Mandatory	
Weather Station Operating Hours	Number (int)	Mandatory	Comment Derived from Regime Code
Weather Station - additional components - Circuit Wattage	Number (decimal)	Mandatory	Comment Overall summary of circuit wattage for all additional components (e.g. Cameras,

Field Name	Field Format	Field Required	Comments
			Sensors, heaters etc) not included in the Elexon Code circuit wattage.
Maintenance Safety			
Safe Maintenance Access	Yes/No	Mandatory	
Behind Safety Barrier	Yes/No	Mandatory	
Conspicuity Bands	Yes/No	Mandatory	
Schematic Showing Cables	Yes/No	Mandatory	
Salting of the Road			
Salting of the Road	Yes/No	Mandatory	
Road Environment			
Road Environment	Yes/No	Mandatory	
Environment Situation			
Environment Situation	Yes/No	Mandatory	
Wind Exposure			
Wind Exposure	Yes/No	Mandatory	
Designed for Fatigue			
Designed for Fatigue	Yes/No	Mandatory	
Traffic Flow			
Traffic Flow	Yes/No	Mandatory	
Traffic Speed			
Traffic Speed	Yes/No	Mandatory	
On a Bridge			
On a Bridge	Yes/No	Mandatory	
Traffic Disruption Caused By Failure			
Traffic Disruption Caused By Failure	Yes/No	Mandatory	
Pedestrian Density			
Pedestrian Density	Yes/No	Mandatory	
Effect of Location (Missing)			
Effect of Location (Missing)	Yes/No	Mandatory	
Overhead Cable Restriction			
Overhead Cable Restriction	Yes/No	Mandatory	
Site Access, Hard Standing ETC			
Site Access, Hard Standing ETC	Yes/No	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.

Category 2 Analyse data prioritise and schedule for programmed Operations or Works.
Low

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Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Missing equipment essential for operation essential for operation			
Obscuration effecting equipment performance particularly the CCTV cameras where fitted			
Accident damage			
Road sensor failure			
Damage to cabinets			
Other sensor failure			
CCTV Failure defined as loss of any function			
Processor failure			
Electrical condition			
Defective conspicuity banding on equipment located in areas accessible to the public			
No electrical supply			
RCD failure			
Structural Condition			
Obscuration			
Other			

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Columns or post projecting into carriageway or footway	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Total failure, visible instability, or damaged column or post that may fall onto the carriageway, footway or private land	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Damaged or Defective, or visible instability of bracket, arm or lantern that may fall onto the carriageway, footway or private land	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets or other roadside electrical apparatus that exposes wiring/internal equipment - exposes live wiring with low risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Damage to cabinets that exposes wiring/internal equipment - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring with high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - exposes live wiring but	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 28 days.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
low risk of pedestrian access			
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed but high risk of pedestrian access	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Missing or unsecured doors on columns or feeder pillars (excluding central reservation) - no live wiring exposed and low risk of pedestrian access	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Component or other miscellaneous failure not covered in other items listed here which results in high electrical safety risk	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Installation failed safety electrical testing or present a safety risk from high Ze value in excess of the maximum allowable.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Cables that have failed safety electrical testing or present a safety risk from high earth loop impedance (Zs) value in excess of the maximum allowable for the protective device.	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Failure of insulation test between live conductor and earth, and disconnection of earthing and bonding conductors.			
Exposed or extraneous conductive parts of electrical apparatus made live under fault conditions	All Defects shall be treated as Category 1b Defects	All Defects. Maximum response time for Electrical Specialist shall be 24 hours. Maximum response time for a deferred permanent repair shall be 28 days.	
Electrical Check failure as BS7671 GN3 Section & 3.5 Table 3.2	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours. Maximum response time for a deferred permanent repair shall be 7 days.	
Hazardous electrical Defect	All Defects shall be treated as Category 1a Defects	All Defects. Maximum response time for Electrical Specialist shall be 4 hours.	

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
		Maximum response time for a deferred permanent repair shall be 7 days.	
Any functional failure of equipment			

Inspections

Weather Station - Periodic Electrical Inspection and Testing - BS7671

Inspection Name	Weather Station - Periodic Electrical Inspection and Testing - BS7671
Inspection Group	Periodic Electrical Inspection and Testing - BS7671
Inspection Interval	At intervals not exceeding 5 years
Inspection Requirement	<p>Electrical Inspection and testing of all electrical assets shall be carried out in accordance with LDS8023 and BS7671.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded in the register, by adding and end dating assets as appropriate, • that the attributes of every asset shall be validated to ensure that they accurately represent each asset, • and all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	BS7671 electrical Inspection and Testing certificate shall be held against the relevant cabinet asset containing the Distribution Unit (MCB/Consumer unit) to which the asset is connected along with date/time/user stamps. On completion of the inspection of each asset a date/time/user stamp and other asset specific attributes shall also be recorded against the relevant asset record. Any Defects shall be recorded and associated with the relevant asset.

Weather Station - Detailed Inspection and Calibration check

Inspection Name	Weather Station - Detailed Inspection and Calibration check
Inspection Group	Weather Station - Detailed Inspection and Calibration check
Inspection Interval	During August to September and December to February each year
Inspection Requirement	The Detailed Inspection and Calibration check shall be carried out by suitably qualified personnel consented to in writing by the Director.

	The full installation shall be checked with a Calibration and test certificate completed for each installation and any Defects noted.
Inspection Records	On completion of each Inspection, a record shall be recorded against the relevant asset record along with details of the inspection date/times, inspector. A copy of the Calibration and test certificates shall be attached to the relevant asset record. Any Defects shall be recorded against the relevant inventory item.

Weather Station - Routine Electrical Inspection

Inspection Name	Weather Station - Routine Electrical Inspection
Inspection Group	Routine Electrical Inspection & TR22
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	<p>Routine Electrical Inspections of all electrical assets shall be carried out in accordance with LDS8023.</p> <p>During each Inspection, the Asset Register shall be validated to ensure that:</p> <ul style="list-style-type: none"> • all assets are accurately recorded and located in the register, by moving, adding and end dating assets as appropriate, • that all attributes accurately represent every asset, • and all errors are corrected. <p>Inspectors carrying out these inspections should be competent to carry out inspections of electrical equipment.</p>
Inspection Records	On completion of each Inspection a record shall be recorded against each asset including date/time/user stamps. Any Defects shall be recorded and associated with the relevant asset.
Comments	References include LDS8023 - EMG010

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Weather Station - Electrical components - Cleaning

Cyclic Maintenance Name	Weather Station - Electrical components - Cleaning
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Cyclic Maintenance Operation Interval	As required and at intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	All electrical components shall be cleaned in accordance with Schedule 5 Specification Clause 6120AR, 6122AR and LDS8023. Operatives carrying out these activities should be competent to carry out operations on electrical apparatus.
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	References include LDS8023 <ul style="list-style-type: none"> EMG010 Task 1(clean & check), 6, 9 & 10

Weather Station - Electrical - RCD

Cyclic Maintenance Name	Weather Station - Electrical - RCD
Cyclic Maintenance Operation Interval	As required and at intervals not exceeding 3 months.
Cyclic Maintenance Operation Requirement	Where the installation is installed with a Residual Current Device (RCD) the Contractor shall carry out an RCD test using the RCD integral TEST push button quarterly or as otherwise stated in BS7671.
Cyclic Maintenance Operation Records	On completion of each Operation a date/time/user stamp shall be recorded against each asset. Any Defects shall be recorded against the relevant asset.
Comments	References include LDS8023 - EMG010 - Task 5. An Asset will be considered to have require RCD Testing where the "Electrical Protection Device " field = "RCD" or "?"

Weed Control



Weed control is required on all aspects of the network and may be associated with all assets. Weed Control will not be required to be recorded as an asset but all weed control activities shall be recorded.

Asset Attributes

Asset Shape	Linear
Asset Service Level	Weed growth on the network can cause damage to assets - reducing their life, or can be unsightly - reducing the amenity of the network. Regular treatment of all areas of weed shall be carried out in accordance with the Specification (Clause 3002) to control and manage the growth, restrict further spread and, if required, to eliminate the weeds. Recurring Inspections shall be carried out to identify areas requiring weed treatment.
Common Attributes	Weed Control Attributes shall include the Common Attributes .
Parent/Child Assets	Weed Control Assets are not associated with other assets.

Asset Specific Attributes

There are no Asset specific attributes.

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Permanently repair or make safe by no later than by 0600 the following day (or within 24 hours if earlier) and permanent repair within 28 days of recording.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.
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Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Other			
Overgrowing or overhanging the footway or carriageway	Any overgrowing or overhanging vegetation	Vegetation which narrows the width of the footway by 50%, poses a trip hazard, or other risk of injury, damage to a vehicle, or obscures road markings or signs.	Any overgrowing or overhanging vegetation
Obstructed sightline	Any obstructed sightline	Obstruction which limits the view of network users	Any obstructed sightline
Arisings from cutting operations affecting network.	Any arisings affecting the footway or carriageway.	Any arisings which may cause a trip, slip or skid hazard.	Any arisings that may impact other operations or detrimentally affect the appearance of the network.
Vegetation in hard or gravelled areas	Any vegetation growing in hard or gravelled areas, including footways, pavements, drains, central reserves, hard standings etc.	Any vegetation growing in hard or gravelled areas which poses a risk to the operation of the network, or presents a trip hazard, or other risk of injury, damage to a vehicle, or obscures road markings or signs.	Any vegetation growing in hard or gravelled areas, including footways, pavements, drains, central reserves, hard standings etc.

Inspections

Weed Control - Visual Assessment Inspection

Inspection Name	Weed Control - Visual Assessment Inspection
Inspection Group	Weed Control Inspection
Inspection Interval	As necessary
Inspection Requirement	Inspections of all areas of the Network shall be carried out as necessary to identify where Weed Control Cyclic Maintenance Operations are required and confirm the effectiveness of Weed Control Cyclic Maintenance Operations. Inspections shall include inspecting areas that cannot be seen from the carriageway e.g. embankments.
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time stamps. Any Defects shall be recorded against the relevant inventory item.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

Weed Control - Treatment

Cyclic Maintenance Name	Weed Control - Treatment
Cyclic Maintenance Operation Interval	As necessary
Cyclic Maintenance Operation Requirement	Weed Control shall be carried out across the Network in accordance with Schedule 5 Specification Clause 3002.
Cyclic Maintenance Operation Records	<p>On completion of each maintenance visit a maintenance record shall be recorded against the network in the form of a breadcrumb trail of GPS co-ordinates and a date/time stamp with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none">• activities not undertaken and the reasons why,• type of weed control, Total weed control, selective weed control, hand weeding etc.• quantities and type of herbicide used,• any impact on wildflower or conservation areas or other desirable assets,• weed development observations and any signs of animal browsing,• any other notes. <p>Any Defects noted shall also be recorded.</p>

Wetland



An area associated with permanent or semi-permanent water from open water bodies to areas of boggy ground.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>Wetlands should generally be self-supporting and only require occasional and irregular maintenance. Cyclic Maintenance is not required and the need for maintenance shall be identified through inspections.</p> <p>High priority defects for the majority of Wetland Areas are likely to be visible from the carriageway and should normally be identified from safety inspections or through other sources such as customer care or incident response and sometimes through annual Detailed Inspections.</p> <p>Recurring Comprehensive Inspections shall be carried out by a suitable landscape specialist inspector during the Wetland growing season to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p>
Common Attributes	Wetland Attributes shall include the Common Attributes .
Parent/Child Assets	Other assets may be linked by Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Form	Lookup <ul style="list-style-type: none"> • ? (Default) • Wet ground • Open water • Mix • Other 	Desirable	
Wet Type	Lookup <ul style="list-style-type: none"> • ? (Default) • Permanently wet • Seasonally wet 	Desirable	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Other 		
First Wetland Composition	Lookup <ul style="list-style-type: none"> ? (Default) Grasses Rushes/reeds Bog/mire Marginal species Aquatic species Other 	Desirable	
Second Wetland Composition	Lookup <ul style="list-style-type: none"> ? (Default) Grasses Rushes/reeds Bog/mire Marginal species Aquatic species Other 	Optional	
Boundary	Text	Optional	
Notes	Text	Optional	
Value			
Landscape value	Yes/No	Mandatory	

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

Is the defect likely to cause flooding?

Would the flooding cause a hazard, or damage to property or services?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Fly tipping/illegal dumping	Any fly tipping or dumping	Any fly tipping or illegal dumping which poses a risk to people, wildlife or the environment	Any fly tipping or dumping
Flooding	Any flooding	Sufficient amount of water which represents a hazard to network users, structures or services, or an indication that flooding of any private property is imminent.	
Pollution	Any pollution	Pollution which could cause harm to a person, wildlife or the environment	Any pollution
Other	Any other Defect		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
The wetland area and/or any associated vegetation in poor condition.	Any signs of the wetland or its associated vegetation in poor condition.	Where the condition of the wetland may impact the safety of road users or operatives (e.g. flooding etc).	Where the condition of the wetland may detrimentally impact the appearance or ecological value of the network.

Inspections

Wetland - Visual Assessment Inspection

Inspection Name	Wetland - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	Each year during their growing season

Inspection Requirement	<p>The full extends of each Wetland asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.</p> <p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	<p>On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.</p>
Comments	<p>The growing season for Wetland assets shall be considered to be from April through to September.</p>

Wetland - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection

Inspection Name	Wetland - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Group	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Interval	Each year between September to end of February each year
Inspection Requirement	<p>Between September and the end of February each year the full extents of the network shall be inspected to identify any vegetation which may develop during the coming growing season with the potential to detrimentally effect the road envelope visibility. This shall include vegetation encroaching upon or otherwise effecting:</p> <ul style="list-style-type: none"> • the forward visibility of drivers and other road users, • the sight lines for traffic signs, bollards and other road infrastructure, • the sight lines for junctions, accesses, bends etc. or • the carriageway, footway, cycleway <p>Any identified vegetation shall be recorded for remedial action by the "Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance" Cyclic Maintenance Operations and shall be completed before the end of March in the same period.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be updated during each Inspection.</p>
Inspection Records	<p>The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time/user stamps. Any Defects shall be recorded against the relevant inventory item.</p>
Comments	<p>The aim of this inspection and associated Cyclic Maintenance Operation is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured or driver visibility is compromised. It is important that the required Cyclic Maintenance is carried out before the commencement of the bird nesting season each year. When remedial maintenance is identified it is expected, where practicable and without having a detrimental impact on the local landscape character or any important landscape features, that the relevant vegetation be trimmed back sufficiently to allow several years growth before trimming would be required again in accordance with clause 4.3.3.2 of this Manual.</p>

Wetland - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Wetland - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	<p>The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.</p> <p>This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against the network along with a GPS bread crumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.

Defects

Condition Rating

Wetland - Condition Rating

Condition	Description
A - Excellent	Not Applicable
B - Good	Asset is healthy, growing well and free from defects.
C - Fair	Asset is generally healthy and growing reasonably well although there are signs of minor damage/decay.
D - Poor	Asset is showing significant signs of decay or damage, or is dead/dying. Asset close to or encroaching into sightlines.
E - Very Poor	Not applicable
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

Wetland - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance

Cyclic Maintenance Name	Wetland - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance
Cyclic Maintenance Operation Interval	As necessary

<p>Cyclic Maintenance Operation Requirement</p>	<p>All:</p> <ul style="list-style-type: none"> • sightlines and forward visibility areas; • road signs and; • areas with Encroaching Vegetation that may cause difficulties for maintenance operations, such grass cutting adjacent to the carriageway, the inspection of barriers, cabinets and other equipment etc. and/or the management of other elements of network infrastructure, such as lighting and roadside cameras etc <p>shall be treated and/or cut back by the Operating Company to maintain forward visibility, prevent signs etc being obscured or to maintain safe access to equipment. Such areas shall be as defined in the inventory or that required to maintain minimum forward visibility as specified in TD 26/17. The Operating Company shall comply with section 4 of this Manual.</p> <p>Visibility splays and the like shall be cut in accordance with Schedule 5 Specification Clause 3002, 3006, 3007, 3009 & 3010 and Appendix 30/7.</p>
<p>Cyclic Maintenance Operation Records</p>	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item and any associated Defects along with a date/time/user stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • Potential landscape opportunities (see 4 of this Manual) • Asset Shape not matching cut areas. • Any other notes <p>Any additional Defects noted shall also be recorded against the relevant inventory item.</p>
<p>Comments</p>	<p>The aim of this Cyclic Maintenance Operation and associated Inspection Operation (Road Envelope Visibility Inspections) is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured and to ensure preventative maintenance is carried out before the bird nesting season each year. When maintenance is carried out is it expected that trimming of vegetation should be trimmed back far enough to allow several years growth before trimming would be required again.</p>

Wildflower Area



An area of sown or naturalised or naturally occurring herbaceous and/or flowering ground cover species of ecological or environmental value, usually found within grassed verges, cuttings or embankments.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>Wildflower areas should generally be self-supporting and only require occasional maintenance. All other maintenance shall be identified through inspections.</p> <p>High priority defects for the majority of Wildflower Areas are likely to be visible from the carriageway and should normally be identified from safety inspections or through other sources such as customer care or incident response and sometimes through annual Detailed Inspections.</p> <p>Recurring Comprehensive Inspections shall be carried out by a suitable landscape specialist inspector during the Wildflower growing season to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p> <p>The majority of Wildflower areas tend to be within minimal frequency grassed areas where cutting takes place after their flowering season. Grass cutting Cyclic maintenance activities shall be recorded under the Grassed Area inventory.</p>
Common Attributes	Wildflower Area Attributes shall include the Common Attributes .
Parent/Child Assets	Wildflower areas tend to be associated with grassed areas or other landscape assets but their linkage will be defined as a Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Main Species	Text	Mandatory	<p>Comment</p> <p>Description of species and their extents/density/importance/value</p>
Notes	Text	Optional	<p>Comment</p> <p>If the Main Species or Main Objective field is "Other" then further information must be entered</p>
Wildflower Areas - Main Objective			
Integration	Yes/No	Mandatory	

Field Name	Field Format	Field Required	Comments
Visual amenity	Yes/No	Mandatory	
Nature conservation	Yes/No	Mandatory	
Other	Yes/No	Mandatory	
Main Objective Other - Description	Text	Conditional (Mandatory)	Comment Mandatory when Main Objective - Other = Yes.

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the vegetation obscure regulatory signs or lines?
Does the vegetation force pedestrians to step in to the carriageway?
Could the vegetation cause a pedestrian to trip or be injured?
Does the vegetation obscure visibility for network users?

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Wildflower area and/or any associated vegetation in poor condition.	Any signs of the wildflower area or its associated vegetation in poor condition.	Where the condition of the wildflower area may impact the safety of road users or operatives (e.g. encroachment to undesirable areas, failure of sward	Where the condition of the wildflower area may detrimentally impact the appearance or ecological value of the network.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
		leading to possible slippage etc).	

Inspections

Wildflower - Visual Assessment Inspection

Inspection Name	Wildflower - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	Each year during their growing season
Inspection Requirement	<p>The full extents of each Wildflower asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.</p> <p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.
Comments	<p>The growing season for Wildflower shall be considered to be:</p> <ul style="list-style-type: none"> • Wildflowers may flower at various times in the year depending on the species. Inspections should be timed to coincide with these times, as far as practicable. • Other - April • ? - April

Wildflower Area - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Wildflower Area - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.

	This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities.
Inspection Records	On completion of each Inspection an inspection record shall be recorded against the network along with a GPS bread crumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.

Wildflower Areas - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection

Inspection Name	Wildflower Areas - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Group	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Interval	Each year between September to end of February each year
Inspection Requirement	<p>Between September and the end of February each year the full extents of the network shall be inspected to identify any vegetation which may develop during the coming growing season with the potential to detrimentally effect the road envelope visibility. This shall include vegetation encroaching upon or otherwise effecting:</p> <ul style="list-style-type: none"> • the forward visibility of drivers and other road users, • the sight lines for traffic signs, bollards and other road infrastructure, • the sight lines for junctions, accesses, bends etc. or • the carriageway, footway, cycleway <p>Any identified vegetation shall be recorded for remedial action by the "Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance" Cyclic Maintenance Operations and shall be completed before the end of March in the same period.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be updated during each Inspection.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time/user stamps. Any Defects shall be recorded against the relevant inventory item.
Comments	The aim of this inspection and associated Cyclic Maintenance Operation is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured or driver visibility is compromised. It is important that the required Cyclic Maintenance is carried out before the commencement of the bird nesting season each year. When remedial maintenance is identified it is expected, where practicable and without having a detrimental impact on the local landscape character or any important landscape features, that the relevant vegetation be trimmed back sufficiently to allow several years growth before trimming would be required again in accordance with clause 4.3.3.2 of this Manual.

Defects

Condition Rating

Wildflower Area - Condition Rating

Condition	Description
A - Excellent	Not Applicable
B - Good	Asset is healthy, growing well and free from defects.
C - Fair	Asset is generally healthy and growing reasonably well although there are signs of minor damage/decay.
D - Poor	Asset is showing significant signs of decay or damage, or is dead/dying. Asset close to or encroaching into sightlines.
E - Very Poor	Not applicable
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

Wildflower Area Maintenance

Cyclic Maintenance Name	Wildflower Area Maintenance
Cyclic Maintenance Operation Interval	1 cut during late Summer/autumn following wildflower seeding
Cyclic Maintenance Operation Requirement	Wildflower areas shall be cut to a height of between 90 and 100 mm after the seeding of desirable species, in late autumn or as directed in Appendix 30/7, with the cuttings being finely chopped and evenly dispersed over the area.
Cyclic Maintenance Operation Records	<p>On completion of each cutting Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • Areas not cut and the reasons why e.g. presence of bulbs/wildflowers, wet or boggy areas etc. • Asset Shape not matching cut areas. • Alterations to the asset area due to development of a different asset type e.g. other vegetation • Any other notes <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	<p>This Operation shall only apply to Wildflower Areas .</p> <p>For the purposes of the KPI a cutting period shall be August to November.</p>

Wildflower Area - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance

Cyclic Maintenance Name	Wildflower Area - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance
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Cyclic Maintenance Operation Interval	As necessary
Cyclic Maintenance Operation Requirement	<p>All:</p> <ul style="list-style-type: none"> • sightlines and forward visibility areas; • road signs and; • areas with Encroaching Vegetation that may cause difficulties for maintenance operations, such grass cutting adjacent to the carriageway, the inspection of barriers, cabinets and other equipment etc. and/or the management of other elements of network infrastructure, such as lighting and roadside cameras etc <p>shall be treated and/or cut back by the Operating Company to maintain forward visibility, prevent signs etc being obscured or to maintain safe access to equipment. Such areas shall be as defined in the inventory or that required to maintain minimum forward visibility as specified in TD 26/17. The Operating Company shall comply with section 4 of this Manual.</p> <p>Visibility splays and the like shall be cut in accordance with Schedule 5 Specification Clause 3007 and Appendix 30/7.</p>
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item and any associated Defects along with a date/time/user stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • Potential landscape opportunities (see 4 of this Manual) • Asset Shape not matching cut areas. • Any other notes <p>Any additional Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	<p>The aim of this Cyclic Maintenance Operation and associated Inspection Operation (Road Envelope Visibility Inspections) is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured and to ensure preventative maintenance is carried out before the bird nesting season each year. When maintenance is carried out it is expected that trimming of vegetation should be trimmed back far enough to allow several years growth before trimming would be required again.</p>

Wildlife Counters



A device which records the activity and frequency of specific wildlife activity.

Asset Attributes

Asset Shape	Point
Asset Service Level	Regular Cyclic Maintenance shall be carried out to clean all electrical apparatus and replace consumables. All other maintenance shall be identified through inspections. Regular Comprehensive Inspections shall be carried out to record asset condition and Defects. Where applicable, the requirements of Transport Scotland's guidance document LDS8023 – Electrical Maintenance Guidelines shall be applied to this item. The EMG equipment type(s) covered by this inventory item are: 023.
Common Attributes	Wildlife Counters Attributes shall include the Common Attributes but with the following amendments. All Wildlife Counters owned/maintained by Scottish Ministers shall be recorded, some of which may be outside the Trunk Road Boundary.
Parent/Child Assets	Wildlife Counters Assets are not associated with other assets.

Asset Specific Attributes

There are no Asset specific attributes.

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

No defect response times are applicable to this asset.

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Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations

There are no Defect Category and Response Time Considerations currently configured for this asset.

Inspections

There are no Inspections associated with this Asset.

Defects

Condition Rating

There are no Condition Ratings associated with this Asset.

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Wildlife Mitigation Measures



An item intended to mitigate the potential impact of the road or traffic on wildlife.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>Wildlife Mitigation Measures should only require occasional and irregular maintenance. The need for all maintenance shall be identified through Inspections.</p> <p>Wildlife Mitigation Measures are often situated away from the road and are unlikely to be visible to regular Safety Inspections.</p> <p>Recurring Comprehensive Inspections shall be carried out by a suitable landscape specialist inspector to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p>
Common Attributes	Wildlife Mitigation Measures Attributes shall include the Common Attributes .
Parent/Child Assets	Other assets may be linked by Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Mitigation type	Lookup <ul style="list-style-type: none"> • ? (Default) • Vegetation Management - Habitat creation • Vegetation Management - Habitat relocation • Vegetation Management - Other • Freshwater - River habitat creation • Freshwater - River habitat protection • Freshwater - Fish passes for salmon • Freshwater - Creation of Stilling pools 	Required	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Freshwater - Pond creation • Freshwater - Other • Invertebrates - Ant nest translocation • Invertebrates - Other • Amphibians - Amphibian hibernacula • Amphibians - Permanent fencing • Amphibians - Other • Reptiles - Adder hibernacula • Reptiles - Temporary fencing • Reptiles - Other • Birds - Nesting boxes • Birds - Duck warning signs • Birds - Other • Mammals - Badger fence/gate • Mammals - Badger tunnel • Mammals - Bat roost creation • Mammals - Bat roost protection • Mammals - Deer fence • Mammals - Deer reflectors • Mammals - Hedgehog ramp (cattle grid) • Mammals - Otter fence • Mammals - Otter holt creation • Mammals - Otter couch creation • Mammals - Otter grooming pool • Mammals - Otter ledge • Mammals - Otter tunnel • Mammals - Otter reflector • Mammals - Otter road sign • Mammals - Red squirrel rope bridge • Mammals - Other • Other 		
First Mitigation Species	Lookup <ul style="list-style-type: none"> • ? (Default) • Amphibians • Reptile • Badger • Bats • Birds • Red squirrel • Deer 	Mandatory	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Fish • Otter • Hedgehog • Invertebrates • Other 		
Second Mitigation Species	Lookup <ul style="list-style-type: none"> • ? (Default) • Amphibians • Reptile • Badger • Bats • Birds • Red squirrel • Deer • Fish • Otter • Hedgehog • Invertebrates • Other 	Required	
Notes	Text	Optional	
Wildlife Mitigation - Main Objective			
Integration	Yes/No	Mandatory	
Visual amenity	Yes/No	Mandatory	
Nature conservation	Yes/No	Mandatory	
Other	Yes/No	Mandatory	
Main Objective Other - Description	Yes/No	Conditional (Mandatory)	Comment Mandatory when Main Objective - Other = Yes.

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
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Category 1a Attend and make safe as per incident response timescales.

Category 1b Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.

Category 2 High Repair within 28 days of being ordered.

Category 2 Low Analyse data prioritise and schedule for programmed Operations or Works.

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Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Is the asset still performing its intended function?
Have there been occurrences of wildlife entering the carriageway?
Has there been an increase in carcasses removed from the carriageway?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Missing	Any missing measure or component	Any missing component which puts road user or wildlife in danger	
Damaged, Deformed or Unstable.	Any damaged, deformed or unstable measure or component.	Any damaged, deformed or unstable component which puts road user or wildlife in danger.	
Obstructed	Any obstructed measure or component	Any blockage which prevents wildlife from utilising the asset and may result in a risk to road users or wildlife	
Tunnel created under fence	Any tunnel or evidence of excavation	Any tunnel which bypasses a fence intended to prevent the movement of wildlife and which is likely to increase the risk to road users or wildlife	
Damage to a wildlife counter	Any damage		
Other	Any other Defect	Any other defect that may put road users or wildlife at risk.	

Inspections

Wildlife Mitigation Measures - Visual Assessment Inspection

Inspection Name	Wildlife Mitigation Measures - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	At intervals not exceeding 12 months
Inspection Requirement	The full extends of each Wildlife Mitigation Measure asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.

	<p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	<p>On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.</p>
Comments	<p>The growing season for wildlife mitigation measures involving a vegetation component shall be considered to be from April through to September.</p>

Wildlife Mitigation - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Wildlife Mitigation - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	<p>The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.</p> <p>This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities.</p>
Inspection Records	<p>On completion of each Inspection an inspection record shall be recorded against the network along with a GPS bread crumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.</p>

Defects

Condition Rating

Wildlife Mitigation Measure - Condition Rating

Condition	Description
A - Excellent	Not Applicable
B - Good	Asset is intact, free from defects/obstructions and still meets its original mitigation objectives.
C - Fair	Asset is generally intact and largely free from defects/obstructions and is broadly capable of meeting its intended function.
D - Poor	Asset is showing significant signs of decay, damage or obstruction and is materially compromised in its ability to meet its original function.
E - Very Poor	Not applicable

Condition	Description
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

There are no maintenance activities associated with this Asset.

Woodland



An assemblage of predominantly tree species but possibly also including an understory of shrub species and a ground cover layer.

Asset Attributes

Asset Shape	Area
Asset Service Level	<p>Woodland Areas will require regular Cyclic Maintenance during their early life establishment period but after that should generally be self-supporting and only require occasional and irregular maintenance. Cyclic Maintenance will be required for newly planted (developing) woodlands during the first five years, Woodlands older than 5 years from planting will not require regular Cyclic Maintenance. The need for all other maintenance shall be identified through inspections.</p> <p>High priority defects for the majority of Woodland Areas are likely to be visible from the carriageway and should normally be identified from safety inspections or through other sources such as customer care or incident response and sometimes through annual Detailed Inspections.</p> <p>Recurring Comprehensive Inspections of Woodland areas shall be carried out by a suitable landscape specialist inspector during the growing season to record their condition, defects and identify any maintenance operations required or any potential for actions for possible inclusion in the schedule of landscape opportunities, the Tree Management Strategy, Tree Management Plan and, potentially, the Landscape Development Plan. The Operating Company shall ensure the Landscape Architect is kept fully informed of the results of all Comprehensive Inspections relating to all landscape elements.</p>
Common Attributes	<p>Woodland Attributes shall include the Common Attributes but with the following amendments.</p> <p>Start Date. The Start Date for each Asset shall be used to determine the age category of each asset. If the age of the Woodland is less than 10 years old it is important that the Start Date reflects the age. Where an exact planting date of the Woodland is not known an approximate date can be entered either as 01/mm/yyyy where the approximate month and year is known or 01/01/yyyy where an approximate year is known. Where the planting date is not known its age shall be estimated and an approximate year chosen and entered as 01/01/yyyy.</p> <p>All Woodland area over 5 years old (from planting) and/or over 3.0m height, including those outwith Scottish Ministers' land but adjacent to the Trunk Road network shall be recorded and be inspected.</p>
Parent/Child Assets	Other assets may be linked by Geo-spatial association.

Asset Specific Attributes

Field Name	Field Format	Field Required	Comments
Age Category	Lookup	System	Comment

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> New (Age 0-5 years) Developing (Age 6-14 years) Maturing (Age 15+ years) 		The age category shall be derived by the system based on the asset "Start Date" field. Age 0-5 years = "New", Age 6-14 years = Developing, Age 15+ = Maturing.
Notes	Text	Optional	
Composition			
Tree Dominant Species	Lookup <ul style="list-style-type: none"> ? (Default) Alder - <i>Alnus glutinosa</i> Ash - <i>Fraxinus excelsior</i> Aspen - <i>Populus tremula</i> Beech - <i>Fagus sylvatica</i> Birch, downy - <i>Betula pubescens</i> Birch, silver - <i>betula pendula</i> Cherry, gean - <i>Prunus avium</i> Elder - <i>Sambucus nigra</i> Cherry, bird - <i>Prunus padus</i> Elm, wych - <i>Ulmus glabra</i> Hawthorn - <i>Crataegus monogyna</i> Hazel - <i>Corylus avellana</i> Hemlock Western - <i>Tsuga heterophylla</i> Holly - <i>Ilex aquifolium</i> Hornbeam - <i>Carpinus betulus</i> Horse Chestnut - <i>Aesculus hippocastanum</i> Juniper - <i>Juniperus communis</i> Larch, European - <i>Larix decidua</i> Leylandii - <i>Cupressus × leylandii</i> Lime - <i>Tilia x europaea</i> Maple, field - <i>Acer campestre</i> Oak, common - <i>Quercus robur</i> Oak, sessile - <i>Quercus patraea</i> Pine, Austrian - <i>Pinus nigra</i> 	Desirable	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> • Pine, Scots - Pinus sylvestris • Poplar, black - Populus nigra • Rowan - Sorbus aucuparia • Spruce, sitka - Picea sitchensis • Sycamore - Acer pseudoplatanus • Whitebeam - Sorbus aria • Willow, crack - Salix fragilis • Willow, goat - Salix caprea • Willow, grey - Saix cinerea • Willow, white - Salix alba • Yew - Taxus baccata • Other 		
<p>Dominant Understory</p>	<p>Lookup</p> <ul style="list-style-type: none"> • ? (Default) • Blackthorn - Prunus spinosa • Broom - Cytissus scoparius • Buckthorn - Rhamnus cathartica • Dogwood - Cornus sanguinea • Elder - Sambucus nigra • Gorse - Ulex europaeus • Guelder rose - Viburnum opulus • Hawthorn - Crataegus monogyna • Hazel - Corylus avellana • Holly - Ilex aquilfolium • Juniper - Ilex aquilfolium • Privet - Ligustrum ovalifolium • Maple, field Acer campestre • Rose. Dog - Rosa canina • Spindle - Euonymus europaea • Wayfaring tr. - Viburnum lantana 	<p>Desirable</p>	

Field Name	Field Format	Field Required	Comments
	<ul style="list-style-type: none"> Willow, grey - Salix cinerea Willow, osier - Salix viminalis Willow, purple - Salix purpurea Other - (species) 		
Ground Cover	Lookup <ul style="list-style-type: none"> ? (Default) Ferns/grasses/ sedges etc Mosses/ivy/lichens/ fungi Low level scrub Woodland flora Bog Mire Dry Heath Other 	Desirable	
Density	Lookup <ul style="list-style-type: none"> ? Open Full cover Crowded 	Desirable	
Woodland - Objectives			
Integration	Yes/No	Mandatory	
Visual amenity	Yes/No	Mandatory	
Nature conservation	Yes/No	Mandatory	
Other	Yes/No	Mandatory	
Main Objective Other - Description	Yes/No	Conditional (Desirable)	Comment Mandatory when Main Objective - Other = Yes.
Tree Protection Order			
Tree Protection Order - Details	Text	Conditional (Mandatory)	Comment Mandatory to enter details of Tree Protection Order is one applies

Asset Specific Rules

Asset Maintenance

Defects

Defect Categories and Response Times

Defect Category	Response Times
Category 1a	Attend and make safe as per incident response timescales.
Category 1b	Made safe at the time of inspection or at latest within 24 hours and a permanent repair within 28 days.
Category 2 High	Repair within 28 days of being ordered.
Category 2 Low	Analyse data prioritise and schedule for programmed Operations or Works.

Defect Category and Response Time Consideration

The following considerations should be taken into account when determining Defect category and response times for this asset.

Defect Category and Response Time Considerations
Does the vegetation obscure regulatory signs or lines?
Does the vegetation force pedestrians to step in to the carriageway?
Could the vegetation cause a pedestrian to trip or be injured?
Is there a risk of a tree or branch falling in to the footway, carriageway or private property?
Does the vegetation obscure visibility for network users?

General Defect List

The following Defects shall be recorded if identified at any Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Vegetation overgrowing or overhanging the footway or carriageway	Any overgrowing or overhanging vegetation	Vegetation which narrows the width of the footway by 50%, poses a trip hazard, or other risk injury (including head/facial), damage to a vehicle, or obscures road markings or signs.	Any overgrowing or overhanging vegetation
Obstructed sightline	Any obstructed sightline	Obstruction which limits the view of network users	Any obstructed sightline
Initiate specialist inspection			
Fly tipping/illegal dumping	Any fly tipping or illegal dumping	Any fly tipping or illegal dumping which poses a risk to people, wildlife or the environment	Any fly tipping or illegal dumping
Other	Any other Defects		

Specialist Defect List

The following Defects shall generally only be identified and recorded by Specialists during any Specialist Inspection Operation.

Defect Description	Investigatory Level	Category 1a / Category 1b Intervention Level	Category 2 High Intervention Level
Woodland areas, or selected species therein, in poor condition.	Any areas or species in poor condition.	Where dead, dying or damaged vegetation may impact the safety of road users/ infrastructure, the public or operatives (e.g. damaged branches etc).	Any dead, dying or missing vegetation that may detrimentally impact the appearance of the network or interfere with other required operations.
Unstable			
Dead tree			
Dying/diseased tree			
Dying/dead branch			
Obstructed sightline			
Overhanging/overgrown			

Inspections

Woodland - Visual Assessment Inspection

Inspection Name	Woodland - Visual Assessment Inspection
Inspection Group	Landscape - Visual Assessment Inspection
Inspection Interval	Each year during their growing season
Inspection Requirement	<p>Each Woodland Area asset shall be inspected by a landscape specialist inspector and an overall assessment of its condition and any Defects present shall be noted.</p> <p>Any potential for landscape opportunities shall also be noted for inclusion in the schedule of landscape opportunities.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be recorded and the inventory updated following each Inspection.</p>
Inspection Records	On completion of each Inspection a Condition Rating shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item. Where the asset has been rated as Condition Rating D, at least one Defect shall also be recorded.
Comments	The growing season for Woodland assets shall be considered to be from April through to September.

Woodland - Specialist Arborist Inspection

Inspection Name	Woodland - Specialist Arborist Inspection
Inspection Group	Landscape - Specialist Arborist

Inspection Interval	During the growing season at intervals not exceeding 5 years
Inspection Requirement	<p>The Arborist Inspections shall include all mature trees within Woodland areas and include any such trees that may impact the trunk road area (i.e. where the tree is within falling distance of the carriageway or where a branch/limb may fall onto the carriageway/footway or otherwise impact land within the trunk road boundary. Mature trees shall mean any tree in the region of 10 m in height or above and/or 15 years old or more, but the Arborist Inspection must consider any tree where failure of the whole tree or a part of it could realistically significantly impact the road network, its users and/or those managing operations.</p> <p>The main purpose of the inspections is to determine the condition of the trees within the Woodland areas and any risk they may pose to the public, the network and/or its users.</p> <p>Each Woodland Area shall be inspected by a suitably qualified Arborist approved by the Director. The inspection shall record the condition of all mature trees, including any Defects and advice for remedial and urgent Operations or Works. A report shall be submitted to the Director within 4 weeks of the completion of the Arborist Inspection detailing the results of the inspection and any recommendations.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against each inventory item along with a date/time stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape improvement/development shall be recorded against each inventory item and included in the Tree Management Strategy and Tree Management Plan.
Comments	<p>For the purposes of the Woodland Area Inspection KPI, the growing season shall be considered to be from April through to September.</p> <p>The following data should be collated during each inspect (this is not an exhaustive list):</p> <ul style="list-style-type: none"> • Species and reference • Physical attributes • General health including any indication of disease • Consideration of growth pattern and risk of failure (relevant to tree species and situation) • Visual evidence of structural Defects or physical damage • Any indication of stress or die-back • Any concerns related to tree location and the general public • Evidence of the effects of detrimental ground conditions • Evidence of the effects of exposure • Evidence of the effects of any recent circumstantial changes

Woodland - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection

Inspection Name	Woodland - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Group	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection
Inspection Interval	Each year between September to end of February each year
Inspection Requirement	<p>Between September and the end of February each year the full extents of the network shall be inspected to identify any vegetation which may develop during the coming growing season with the potential to detrimentally effect the road envelope visibility. This shall include vegetation encroaching upon or otherwise effecting:</p> <ul style="list-style-type: none"> • the forward visibility of drivers and other road users,

	<ul style="list-style-type: none"> the sight lines for traffic signs, bollards and other road infrastructure, the sight lines for junctions, accesses, bends etc. or the carriageway, footway, cycleway <p>Any identified vegetation shall be recorded for remedial action by the "Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance" Cyclic Maintenance Operations and shall be completed before the end of March in the same period.</p> <p>During each Inspection the accuracy of the Inventory shall be assessed with any errors or omissions corrected. The extents of landscape assets can change over time and any changes to the extents must be updated during each Inspection.</p>
Inspection Records	The Inspection record shall be recorded against the Network Referencing in the form of a breadcrumb trail of GPS co-ordinates and date/time/user stamps. Any Defects shall be recorded against the relevant inventory item.
Comments	The aim of this inspection and associated Cyclic Maintenance Operation is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured or driver visibility is compromised. It is important that the required Cyclic Maintenance is carried out before the commencement of the bird nesting season each year. When remedial maintenance is identified it is expected, where practicable and without having a detrimental impact on the local landscape character or any important landscape features, that the relevant vegetation be trimmed back sufficiently to allow several years growth before trimming would be required again in accordance with clause 4.3.3.2 of this Manual.

Woodland - Landscape Opportunity Inspection - Landscape Architect

Inspection Name	Woodland - Landscape Opportunity Inspection - Landscape Architect
Inspection Group	Landscape Opportunity Inspection - Landscape Architect
Inspection Interval	Each Annual Period
Inspection Requirement	<p>The landscape Architect shall visit and inspect all parts of the Network during each Annual Period. Each visit to each part of the network should be carried out at a different time of year so that the Unit can be seen at all stages of the growing season.</p> <p>This Inspection may be carried out as a driven Inspection but with a more detailed Inspection of all potential Landscape Opportunities identified by this and other Inspections being carried out on foot. All potential Landscape Opportunities shall be reviewed for inclusion in the schedule of landscape opportunities, the Tree Management Strategy and, potentially, the Tree Management Plan.</p>
Inspection Records	On completion of each Inspection an inspection record shall be recorded against the network along with a GPS breadcrumb trail date/time & User stamp. Any Defects shall be recorded and associated with the relevant inventory item. Notes for any landscape opportunities shall be recorded against each inventory item.

Defects

Condition Rating

Woodland - Condition Rating

Condition	Description
A - Excellent	Not Applicable

Condition	Description
B - Good	Asset is healthy, growing well and free from defects.
C - Fair	Asset is generally healthy and growing reasonably well although there are signs of minor damage/decay.
D - Poor	Asset is showing significant signs of decay or damage, or is dead/dying. Asset close to or encroaching into sightlines.
E - Very Poor	Not applicable
R - Routine Maintenance	Not applicable

Maintenance

Cyclical Maintenance Activities

Woodland - Establishment of new

Cyclic Maintenance Name	Woodland - Establishment of new
Cyclic Maintenance Operation Interval	At intervals not exceeding 12 months
Cyclic Maintenance Operation Requirement	Woodland planted as part of the Contract will automatically be subject to a 3 year establishment maintenance period in accordance with Schedule 5 Specification Clause 3006, 3007 and 3009. Outwith this period and up to the age of 5 years old, each Woodland area shall be maintained in accordance with Schedule 5 Specification Clause 3009.
Cyclic Maintenance Operation Records	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item along with a date/time stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • activities not undertaken and the reasons why • any dead, damaged, missing or otherwise Defective trees • weed development observations and any signs of animal browsing • observations regarding tree support performance (stakes, ties and shelters) • any tree re-firming requirements • Any other notes <p>Any Defects noted shall also be recorded against the relevant inventory item.</p>
Comments	This Operation applies to Woodland where the "Age Category" field as "New".

Woodland - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance

Cyclic Maintenance Name	Woodland - Road Signs, Visibility Sightlines and Encroaching Vegetation Maintenance
Cyclic Maintenance Operation Interval	As necessary

<p>Cyclic Maintenance Operation Requirement</p>	<p>All:</p> <ul style="list-style-type: none"> • sightlines and forward visibility areas; • road signs and; • areas with Encroaching Vegetation that may cause difficulties for maintenance operations, such grass cutting adjacent to the carriageway, the inspection of barriers, cabinets and other equipment etc. and/or the management of other elements of network infrastructure, such as lighting and roadside cameras etc <p>shall be treated and/or cut back by the Operating Company to maintain forward visibility, prevent signs etc being obscured or to maintain safe access to equipment. Such areas shall be as defined in the inventory or that required to maintain minimum forward visibility as specified in TD 26/17. The Operating Company shall comply with section 4 of this Manual.</p> <p>Visibility splays and the like shall be cut in accordance with Schedule 5 Specification Clause 3002, 3006, 3007, 3009 & 3010 and Appendix 30/7.</p> <p>For avoidance of doubt this cyclic maintenance activity affects all Woodland age categories.</p>
<p>Cyclic Maintenance Operation Records</p>	<p>On completion of each maintenance Operation a record shall be recorded against each inventory item and any associated Defects along with a date/time/user stamp along with any relevant notes. Relevant notes may include:</p> <ul style="list-style-type: none"> • Potential landscape opportunities (see 4 of this Manual) • Asset Shape not matching cut areas. • Any other notes <p>Any additional Defects noted shall also be recorded against the relevant inventory item.</p>
<p>Comments</p>	<p>The aim of this Cyclic Maintenance Operation and associated Inspection Operation (Road Envelope Visibility Inspections) is to ensure that vegetation on the network is actively maintained and preventative trimming is carried out before assets are obscured and to ensure preventative maintenance is carried out before the bird nesting season each year. When maintenance is carried out it is expected that trimming of vegetation should be trimmed back far enough to allow several years growth before trimming would be required again.</p>

Appendix A Acronyms and Supporting Documents

A.1 Table of Acronyms

A.2 Supporting Documents

- Transport Scotland Contract for Management and Maintenance of the Scottish Trunk Road Network, Transport Scotland.
- Transport Scotland Trunk Road Inventory Manual.
- Transport Scotland Trunk Road Inspection Manual.
- HD41/03 Maintenance of Highway Geotechnical Assets, Design Manual for Roads and Bridges, Volume 4, Section 1, Chapter 3 Risk Assessment of Geotechnical Features.
- TD26/07 Inspection and Maintenance of Road Markings and Road Studs on Motorways and All-Purpose Trunk Roads, Design Manual for Roads and Bridges, Volume 8, Section 2, Part 2.
- TD19/06 Requirement for Road Restraint Systems, Design Manual for Roads and Bridges, Volume 2, Section 2, Part 8.
- TD23/99 Trunk Roads and Trunk Road Motorways Inspection and Maintenance of Road Lighting, Design Manual for Roads and Bridges, Volume 8, Section 3.
- TD25/01 Inspection and Maintenance of Traffic Signs on Motorway and All- Purpose Roads, Design Manual for Roads and Bridges, Volume 8 Section 2.
- Institute of Lighting Engineers Technical Report 22, 2002.
- BS EN 1436: 1998: Road marking materials – Road marking performance for road users.
- BS 7671: 2008: Requirements for electrical installations, IEE Wiring Regulations.
- Institute of Lighting Engineers Technical Report 22, Third Edition. Reference TD24 & TD25.

Appendix B Pavement Surface Identification

HRA (Hot Rolled Asphalt)

Hot rolled asphalt was the predominant surfacing material for UK main roads until about 1995. It is essentially a gap-graded material composed of coarse aggregate surrounded by a mixture or mastic of bitumen, sand and very fine material (filler). The strength is largely derived from the stiffness of the matrix for its mechanical stability, whereas coated macadam derives its strength from the mechanical interlock of the constituents.

Pre-coated high polished stone value (PSV) chippings are applied to the hot-laid material and rolled in to form a skid resistant surface. They are therefore referred to as positive texture materials. Individual chippings and the smooth asphalt layer are both seen.

Anti-Skid Surface

Also known as High Friction Surfacing, this is a veneer treatment at locations where high resistance to skidding is required such as approaches to traffic signals, crossings, on bends or where high braking may occur. The systems comprise a resin binder which also acts as an adhesive for the fine single sized calcined bauxite aggregate. This is very hard and has a high PSV.

The Anti-Skid Surface is applied hot as a sprayed film of resin into which the aggregate is spread or as a mixture which includes the aggregate screeded onto the existing surface in bands. It is usually grey or natural buff colour but may be coloured through the pigmentation of the binder and coating of the aggregate.

Surface Dressing

Traditionally known as "Tar and Chip" it is an economical treatment to seal the surface against water ingress and restore skidding resistance. The purpose of surface dressing is to create a stable mosaic of chippings securely attached to the road surface. It does not improve structural strength. Bitumen, usually in the form of an emulsion, is sprayed onto the road surface at an appropriate rate from the spray bar at the rear of a large tanker containing the bitumen emulsion. Chippings of an appropriate size are immediately applied to the bitumen by a large spreader, which usually tows behind it a lorry containing the chippings.

Bituminous Macadam

Bituminous macadam, also known as Asphaltic Concrete, depends primarily on a well-graded aggregate and the mechanical interlock for its strength, using the bitumen as a binder. They are generally used on lightly trafficked or urban roads and may be open or close graded. The close graded materials may have a smooth overall surface with little texture although this will generally increase over the life of the material.

Concrete

Concrete pavements may be either reinforced or unreinforced. They have regular length bays with transverse joints (at 25-30m spacing for reinforced and 4-6m spacing for Unreinforced). They are extremely durable and many are still in service as a concrete surface after 40 or 50 years. However they generally generate more traffic noise than bituminous pavements and for that reason cannot now be laid without a bituminous surface course.

Slurry Seal and Microasphalt

Slurry seals are cold mixed materials based on bitumen emulsion, crushed rock aggregate, cement, water and a break-control additive. They can be either hand mixed for use on footways, or machine mixed for carriageway application. It is rapid setting even at low temperatures. In most situations the surface and surroundings will be fully operational and clean within a few hours. It leaves no loose chippings and will not fat or bleed in hot weather. Microasphalt is slurry containing coarse aggregate (up to 6mm) to enable a thicker application.

The materials can be made relatively stiff so that they will regulate rutting and trench reinstatements and can be used on all flexible footways and moderately heavily trafficked roads.

Thin Surface Course Systems (TSCS)

Thin Surface Course Systems are all proprietary materials, i.e. they will all be sold as a brand named product, and will have received approval from the British Board of Agrément under HAPAS. They have replaced the more traditional hot rolled asphalt wearing course as the standard material for all new construction and maintenance work on UK trunk road networks.

They are open graded materials, have a negative texture and are composed entirely of high PSV aggregate. The open grading reduces the noise generated by vehicle tyres on this surface and for this reason are sometimes referred to as quieter surfacing. They derive their strength from the mechanical interlock of the constituents in a similar way to coated macadam, but their very open texture can result in extremely rapid failure once the fine particles start to fret away.

TSCS were derived from Stone Mastic Asphalts (SMA) which originated in Germany and are made and laid in the same way as the more common coated macadam. However TSCS are not SMA and these materials have no specification in the UK.

Appendix C Traffic Sign Guidance

C.1 Traffic Signs Schedule

The page reference to locate various types of traffic signs in the Traffic Signs and Regulations and General Directions (TSRGD) 2002 manual is given in the table below.

C.2 Warning Sign Examples



501

Junction head controlled by a diagram 601.1 ("STOP") or diagram 602 ("GIVE WAY") sign



502

Distance to a junction ahead controlled by a diagram 601.1 ("STOP") sign



503

Distance to a junction ahead controlled by a diagram 602 ("GIVE WAY") sign



504.1

Crossroads ahead



600
(750)
(900)
(1200)
(1500)



512

Bend ahead

600
(750)
(900)
(1200)
(1500)



512

Double bend or series of bends,
first to the left

600
(900)
(1200) 200
(300)
(400)



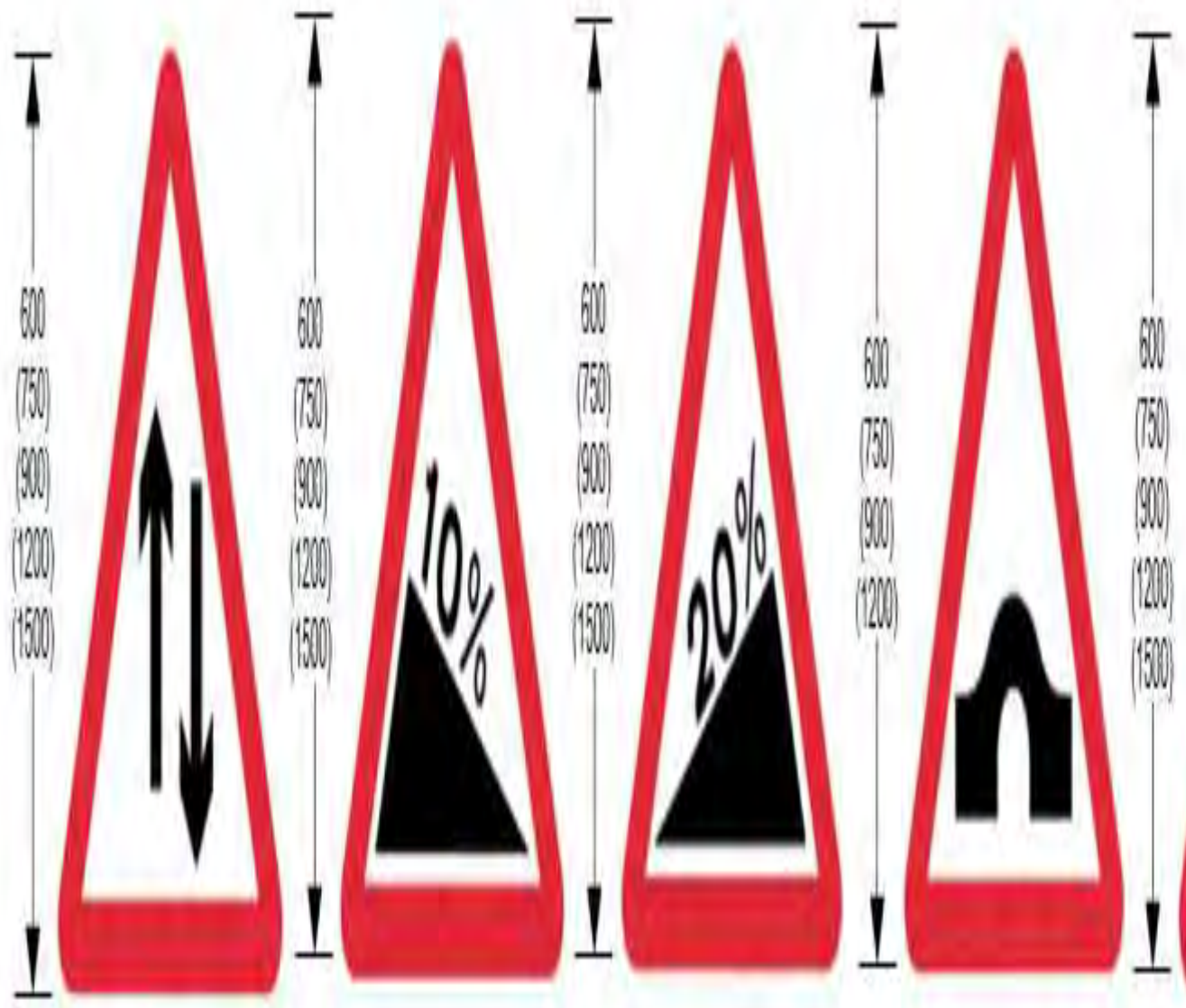
515

Sharp deviation of route

600
(750)
(900)
(1200)
(1500)



Road narrows



521

Two way traffic

523.1

Steep hill downwards ahead

524.1

Steep hill upwards ahead

528

Hump bridge ahead

C.3 Regulatory Sign Examples



750
(900)
(1200)

601.1

Vehicular traffic must comply with the requirements prescribed in regulation 16



600
(750)
(900)
(1200)
(1500)

602

Vehicular traffic must comply with the requirements prescribed in regulation 16



(270)
(300)
(450)
600
(750)
(900)
(1200)
(1500)

606

Vehicular traffic must proceed in the direction indicated by the arrow



608

Dual carriageway

(270)
(300)
(450)
600
(750)
(900)
(1200)
(1500)



610

Vehicular traffic must comply with the requirements prescribed in regulation 15

(450)
600
(750)
(900)
(1200)
(1500)



622.1A

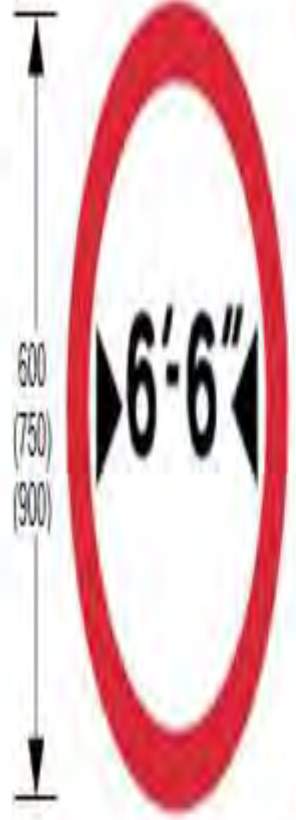
Goods vehicles exceeding the maximum gross weight indicated on the goods vehicle symbol prohibited



626.2A

Vehicles exceeding the maximum gross weight indicated prohibited from crossing the bridge or other structure

(60)
80
(100)
(120)
(450)
600
(750)
(900)



629

Vehicles exceeding width indicated prohibited

600
(750)
(900)

Vehicles exceeding



(300)
(450)
600
(750)
(900)
(1200)
(1500)

670

Maximum speed limit in miles per hour



(450)
600
(750)
(900)
(1200)
(1500)

671

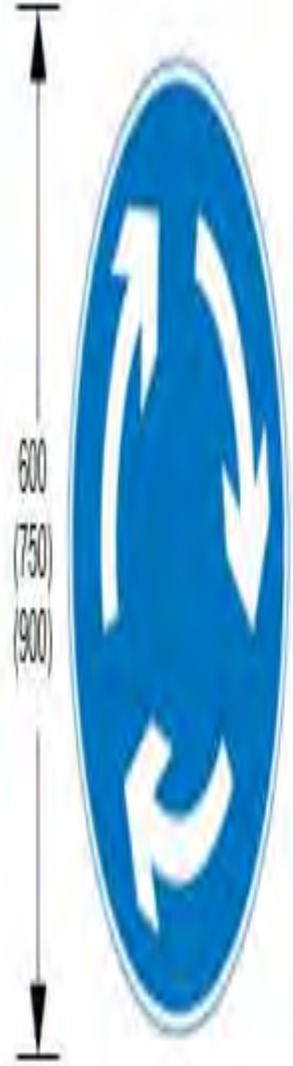
National speed limits apply



(300)
(450)
600
(750)
(900)

672

Maximum speed limits in miles per hour



600
(750)
(900)

611.1

Vehicles entering the junction must comply with the requirements prescribed in regulation 16



270
(300)
(450)
600
(750)
(900)
(1200)

No rig

C.4 Information Sign Examples



62.5
(75)
(100)
(125)

818

Section of dual carriageway road begins directly ahead



250 min
400 max

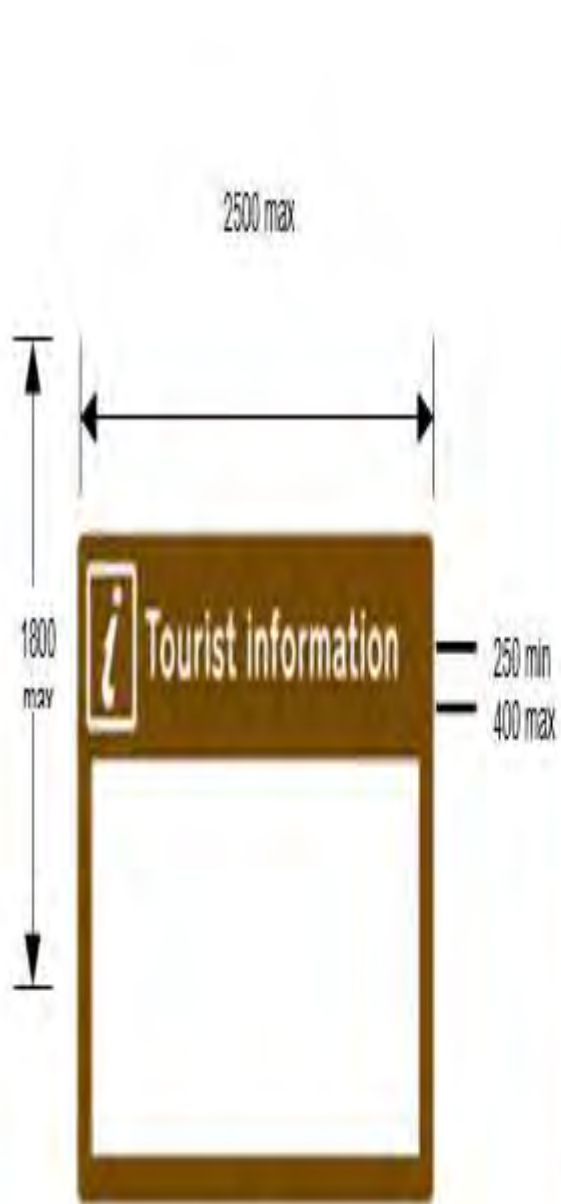
820.1

Absence of hard shoulder for the distance shown



823

Distance in hund



857

Information for pedestrians about tourist attractions and facilities in a nearby place or area



868

Additional traffic lane joining from the left ahead



868.1

Additional traffic lane joining from the right ahead



Additional traffic lane joining from the right ahead. The priority of the main road is indicated by a blue background.



875

Additional traffic lanes joining from the right ahead. Traffic in the right hand lane of the slip road has priority over traffic in the left hand lane.

(240) (320)
400 (480)



872

The number of traffic lanes ahead on a dual carriageway road or a one-way street reduces from three to two. Traffic in the right hand lane must move into the lane on the immediate left.

150 (200)
(250) (300)



900
(1200)
(1500)
(1800)

877

Appropriate traffic lanes for different manoeuvres at a junction

150 (200)
(250) (300)



645
(860)
(1075)
(1290)



200 min
1000 max



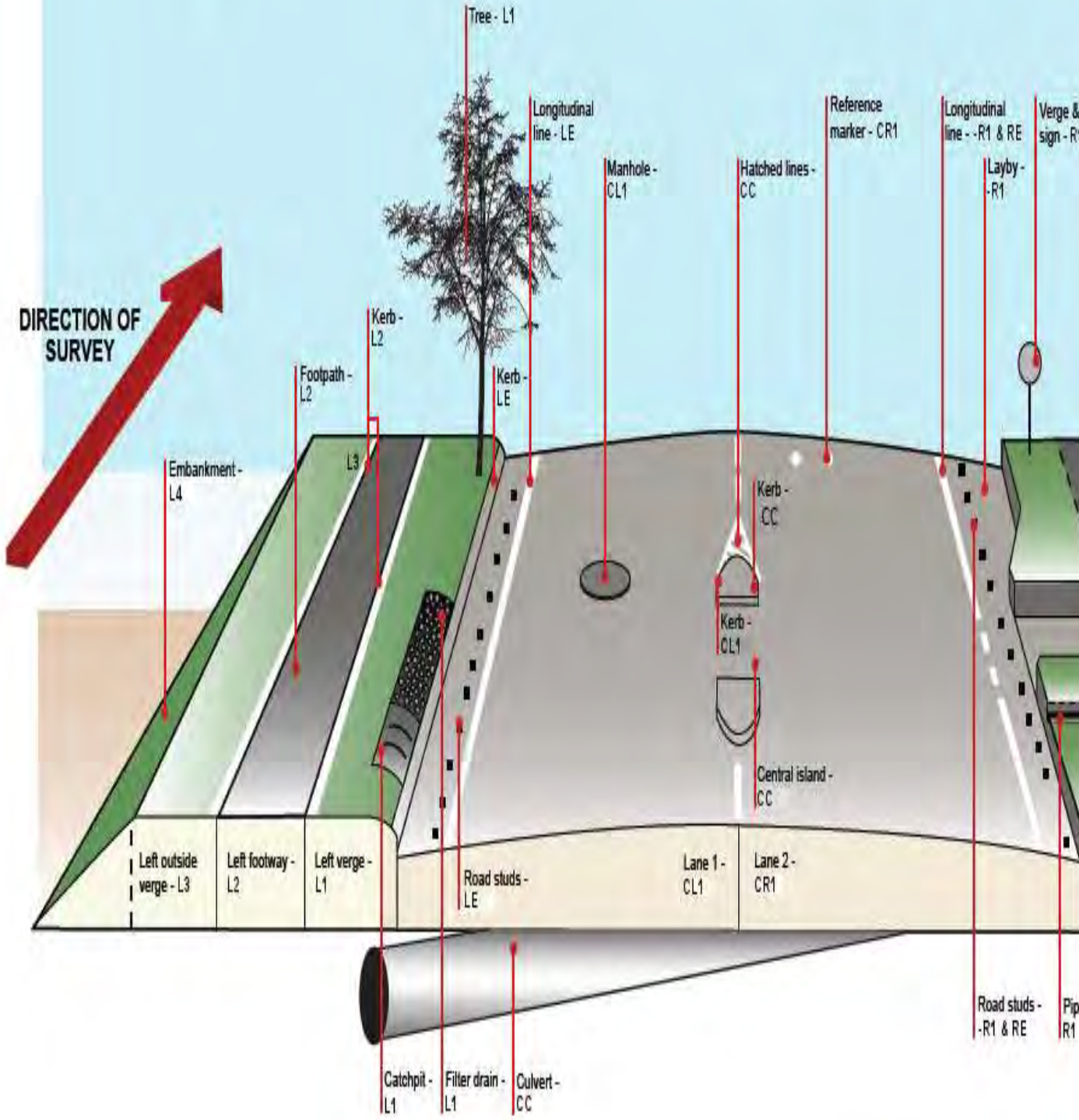
200 min
1000 max

878

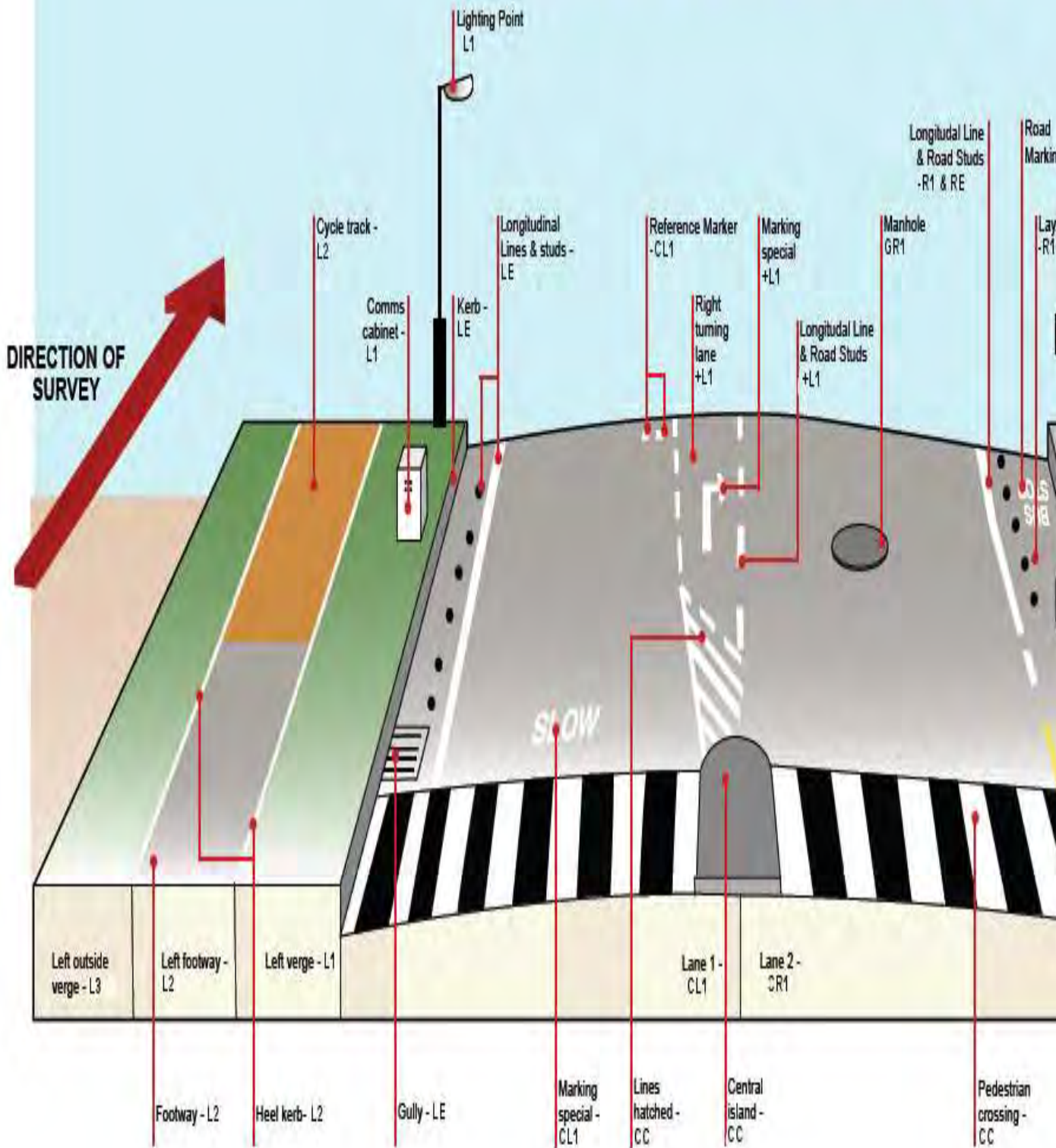
Area in which cameras are used to enforce traffic light signal regulations (Alternative types)

Appendix D XSP Examples

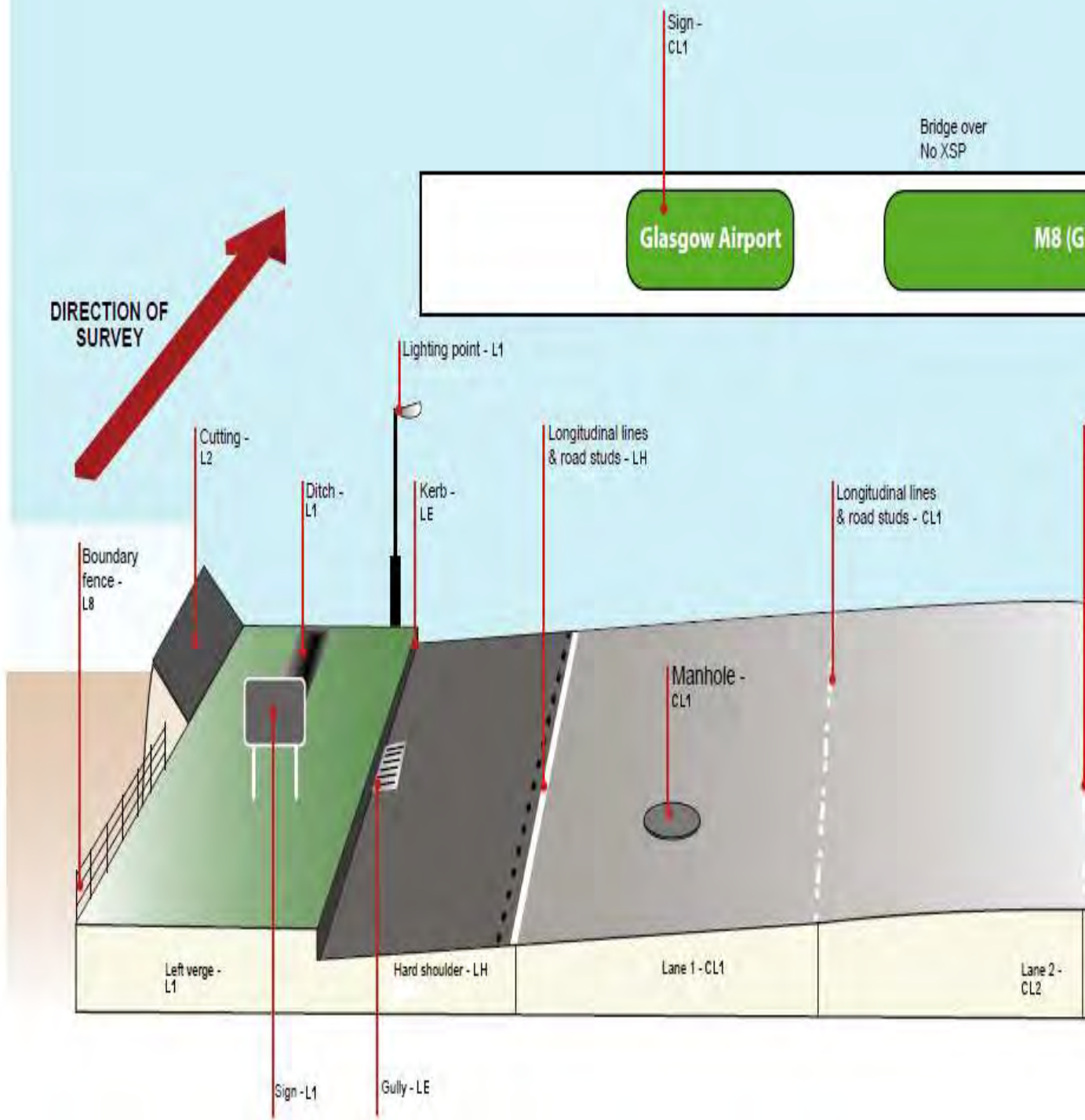
All Purpose - Rural section



All-purpose Urban section



Lit Motorway Section



Appendix E Electrical Safety at Site

1. The Operating Company (OC) shall ensure all personnel at the site are familiar with the Equipment, the Equipment installed, any modifications and/or changes in configuration of the Equipment and the layout of mains power supply, such as methods of isolation, termination and distribution.
2. The Operating Company shall ensure the requirements for any special equipment or Works Site specific to health and safety precautions and welfare are adhered to. These requirements may include the possession of a Permit to Work certificate.
3. The Operating Company shall ensure any necessary interruption of supply to any Equipment has the prior agreement of Traffic Scotland and the appropriate Contracted Third Party or Parties.
4. The Operating Company shall ensure the availability of all required tools, including equipment for gaining access to the site that includes appropriate electrical keys.
5. The Operating Company shall ensure all personnel prior to attending the site, are fully aware of the consequential effects that could arise from defects of any Equipment at the site.
6. The Operating Company shall ensure all personnel are aware of the consequences of failing to conform to any applicable Electrical Regulations.
7. The Operating Company shall ensure inspection and testing works are co-ordinated with other centres, offices or organisations, where appropriate. The Operating Company shall ensure prior arrangement and agreements are in place before entering other premises that include Equipment.
8. The Operating Company shall prepare and have in use by their personnel all appropriate Method Statements, Work Procedures and similar documents covering, inter alia, safe access and safe working on site. Where required by the Contract such Method Statements and Work Procedures shall incorporate guidance as contained within LDS ('Lighting Documents Scotland') and similar issued Transport Scotland documents.

Appendix F Inspection Checklists

F.1 Geotechnical Assets - Condition Checklist

F.1.1 Earthwork Slope - Condition Checklist

Earthwork Slope - Condition Inspection Checklist

On Site Inspection Elements

Slope

Tick any of the following defects present. If present complete all further options.

- Terracettes?
If Terracettes defect ticked
Terracettes - Severity Terracettes - Proportion of asset
- Bulge near or parallel to toe?
If bulge defect ticked
Bulge - Severity Bulge - Proportion of asset
- Leaning trees/posts?
If Leaning defect ticked
Leaning trees/posts - Severity Leaning trees/posts - Proportion of asset
- Misaligned linear features (kerbs, fence lines, conduits etc.)?
If Misaligned linear features defect ticked
Misaligned linear features - Severity Misaligned linear features - Proportion of asset
- Tension crack?
If Tension crack defect ticked
Tension crack - Severity Tension crack - Proportion of asset
- Shallow Slide (fresh headscar on slope, less than 1m deep; displaced toe)?
If Shallow Slide defect ticked
Shallow Slide - Severity Shallow Slide - Proportion of asset
- Deep Slide (fresh headscar on slope, less than 1m deep; displaced toe)?
If Deep Slide defect ticked
Deep Slide - Severity Deep Slide - Proportion of asset
- Debris Flow (fresh head erosion; channelised path; toe spread)?
If Debris Flow defect ticked.

Debris Flow - Severity Debris Flow - Proportion of asset

Other Erosion (fresh soil/rock exposed)?
If Other Erosion ticked.

Other Erosion - Severity Other Erosion - Proportion of asset

Evidence of historical instability (weathered headscar, overgrown toe etc.)?
If Evidence of historical instability ticked.

Evidence of historical instability - Severity Evidence of historical instability - Proportion of asset

Animal burrows?
If Animal burrows ticked.

Animal burrows - Severity Animal burrows - Proportion of asset

Undercutting?
If Undercutting ticked.

Undercutting - Severity Undercutting - Proportion of asset

Subsidence?
If Subsidence ticked.

Subsidence - Severity Subsidence - Proportion of asset

Other deformation or notes?
If Other ticked.

Other deformation and/or notes

Water

Tick any of the following defects present. If present complete all further options.

Damp areas ?
If Damp areas defect ticked

Damp areas - Severity Damp areas - Proportion of asset

Marsh vegetation (reeds, sphagnum moss etc.)?
If Marsh vegetation defect ticked

Marsh vegetation - Severity Marsh vegetation - Proportion of asset

Seepage?
If Seepage defect ticked

Seepage - Severity Seepage - Proportion of asset

Flow?
If Flow defect ticked

Flow - Severity Flow - Proportion of asset

Flood?
 If Flood defect ticked
 Flood - Severity Flood - Proportion of asset

Rills (less than 100mm deep)?
 If Rills defect ticked
 Rills - Severity Rills - Proportion of asset

Gullies (less than 100mm deep)?
 If Gullies defect ticked
 Gullies - Severity Gullies - Proportion of asset

Vegetation

Tick any of the following vegetation present. If present complete all further options.

Bare ground?
 If Bare ground ticked
 Bare ground - Proportion of asset

Grass/wildflowers?
 If Grass/wildflowers ticked
 Grass/wildflowers - Proportion of asset

Scrub/heather/bracken?
 If Scrub/heather/bracken ticked
 Scrub/heather/bracken - Proportion of asset

Shrubs?
 If Shrubs ticked
 Shrubs - Proportion of asset

Trees (submature)?
 If Trees (submature) ticked
 Trees (submature) - Proportion of asset

Trees (mature)?
 If Trees (mature) ticked
 Trees (mature) - Proportion of asset

Felled trees?
 If Felled trees ticked
 Felled trees - Proportion of asset

Uprooted Trees ?
 If Uprooted Trees defect ticked
 Uprooted Trees - Severity Uprooted Trees - Proportion of asset

Disturbance

Tick any of the following defects present. If present complete all further options.



Excavation at Crest?

If Excavation at Crest defect ticked

Excavation at Crest - Severity Excavation at Crest - Proportion of asset



Excavation on Slope?

If Excavation on Slope defect ticked

Excavation on Slope - Severity Excavation on Slope - Proportion of asset



Excavation at Toe?

If Excavation at Toe defect ticked

Excavation at Toe - Severity Excavation at Toe - Proportion of asset



Deposition of material at Crest?

If Deposition of material at Crest defect ticked

Deposition of material at Crest - Severity Deposition of material at Crest - Proportion of asset



Deposition of material on Slope?

If Deposition of material on Slope defect ticked

Deposition of material on Slope - Severity Deposition of material on Slope - Proportion of asset

On Site Conclusion

Any additional Comment Inspector Name: Date/time:

Desktop Review Elements

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

Asset Condition

Overall asset Condition

Next Condition Inspection Interval

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

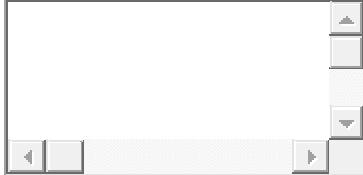
Inspection Interval:

Special Inspection and Maintenance Requirements


Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements



Desktop Review Conclusion



Any additional Comment Date/time: Principal Engineer Name:

F.1.2 Land Slope - Condition Checklist

Land Slope - Condition Inspection Checklist

On Site Inspection Elements

Slope

Tick any of the following defects present. If present complete all further options.

Terracettes?
If Terracettes defect ticked
Terracettes - Severity: Terracettes - Proportion of asset:

Hummocky/irregular profile?
If Hummocky/irregular profile defect ticked
Hummocky/irregular profile - Severity: Hummocky/irregular profile - Proportion of asset:

Bulge near or parallel to toe?
If bulge defect ticked
Bulge - Severity: Bulge - Proportion of asset:

Leaning trees/posts?
If Leaning defect ticked

Leaning trees/posts - Severity Leaning trees/posts - Proportion of asset

Misaligned linear features (kerbs, fence lines, conduits etc.)?
If Misaligned linear features defect ticked

Misaligned linear features - Severity Misaligned linear features - Proportion of asset

Tension crack?
If Tension crack defect ticked

Tension crack - Severity Tension crack - Proportion of asset

Shallow Slide (fresh headscar on slope, less than 1m deep; displaced toe)?
If Shallow Slide defect ticked

Shallow Slide - Severity Shallow Slide - Proportion of asset

Deep Slide (fresh headscar on slope, less than 1m deep; displaced toe)?
If Deep Slide defect ticked

Deep Slide - Severity Deep Slide - Proportion of asset

Debris Flow (fresh head erosion; channelised path; toe spread)?
If Debris Flow defect ticked.

Debris Flow - Severity Debris Flow - Proportion of asset

Other Erosion (fresh soil/rock exposed)?
If Other Erosion ticked.

Other Erosion - Severity Other Erosion - Proportion of asset

Evidence of historical instability (weathered headscar, overgrown toe etc.)?
If Evidence of historical instability ticked.

Evidence of historical instability - Severity Evidence of historical instability - Proportion of asset

Animal burrows?
If Animal burrows ticked.

Animal burrows - Severity Animal burrows - Proportion of asset

Undercutting?
If Undercutting ticked.

Undercutting - Severity Undercutting - Proportion of asset

Subsidence?
If Subsidence ticked.

Subsidence - Severity Subsidence - Proportion of asset

Large Boulders >0.5m?
If Large Boulders >0.5m ticked.

Large Boulders >0.5m - Severity Large Boulders >0.5m - Proportion of asset

Old Track?
If Old Track ticked.

Old Track - Severity Old Track - Proportion of asset

Freshly-Constructed/maintained Track?
If Freshly-Constructed/maintained Track ticked.

Freshly-Constructed/maintained Track - Severity Freshly-Constructed/maintained Track -
Proportion of asset

Other deformation or notes?
If Other ticked.

Other deformation and/or notes

Water

Tick any of the following defects present. If present complete all further options.

Damp areas ?
If Damp areas defect ticked

Damp areas - Severity Damp areas - Proportion of asset

Marsh vegetation (reeds, sphagnum moss etc>)?
If Marsh vegetation defect ticked

Marsh vegetation - Severity Marsh vegetation - Proportion of asset

Seepage?
If Seepage defect ticked

Seepage - Severity Seepage - Proportion of asset

Flow?
If Flow defect ticked

Flow - Severity Flow - Proportion of asset

Flood?
If Flood defect ticked

Flood - Severity Flood - Proportion of asset

Desiccation cracks?
If Desiccation cracks defect ticked

Desiccation cracks - Severity Desiccation cracks - Proportion of asset

Rills (less than 100mm deep)?
If Rills defect ticked

Rills - Severity Rills - Proportion of asset

Gullies (less than 100mm deep)?
If Gullies defect ticked

Gullies - Severity Gullies - Proportion of asset

Channels (permanent flow)?

If Channels defect ticked

Channels - Severity Channels - Proportion of asset

Ponds?

If Ponds defect ticked

Ponds - Severity Ponds - Proportion of asset

Vegetation

Tick any of the following vegetation present. If present complete all further options.

Bare ground?

If Bare ground ticked

Bare ground - Proportion of asset

Grass/wildflowers?

If Grass/wildflowers ticked

Grass/wildflowers - Proportion of asset

Scrub/heather/bracken?

If Scrub/heather/bracken ticked

Scrub/heather/bracken - Proportion of asset

Shrubs?

If Shrubs ticked

Shrubs - Proportion of asset

Trees (submature)?

If Trees (submature) ticked

Trees (submature) - Proportion of asset

Trees (mature)?

If Trees (mature) ticked

Trees (mature) - Proportion of asset

Felled trees)?

If Felled trees ticked

Felled trees - Proportion of asset

Uprooted Trees ?

If Uprooted Trees defect ticked

Uprooted Trees - Severity Uprooted Trees - Proportion of asset

Peat moss?

If Peat moss defect ticked

Peat moss - Proportion of asset

Disturbance

Tick any of the following defects present. If present complete all further options.

Excavation at Crest?
If Excavation at Crest defect ticked
Excavation at Crest - Severity Excavation at Crest - Proportion of asset

Excavation on Slope?
If Excavation on Slope defect ticked
Excavation on Slope - Severity Excavation on Slope - Proportion of asset

Excavation at Toe?
If Excavation at Toe defect ticked
Excavation at Toe - Severity Excavation at Toe - Proportion of asset

Deposition of material at Crest?
If Deposition of material at Crest defect ticked
Deposition of material at Crest - Severity Deposition of material at Crest - Proportion of asset

Deposition of material on Slope?
If Deposition of material on Slope defect ticked
Deposition of material on Slope - Severity Deposition of material on Slope - Proportion of asset

Desktop Review Elements

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

Asset Condition

Overall asset Condition

Next Condition Inspection Interval

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

Special Inspection and Maintenance Requirements

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements

Desktop Review Conclusion

Any additional Comment
Date/time:

Principal Engineer Name:

F.1.3 Rock Slope - Condition Checklist

Rock Slope - Condition Inspection Checklist

On Site Inspection Elements

Slope

Tick any of the following defects present. If present complete all further options.

Irregular Profile (relief >1m)?

If Irregular Profile defect ticked

Irregular Profile - Severity Irregular Profile - Proportion of asset

Overhang?

If Overhang defect ticked

Overhang - Severity Overhang - Proportion of asset

Open joints?

If Open joints defect ticked

Open joints - Severity Open joints - Proportion of asset

Displaced blocks on face?

If Displaced blocks on face defect ticked

Displaced blocks on face - Severity Displaced blocks on face - Proportion of asset

Erosion (fresh rock exposed)?

If Erosion ticked

Erosion - Severity Erosion - Proportion of asset

Rock slide (clear linked eroded area and toe)?
 If Rock slide defect ticked
 Rock slide - Severity Rock slide - Proportion of asset

Rock fall (clear debris at toe)?
 If Rock fall defect ticked
 Rock fall - Severity Rock fall - Proportion of asset

Ravelling (small (up to fist-size) stones loosening and falling)?
 If Ravelling defect ticked.
 Ravelling - Severity Ravelling - Proportion of asset

Weathering (discolouration/weakening along joints)?
 If Weathering Erosion ticked.
 Weathering - Severity Weathering - Proportion of asset

Water

Tick any of the following defects present. If present complete all further options.

Seepage?
 If Seepage defect ticked
 Seepage - Severity Seepage - Proportion of asset

Flow?
 If Flow defect ticked
 Flow - Severity Flow - Proportion of asset

Flood?
 If Flood defect ticked
 Flood - Severity Flood - Proportion of asset

Gullies ?
 If Gullies defect ticked
 Gullies - Severity Gullies - Proportion of asset

Channels (permanent flow)?
 If Channels defect ticked
 Channels - Severity Channels - Proportion of asset

Vegetation

Tick any of the following vegetation present. If present complete all further options.

Grass/wildflowers?
 If Grass/wildflowers ticked
 Grass/wildflowers - Proportion of asset

Scrub/heather/bracken?
 If Scrub/heather/bracken ticked
 Scrub/heather/bracken - Proportion of asset

Shrubs?

If Shrubs ticked

Shrubs - Proportion of asset

Trees (submature)?

If Trees (submature) ticked

Trees (submature) - Proportion of asset

Trees (mature)?

If Trees (mature) ticked

Trees (mature) - Proportion of asset

Felled trees)?

If Felled trees ticked

Felled trees - Proportion of asset

Uprooted Trees ?

If Uprooted Trees defect ticked

Uprooted Trees - Severity

Uprooted Trees - Proportion of asset

Root jacking (clear displacement of blocks by roots)?

If Root jacking defect ticked

Root jacking - Severity

Root jacking - Proportion of asset

Disturbance

Tick any of the following defects present. If present complete all further options.

Excavation at Crest?

If Excavation at Crest defect ticked

Excavation at Crest - Severity

Excavation at Crest - Proportion of asset

Excavation on Slope?

If Excavation on Slope defect ticked

Excavation on Slope - Severity

Excavation on Slope - Proportion of asset

Excavation at Toe?

If Excavation at Toe defect ticked

Excavation at Toe - Severity

Excavation at Toe - Proportion of asset

Deposition of material at Crest?

If Deposition of material at Crest defect ticked

Deposition of material at Crest - Severity

Deposition of material at Crest - Proportion of

asset

Deposition of material on Slope?

If Deposition of material on Slope defect ticked

Deposition of material on Slope - Severity Deposition of material on Slope - Proportion of asset

[Desktop Review Elements](#)

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

[Asset Condition](#)

Overall asset Condition

[Next Condition Inspection Interval](#)

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

[Rock Slope Hazard Index Inspection Required](#)

Based on the condition of the asset determine if Rock Slope Hazard Index Inspection (RSHI) Inspection needs to be initiated.

Initiate RSHI

RSHI initiation commentary

[Special Inspection and Maintenance Requirements](#)

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements

[Desktop Review Conclusion](#)

Any additional Comment Principal Engineer Name:
 Date/time:

F.1.4 SGM Anchors/Bolts/Dowels - Condition Checklist

SGM - Anchors/Bolts/Dowels - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
 If water seepage defect ticked
 Water Seepage - Severity Water Seepage - Proportion of asset
 Plant growth causing damage/displacement?
 If Plant growth causing damage/displacement defect ticked
 Plant growth - Severity Plant growth - Proportion of asset
 Debris accumulation ?
 If Debris accumulation defect ticked
 Debris - Severity Debris - Proportion of asset
 Other General Distress?
 If other ticked
 Other - Severity Other - Proportion of asset Other comment
 and notes.

Bar

Tick any of the following defects present. If present complete all further options.

Missing?
 If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Strand

Strand present?

If Strand present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Nuts

Nuts present?

If Nuts present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Faceplates

Faceplates present?

If Faceplates present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Other Components

Other Components present?

If Other Components present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Desktop Review Elements](#)

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

[Asset Condition](#)

Overall asset Condition

[Next Condition Inspection Interval](#)

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

[Special Inspection and Maintenance Requirements](#)

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements



[Desktop Review Conclusion](#)

Any additional Comment Principal Engineer Name:
 Date/time:

F.1.5 SGM Barrier Fencing System - Condition Checklist

SGM - Barrier Fencing System - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
 If water seepage defect ticked
 Water Seepage - Severity Water Seepage - Proportion of asset
 Plant growth causing damage/displacement?
 If Plant growth causing damage/displacement defect ticked
 Plant growth - Severity Plant growth - Proportion of asset
 Debris accumulation ?
 If Debris accumulation defect ticked
 Debris - Severity Debris - Proportion of asset
 Other General Distress?
 If other ticked
 Other - Severity Other - Proportion of asset Other comment
 and notes.

Foundation

Tick any of the following defects present. If present complete all further options.

Missing?
 If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Posts

Posts present?

If Posts present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Rails

Rails present?

If Rails present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Wires

Wires present?

If Wires present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Mesh

Mesh present?

If Mesh present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset



Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset



Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset



Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Ropes



Ropes present?

If Ropes present ticked

Tick any of the following defects present. If present complete all further options.



Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset



Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset



Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset



Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Anchors



Anchors present?

If Anchors present ticked

Tick any of the following defects present. If present complete all further options.



Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset



Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset



Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset



Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Fixings



Fixings present?

If Fixings present ticked

Tick any of the following defects present. If present complete all further options.



Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset



Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset



Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset



Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Desktop Review Elements

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

Asset Condition

Overall asset Condition

Next Condition Inspection Interval

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

Special Inspection and Maintenance Requirements

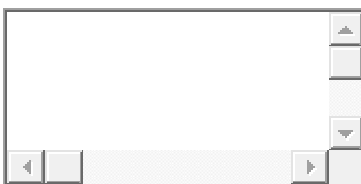
Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements



Desktop Review Conclusion

Any additional Comment  Principal Engineer Name:

Date/time:

F.1.6 SGM Debris Trap - Condition Checklist

SGM Debris Trap - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
If water seepage defect ticked
Water Seepage - Severity Water Seepage - Proportion of asset

Plant growth causing damage/displacement?
If Plant growth causing damage/displacement defect ticked
Plant growth - Severity Plant growth - Proportion of asset

Debris accumulation ?

If Debris accumulation defect ticked

Debris - Severity Debris - Proportion of asset

Other General Distress?

If other ticked

Other - Severity Other - Proportion of asset Other comment

and notes.

Desktop Review Elements

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

Asset Condition

Overall asset Condition

Next Condition Inspection Interval

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

Special Inspection and Maintenance Requirements

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements

Desktop Review Conclusion

Any additional Comment Principal Engineer Name:
Date/time:

F.1.7 SGM Granular Replacement - Condition Checklist

SGM Granular Replacement - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
If water seepage defect ticked

Water Seepage - Severity Water Seepage - Proportion of asset

Plant growth causing damage/displacement?
If Plant growth causing damage/displacement defect ticked

Plant growth - Severity Plant growth - Proportion of asset

Debris accumulation ?
If Debris accumulation defect ticked

Debris - Severity Debris - Proportion of asset

Other General Distress?
If other ticked

Other - Severity Other - Proportion of asset Other comment

and notes.

Lining

Lining Connectors present?
If Lining present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Rockfill

Rockfill present?
If Rockfill ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Reinforcement

Reinforcement present?
If Reinforcement present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Drainage

Drainage present?
If Drainage present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Other components

Other components present?
If Other components present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

F.1.8 SGM Reinforced Soil System - Condition Checklist

SGM Reinforced Soil System - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
If water seepage defect ticked

Water Seepage - Severity Water Seepage - Proportion of asset

Plant growth causing damage/displacement?
If Plant growth causing damage/displacement defect ticked

Plant growth - Severity Plant growth - Proportion of asset

Debris accumulation ?
If Debris accumulation defect ticked

Debris - Severity Debris - Proportion of asset

Other General Distress?
If other ticked

Other - Severity Other - Proportion of asset Other comment

and notes.

Reinforcement

Reinforcement present?
If Reinforcement ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Flexible

Facing-Flexible present?
If Facing-Flexible present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Gabion

Facing-Gabion present?
If Facing-Gabion present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Rigid

Facing-Rigid present?
If Facing-Rigid present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Connectors

Facing-Connectors present?
If Facing-Connectors present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Joints

Facing-Joints present?
If Facing-Joints present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Ropes

Ropes present?
If Ropes present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Drainage

Drainage present?
If Drainage present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Accessories/Other

Accessories/Other present?
If Accessories/Other present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity: Corroded/Decayed - Proportion of asset:

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity: Physically Damaged - Proportion of asset:

Displaced ?
If Displaced defect ticked

Displaced - Severity: Displaced - Proportion of asset:

Desktop Review Elements

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

Asset Condition

Overall asset Condition:

Next Condition Inspection Interval

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

Special Inspection and Maintenance Requirements

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements

Desktop Review Conclusion

Any additional Comment:

Date/time:

Principal Engineer Name:

F.1.9 SGM Rigid Support/Protection System - Condition Checklist

SGM Rigid Support/Protection System - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
If water seepage defect ticked

Water Seepage - Severity Water Seepage - Proportion of asset

Plant growth causing damage/displacement?
If Plant growth causing damage/displacement defect ticked

Plant growth - Severity Plant growth - Proportion of asset

Debris accumulation ?
If Debris accumulation defect ticked

Debris - Severity Debris - Proportion of asset

Other General Distress?
If other ticked

Other - Severity Other - Proportion of asset Other comment

and notes.

Foundation

Foundation present?
If Foundation present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Concrete

Concrete present?
If Concrete present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Masonry Units

Masonry Units present?
If Masonry Units present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Jointing](#)

Jointing present?
If Jointing present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Sheetpile](#)

Sheetpile present?
If Sheetpile present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Concrete pile

Concrete pile present?
If Concrete pile present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Crib

Crib present?
If Crib present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Gabion-cage

Gabion-cage present?
If Gabion-cage present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Gabion-Fill

Gabion-Fill present?
If Gabion-Fill present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[RipRap/Armourstone](#)

RipRap/Armourstone present?
If RipRap/Armourstone present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Structural steelwork](#)

Structural steelwork present?
If Structural steelwork present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Expansion Joints

Expansion Joints present?
If Expansion Joints present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Anchors

Anchors present?
If Anchors present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Connectors

Connectors present?
If Connectors present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Drainage

Drainage present?
If Drainage present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Accessories/Other](#)

Accessories/Other present?
If Accessories/Other present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Desktop Review Elements](#)

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

[Asset Condition](#)

Overall asset Condition

[Next Condition Inspection Interval](#)

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

Special Inspection and Maintenance Requirements

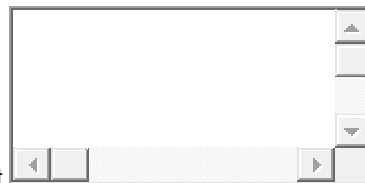
Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements



Desktop Review Conclusion



Any additional Comment
Date/time:

Principal Engineer Name:

F.1.10 SGM Rock Netting - Condition Checklist

SGM - Rock Netting - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.



Water seepage?

If water seepage defect ticked

Water Seepage - Severity

Water Seepage - Proportion of asset



Plant growth causing damage/displacement?

If Plant growth causing damage/displacement defect ticked

Plant growth - Severity

Plant growth - Proportion of asset



Debris accumulation ?

If Debris accumulation defect ticked

Debris - Severity Debris - Proportion of asset

Other General Distress?

If other ticked

Other - Severity Other - Proportion of asset Other comment

and notes.

[Facing-Mesh](#)

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Facing-Mesh Connectors](#)

Facing-Mesh Connectors present?

If Facing-Mesh Connectors present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset



Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Anchors-Crest](#)



Anchors-Crest Connectors present?

If Anchors-Crest present ticked

Tick any of the following defects present. If present complete all further options.



Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset



Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset



Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset



Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Anchors-Face](#)



Anchors-Face Connectors present?

If Anchors-Face present ticked

Tick any of the following defects present. If present complete all further options.



Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset



Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset



Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Anchors-Toe](#)

Anchors-Toe Connectors present?

If Anchors-Toe present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Ropes-Crest](#)

Ropes-Crest present?

If Ropes-Crest present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Ropes-Face](#)

Ropes-Face present?

If Ropes-Face present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Ropes-Toe](#)

Ropes-Toe present?

If Ropes-Toe present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Toe-Weigh

Toe-Weigh present?

If Toe-Weigh present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Accessories/Other

Accessories/Other present?

If Accessories/Other present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?
 If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Desktop Review Elements

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

Asset Condition

Overall asset Condition

Next Condition Inspection Interval

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

Special Inspection and Maintenance Requirements

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements

Desktop Review Conclusion

Any additional Comment Principal Engineer Name:

Date/time:

F.1.11 SGM Soil Nailing System - Condition Checklist

SGM Soil Nailing System - Condition Inspection Checklist

On Site Inspection Elements

General

Tick any of the following defects present. If present complete all further options.

Water seepage?
If water seepage defect ticked

Water Seepage - Severity Water Seepage - Proportion of asset

Plant growth causing damage/displacement?
If Plant growth causing damage/displacement defect ticked

Plant growth - Severity Plant growth - Proportion of asset

Debris accumulation ?
If Debris accumulation defect ticked

Debris - Severity Debris - Proportion of asset

Other General Distress?
If other ticked

Other - Severity Other - Proportion of asset Other comment

and notes.

Nails

Nails present?
If Nails present ticked

Tick any of the following defects present. If present complete all further options.

Missing?
If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?
If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?
If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Flexible

Facing-Flexible present?

If Facing-Flexible present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Facing-Rigid

Facing-Rigid present?

If Facing-Rigid present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Facing-Connectors](#)

Facing-Connectors present?

If Facing-Connectors present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Facing-Joints](#)

Facing-Joints present?

If Facing-Joints present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Ropes

Ropes present?

If Ropes present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

Drainage

Drainage present?

If Drainage present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Accessories/Other](#)

Accessories/Other present?

If Accessories/Other present ticked

Tick any of the following defects present. If present complete all further options.

Missing?

If Missing defect ticked

Missing - Severity Missing - Proportion of asset

Corroded/Decayed?

If Corroded/Decayed defect ticked

Corroded/Decayed - Severity Corroded/Decayed - Proportion of asset

Physically Damaged?

If Physically Damaged defect ticked

Physically Damaged - Severity Physically Damaged - Proportion of asset

Displaced ?

If Displaced defect ticked

Displaced - Severity Displaced - Proportion of asset

[Desktop Review Elements](#)

This section of the Inspection must be carried out and completed by a Principal Geotechnical Engineer or Principal Engineering Geologist along with the Inspector who carried out the On Site Inspection Element of the Inspection

[Asset Condition](#)

Overall asset Condition

[Next Condition Inspection Interval](#)

Based on the condition of the asset determine the future Condition Inspection interval. The Default and Maximum interval shall be 60 months (5 years). The Inspection interval for Poor or Very Poor condition assets may require reducing.

Inspection Interval:

[Special Inspection and Maintenance Requirements](#)

Based on the condition of the asset determine if any Special Inspection and/or Maintenance Requirements need to be added, changed or removed.

Ensure that any Special Inspection or Maintenance Requirements are added as assets to IRIS.

Commentary on any new or existing Special Inspection or Maintenance Requirements

Desktop Review Conclusion

Any additional Comment Date/time:

Principal Engineer Name:

F.2 VRRS Assets - Condition Checklist

F.2.1 VRRS Arrester Bed - Condition Checklist

VRRS - Arrester Bed - Condition Inspection Checklist

General

	Criteria	If to Specification or Visual Standard tick 'Yes', otherwise tick 'No' then state location and confirm degree of issue (i.e. measurement, no. missing items, extent of corrosion)	Visual Insp.	Measurement
1.1	<input type="checkbox"/> Does the arrester bed protect a hazard adequately? ??? How is this measured. Ask John Addy???	<input type="text"/>	x	√
1.2	<input type="checkbox"/> Is the surface free of wheel tracks & debris	<input type="text"/>	x	√
1.3	<input type="checkbox"/> Is the gravel bed still in a loose and uncompacted condition?	<input type="text"/>	x	√
1.4	<input type="checkbox"/> Is the surface of the bed , free from any signs of water ponding or lying?	<input type="text"/>	x	√
1.5	<input type="checkbox"/> Are all the required warning signs in clear and legible condition?	<input type="text"/>	x	√

Is the whole installation
1.6 free from any weed growth which may affect its
performance?

x

√

Condition Rating

Overall asset Condition

Inspector

Any additional Comment

Inspector Name (Lead Erector):

Date/time:

Appendix G MSD

MSD sheets shall be completed to inform Transport Scotland of required updates to Pavement Construction Records. The MSD sheet Template in Microsoft Excel format can be found at:

[MSD V3.3](#)

Appendix H Inspection Groupings

Details of all Inspections and Inspection Groups are detailed within the Asset Register section of this manual and are also summarised in this Appendix H:

Inspection Type	Inspection Group	Inspection Name	Qualification
Routine Monitoring Inspection	Safety Inspection	Safety Inspection	Accredited Inspector
		Safety Patrol	Accredited Inspector
		Night Time Lighting Safety Inspections (Dark Lamp Scout)	Specialist Inspector
		Bollard - Night Time Reflectivity Safety Inspections	Accredited Inspector
		Traffic Signs - Night Time Reflectivity Safety Inspections	Accredited Inspector
Routine Monitoring Inspection	Night Time Reflectivity Safety Inspections	Road Studs - Night Time Reflectivity Safety Inspections	Accredited Inspector
		Road Markings Longitudinal - Night Time Reflectivity Safety Inspections	Accredited Inspector
		Road Markings Hatched - Night Time Reflectivity Safety Inspections	Accredited Inspector
		Road Markings Transverse Special - Night Time Reflectivity Safety Inspections	Accredited Inspector
		Carriageway - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Central Island - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Crossover - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Central Reserve - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
Comprehensive Inspection	Visual Assessment Inspection - Carriageway (Central Reserve)	Kerb - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Road Studs - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Cabinet Pillars - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Detector Loops - Visual Assessment Inspection (Central Reserve)	Accredited Inspector
		Bollard - Accessibility Inspection	Specialist Inspector
		Bus Stop - Visual Assessment Inspection	Specialist Inspector
		Cabinet Pillars - Accessibility Inspection	Specialist Inspector
		CCTV Cameras - Accessibility Inspection	Specialist Inspector
		Cycle Facility - Accessibility Inspection	Specialist Inspector
		Emergency Telephone - Accessibility Inspection	Specialist Inspector
Comprehensive Inspection	Accessibility Inspection	Fences, Walls and Barriers - Accessibility Inspection	Specialist Inspector
		Footway - Accessibility Inspection	Specialist Inspector
		Kerb - Accessibility Inspection	Specialist Inspector
		Miscellaneous Street Furniture - Accessibility Inspection	Specialist Inspector
		Pedestrian Crossing - Accessibility Inspection	Specialist Inspector
		Pedestrian Guardrail - Accessibility Inspection	Specialist Inspector

		Road Marking Hatched - Accessibility Inspection	Specialist Inspector
		Road Marking Longitudinal - Accessibility Inspection	Specialist Inspector
		Road Marking Tranaverse Special-Accessibility Inspection	Specialist Inspector
		VRRS Safety Fence Barrier - Accessibility Inspection	Specialist Inspector
		Traffic Signs - Accessibility Inspection	Specialist Inspector
Comprehensive Inspection	Visual Assessment Inspection- Drainage Assets Spring/Autumn	Balancing Pond - Visual Assessment Inspection	Accredited Inspector
		Culvert - Visual Assessment Inspection	Accredited Inspector
		Drainage Ancillary - Visual Assessment Inspection	Accredited Inspector
		Catchpit - Internal Visual Assessment Inspection	Specialist Inspector
		Interceptor/Separator - Internal Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Drainage Assets - Internal Visual Condition	Soakaway - Internal Visual Assessment Inspection	Specialist Inspector
		Manhole - Internal Visual Assessment Inspection	Specialist Inspector
		Footway category A - Visual Assessment Inspection	Accredited Inspector
Comprehensive Inspection	Visual Assessment Inspection - Footway/Cycleway CAT A B	Footway category B - Visual Assessment Inspection	Accredited Inspector
		Cycleway category A - Visual Assessment Inspection	Accredited Inspector
		Cycleway category B - Visual Assessment Inspection	Accredited Inspector
Comprehensive Inspection	Visual Assessment Inspection - Snow Poles	Snow Pole - Visual Assessment Inspection	Accredited Inspector
Comprehensive Inspection	Traffic Signs - Measured Reflectivity and Condition	Traffic Sign - Reflectivity Condition	Specialist Inspector
Comprehensive Inspection	Condition Assessment - Road Markings and Studs	Road Studs - Night-time Visual Assessment Inspection	Accredited Inspector
		Road Marking Transverse Special - Skid Resistance	Accredited Inspector
		Road Marking Longitudinal - Retro-Reflectivity Measurement - Machine	Accredited Inspector
		Road Marking Transverse Special - Condition assessment - Visual Assessment	Accredited Inspector
		Road Marking Transverse Special - Retro-Reflectivity Measurement - Handheld	Accredited Inspector
		Road Marking Transverse Special - Retro-Reflectivity Measurement - Machine	Accredited Inspector
		Road Marking Longitudinal - Road Marking Longitudinal - Visual Assessment	Accredited Inspector
		Road Marking Longitudinal - Retro-Reflectivity Measurement - Handheld	Accredited Inspector
		Road Marking Longitudinal - Skid Resistance	Accredited Inspector
		Comprehensive Inspection	Landscape - Visual Assessment Inspection
Grassed Area - Visual Assessment Inspection	Specialist Inspector		

		Hedge/Hedgerow - Visual Assessment Inspection	Specialist Inspector
		Invasive Species - Visual Assessment Inspection	Specialist Inspector
		Scrub - Visual Assessment Inspection	Specialist Inspector
		Shrub - Visual Assessment Inspection	Specialist Inspector
		Tree - Visual Assessment Inspection	Specialist Inspector
		Woodland - Visual Assessment Inspection	Specialist Inspector
		Wetland - Visual Assessment Inspection	Specialist Inspector
		Wildlife Mitigation Measures - Visual Assessment Inspection	Specialist Inspector
		Wildflower - Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Landscape - Specialist Arborist	Tree - Specialist Arborist Inspection	Specialist Inspector
		Woodland - Specialist Arborist Inspection	Specialist Inspector
		Bulb - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Grassed Area - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Hedge/Hedgerow - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Invasive Species - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Scrub - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
Comprehensive Inspection	Landscape - Landscape Architect	Shrub - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Tree - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Wetland - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Wildlife Mitigation - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Woodland - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Wildflower Area - Landscape Opportunity Inspection - Landscape Architect	Specialist Inspector
		Scrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Grassed Areas - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Hedge/Hedgerow - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
Comprehensive Inspection	Landscape - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Invasive Species - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Shrub - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Tree - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Woodland - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Wetland - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
		Bulb Area - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector

		Wildflower Areas - Road Signs, Visibility Sightlines and Encroaching Vegetation Inspection	Specialist Inspector
Comprehensive Inspection	Weed Control Inspection	Weed Control - Visual Assessment Inspection	Accredited Inspector
Comprehensive Inspection	Litter Refuse and Detritus	Litter and Refuse - Visual Assessment Inspection	Accredited Inspector
		Litter and Refuse - Monitoring Regime effectiveness	Accredited Inspector
Comprehensive Inspection	VRRS Assets - Visual Assessment Inspection	VRRS Arrester Bed - Visual Assessment Inspection	Specialist Inspector
		VRRS Safety Fence/Barrier - Visual Assessment Inspection	Specialist Inspector
		VRRS Crash Cushion - Visual Assessment Inspection	Specialist Inspector
		VRRS Transition - Visual Assessment Inspection	Specialist Inspector
		VRRS Parapet - Visual Assessment Inspection	Specialist Inspector
		Earthwork Slopes - Visual Assessment Inspection	Specialist Inspector
		Rock Slopes - Visual Assessment Inspection	Specialist Inspector
		SGM Rock Netting - Visual Assessment Inspection	Specialist Inspector
		SGM Fencing Barrier System - Visual Condition	Specialist Inspector
		SGM Anchors/Bolts/Dowels System - Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Geotechnical Assets - Visual Assessment Inspection	SGM Granular Replacement - Visual Assessment Inspection	Specialist Inspector
		Land Slopes - Visual Assessment Inspection	Specialist Inspector
		SGM Monitoring Equipment - Visual Assessment Inspection	Specialist Inspector
		SGM Reinforced Soil - Visual Assessment Inspection	Specialist Inspector
		SGM Rigid Support/Protection Systems - Visual Assessment Inspection	Specialist Inspector
		SGM Debris Traps - Visual Assessment Inspection	Specialist Inspector
		SGM Soil Nailing - Visual Assessment Inspection	Specialist Inspector
		Rock Slopes - Rock Slope Hazard Index (RSHI)	Specialist Inspector
		Rock Slopes - Rock Slope Hazard Rating (RSHR)	Specialist Inspector
		Earthwork Slopes - Specialist Inspection	Specialist Inspector
Comprehensive Inspection	Geotechnical Assets - Specialist Inspection	Rock Slopes - Specialist Inspection	Specialist Inspector
		Land Slopes - Specialist Inspection	Specialist Inspector
		SGM Anchors/Bolts/Dowel - Specialist Inspection	Specialist Inspector
		SGM Fencing/Barrier- Specialist Inspection	Specialist Inspector
		SGM Granular Replacement - Specialist Inspection	Specialist Inspector
		SGM Debris Trap - Specialist Inspection	Specialist Inspector
		SGM Reinforced Soil - Specialist Inspection	Specialist Inspector

		SGM Rigid Support/Protection - Specialist Inspection	Specialist Inspector
		SGM Soil Nailing - Specialist Inspection	Specialist Inspector
		SGM Rock Netting - Specialist Inspection	Specialist Inspector
Comprehensive Inspection	Rock Netting - Debris Visual Assessment Inspection	Rock Netting - rock Debris Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Traffic Signals - TD24 Monthly Visual Assessment Inspection	Traffic Signals - TD24 Monthly Visual Assessment Inspection	Specialist Inspector
		Traffic Signal - Controller - TD24 Monthly Visual Assessment Inspection	Specialist Inspector
		Traffic Signals - TD24 and Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Traffic Signals - TD24 Visual Assessment Inspection	Traffic Signal - Controller - TD24 and Visual Assessment Inspection	Specialist Inspector
		Traffic Signal - Detector Loop - TD24 and Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Traffic Signals - Phasing, Operation, Equipment and Strategy Review	Traffic Signal - Annual Phasing Operation	Specialist Inspector
		Traffic Signal - Equipment review	Specialist Inspector
		Traffic Signal - Operational Strategy review	Specialist Inspector
		Traffic Signal - MOVA SCOOT validation	Specialist Inspector
Comprehensive Inspection	Emergency Lighting Tests	Emergency Lighting	Specialist Inspector
		Traffic Signals - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Traffic Signal Controller - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Bollard - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Lighting Point - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Cabinets - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
Comprehensive Inspection	Periodic Electrical Inspection and Testing - BS7671	Drainage Ancillary Items - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Navigation Aids - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Roadside Services - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Sea and navigation Lights - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Structures - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Traffic Control Barrier - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Weather Station - Periodic Electrical Inspection and Testing - BS7671	Specialist Inspector
		Traffic Signs - BS7671	Specialist Inspector
		Bollard - Routine Electrical Inspection TR22	Specialist Inspector
		Lighting Point - Routine Electrical Inspection TR22	Specialist Inspector
Comprehensive Inspection	Routine Electrical Inspection TR22	Traffic Signs - Routine Electrical Inspection TR22	Specialist Inspector
		Navigation Aids - Electrical - Routine Electrical Inspection	Specialist Inspector
		Traffic Control Barrier - Routine Electrical Inspection	Specialist Inspector

		Weather Station - Routine Electrical Inspection	Specialist Inspector
		Sea and Navigation Lights - Routine Electrical Inspection	Specialist Inspector
		Cabinets - Routine Electrical Inspection	Specialist Inspector
		Cable Chambers - Routine Electrical Inspection	Specialist Inspector
		Drainage Ancillary Items - Routine Electrical Inspection	Specialist Inspector
		Electrical Ducting and Cables - Routine Electrical Inspection	Specialist Inspector
		Roadside Services - Routine Electrical Inspection	Specialist Inspector
		Structures - Electrical - Routine Electrical Inspection	Specialist Inspector
Comprehensive Inspection	Weather Station - Detailed Inspection and Calibration check	Weather Station - Detailed Inspection and Calibration check	Specialist Inspector
Comprehensive Inspection	Drainage Ancillary Items - Specialist Mechanical/Electrical Inspection	Drainage Ancillary Items - Specialist Mechanical/Electrical Inspection	Specialist Inspector
		Reference Marker Point - Visual Assessment Inspection	Accredited Inspector
Comprehensive Inspection	Network Referencing Review	Network Referencing - Definition and Shape	Accredited Inspector
		Node Marker Point - Visual Assessment Inspection	Accredited Inspector
Comprehensive Inspection	Specialist Adhoc Inspections	Piped Drainage - Visual Assessment Inspection	Specialist Inspector
Comprehensive Inspection	Specialist Adhoc Inspections	Special Inspection	Specialist Inspector
Comprehensive Inspection	SCRIM Site Category Review	SCRIM Site Category Review	Specialist Inspector
Data	Pavement Construction Records	Pavement Construction Records - MSD	Technical