

TORFAEN COUNTY BOROUGH COUNCIL

HIGHWAY ASSET MANAGEMENT PLAN 2019 – 2025

Setting the Standard



This set of documents outlines the methods and specifications for the recording and maintenance of all highway assets and has been divided into the following sections:

- Section 1: Highway Asset Management Policy for the Adopted Highway
- Section 2: Highway Asset Management Strategy for the Adopted Highway
- Section 3: Highway Asset Data Management Plan for the Adopted Highway
- Section 4: Highway Asset Maintenance Manual for the Adopted Highway
- Section 5: Risk Based Approach Methodology for the Adopted Highway
- Section 6: Highway Drainage Cleansing Service for the Adopted Highway
- Section 7: Skid Resistance Policy for the Adopted Highway

Section 1

TORFAEN COUNTY BOROUGH COUNCIL

HIGHWAY ASSET MANAGEMENT POLICY

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	March 2019
Author	Mark Strickland
Issued to	
Version No	2 .3

1 Introduction

- 1.1 The over-riding asset management policy for the Authority was agreed by Cabinet on 24 February 2009. It states:

"That the Council will only retain or acquire properties that are sufficient, suitable and sustainable in the delivery of its corporate plan priorities and will prioritise the use of its capital and revenue budgets accordingly. Property resources that are surplus to, unsuitable or unsustainable in the delivery of Corporate Plan priorities will be considered for disposal at best consideration".

- 1.2 Whilst this policy relates to Council owned buildings and land it is deemed appropriate and good practice to include the highway assets that Torfaen County Borough Council maintain in its role as a Highway Authority. To ensure that the Council apply the same principles to both assets the following Highway Asset Management Policy is to be placed before the Torfaen County Borough Council Cabinet in 2019.

2 Policy Scope

- 2.1 The Highway Asset Management Policy applies to the creation, acquisition, operation, maintenance, rehabilitation and disposal of all assets that are included within the adopted highway network in Torfaen County Borough Council.

3 Policy Objectives

- 3.1 The Highway Asset Management Policy guides Torfaen County Borough Council, acting as the Highway Authority, in the management of the adopted highway network to ensure that:

- All assets continue to deliver a service to the community and highway users at an agreed level.
- There is clear direction for Elected Members and Council staff to make informed decisions regarding the adopted highway network.
- Legislative requirements are satisfied
- Exposure to safety risk is mitigated to agreed and acceptable levels
- Asset purchases, increases or construction are only approved after whole life costs and benefits are assessed and agreed.

- Clear and transparent allocation of responsibilities for the management of individual assets is recorded.

4 Definitions

Asset(s): Any physical item(s) the Highway Authority acquires or constructs which gives a benefit or service to highway users.

Asset Group/Class: Any assets that are of similar type, role or construction.

Asset Lifecycle: The period of time from asset acquisition to disposal, or renewal.

Asset Management: Activities and practices through which the Highway Authority optimally manages all assets including intellectual property associated to the adopted network, their performance, safety risk and expenditure over their lifecycle for the purpose of achieving the agreed objectives of the Highway Asset Management Plan.

Asset Management Plan: An agreed plan that details the financial expenditure on and technical treatments to, an asset or asset class over its lifecycle to optimise its availability to highway users.

Asset Register: A record of asset information considered worthy of separate identification.

Level of Service: The agreed, measurable service standard set for an asset, group of assets or asset class against which the Highway Authorities performance can be assessed.

Whole of Life Costs: The sum of all costs incurred by an asset over its lifecycle, containing any construction, capital, maintenance and disposal costs.

Section 2

TORFAEN COUNTY BOROUGH COUNCIL

HIGHWAY ASSET MANAGEMENT STRATEGY

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	March 2019
Author	Mark Strickland
Issued to	
Version No	1.6

1 Executive Summary

1.1 Highway asset management is defined as:

“A strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers”^[1]

The adoption of an asset management approach is now deemed by Welsh Government as a proven means to demonstrate effective husbandry of the highway network by providing significant financial understanding.^[2] This strategy records and reports how Torfaen County Borough Council will adopt and use these principles to manage the public highway assets.

This Strategy commits Torfaen County Borough Council to:

- a. Affordable Standards; the strategy establishes standards that can be afforded with current budgets and communicates them to the public and other users such that they know what service to expect.
- b. Long Term Planning; the strategy enables the medium term (10 year) and long term (20 year) time periods to ensure the correct balance of short term fixes, preventative actions and replacement of aged assets.
- c. Budget Allocation; the strategy requires data to be collected about the highway assets that will enable informed decisions to be made about how best to spend the available budgets.
- d. Managing Risk; the strategy requires the analysis of asset data to gauge and manage the risk associated with any decisions resulting from the strategy.

1.2 The implementation of the strategy will support:

1. The introduction of Whole of Government Accounts (WGA) and specifically the Chartered Institute of Public Finance and Accountancy (CIPFA) Transport Asset Code.

2. The continuing desire by Welsh Government to see Authorities use asset management for highways, to realise and demonstrate the associated cost benefits and transparent governance of the assets associated with the road network.
 3. The need to manage increasing budget pressures resulting from the national and local financial position.
 4. The agreed aims of Torfaen County Borough Council's Corporate Plan 3 2016-2021 - 'Using resources wisely, to include maintaining the highway infrastructure and reducing energy consumption and waste,' - this infers the requirement under the Highways Act 1980 to maintain the highway in a safe condition for users, and also reflects the drive to manage the asset both economically, ecologically or environmentally.
- 1.3 The extent of the adopted highway is held by Torfaen County Borough Council, and the highway asset is any structure, system, construction or land associated with the adopted highway.

As of April 2018 the Council, in its role as Highway Authority, have assets made up of the following major asset groups:

- A. 442 Km of carriageway,
- B. 633 Km of footway,
- C. 173 bridges of which 12 are currently weight restricted,
- D. 109 culverts of diameter between 0.8m and 1.5m, 27 subways
- E. 13601 streetlights, of which 7062 are fully lit, 4697 are lit between the hours of dusk and midnight and then 05:00 a.m. and dawn and 1842 are not currently illuminated,
- F. 47 sets of traffic signals, (including Pelican, Puffin and Toucan crossings),
- G. 1342 Illuminated traffic signs and bollards,

- H. Approximately 5000 non-illuminated traffic signs. However, it has been deemed that a survey of these is not cost effective at present, but will form part of the improvement actions considered by this Plan.
- I. 17300 road gullies,
- J. Approximately 350 Km of dedicated highway drainage pipes. However, it has been deemed that a survey of these is not cost effective at present, but will form part of the improvement actions considered by this strategy.

Note: The HAMP relates only to the Council's obligations as a Highway Authority and therefore only includes those assets on the publically adopted highway. Private streets and roads transferred to social landlords are not included the extents of the adopted highway are available via the Council's web site.

- 1.4 Torfaen County Borough Council as a landowner is responsible for assets that are not classed as adopted highway, such as Council owned streets and footways, and will maintain these in a safe state, as required by legislation or judicial precedent, however, this may be below the level of service afforded to the adopted highway network.
- 1.5 Additions to the overall highway asset due to new construction in Torfaen have been small since 2003 with the length of the adopted network increasing from 427.5 Km to 441.9 Km in 2018, however, several large developments are about to come on-line in the next 5 years which will result in significant additions to all highway maintained assets. With the exception of street furniture and unlit traffic signage asset data coverage is very good for all categories and this is not expected to have a major impact on the highway asset as a whole.
- 1.6 Torfaen County Borough Council's current Local Development Plan states that the highway network was expected to increase by an additional 2 – 4% over the life time of the Plan. TCBC Forward Planning Department is updating the LDP with this update and it is expected that highway growth will be in line with the current projections.
- 1.7 The Department for Transport (DfT) carry out surveys to identify total number of miles travelled by vehicles broken down by type and region; these are then extrapolated using known growth factors to give figures for each category in five year intervals. The current Road Transport Forecast 2011 only report total number of miles driven in Wales, however, based on the minimal increase in network length, a useful relationship between any additional mileage and carriageway usage can be postulated.

- 1.8 As the carriageway asset has the largest Gross Replacement Cost (GRP) of any asset that TCBC manage then any increase in degradation due to increased in traffic use will have a significant impact on the HAMP. The current survey for all traffic in the ‘Other Urban’ and ‘Rural’ categories, (those that match the profile of Torfaen’s network) is:

Department for Transport Road Traffic Estimates – Wales (billion miles)

	2010	2015	2020	2025	2030
Car	12.3	12.4	13.7	14.6	15.4
Light Goods Vehicle	2.2	2.6	3.0	3.5	3.9
Rigid Heavy Goods Vehicle	0.5	0.6	0.6	0.6	0.6
Articulated Heavy Goods Vehicle	0.2	0.2	0.2	0.3	0.3
Passenger Service Vehicle	0.1	0.1	0.1	0.1	0.1
All Traffic	15.3	15.9	17.6	19.1	20.3
% Increase	Base-line	3.92%	15.03%	24.84%	32.68%

- 1.9 Therefore it can be argued that by 2020 as there will be approximately 15% more miles travelled by vehicles in Torfaen, there will be a linked increase in the degradation of the carriageways, i.e. more potholes, more route Kms falling below the accepted standard of maintenance.

- 1.10 All public enquiries or complaints that are highway related are dealt with by either the Council’s customer call centre or Corporate Communications Section. These include contacts using telephone, e-mail or social media platforms and face-to-face and are recorded and logged onto a database, (currently Mayrise), and these are electronically transferred to the relevant sections and officers for action or comment. This flow of information is analysed to ensure that all communications are within the Council’s targets for dealing with such interactions.

- 1.11 As part of the highway asset management process, TCBC will consult the general public on general highway related matters via the Council's 'Your Say' area of its web-site. It is proposed that this is carried out bi-annually from 2013/14. The survey will ask the same questions so that customer trends and satisfaction rates can be assessed.

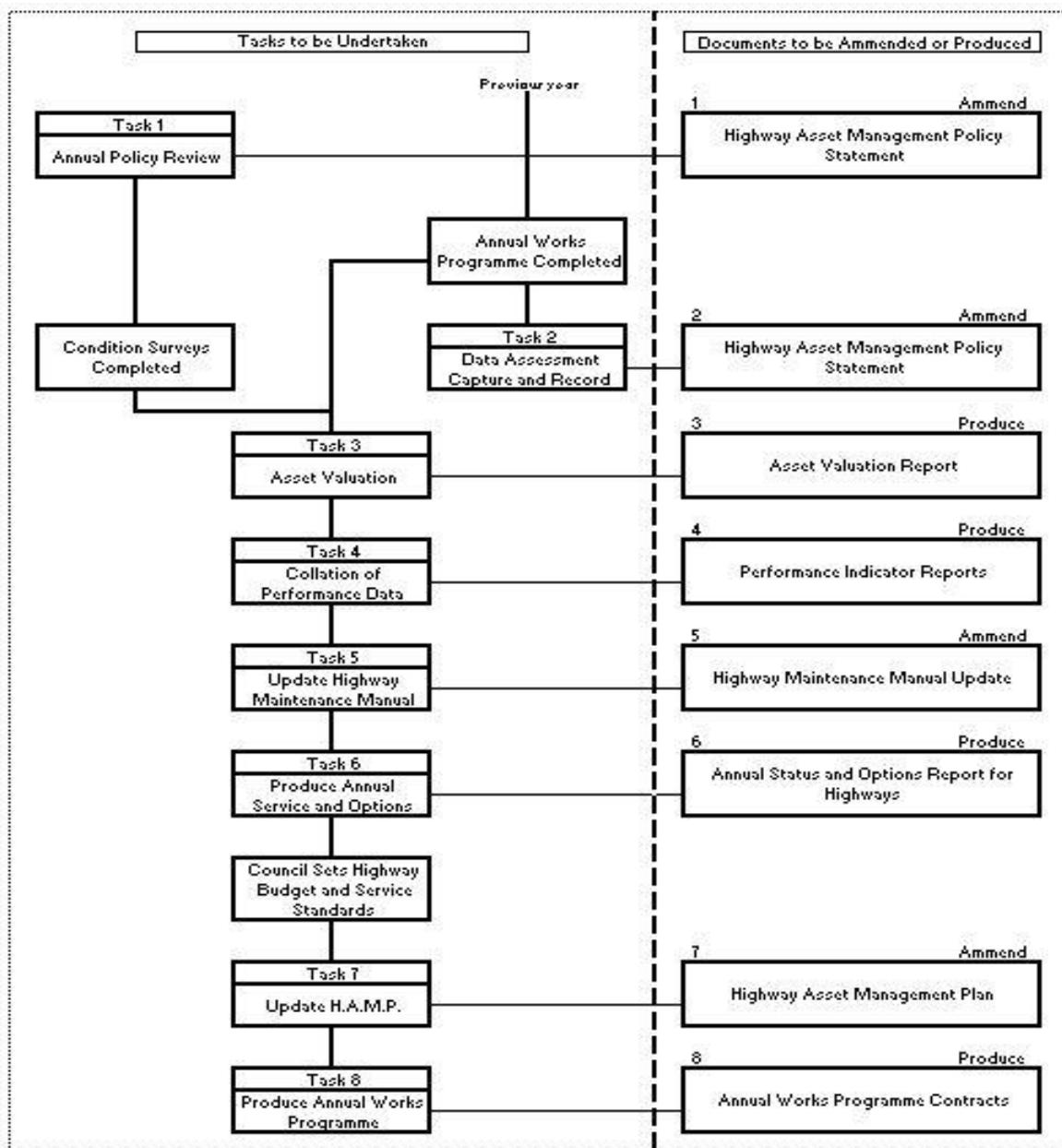
HIGHWAY ASSET MANAGEMENT STRATEGY

1 Introduction

- 1.1 This document summarises Torfaen County Borough Council's asset management planning practices for the period 2019 until 2024. It details the tasks and activities that are required through the year and provides details of the instruction documents, spreadsheets and template documents required of this strategy.

2 Annual Asset Management Planning Process

- 2.1 The process below shows the steps that Torfaen County Borough Council applying asset management planning uses annually. The documents that are required to support this process are identified below with the content of each document briefly described in the diagram.



3 Asset Management Planning Documentation

3.1 Asset Management Policy Statement

Torfaen County Borough Council has produced an Asset Management Policy Statement confirming the Council's commitment to:

- Applying asset management systems to manage its adopted highway assets
- Publishing a Highway Asset Management Plan
- Reporting achievements and performance annually

3.2 Data Management Plan

The Torfaen County Borough Council Data Management Plan records how the Council manages relevant asset data, specifically:

- Recording the data held by the Council about its highway assets
- Documenting the methods used to maintain this data
- Documenting plans for improvement of the data held

3.3 Asset Valuation Report

The Torfaen County Borough Council Highway Valuation Report details the results of the latest asset valuation. This report forms part of the larger requirement under of the whole of Government Accounts and records:

- The quality of the data used to produce the valuation
- The method of calculation
- The sources of data

The report supplies a narrative on the results, allowing others to understand the current valuation and informs the Council about the adopted Highway asset and records any limitations with the current valuation. The Highway valuation report recommends improvements that would enable more reliable future valuations.

3.4 Performance Indicator Returns

Torfaen County Borough Council collate highway data to report out several National and local suites of performance indicators. Whilst this data does not form part of the HAMP it does provide results which are required to be included in the Annual Status and Options Report. The current performance indicator returns are held within the TCBC Ffynon database.

3.5 Maintenance Manual

The Highway Maintenance Manual for the adopted highway 2019-2024 records the methods used to manage the road assets, specifically it records how and when the Authority:

- Inspects
- Categorises and prioritises reactive repairs
- Assesses condition
- Identifies and prioritises sites or assets for replacement or strengthening
- Prepares works programmes
- Procures and manages works
- Records and reports costs
- Records and responds to customer contacts

3.6 Annual Status and Options Report (ASOR)

An Annual Status and Options Report (ASOR) will summarise the status of each asset group in terms of its condition, compliance with meeting repair standards, level of public complaint/contact etc. The report will describe the result of the previous year's investment in terms of meeting the target service standards. The status report will enable the Council to note if the standards in the HAMP are being met or not. Based upon the current status, the report will then set out the options available to the Council for the future. These will include relevant data sufficient to enable the Council to choose how to best allocate the following years budgets and to decide whether any of the service standards contained in this HAMP need to be revised. In particular they will address the types of works that are planned and state the approach to be.

3.7 Asset Levels of Service

A fundamental requirement of a HAMP is to record the service standards that the Council is aiming to deliver for each asset group and the plan will endeavour to identify any risks that may prevent the plan being realised. The strategy will reflect local context in terms of traffic levels, customer preferences and the Council's corporate strategies.

4.8 Annual Programme

The Annual Programme once agreed and scrutinised will detail each asset class with a proposed schedule of works together with the current target Level of Service.

5 Annual Updating Regime

It is intended that the HAMP documents and spread sheets above are reviewed and updated annually, and in line with the County Surveyors Society (Wales) training workshops the following timetable will be utilised:

Torfaen County Borough Council Annual HAMP Update Programme												
	Ja n	Fe b	Ma r	Ap r	Ma y	Ju n	Ju l	Au g	Se p	Oc t	No v	De c
1. Annual Policy Review												
2. Data Assessment												
3. Asset Valuation												
4.Collation of Performance Information												
5.Maintenance Manual Update												
6.Annual Status and Options Report												
7.HAMP update and sign off												
8. Works Programme												

[1] County Surveyors Society Framework for Highway Asset Management 2004

[2] Local Authority Transport Infrastructure Asset Review of Accounting, Management and Finance Mechanisms Final Report.

Section 3

TORFAEN COUNTY BOROUGH COUNCIL

HIGHWAY DATA MANAGEMENT PLAN

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	March 2019
Author	Mark Strickland
Issued to	
Version No	2.2

1 Introduction

1.1 Asset Data

This Plan records the data held about each of the Asset groups that make up the road asset, it details where the data is stored and the systems used for data storage. It identifies how and when this data is updated, verified and validated, and where data or system deficiencies exist these are acknowledged and, either a plan is included for how and when improvements will be made to the data systems or an explanation why the data is not recorded.

1.2 Types of Data

The type of data required to manage all asset classes will include:

Inventory: the number, location, size, type and age of the components that make up each asset.

Condition: measurement and a rating of the condition of the asset from testing, visual or other means.

Inspection: the inspection regime, inspection results and actions initiated by the inspection

Use: the use of individual asset, such as traffic counts or heavy vehicle routes etc.

Safety: records of accidents or incidents that occur on the asset.

Cost: details of the unit cost of common activities and the overall cost to enable cost benchmarking.

1.3 Asset Management Data Uses

The use of asset management data allows TCBC to:

- Provide public information to offer greater transparency
- Monitor and report on the condition of the assets that make up the highway network
- Predict and report on funding needs
- Identify and prioritise sites, areas or assets for maintenance work
- Monitor and report the performance of assets to inform local and national Key Performance Indicators (KPI)
- Assess the expected life of individual assets or asset components
- Place a value on the asset and calculate depreciation due to age and use to comply with Whole of Government Accounts (WGA)

The flowing section show how TCBC will manage the road asset data.

2 Asset Groupings

For the purpose of this plan and for all road asset management reporting, Torfaen County Borough Council has adopted the groupings used in the CIPFA Transport Asset Code as shown below:

Level 1 Asset type	Level 2 Asset group	Level 3 Components that level 2 implicitly covers
Carriageway	<p>Area (square metre) based elements</p> <ul style="list-style-type: none"> • Flexible pavements • Flexible composite pavements • Rigid concrete pavements • Rigid composite pavements 	<ul style="list-style-type: none"> • Pavement layers • Other surface types, e.g. paved • Central reservation, roundabout, lay-by, traffic island, etc • Earthworks (embankments and cuttings, height <1.35m) • Traffic calming • Fords and causeways
	Linear elements	<ul style="list-style-type: none"> • Kerbs • Line markings • Road studs • Road drainage elements (gullies, drains, etc, but not large structures) • Boundary fences and hedges • Hard strip/shoulder verges/vegetation
Footways and cycletracks (attached to the road or segregated)	<ul style="list-style-type: none"> • Footways • Pedestrian areas • Footpaths • Cycletracks 	<ul style="list-style-type: none"> • Pavement layers • Other surface types, eg block paving, • unbound materials
Structures	<ul style="list-style-type: none"> • Bridges (span >1.5m) • Cantilever road sign • Chamber/cellar/vault • Culverts (span >0.9m) • High mast lighting columns (height >20m) • Retaining walls (height >1.35m) • Sign/signal gantries and cantilever road signs • Structural earthworks, e.g. strengthened/reinforced soils (all structures with an effective retained height of 1.5m or more) • Subway: pipe • Tunnel (enclosed length of 150m or more) • Underpass/subway: pedestrian (span of 1.5m or more) • Underpass: vehicular • Special structure 	<p>All elements identified on the CSS inspection pro forma</p> <p>Smaller water-carrying structures are considered as road drainage</p>
Highway lighting	<ul style="list-style-type: none"> • Lighting columns • Lighting unit attached to wall/ wooden pole • Heritage columns • Illuminated bollards • Illuminated traffic signs 	<ul style="list-style-type: none"> • Column and foundations • Bracket • Luminaires • Control equipment, cables • Control gear, switching, internal wiring cabling (within ownership)

Level 1 Asset type	Level 2 Asset group	Level 3 Components that level 2 implicitly covers
Street furniture	<ul style="list-style-type: none"> • Transport • Highway • Streetscene/ amenity 	<ul style="list-style-type: none"> • Traffic signs (non-illuminated) • Safety fences • Pedestrian barriers • Street name plates • Bins • Bollards • Bus shelters • Grit bins • Cattle grids • Gates • Trees/tree protection, etc • Seating • Verge marker posts • Weather stations
Traffic management systems	<ul style="list-style-type: none"> • Traffic signals • Pedestrian signals • Zebra crossings 	Different types
	<ul style="list-style-type: none"> • In-station 	Complete installation
	<ul style="list-style-type: none"> • Information systems • Safety cameras 	<ul style="list-style-type: none"> • Variable message signs • Vehicle activated signs • Real time passenger information
Land	<ul style="list-style-type: none"> • Freehold land • Rights land 	Features on the land are not taken into account in the valuation

3 Data Storage

Data for each asset is held electronically on the systems shown in the table below:

Software Systems Used

Software Systems Used	Carriageways	Footways	Structures	Street Lighting	Drainage	Street Furniture*	Traffic Management Systems*
Asset register	MS Excel, Mapinfo, Spectrum Spatial Analyst Status	MS Excel, Mapinfo, Spectrum Spatial Analyst Status	MS Access Data Base	Mayrise	Mapinfo	MS Excel	MS Excel
Safety Inspections	Mayrise	Mayrise	MS Access Data Base	Mayrise	Mayrise	Mayrise	External Contractor

Software Systems Used	Carriageways	Footways	Structures	Street Lighting	Drainage	Street Furniture*	Traffic Management Systems*
Condition survey	Mayrise UKPMS Horizons	MS Excel	MS Access Data Base	Mayrise	MS Excel, Mapinfo	n.a.	External Contractor
Routine Reactive Maintenance	Mayrise	Mayrise	Mayrise	Mayrise	Mayrise	Mayrise	External Contractor
Cyclic Maintenance	Mayrise	Mayrise	Mayrise	Mayrise	Mayrise	n.a.	External Contractor
Planned Maintenance	MS Excel	MS Excel	MS Access Data Base	Mayrise	MS Excel	n.a.	External Contractor
Streetworks	Mayrise	Mayrise	n.a.	n.a.	n.a.	n.a.	n.a.
Street Gazetteer	TCBC 'Aligned Assets'						
Accident Analysis	Mapinfo	Mapinfo	n.a.	n.a.	n.a.	n.a.	n.a.
Traffic Data (Counts)	External Contractor	External Contractor	n.a.	n.a.	n.a.	n.a.	n.a.
Customer Contacts	TCBC My Council Services						
3rd Party Claims	Local Authority Claims Handling System						
Departmental Finance	TCBC 'Civica' Financial System						

4 Data Management

It is essential that the quality of the asset data that TCBC hold is known and that the appropriate measures are taken to maintain this data. It is also important to identify where there are deficiencies and the timescales for collecting this data. Not all data needs to be collected, and TCBC will identify those sets that have low cost benefit together with any relevant review dates and reasoning.

Carriageway asset management: The designated officer will ensure that the following data is maintained to provide input into the annual HAMP revue

Length Area Hierarchy Condition Valuation

Footway asset management: The designated officer will ensure that the following data is maintained to provide input into the annual HAMP revue

Length Area Hierarchy Condition Valuation

Drainage: The designated officer will ensure that the following data is maintained to provide input into the annual HAMP revue

Location Type Construction Valuation

Street Lighting Asset Management: The designated officer will ensure that the following data is maintained to provide input into the annual HAMP revue

Location Type Condition Valuation

Non Illuminated Signs Asset Management: It has been agreed locally that, at present, the cost involved in collecting this data is not an efficient use of highway budget. This is based on the ability of the designated officer to access location and type information from 'Street-view' mapping systems via the internet. For TCBC purposes, condition data is based on highway safety inspections and customer contacts, and TCBC managers are comfortable with using a valuation based on engineers estimates.

Structures Asset Management: The designated officer will ensure that the following data is maintained to provide input into the annual HAMP revue

Location Type Construction Condition Valuation

Traffic Signal Asset Management: The designated officer will ensure that the following data is maintained to provide input into the annual HAMP revue

Location	Type	Condition	Valuation
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Street Furniture Asset Management: It has been agreed locally that, at present, the cost involved in collecting this data is not an efficient use of highway budget. This is based on the ability of the designated officer to access location and type information from 'Street-view' mapping systems via the internet. For TCBC purposes, condition data is based on highway safety inspections and customer contacts, and TCBC managers are comfortable with using a valuation based on engineers' estimates.

5 Roles and Responsibilities

The designated officer who will assume the responsibility for data management for asset group is as follows:

Asset Group	Person Responsible for Asset Data
Carriageways	Highway Asset Management Officer
Footways, Footpaths & Cycleways	Highway Asset Management Officer
Drainage	Highway Asset Management Officer
Street Lighting	Street Lighting Engineer
Non-illuminated signs	Network Management Technician
Structures	Structural Network Officer
Traffic Signals	Network Management Technician
Street Furniture	Streetscene Officer
Verges & Planted Areas	Streetscene Officer

It is the responsibility of the officer listed above to ensure that data relating to the asset group for which they are responsible is updated, verified, validated and reviewed as shown in the following sections and that any actions required to improve data are reported to the Highway Asset Management Officer.

Overall the responsibility for road asset data quality lies with Group Leader Highway Network.

6 Data Updates

Inventory Updating Timing	
Type	Timing
New Assets – Council Built	Annually updated in November
New Assets - Adoptions	Within 3 months of confirmation of order
Major maintenance e.g. resurfacing	Annually updated in November
Removals	Within 3 months of confirmation of order

6.1 Data Verification

In TCBC individual officers, as part of their job description are responsible for individual or groups of assets classes. Where these officers gather new data in the course of their duties, a random sample no smaller than 10% will be abstracted and its accuracy verified by a line manager, colleague, or highway operative. Any inaccuracies or deficiencies in the data will be re-surveyed and re-verified by the same officer that carried out the original verification, the name, data and sample size will be attached where suitable as meta-data to the new data.

Where data is received for outside sources, the receiving officer or officer responsible for the asset will require the data provider to furnish an assurance or meta-data to prove a verification process. This will be then added to the new data as meta-data when entered into the appropriate electronic system.

6.2 Data Validation

TCBC, hold large sets of asset data that will be used on an annual basis providing important information to programme future works, Key performance indicators and valuations etc. This data can lie dormant for long periods of time, and so errors can arise due to inadequate systemic updates. Therefore at the bi-annual and end of the HAMP 2019-2025 this data will be verified by each officer responsible for that asset to ensure that the data is correct and current by selecting a random 10% of that data, and resurveying that data.

7 **Data Assessment and Improvement**

7.1 Annual Data Review

The TCBC HAMP 2019-2025 requires that a bi-annual and closing data review is carried out to gauge the veracity of the data held within the various systems used by the Council. This review is informed by the results of the data validation survey and uses the spread sheets produced under the CSSWales R/HAMP project to enable and evaluation of the data held. The method uses a core data set recommended by CSSWales as the minimum that TCBC should hold from each asset group and a method of assessing the quality and reliability of the data held. This results in a confidence rating for each item of data.

The review is used to identify data deficiencies and to enable improvement actions to be planned to improve the quality of the data held, where appropriate.

The results of the 'closing review' of the 2013 – 2018 HAMP are reported below in Appendix 1, by asset group, detailing any data deficiencies and the actions proposed for their improvement.

Appendix 1. Asset Data Improvement Register

Asset Data Improvement Register		
Data Deficiency	Data Improvement Action	Date
Carriageway Data		
None		
Footway Data		
None		
Street Lighting Data		
None		
Structures Data		
BCI bridge data	BCI data to be added for 50% of bridge stock	2018-2019
BCI retaining walls data	BCI data to be added for 25% of the known highway retaining wall stack	2018-2019
BCI culvert data	BCI data to be added for 25% of the culvert stock	2018-2020
Crash barrier data	Crash barrier data to be added	2019-2021
Traffic Management Systems Data		
None		
Street Furniture		
Location and type of asset	Location and type data for sample area to be captured	2018-2020

Section 4

TORFAEN COUNTY BOROUGH COUNCIL

HIGHWAY MAINTENANCE MANUAL

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	May 2019
Author	Mark Strickland
Issued to	
Version No	V 3.1

1 Introduction

1.1 Scope

This manual is part of a suite documents that comprise Torfaen County Borough Council's (TCBC) policy in managing highway maintenance. It details how the adopted highway network is categorised into a hierarchy and how this network is inspected and repaired. This maintenance manual will have a proposed lifespan of 6 years (2025) and will be updated by the end of 2021 and 2023.

1.2 Purpose

This document will detail how the Highway Authority (HA) carries out its duties, and demonstrate that the safety risks to users are appropriately managed with regard to both local, national and UK guidance.

1.3 Legal Requirements

The HA has a duty to meet the requirements of the Highways Act 1980, The New Roads and Streetworks Act 1991 and The Traffic Management Act 2004. These acts require the HA to maintain the highway at public expense, to co-ordinate all works in the Highway and to ensure the expeditious movement of traffic.

1.4 Guidance

TCBC has reviewed, refreshed and aligned its highway asset management policies and procedures and this manual is the result. It has been produced to reflect the local conditions that take in account the guidance produced by the County Surveyors Society (Wales), (CSS Wales) – CSSW Nationally Consistent Response to the Code of Practice 2016 and the 'Well Managed Highway Infrastructure: A Code of Practice, UK Roads Liaison Group 2016' (WMHI 2016).

2 Roles, Responsibilities and Competencies

The Chief Officer has delegated the Highway Asset Management Officer to review and update the processes contained within this manual.

The table below identifies the structure of responsibility and competencies of those involved in implementing the policy and this manual and are full outlined in the individual job descriptions.

Table 2:

Role	Responsibility
Executive Member for Environment	Approve the policy and standards in this manual
Chief Officer Neighbourhoods, Planning and Public Protection	Power to identify and prioritise the mitigation of safety risk on the highway network
Assistant Chief Officer Technical Services and Environment	Power to identify and prioritise the mitigation of safety risk on the highway network
Highway Network Manager	Delegated power to identify and prioritise the mitigation of safety risk on the highway network
Highway Asset Management Officer	Delegated powers to develop the manual and standards to be used and to ensure that these are implemented, monitor the results and ensure that an annual risk assessment is undertaken
Highways Inspector/On-Call (Standby) Officer	Undertake highway inspections/surveys recording and actioning works to ensure highway safety
Highways On-Call (Standby) Officer	To record, inspect and or assess any highway safety related report ensuring that this risk is mitigated until working hours
Highway Operative	Carry out and record all work as required by the highways inspectorate in line with the appropriate service levels and to record
Contractor	Carry out and record all work as required by the highways inspectorate in line with the appropriate service levels and to record

Competencies, Training and Accreditation

Highway Asset Management Officer: This officer will hold education qualification(s) of the equivalent of HND, or higher, in an engineering discipline and be able to demonstrate relevant experience in highway asset management, as required by TCBC's job description. The Officer will also be in possession, or working

toward accreditation under the CSS Wales highway asset accreditation scheme, or a similar standard.

Highway Inspector: A highway inspector will hold education qualification(s) of the equivalent of ONC, or higher in an engineering discipline and/or be able to demonstrate relevant experience in highway inspection, maintenance or administration as required by TCBC's job description. The Officer will also be in possession, or working toward accreditation under the CSS Wales highway inspector accreditation scheme, or a similar standard.

Highway Operative: During normal working hours TCBC highway operatives will work in gangs of two or more and the lead operative will hold the Street Works qualification relevant to the type of work being undertaken.

Highway On-Call (Standby) Officer: TCBC operate an out of hours' standby system, whereby anyone can be put in contact with an experienced officer via the Council's main telephone number. Officers undertaking this role will be chosen for their experience and knowledge of the Borough and have been instructed to always act to preserve highway safety in the first instance.

3 Network Hierarchy

Within both the CSS(Wales) and the WMHI 2016 guidance, road hierarchy should be based on use, function and the exposure to safety risk, at present the hierarchy is exclusively based on the road classification, which does not reflect this in all cases. Unlike in England, the process to alter the road classification is time consuming and costly, so it has been determined that the road classification need not be altered. TCBC in conjunction with CSS Wales have produced a revised road hierarchy based on the actual or estimated traffic flows. This, has been used to produce a table that when populated has given an indication of the safety risk that a user can expect to be exposed to when passing any condition variation, (a sudden or dramatic change in the nature of the asset likely to increase the risk of harm) in a carriageway's surface. Therefore, all roads have been divided into network hierarchy categories that reflect their use, function and the exposure to safety risk, this enables the creation of inspection and repair regimes that mitigate this.

3.1 Carriageways

The WMHI 2016 Section A:4.3.11 states:-

“The carriageway hierarchy will not necessarily be determined by the road classification, but by functionality and scale of use. Table 1 is intended to be used as a reference point from which to develop local hierarchies. The descriptions relate to the most usual circumstances encountered in the UK. There are likely to be, some very significant variations and Authorities should take their own circumstances into account.”

Table 1 below is abstracted from the WMHI 2016

Table 1 – Factors to Consider – Carriageways

Category	Type of Road General Description	Description
Motorway	Limited access -motorway regulations apply	Routes for fast moving long distance traffic. Fully grade separated and restrictions on use.
Strategic Route	Trunk and some Principal 'A' class roads between Primary Destinations	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40 mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.
Main Distributor	Major Urban Network and Inter-Primary Links. Short - medium distance traffic	Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.
Secondary Distributor	B and C class roads and some unclassified urban routes carrying bus, HGV and local traffic with frontage access and frequent junctions	In residential and other built up areas these roads have 20 or 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons. In rural areas these roads link the larger villages, bus routes and HGV generators to the Strategic and Main Distributor Network.
Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions	In urban areas these are residential or industrial interconnecting roads with 20 or 30 mph speed limits, random pedestrian movements and uncontrolled parking. In rural areas these roads link the smaller villages to the distributor

Category	Type of Road General Description	Description
		roads. They are of varying width and not always capable of carrying two-way traffic.
Local Access Road	Roads serving limited numbers of properties carrying only access traffic	In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs. In urban areas they are often residential loop roads or cul-de-sacs.
Minor road	Little used roads serving very limited numbers of properties.	Locally defined roads.

As stated in the CSS (Wales) guidance the above table –“....is a reference but does not include the most significant factor that affects risk: **use**”

In Torfaen, the WMHI2016 Section 4: Table 1 (above) has been considered and the table below has been developed and will be utilised when defining the hierarchy:

Table 3.1 Carriageways	
Category	Description (maximum daily traffic volume)
Strategic Route	Route enabling travel between regionally important locations, (in this document these routes are based on local significance and not on traffic volumes) in Torfaen the WMHI 2016 has been considered and only the A472 and the A4051 – Cwmbran Drive fit these criteria.
Main Distributor	Routes that have between 10,000 and 20,000 + vehicle movements per day. In Torfaen the WMHI 2016 has been considered and only the A4043 (Pontypool to Abersychan), Avondale Road, Henllys Way, Llanfrechfa Way and the roads around Cwmbran shopping centre fit the criteria.
Secondary Distributor	Routes that have between 5,000 and 10,000 vehicle movements per day and as set out in the WMHI 2016 these may include B and C class routes, should have maximum 30mph speed limits, have high pedestrian footfall, and are generally bus routes. This criteria has been applied to the network and currently there are 68 roads that fall into this category in Torfaen.
Link Road	Routes that have between 1,000 and 5,000 vehicle movements per day and as set out in the WMHI 2016 these may include lesser used urban streets with

Table 3.1 Carriageways	
Category	Description (maximum daily traffic volume)
	random or tidal pedestrian footfall. This criteria has been applied to the network and currently there are 167 roads that fall into this category in Torfaen.
Local Access Road	Routes that have up to 1,000 vehicle movements per day and as set out in the WMHI 2016 these may include roads serving limited numbers of properties carrying only access traffic. This criteria has been applied to the network and currently there are 1052 roads that fall into this category in Torfaen.
Note: The number of roads currently listed in this table will change as traffic flows increase or decreases, and will be reassessed at the Mid Life Update of this plan.	

CSS (Wales) and WMHI 2016 guidance suggests that a category of 'minor road' be included for traffic flows of below 200 movements per day. TCBC have included this category into the Local Access Road definition, on the basis the traffic movements are so small that it offers no discernible benefit to determining highway safety risk within the Borough.

As of July 2018 there are 1401 roads on the adopted network with Unique Street Reference numbers (USRN) that are maintained at public expense but, as traffic flow data has not been routinely collected since 2012, to establish vehicular flows for each street an estimation exercise has been undertaken based on local knowledge, engineers estimates and where possible, cross referenced with any ad hoc data that is available to the HA.

Each street has been the subject of a desktop exercise to determine the maximum vehicular movements per day split into 6 hour periods: 00:00 to 06:00, 06:00 to 12:00, 12:00 to 18:00, and 18:00 to 00:00. This allows engineers to have a better understanding and therefore more accurately model the usage profile of any given road. Until more accurate data is available this method will be used and revisited by the end of 2021 and 2023 to ensure that traffic flows for any given street remain as consistent as the data allows.

The table below has been produced to aid highway engineering staff to estimate the maximum expected vehicle movements on any given road:

Table 3.1.1									
Estimated Maximum Traffic Flow									
	00:00-06:00	Total	06:00-12:00	Total	12:00-18:00	Total	18:00-00:00	Total	Daily Total
	Movement every		Movement every		Movement every		Movement every		
Very High	2.5 seconds	8640	1.25 seconds	17280	1.25 seconds	17280	2.5 seconds	8640	51840
High	5.seconds	4320	2.5 seconds	8640	2.5 seconds	8640	5 seconds	4320	25920
Medium	30 seconds	720	7.5 seconds	2880	7.5 seconds	2880	10 seconds	2160	8640
Low	90 seconds	240	30 seconds	720	30 seconds	720	60 seconds	360	2040
Very Low	5 minutes	72	2 minutes	180	2 minutes	180	5 minutes	72	504

In June 2018 all relevant highway data was inputted into a table produced in conjunction with CSS (Wales), and, based on the traffic flows, road classification, HGV usage and existing hierarchy, a revised hierarchy was established. This information has then been transferred to the Council's GIS section for inclusion as metadata associated with each adopted street. It is this hierarchy that is then utilised as the foundation for the inspection regime.

3.2 Footways

The following hierarchies included in the CSS (Wales) and WMHI 2016 guidance have been considered when establishing the footway hierarchy:

Table 3.2 Footways	
Category	Description
Pedestrian Areas in City Centre Shopping/Business Areas	Very Busy areas of towns as cities with high public space and Streetscene contribution
Pedestrian Areas in Town Centre Shopping/Business Areas	Busy urban shopping and business areas and main pedestrian routes
Footways Outside Public Buildings or Facilities	Footways outside busy public buildings such as train/bus stations, hospitals, schools and colleges or small parades of shops etc. that experience significantly higher levels of use than the adjacent footways
Link Footways	Footways linking housing or industrial estates to other centres or routes
Local Access Footways	Footways in housing areas
Minor Footways	Rural footways with infrequent use

Both the CSS (Wales) and the WMHI 2016 suggests that a category of ‘minor footway’ be included where footfall is described as ‘little used rural footways serving very limited numbers of properties’, TCBC have included this category into the Local Access Footway on the basis the footfall counts are so small to offers no discernible benefit to determining highway safety risk.

TCBC has not historically collected routine pedestrian footfall figures, and only has two sites within the World Heritage site of Blaenavon where permanent counters are located. To establish a base figure for pedestrian footfall an estimation exercise has been undertaken based on local knowledge and where possible cross referenced with any ad hoc data that is available to the HA. Initially this exercise counted the number of properties on a street multiplied this by 3 to represent the average number of occupants per property and then doubled the figure to allow each person one movement into and out of the property to give a base figure for footfall on any given footway.

Each footway has been the subject of a desktop exercise to determine the maximum pedestrian movements per day split into 6 hour periods: 00:00 to 06:00, 06:00 to 12:00, 12:00 to 18:00, and 18:00 to 00:00. This allows engineers to have a better understanding and therefore more accurately model the usage profile of any given footway. Until more accurate data is available this method will be used and revisited annually as set out in the Highway Asset Management Plan (HAMP) to ensure that pedestrian footfall flows for any given footway remain as consistent as the method allows.

The table below gives an estimation of the maximum expected pedestrian movements over any part of a street:

Estimated Maximum Pedestrian Footfall									
	00:00-06:00	Total	06:00-12:00	Total	12:00-18:00	Total	18:00-00:00	Total	Daily Total
	Pedestrian every		Pedestrian every		Pedestrian every		Pedestrian every		
Very High	5 min	72	10 secs	2160	5 secs	4320	15 secs	1440	7992
High	30 min	18	15 secs	1440	10 secs	2160	30 secs	720	4338
Medium	1 hr	6	90 secs	240	30 secs	720	1 min	360	1326
Low	3 hrs	2	3 min	120	90 secs	240	3 min	120	482
Very Low	6 hrs	1	10 min	36	6 min	60	10 min	36	133

Combining tables 3.2 and 3.2.1 the hierarchies for TCBC footways are:

Table 3.2.2				
TCBC Footway Hierarchy				
Category	CSS Wales Description	WMHI 2016 Description	Estimated Maximum Pedestrian Footfall	Location
Primary Walking Routes/Zones	High use pedestrianised zone and footways in town centres	High use pedestrianised zone and footways in town centres	Very High	Pedestrian Area Pontypool
Secondary Walking Routes/Zones	Footways outside busy public buildings such as train/bus stations, hospitals, schools and colleges or small parades of shops etc. that experience significantly higher levels of use than the adjacent footways	Busy urban shopping and business areas and main pedestrian routes	High	Includes: Non Ped Areas Pontypool TC, Blaenavon TC, Abersychan VC, Pontnewydd VC, Old Cwmbran VC, Llanyravon Shops, North Road Croesyceiliog Shops, Greenmeadow Way Shops, All school and college entrances
Link Footways	Footways linking housing or industrial estates to other centres or routes	Linking local assess footways through urban areas and busy rural footways	Medium	Includes: Cycleway 492, non-residential footways radiating out of Cwmbran TC. non-residential footways radiating out of Pontypool TC
Local Access Footways/ Minor Footways	Footways in housing areas/ Rural footways with infrequent use	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs/little used rural footways serving very limited numbers of properties	Low/Very Low	All other footways

Both the CSS(Wales) and the WHMI 2016 suggests a very high use category named Prestige Walking Zones, which are ‘Pedestrianised zones and footways used by thousands of people per day, very high use areas in cities such as Newport and Cardiff.’ However, in Torfaen the only area that would fit this category would be Cwmbran (New Town) which is in private ownership and so not covered by the document.

3.3 Structures

Based on the CSS (Wales) guidance the following hierarchies have been used:

Table 3.3 Structures	
Category	Description
Vital Structure	A structure that is vital to the network and if required to have restricted use or removed from service would result in significant adverse disruption/delay to traffic movement
Important Structure	A structure that is deemed important to the functioning of the networks and restricted use or loss would cause disruption to traffic movement
Standard Structure	All other highway related structures

3.4 Street Lighting

In 2008 TCBC agreed to reduce the Council’s Carbon footprint and adopted a policy of risk assessed switch off or part night lighting of street lights to achieve this. Historically the safety hierarchy of street lights has been based on the electrical safety of individual columns, however, to ensure that there was no increased safety risk or legal issues by deactivating lights a safety risk exercise was undertaken to identify those lights that were to remain in lighting during the hours of darkness. This included roundabouts, junctions, roads with traffic calming and lights within 30 mph areas to meet the requirement of the Road Traffic Regulation Act 1984, Section 82(1)(a).

Maintenance of the asset is carried out via a Term Contract which includes times for attendance for faults and outages. Within this Contract are targets for repair and maintenance work not considered in this document.

3.5 Traffic Signals

Based on the CSS (Wales) guidance the following hierarchies have been used:

Table 3.5 Traffic Signals	Description
Vital Junction	Due to the limited number of traffic signal controlled junctions in the Borough all illuminated traffic signals at any junction in the Borough are classed as vital
All other Signals	This will include all illuminated pedestrian signal crossings

TCBC maintain their traffic signal assets via a term contract in which the hierarchy is set as per table 3.5 and maintenance and call out regimes are included in this document.

Regional Consistency

Consultation has been undertaken prior to adopting this policy with Caerphilly, Blaenau Gwent, Monmouth and Newport HA's and nationally with all Local Authorities in Wales via the CSS (Wales) HAMP project, to ensure that a broadly consistent approach to Highway Asset Management is taken. TCBC has confirmed that where routes cross into neighbouring Authorities hierarchies and so inspection regimes have a high level of commonality.

3.6 Update and Review

The carriageway hierarchies and associated inspection frequencies will be reviewed by the end of 2021 and again in 2023 for the lifecycle of this plan, and will only be altered if:

- Evidence is available to prove that the current traffic flow data has changed
- Case law is cited to which the CSS Wales HAMP project accept is relevant
- New statute or guidance is issued

4 Inspection Regime

4.1 Types of Inspection

To monitor the condition and repair needs of any highway asset TCBC employs a regime of inspections made up of the following types

- 4.1.1 Detailed Visual Inspection (DVI): Unless a safety risk assessment precludes it, all inspections in TCBC will be walked and carried out by a qualified Highways Inspector using the accredited CSS(Wales) DVI standards and guidance, and include both footway and carriageway.
- 4.1.2 Coarse Visual Inspection (CVI): Where a safety risk assessment has been carried out highlighting that a walked inspection is inappropriate a CVI, driven inspection will be made from a slow moving vehicle in accordance with the National and UK standards and guidance, and include both footway and carriageway.
- 4.1.3 Reactive Inspections: These site specific DVI's are carried out in response to reports of potential safety risks generated by persons outside the Highways Inspectorate.
- 4.1.4 Reports by Third Parties: When a report is received by TCBC Highway Network Section from a third party regarding the condition of the carriageway, it will be recorded and assessed by a qualified and/or experienced officer within 24 hours. Any remedial work deemed required will be programmed in line with the HA's repair regime for that asset. It is accepted that there will be a wide variation in the quality of the data that these reports will provide, however, TCBC regards these reports as potentially significant risks and so does not distinguish between safety and maintenance reports. Currently the Council operates an out of hours automated mobile application to alert the Council of condition variations in the highway assets that may constitute a safety risk to highway users. This application clearly states that the response times are limited to office hours and as such *is not recognised as being a report received by TCBC's Highway Network Section* for the purposes of this document.
- 4.1.5 Planned Inspections: These are proactive DVI's are carried out to identify, record and where required, programme works to mitigate actual or potential safety risks to highway users.

- 4.1.6 Condition Inspections: These inspections are carried out to identify and record the condition of the asset so that a programme of preventative maintenance can be generated and will include DVI's, manual or machine based inspections depending on the nature of the asset.

4.2 Carriageway Inspection Frequencies

- 4.2.1 Planned Inspections: The frequency of inspections will be based on the safety risk that a highway user could be exposed to, based on the traffic flow past a point on a carriageway, that may have a condition variation. A table has been produced and the results are held within the TCBC Highway Assets Risk Review Method report. Based on this methodology, and initially using the Main Distributor traffic flows (as detailed in the CSS(Wales) 'Risk Based Approach to Highway Management'), as a datum the following frequencies have been determined:
- 4.2.2 Carriageway Inspection Frequencies: The following Routine planned inspections are carried out on the carriageway:

Table Hierarchy	4.2.2 CSS(WALES) Recommended Minimum Inspection Frequency	CSS(WALES) Recommended Inspection Method	TCBC Inspection Frequency	TCBC Method of Inspection
Strategic Route	Monthly	Driven	4 weekly	Walked**
Main Distributor	Monthly	Driven	4 weekly	Walked**
Secondary Distributor	3 Monthly	Driven	13 weekly	Walked**
Link Road	6 Monthly	Driven	26 weekly	Walked**
Local Access Road/Minor Road	24 monthly if in good condition 12 monthly if condition if poor condition or unknown	Driven	39 weekly*	Walked**

*This figure has been chosen as inspections on the lowest used routes will over a period give planned inspections at differing seasons over a period of years.

**Unless the risk assessment for the road identifies that due to the nature or use of the road the safety of the highway inspector would be at risk if a walked inspection were carried out.

4.2.3 Condition Inspections: These are annual surveys to assess the long term maintenance needs of the network and are carried out in line with CSS(Wales) condition assessment criteria, (to demonstrate consistency across Wales) by qualified highway personnel.

The TCBC inspection frequencies mirror those recommended by the CSS Wales HAMP project, however, the frequency for Local Access and Minor Roads was deemed too great a deviation from the existing regime. After consultation it was has been decided to assess these intervals at the planned 2021 and 2023 updates of the HAMP.

4.3 Footway Inspection Frequencies

- 4.3.1 Planned Inspections:** The frequency of inspection will be based on the risk factor that a highway user could be exposed to, based on the traffic flow past a point on a footway, that may have a condition variation. A table has been produced and the results are held within the TCBC Highway Assets Risk Review Method report. Based on this methodology, the following frequencies have been determined. If temporary local factors or conditions warrant the reduction in time between inspections to ensure highway safety, then details of the reasoning for the increased inspections will be agreed by the delegated Officer and recorded within the asset database against the street or section of street concerned.
- 4.3.2 Footway Inspection Frequencies:** The following Routine planned inspections are carried out on the footway:

Table Hierarchy	4.3.2	CSS(WALES) Recommended Minimum Inspection Frequency	CSS(WALES) Recommended Inspection Method	TCBC Inspection Frequency	TCBC Method of Inspection
Primary Routes/Zones	Walking	Monthly	Walked	4 weekly	Walked
Secondary Routes/Zones	Walking	3 Monthly	Walked	13 weekly	Walked
Link Footways		6 Monthly	Walked	26 weekly	Walked
Local Access Footways/ Minor Footways		24 monthly if in good condition 12 monthly if condition if poor condition or unknown	Walked	39 weekly*	Walked

*This figure has been chosen as inspections on the lowest used routes will over a period give planned inspections at differing seasons over a period of years.

Where Carriageway and footway hierarchies intersect, or can be inspected simultaneously, the higher frequency (shortest interval) level will be applied.

Where carriageway and/or cycleway and/or footway hierarchies intersect, such as pedestrian crossings or other defined crossing points, the footway hierarchy, investigation level and response time will always take precedence.

4.4 Inspection Tolerance

TCBC will allow an inspection date variation of up to a 10% or 10 working days (whichever is the least) either side of the scheduled inspection date (excluding bank holidays) to the date of the scheduled inspection. This allows for unforeseen circumstances that prevent inspection, such as bad weather or employee sickness, with the reason and length of extension being recorded.

4.5 Planned Interruptions

Where a planned interruption of the inspection frequencies can be predicted, (Christmas ‘shut-down’, prolonged adverse weather etc.) the Chief Officer for the Environment or the delegated officer will advise the Executive Member for the Environment, record the event and instigate an agreed, modified inspection and repair programme:

1. Highway inspectors will only assess and record Category 1 and 2 condition variations as set out in Tables 5.1 and 5.2.
2. Highway gangs will be allocated areas and will systematically carry out and accurately record temporary repair work to any variations in the condition of the carriageway or footway in line with Table 5.2 and 5.3, street by street, until cessation of the interruption is agreed.
3. During this period any condition variation identified before the start of the interruption will be suspended for the duration of the interruption.

4.6 Inspected Assets

The assets inspected during a routine inspection shall include, but not limited to:

- Carriageways
- Footways
- Covers Gratings and Frames (including Statutory Undertakers apparatus)
- Kerbs, Edgings and Channels
- Drainage assets
- Guardrails, Fencing and Restraint Systems
- Verge, Trees and Hedges
- Road Studs and Markings
- Traffic Signals, Traffic Signs, Controlled Crossings
- Street Furniture

4.7 Inspection Records

Both Highway Inspectors and Highway Operatives are required to, and will, record all relevant details relating to any actionable condition variation, either manually or electronically in accordance with the requirements of the Council's Mayrise asset management database.

5 Repair Regime

5.1 Condition Variation (CV) Categories

The CSS(Wales) and the WMHI2016 uses the word 'defect' to describe damage/safety risk to a highway asset, within this document the phrase condition variation (CV) has been substituted as it is considered that this more fully describes an area of an asset that would warrant a safety risk assessment.

The assessment and data recorded during highway inspections is used to determine the CV category, CV categories are then used to prioritise any repairs required. The following CV categories as recommended by CSS (Wales) have been adopted by TCBC.

Table 5.1

CV Category	Description (indicative)	CSS(WALES) Recommended Response Time	TCBC Response Time
CV 1 – (Category 1) All Roads	Condition Variations that pose an immediate safety risk to highway users, such as, collapsed cellar light, missing utility cover, fallen tree, or unprotected excavation.	2 hours to attend site with any works to make safe or repair carried out asap	Made safe or repaired 2 hours from time of first assessment by TCBC
CV 2 – (Category 2) Strategic route Main distributor Secondary distributor	Condition Variations that pose an imminent safety risk to highway users such as, a loose kerb edge, damage to the surface of a carriageway where by its location and use an accident is probable, damage to an asset which if left for more than 24 hours will cause a CV1.	By the end of the next working day	24 hours from time of first assessment by TCBC
CV 2 – (Category 2) Link road Local access/minor road	Condition Variations that pose an imminent safety risk to highway users such as, a loose kerb edge, damage to the surface of a carriageway where by its location and use an accident is probable, damage to an asset which if left for more than 7 calendar days will cause a CV1.	Within 5 working days	7 Calendar days from time od first assessment by TCBC
PM 1 Planned Maintenance Strategic route Main distributor Secondary distributor	Condition Variations that on assessment, and which if left, will degrade into a CV2 prior to the next scheduled inspection and are greater than the dimensional criteria in Tables 5.2, 5.3, 5.4 and 5.5	Within 1 month	Within 4 weeks
PM 1 Planned Maintenance Link road Local access/minor road	Condition Variations that on assessment, and which if left, will degrade into a CV2 prior to the next scheduled inspection and are greater than the dimensional criteria in Tables 5.2, 5.3, 5.4 and 5.5	Within 3 months	Within 12 weeks
Planned Maintenance PM 2	Condition Variations that on assessment, do not and are unlikely to, become a safety risk, but if works were carried out would prolong the service life of the asset.		To be included in annual programmed maintenance schemes

5.2 Condition Variation types and Investigation Level

The following tables outline the starting point for the thought process to satisfy the 'hybrid' safety risk assessment, recommended by CSS(Wales), that an inspector will use in his/her considerations with regard to the highway assets. This table is a guide only, and describes non-exhaustive CV types and suggested investigation levels, and are meant as an initial guide to establishing the safety risk of a CV in an asset. Each specific CV may have factors that appear below and will require the experience and knowledge of TCBC officers to dynamically determine the safety risk to highway users.

Current technology allows TCBC highway inspectors, when carrying out a planned inspection of a street to photograph any CV that, based on the investigation levels below and a dynamic risk assessment, may warrant recording. Thus recorded visual evidence is the first step of determining possible safety risk and therefore this system of inspection accepts that if a qualified Officer has made a risk assessment of a street then only those CV's recorded merit works to make them safe.

Table 5.2

Critical Condition Variation (CV)1

Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
All	Major debris or spillage on the highway; carriageway/footway/cycleway collapse with high risk of accident or loss of control; unstable overhead wire, trees or structures; exposed live wiring; isolated standing water with very high risk of loss of control; missing or seriously defective ironwork with high risk of injury to highway users	All	Not applicable, critical CV's are defined by the potential to cause immediate injury not by CV size	Not applicable, critical CV's are defined by the potential to cause immediate injury not by CV size	2 hours from time of first assessment by TCBC

Table 5.3

Critical Condition Variation (CV)2					
Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
Carriageways	Pothole	Strategic Route Main Distributor Secondary Distributor	Greater than 50mm average depth	Maximum horizontal dimension greater than 150mm	24 hours from time of first assessment by TCBC
	Pothole	Link Road Local Access Road Minor Road	Greater than 75mm average depth	Maximum horizontal dimension greater than 150mm	7 Calendar days from time od first assessment by TCBC
Footways	Pothole	Primary Walking Routes/Zones Secondary Walking Routes/Zones	Greater than 25mm average depth	Maximum horizontal dimension greater than 75mm	24 hours form time of first assessment by TCBC
	Pothole	Link Footways Local Access Footways/ Minor Footways	Greater than 40mm average depth	Maximum horizontal dimension greater than 75mm	
	Crack or Gap	Primary Walking Routes/Zones Secondary Walking Routes/Zones	25mm to 40mm average depth	Maximum horizontal dimension greater than 25mm	
	Crack or Gap	Link Footways Local Access Footways/ Minor Footways	Greater than 40mm average depth	Maximum horizontal dimension greater than 25mm	
	Trip	Primary Walking Routes/Zones Secondary Walking Routes/Zones	25mm to 40mm average depth	Not applicable	
	Trip	Link Footways Local Access Footways/	Greater than 40mm average depth	Not applicable	

Table 5.3

Critical Condition Variation (CV)2					
Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
Footways		Minor Footways			
	Rocking Slab	Primary Walking Routes/Zones Secondary Walking Routes/Zones	25mm to 40mm variation in height	Not applicable	
	Rocking Slab	Link Footways Local Access Footways/ Minor Footways	Greater than 40mm variation in height	Not applicable	
	Kerbing	Dislodged, Loose, Missing, Damaged	Primary Walking Routes/Zones Secondary Walking Routes/Zones	Greater than 25mm variation across or between units	
		Dislodged, Loose, Missing, Damaged	Link Footways Local Access Footways/ Minor Footways	Greater than 40mm variation across or between units	
Traffic Signals	Any Fault	Vital Junction	Not applicable	Not applicable	Included in TCBC term contract specification
Illuminated Highway Signage	Any Fault	Vital Junction	Not applicable	Not applicable	Included in TCBC term contract specification

Table 5.4**Planned Maintenance (PM) 1**

Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
Carriageways	Pothole	Strategic Route Main Distributor Secondary Distributor	Greater than 40mm average depth	Maximum horizontal dimension greater than 150mm	Prior to next routine inspection or 12 weeks whichever is shorter
	Pothole	Link Road Local Access Road Minor Road	Greater than 50mm average depth	Maximum horizontal dimension greater than 150mm	
	Crowning/ Depression	All	Greater than 100mm	Less than 2m in any direction	
Footways	Pothole	All	25mm to 40mm average depth	Maximum horizontal dimension greater than 75mm	Prior to next routine inspection or 12 weeks whichever is shorter
	Crack or Gap	All	25mm to 40mm average depth	Maximum horizontal dimension greater than 25mm	
	Trip	All	25mm to 40mm average depth	Not applicable	
	Rocking Slab	All	25mm to 40mm average variation in height	Not applicable	
	Badly cracked or damaged ironwork	All		Not applicable	
Kerbing	Dislodged, Loose, Missing, Damaged	All	25 to 40mm variation across or between units	Not applicable	
Drainage	Water on the carriageway or footway	All			Detailed in TCBC Gully Cleansing Service 2018 to 2023 V 2.4
	Broken Drain cover or frame	All			Prior to next routine inspection or 59 days

Table 5.4					
Planned Maintenance (PM) 1					
Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
					whichever is shorter
Traffic Signals	Any Fault	Non Vital Junction	Not applicable	Not applicable	Included in TCBC term contract specification
Illuminated Highway Signage	Any Fault	Non vital Junction	Not applicable	Not applicable	Included in TCBC term contract specification

Table 5.5					
Planned Maintenance (PM) 2					
Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
Carriageways	Pothole	Strategic Route Main Distributor Secondary Distributor	25mm to 40mm average depth	Maximum horizontal dimension greater than 150mm	Details to be added to database and used as evidence to inform the annual prioritisation of capital works programme
	Pothole	Link Road Local Access Road Minor Road	25mm to 50mm average depth	Maximum horizontal dimension greater than 150mm	
Footways	Pothole	All	15mm to 25mm average depth	Maximum horizontal dimension greater than 75mm	Details to be added to database and used as evidence to inform the annual prioritisation of capital works programme
	Crack or Gap	All	15mm to 25mm average depth	Maximum horizontal dimension greater than 25mm	
	Trip	All	15mm to 25mm average depth	Not applicable	
	Rocking Slab	All	0mm to 25mm average variation in height	Not applicable	

Table 5.5					
Planned Maintenance (PM) 2					
Asset Type	CV Description	Hierarchy	Dimension Criteria		Time Response
			Depth/Height	Extent	
Kerbing	Damaged, Cracked	All	Not applicable	Not applicable	

Important Note: The data contained in the tables above are a guide to aid highways inspectors in making their assessment of risk and are in no way strict intervention but investigation levels. The highway inspector will make an assessment of either the safety risk or maintenance risk at each point were the condition of the asset varies, and will then programme any remedial action based on the site conditions and other relevant factors, of which the condition variation only forms part.

5.3 Works Ordering and Repair Records

A highway inspector will, at or before the due date on the schedule, inspect the highway asset and will physically mark and then record the nature and location of any actionable CV's. Works ordering is undertaken utilising TCBC's Mayrise highway management system, after data has been inputted from highway inspections. Works are only deemed complete, and signed off as such, once full repair data has been added to the works record.

5.4 Annual Planned Maintenance Assessment Scheme

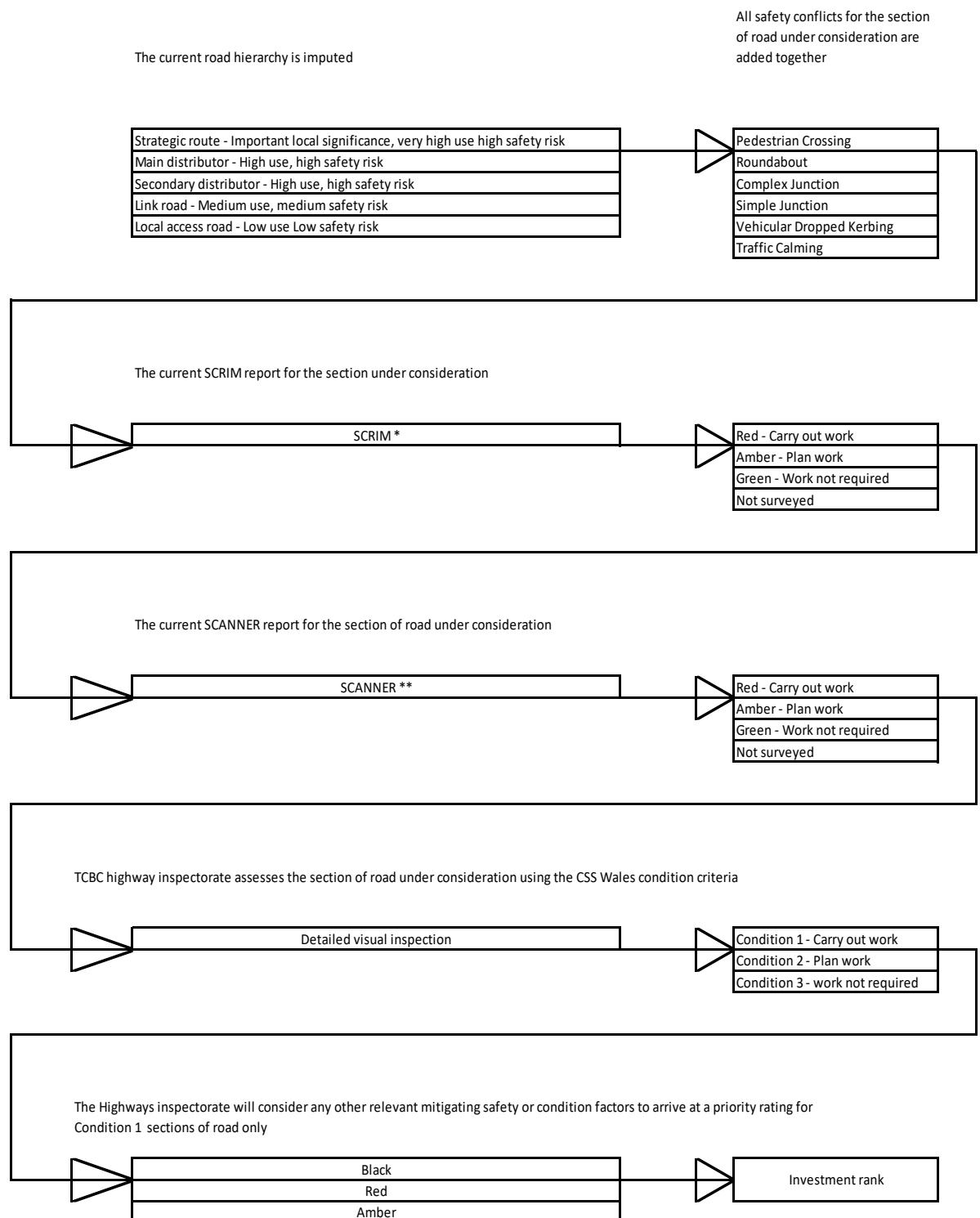
The current level and projected level of funding available for 'Needs Based'(programmed maintenance) is expect to be at a level where only individual sections or small sections of the asset can be dealt with at any one time. To ensure that the limited funding is maximised the following system of identifying these sites has been adopted to demonstrate transparency in the selection process:

Where an asset demonstrates a significant annual change or degradation in its condition, or ability to function, or has been highlighted by Highway Inspector (Programmed Maintenance - PM2) or other party, then the following criteria will be considered in compiling the annual list in the following order:

1. If available and appropriate any accident data relating to the condition of the site in question will be considered as a primary reason for inclusion in the planned maintenance scheme displacing the top investment ranked sites.
2. The site assets' hierarchy will be used to establish the initial safety risk as TCBC's classification of the road has been assessed using traffic flows, which has been shown in this document to demonstrate one of the main safety risks to public.
3. Predetermined safety risk factors are added together which include, pedestrian crossing points, roundabouts, complex and simple junctions, vehicular dropped kerbing and traffic calming to form a risk index where vulnerable users are likely to regularly be in conflict with vehicular traffic.
4. If available and appropriate any deficient SCRIM results will be taken into account for the site under consideration. Sideways Coefficient Routine Investigation Machine - measures the likelihood of a vehicle skidding on a wet road.
5. If available, SCANNER data will be added to the site under consideration providing an indication of condition ranking. Surface Condition of the National Network of Roads (SCANNER) – is a survey carried out by a vehicle at speeds up to 30 mph which uses a suite of optical and electronic sensors and advanced computer software to assess condition variations in the road surface linked to its condition. These include surface texture depth, cracking/crazing, rutting and longitudinal profile.
6. A Detailed Visual Inspection (DVI) will be carried out by qualified inspectors to CSS (Wales) approved methodology with a further detailed assessment of only condition 1 areas to priority rank these sites. The detailed assessment will take into account any other pertinent factors that are not included in the generic system and will be recorded against each site assessment.
7. If condition data or safety criteria is such that the scheme would not warrant the sites' inclusion in the Needs Based schedule but other circumstances support it, then a summary of the extenuating circumstances will be produced and presented to the Chief Officer for the Environment for approval, and only if approved by this officer will it be included in the annual schedule.
8. The results of the each of the above will then be inputted into suitable computer software and an investment ranking list will be produced which will then be costed against the available funding. Prior to submission for approval by the Chief Officer, and briefing the Executive Member for the Environment the proposed scheme list will be distributed within the Council for information.

The flow chart diagram below shows graphically the decision process taken in establishing the investment ranking for any carriageway planned maintenance scheme.

Highway Capital Investment – prioritisation flow chart



* Sideways Coefficient Routine Investigation Machine - measures the likelihood of a vehicle skidding on a wet road

** Surface Condition of the National Network of Roads - a vehicle used to quickly assess several aspects of the surface of the road which are linked to its condition

6 Working Hours

6.1 Reactive Maintenance - Normal Working Hours

In TCBC reactive maintenance is safety based and the authority has set a target that all CV's assessed as meeting the criteria as set out in Table 5.2 and 5.3. Any report of a CV on the highway network will be assessed by a qualified and/or experienced officer within a maximum of 24 hours. During the working week, (8:00am to 3:30pm – Mon to Thurs and 8:00am to 3:00pm Fri) any required action will, as appropriate, sign and/or protect the CV to mitigate the immediate safety risk to the general public and highway users. TCBC will then effect a temporary repair, where this is deemed adequate and appropriate, to minimise the disruption to the freedom of movement on the network. A final permanent repair will then carried out within the timescale set by the highway inspector or equivalent officer, based on the complexity of the operation concerned and the needs of the network.

6.2 Reactive Maintenance - Outside Normal Working Hours

Outside normal working hours (7:30am to 3:30pm – Mon to Thurs and 7:30am to 3:00pm Fri) including Bank Holidays, TCBC operate an emergency standby system. When a CV is reported on the highway network an experienced officer (as set out in Table 2) is informed and he/she will then instruct standby operatives to initially, appropriately sign and/or guard the defect. Then, depending on the location and extent of the defect, the officer may instruct the standby operatives to carry out a temporary repair or he/she will inform the Senior Highway Inspector at the beginning of the next working day so that normal hours' procedures can be instigated.

7 Winter Maintenance

7.1 Statutory Basis

Section 111 of the Railways and Transport Act 2001 amended Section 41(1A) of the Highways Act 1980 (duty of a highway authority to maintain the highway) which reads:

- a) *The authority who are for the time being the highway authority for a highway maintainable at public expense are under a duty, subject to subsection (2) and (3) below, to maintain the highway.*

- b) (1) *In particular, a highway authority is under a duty to ensure, so far as is reasonably practicable, that the safe passage along the highway is not endangered by snow and ice.*

This is not an absolute duty, given the qualification of 'reasonable practicability', but it does effectively overturn previous legal precedence, albeit with not with retrospective effect. Well-Managed Highway Infrastructure recognises that it is not practical or possible to provide the service on all parts of the network, and ensure that running surfaces are kept free of ice and snow at all times, even on treated parts of the network. To comply with the legislation TCBC have formulated and agreed a Winter Maintenance Plan, which is updated annually.

8 Flooding

8.1 Heavy Rain

TCBC have an extensive historic database of the possible locations of flooding to the highway network, and have formulated a system of pre-inspection and cleansing using the Streams and Culverts Maintenance Schedule. All roads within the Borough have some method of transporting rain water from their surface, this ranges from a channel at the side of the carriageway through a formal system of gullies and outfall pipes to the large storage systems associated with Sustainable urban Drainage Systems (SuDS). The most common type of highway drainage system employed in TCBC is of the gully and outfall pipe system. It is recognised that in times of storm the highway can flood and cause a danger to highway users, to reduce the risk of this TCBC carry out routine cyclical gully maintenance in accordance with the agreed Highway Drainage Cleansing Service 2019 to 2024 policy document. Gullies located in the adopted highway are inspected, and where necessary cleansed on an annual basis by dedicated highway operatives to ensure the drainage system is functioning correctly.

It must be noted that the primary function of a highway drainage system is to reduce the risk of flooding to the highway; it is not to protect adjacent landowners. It is accepted that by cleansing the highway drainage system some landowners adjacent to the highway gain a benefit from this operation, however, road safety is the primary consideration when prioritising operations during storm events.

TCBC realise due to the unique topography of 'the Eastern Valley' that watercourses feeding the Afon Llwyd have in the past caused severe flooding to the highway network. A schedule of culvert entrances and known or likely to cause such flooding

is held by TCBC and these are inspected and cleansed as per The Maintenance Schedule for Streams and Culverts.

9 Statutory Undertakers

9.1 Reinstatement Specification

The works carried out by Statutory Undertakers are controlled and co-ordinated by a TCBC officer dedicated to dealing with the New Roads and Street Works Act 1991 utilising The Specification for the Reinstatement of Openings in Highways 2nd edition 2006. All non-emergency works are presented to the South East Wales Highway Authorities and Utilities Committee, where suitable timings and working practices are agreed in order to resolve any local conflicts. TCBC have a list of traffic sensitive streets and protected streets reproduced as Appendix A together with a list of streets and their reinstatement types.

10 Verge Maintenance

10.1 Highway Land Maintenance specification

The Highway Authority utilise TCBC in-house grounds maintenance resource to cut and manage the highway verge, visibility splays and any associated shrubs or trees contained therein. Grass cutting is carried out from April until September each year on a rolling programme with the whole of the asset cut on a ten working day cycle. The extents of the asset are recorded and held on the Council's GIS database. Weather permitting this gives a maximum number of 12 cuts per year, and the grass is cut to a length not exceeding 25mm. All arising's are removed from the highway via mechanical sweeper and from footways by air blower. On high speed or traffic sensitive streets where traffic management is deemed to be required the cutting regime will be organised on a risk basis up to a maximum of 6 cuts per year. Depending on location the grass and vegetation is cut using a variety of mechanical methods appropriate to the site and time of year.

Appendix A - TCBC Protected Streets

Route number	Location	Extent
A472	Jct. A4042 (T)Pontypool R/A to Caerphilly County Boundary	New Crumlin Road A472 [part 5299m]
A4051	Jct. Croes-y-Mwlach R/A to Jct. A4042 (T)New Inn R/A	Croes y Mwyalch dual Link Cwmbran Drive Llantarnam Cwmbran Drive Pontnewydd
R99	A4042 Cwmbran R/A to R98 R/A Usk Road	Newport Road New Inn [part 974m]The Highway New Inn
R270	Llewellyn/Caradoc Rd R/A to Upper Cwmbran Rd	Maendy Way
R272	A4051 Greenforge Way R/A to Community Farm R/A	Greenforge Way
R273	R350 Llantarnam Road R/A To Hollybush R/A Henlllys Way plus Link road from A4051 Henlllys Way R/A to Fire Station R/A Henlllys Way	Henlllys Way [part 728m]
R274	R/A at Hollybush to R/A at Fairwater(R275/R276)	Penylan Way Coed Eva
R275	R/A @ Fairwater to R273 Henlllys Way	Fairwater Way
R276	R/A at Fairwater to Community Farm R/A	Ty Gwyn Way Fairwater Ty Gwyn Road Fairwater [part 832m] Ty Gwyn Way St Dials
R277	R273 Henlllys Way to Community Farm	Greenmeadow Way
R290	A4042 (T)R/A to Cul – de – sac Springfield Close	Turnpike Road [part 907m]The Highway Croesyceiliog
R291	R350 St. David's R/A to R290 The Highway Croesyceiliog plus Edlogan Way Extension	Edlogan Way Chapel Lane [part 278m] Edlogan Way Extension
R292	R290 Turnpike Road to R350 Avondale Road	Woodland Road Avon Terrace Pontnewydd Station Road Pontnewydd [part 263m]
R296	A4042 (T)to R350 R/A	Llanfrechfa Way
R297	Llanyrafon Way Croesyceiliog	Llanyrafon Way
R298	R350 R/A to R299 R/A	Llewellyn Road (south) [part 590m]
R299	R350 St. David's R/A to Jct. R299	Tudor Road Llewellyn Road (north) [part462m] Caradoc Road Glyndwr Road
R350	Jct. A4042 (T)to A4051 R/A	Avondale Road [part1471 m] St David's Road Llantarnam Road
R390	A4051 Woodlands R/A to A4042 (T)Crown R/A (old Newport Road)	Newport Road Llantarnam
U148001 U158003	Hollybush Way	Hollybush Way
U150501	Thornhill Rd, upper Cwmbran	Thornhill Road
	Junction with R276 to junction with Henlllys Way	Ty Canol Way
	From Edlogan Way R/A R291 to Avondale Road Junction R350	Chapel Lane
	Henlllys Way from R/A near Fire Station to R/A (R274/R278/U158003)	Henlllys Way [part 3637m]

Appendix B - TCBC Reinstatement Types (To DFT Road Note 35)

Type 1

A472	Jct. A4042 (T)Pontypool R/A to A 4043 R/A Albion Road	New Crumlin Road A472
A4051	Jct. Croes-y-Mwlach R/A to Jct. A4042 (T)New Inn R/A	Croes y Mwyalch dual Link Cwmbran Drive Llantarnam Cwmbran Drive Pontnewydd
A4043	A472 (Albion Road R/A) to B4246 Junction Pontnewynydd	A 4043 Pontypool Western By Pass
R390	A4051 Woodlands R/A to A4042 (T)Crown R/A (old Newport Road)	Newport Road Llantarnam

Type 2

A4043	Jct. A472 to B4246, Blaenavon	St Luke's Road Pontnewynydd Snatchwood Road Pontnewynydd [part 923m] Broad Street Abersychan Station Street Abersychan Cwmavon Road Blaenavon
B4236	Newport CC Boundary to A4042 (T)Turnpike R/A	Caerleon Road
R350	Jct. A4042 to A4051 R/A	Avondale Road [part 1471 m] St David's Road Llantarnam Road
R298	R350 R/A to R299 R/A	Llewellyn Road (south) [part 590m]
R299	R350 St. David's R/A to Jct. R299	Tudor Road Llewellyn Road (north) [part 462m] Caradoc Road Glyndwr Road
R291	R350 St. David's R/A to R290 The Highway Croesyceiliog plus Edlogan Way Extension	Edlogan Way Chapel Lane [part 278m] Edlogan Way Extension
R273	R350 Llantarnam Road R/A To Hollybush R/A Henllys Way plus Link road from A4051 Henllys Way R/A to Fire Station R/A Henllys Way	Henllys Way [part 728m]
R287	R289 Station Rd to A472 Pontymoile	South Street Sebastopol Greenhill Road Sunnybank Road Stafford Road New link road to Cwmyniscoy R/A [296m] Cwmyniscoy Road [part 188m]
R289	A4051 (Avondale Road R/A) to R287 Sunnybank Rd	Avondale Road [part 491m] Station Road Griffithstown Coed y Gric Road
UC	Blaendare Road And Blaendare Link Road	
UC	Henllys Way from R/A near Fire Station to R/A (R274/R278/U158003)	Henllys Way [part 3637m]

Type 3

B4246	Jct. A4043 to Monmouthshire County Boundary at R50	Hill St [part 49.5m](Pontnewynydd) George St (Pontnewynydd) Freeholdland Road Limekiln Road Snatchwood Road [part 100m] Union Street Abersychan Foundry Road Abersychan Lodge Road Abersychan Church Road Talywain Commercial Road Talywain Albert Road Talywain New Road Garndiffiath Emlyn Road Talywain Varteg Road Abersychan Prince Street Blaenavon Church Road Blaenavon North Street Blaenavon Abergavenny Road Blaenavon
B4248	Jct. B4246 to Monmouthshire County Boundary	Garn Road
R270	Llewellyn/Caradoc Rd R/A to Upper Cwmbran Rd	Maendy Way
R271	A4051(Maendy Way R/A) to R350 Pontrhydyrun	Chapel Street Pontnewydd Richmond Road Russell Street [part 63m] New Street Pontnewydd [part 69m] Commercial Street Pontnewydd [part 38m] Lowlands Road Grove Park
R272	A4051 (Greenforge Way R/A) to Community Farm R/A	Greenforge Way
R273	R350 (R/A Llantarnam Road) to (R/A Hollybush Way)plus Link road from A4051 (R/A Henllys Way) to (R/A near fire station) Henllys Way	Henllys Way [part 728m]
R275	R/A at Fairwater to R273 Henllys Way	Fairwater Way
R276	R/A at Fairwater to Community Farm R/A	Ty Gwyn Way Fairwater Ty Gwyn Road Fairwater [part 832m] Ty Gwyn Way St Dials
R277	R273 Henllys Way to Community Farm R/A	Greenmeadow Way
R290	A4042 (T)R/A to Cul – de – sac Springfield Close	Turnpike Road [part 907m]The Highway Croesyceiliog
R291	R350 St. David's R/A to R290 The Highway Croesyceiliog plus Edlogan Way Extension	Edlogan Way Chapel Lane [part 278m] Edlogan Way Extension
R296	A4042 to R350 R/A	Llanfrechfa Way
R297	Llanyrafon Way Croesyceiliog	Llanyrafon Way
R350	Jct. Newport Road to A4051 R/A	Avondale Road [part 1471m] St David's Road Llantarnam Road
U150501	Thornhill Rd, upper Cwmbran	Thornhill Road
U152513	Upper Cwmbran Rd	Upper Cwmbran Road [part 415m]
U153021	5 Locks Road, Pontnewydd	Ty Pwca Road Five Locks Road Lowlands Crescent
	Oakfield Road Oakfield	Oakfield Road
	Wesley Street Old Cwmbran	Wesley Street
U150501	Thornhill Rd, Upper Cwmbran	Thornhill Road

Type 4

All remaining adopted highways within Torfaen County Borough Council.

Under the New Roads and Streetworks Act 1991Section 70 (2) any Statutory Undertaker must reinstate a street to the specification laid down by the Highway Authority, TCBC reserve the right to vary the above reinstatement types to match the existing construction of any road where this is found (or known) to be of a higher specification than those detailed in Appendix 3.

Appendix C - TCBC Traffic Sensitive Streets

Area	Route No	Street Name	Location
Blaenavon	B4246	Prince Street, Church Road, North Street, Abergavenny Road, Blaenavon (Part 2140m)	Junction A4043, Blaenavon to Monmouthshire CC Boundary
Blaenavon	B4248	Garn Road, Blaenavon (Part 3709m)	Junction B4246 to Monmouthshire CC Boundary
Coed Eva	R274	Penylan Way, Coed Eva (Part 1044m)	R/A at Hollybush to R/A at Fairwater (R275/R276)
Croesyceiliog	R290	Turnpike Road, Croesyceiliog (Part 907m) The Highway, Croesyceiliog (Part 925m)	A4042 (T) Turnpike R/A to Old Newport Road junction
Croesyceiliog	R291	Edlogan Way, Croesyceiliog (Part 1783m) Edlogan Way Extension, Croesyceiliog	R350 St David's Road R/A to R290 The Highway Croesyceiliog plus Edlogan Way Extension including the Link Road to A4042 (T) Crematorium R/A
Croesyceiliog	R292	Woodland Road, Afon Terrace, Croesyceiliog. Station Road, Pontnewydd (Part 1027m)	R290 Turnpike Road to R350 Avondale Road
Croesyceiliog	Unclassified	Chapel Lane, Croesyceiliog (Part 1158m)	From Newport Road junction to R350 Avondale Road junction
Cwmbran	R273	Henllys Way (Part 4192m)	From R350 R/A Llantarnam Road to R/A Hollybush Way including the Link Road from A4051 R/A Henllys Way to R/A near The Fire Station to the junction of R303 Henllys Lane
Cwmbran	R350	Llantarnam Road, Llantarnam (Part 1140) St David's Road, Cwmbran (Part 1349m) Avondale Road, Pontnewydd (Part 1471m)	Junction Newport Road to A4051 R/A Near Rechem
Fairwater	R275	Fairwater Way, Fairwater (Part 1285m)	R/A at Fairwater to R273 Henllys Way
Fairwater	R276	Ty Gwyn Way, Ty Gwyn Road, Fairwater (Part 832m) Ty Gwyn Road, St Dials	R/A at Fairwater to Community Farm R/A
Griffithstown	R287	South Street, Greenhill Road, Sunnybank Road, Stafford Road including Link Road to Cwmyniscoy R/A, Pontypool (Part 2500m) Cwmyniscoy Road, Pontypool (Part 828m)	R289 Station Road to A472 Pontymoile
Henllys	R303	Henllys Lane (Part 3219m)	Newport CC Boundary to R278 Henllys Way Junction
Hollybush	Unclassified	Hollybush Way, Cwmbran (Part 1984m)	A4051 Llantarnam Parkway R/A to Henllys Way R/A
Llanfrechfa	R296	Llanfrechfa Way, Llanyravon (Part 1640m)	A4042 (T) Crown R/A to R350 St David's Road R/A
Llantarnam	R390	Newport Road, Llantarnmam (Part 3432m)	A4051 Woodlands R/A to A4042 (T) Crown R/A
Llantarnam	A4051	Cwmbran Drive, Llantarnam & Pontnewydd (Part 5230m)	A4042 (T) Croes Y Mwylach R/A to A4042 (T) New Inn R/A, including the A4042 (T) link between the Woodlands R/A and Croes Y Mwylach R/A
Llanyravon	R297	Llanyravon Way, Llanyravon (Part 807m)	R290 Turnpike Road to R296 Llanfrechfa Way
New Inn	R98	Usk Road, New Inn (Part 1870m)	A472 Rockhill Road to A4042 (T) Court Farm R/A

Area	Route No	Street Name	Location
New Inn	R99	Newport Road, New Inn (Part 974m) The Highway, New Inn (1746m)	A4042 (T) New Inn R/A to R98 R/A Usk Road
Ponthir	B4236	Caerleon Road, Llanfrecha/Ponthir (Part 3679m)	Newport CC Boundary to A4042 (T) Turnpike R/A
Pontypool	A4043	A4043 Pontypool Western Bypass, Osborne Road, St Luke's Road, Snatchwood Road, Pontnewynydd (Part 923m) Broad Street, Station Street, Abersychan, Cwmavon Road, Blaenavon (Part 5607m)	A472 New Crumlin Road R/A to B4246, Blaenavon
Pontypool	R380	Clarence Road, Clarence Street (Part 169m), Hanbury Road, Commercial Street, Park Road (Part 116m), Riverside, Pontypool	Clarence Road to A4043 R/A
Pontypool	A472	New Crumlin Road A472 (Part 5299m) Plus access ramps at Pontymoile	A4042 (T) Heron R/A to Caerphilly CC Boundary
Pontypool	Unclassified	Race Road, Blaendare Road including Link Road to Cwmyniscoy R/A, Pontypool (Part 1192m)	From Cwmyniscoy Link R/A to A472, Upper Race
Sebastopol	R289	Avondale Road, Sebastopol (Part 491m) Station Road, Coed Y Gric Road, Griffithstown (Part 1800m)	A4051 Avondale Road R/A to R287 Sunnybank Road
Southville	R298	Llewellyn Road, Caradoc Road, Glyndwr Road, Tudor Road including Maendy Way Link Road to Cwmbran Drive (Part 2602m)	R350 St David's Road R/A Llanfrechfa Way to A4051 R/A Cwmbran Drive outside Sainsbury's inclusive of One Way System through Cwmbran Town Centre
St Dials	R277	Greenmeadow Way (Part 1070m)	R273 Henllys Way to Community Farm R/A
St Dials	R272	Greenforge Way (Part 957m)	A4051 Greenforge Way R/A to Community Farm R/A

Traffic Sensitivity

- A) Peak Hours: 7:30 - 9:30 & 15:30 - 18:30 (See Note)
- B) Night Hours Only: 18:30 - 07:30
- C) Sunday Hours: All Day

Note: Where traffic control is being used at (A) Peak Hours (traffic sensitive routes) 24 hour working, they must be manually operated and authorised by TCBC Highway Network Section.

Normal working hours - 9:30 - 15:30 only.

Schools

No works to be undertaken near any school without prior authorisation by TCBC Highway Network Section to co-ordinate and minimise traffic flow and pedestrian disruption

Christmas Period

No works to be carried out, 4 weeks prior to the Christmas period which may cause congestion or affect public services and/or amenities through the borough without prior consultation and written agreement with the TCBC Highway Network Section.

Section 5

TORFAEN COUNTY BOROUGH COUNCIL

RISK BASED APPROACH METHODOLOGY

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	MaY 2019
Author	Mark Strickland
Issued to	
Version No	1.1

1 Introduction

The following is based upon the ‘CSSW’s Risk Based Approach to Highway Management – Rationale Behind the Approach’.

Torfaen County Borough Council accepts both the County Surveys Society (Wales) (CSS Wales) and ‘Well Managed Highway Infrastructure: A Code of Practice, UK Roads Liaison Group 2016’ (WMHI 2016), method to use asset information to produce risk assessments, informed by usage data, (including the reference documents used to compile this code of Practice). This is based on the simple premise that if an asset exists and it contains a variation in its condition but no-one uses it, the safety risk is zero. As more people use the asset then it is argued that the probability of them being physically affected by the variation increases and this can be modelled mathematically.

It is now possible to acquire and analyse data regarding areas where the condition of an asset varies from its previous inspection or original state. Categorising the type size and location of the condition variation (CV) will be used as a reference in establishing the foundation for setting the Council’s highway asset hierarchies and repair regimes. These records will also be used to inform and influence annual budget assessment and allocation.

The current Highway Asset Management Plan 2019-2025 will have two bi-annual reviews to confirm and/or alter the hierarchies based on any changes to the data affecting the asset, such as increased traffic flows, changes to condition data etc.

2 Establishing Hierarchies

The CSSW’s Risk Based Approach to Highway Management – Rationale Behind the Approach and the WHMI 2016 requires that highway assets are split into hierarchies, but the latter states that *‘hierarchy will not necessarily be determined by the road classification, but by functionality and scale of use’*, Torfaen County Borough Council have considered the examples provided in the Code of Practice (CoP) and determined that the major factor determining safety risk is use. Others factors specific to the asset are incorporated into final hierarchies and where this is the case these have been noted.

3 Carriageway Traffic Counts

TCBC does not have, and cannot be reasonably expected to have up to date use information for every street, therefore, Officers have devised methods of estimation, detailing their assumptions which are based on specific knowledge and experience of the Borough and the street concerned.

All local roads are already escribed a class; A, B C or Unclassified and historically TCBC has based its highway hierarchy exclusively on its road classification, as these were set prior to local government reorganisation in 1996, and the process for changing them is time consuming and costly, it has been decided that road classification will be only a consideration in the establishment of the current hierarchy. Whilst road class is broadly indicative of use and so safety risk, nationally and locally, there are major variations that means keeping the hierarchy based only on road classification is not appropriate in Torfaen.

The Department of Transport collects and publishes 761 traffic counts on A class roads in all local authorities in Wales, and in 2017-18 these show a range of annual traffic (AADT) from 83,000 to 431. Analysis of this data shows that approximately 29% of the counts fall in the range of 10,000 to 20,000 vehicle movements per day, with approximately 52% falling in the range of 500 to 10,000. The 19% of roads with higher counts are those feeding and linking the cities in the south east and north.

An abstract of the DfT traffic counts for Torfaen is shown in the table below

Table D 3.1

AADT Traffic Data Torfaen CBC 2017-18		
From	To	All Motor Vehicles
A4043 Dreamboats R/A	A4042 Mc Donalds R/A	12,038
A4042 split Croes y Mwlach RA	A4051 Re Chem R/A	54,401
Cwmffrwd Square A4043	B4246 Keepers Pond	7,590
A4051 Re Chem R/A	A472 Dreamboats R/A	15,366
LA Boundary A472 New Crumlin Road	A4043 Dreamboats R/A	17,337
A4051 Woodlands R/A	Hollybush Way, Cwmbran Drive	10,055
A472 Dreamboats R/A	A472 Little Mill Junction	17,148
Newport Boundary A4043	A4042 split Croes y Mwlach RA	2,688
Newport Boundary Malpas Road	A4051 Woodlands R/A	927
Hollybush Way, Cwmbran Drive	A4051 Re Chem R/A	23,544
Cwmffrwd Square A4043	A472 Dreamboats R/A	21,525
A4051 Woodlands R/A	A4042 split Croes y Mwlach RA	3,525

It should be noted that in Wales Trunk roads are maintained by The South East Wales Trunk Road Agency and so the data highlighted are not TCBC maintained roads.

To establish a hierarchy based on national and local traffic counts TCBC uses the CSS Wales developed table below, with the 10,000 to 20,000 movements per day as the datum. It is this range that has been taken to represent a generic busy main distributor type road.

Table D 3.2

Carriageway Hierarchy Level	Approximate Traffic flow
Strategic Route	Based on Local Importance
Main Distributor	10,000 to 20,000
Secondary Distributor	5,000 to 10,000
Link Road	1,000 to 5,000
Local Access Road	200 to 1,000
Minor Road	Below 200

It should be noted that CSS Wales have adopted the 10,000 to 20,000 category as the basis for the calculation for this method, TCBC recognises that there are two routes that currently exceed this figure, but as these are the busiest routes in the Borough, it is not proposed to specifically alter inspection schedules for these routes at the first iteration of this policy. TCBC have concluded that the category of Minor Road can be incorporated into the category above and inspection frequencies can be carried out at the higher level appropriate to a Local Access road. This decision has been taken, as the difference in the time gap of inspection between the superseded HAMP and the current HAMP is deemed too large a step and currently TCBC do not have the risk appetite for a change of this magnitude.

Secondary considerations, such as Road Classification and proximity to vulnerable users have been incorporated into the calculation spreadsheet Torfaen Annual Highway Risk Review.

Due to current lack of traffic flow data, a model based upon local knowledge has been developed by TCBC engineers to better describe estimated traffic movements. Based on four, six hour time segments a total number of traffic movements has been based on the combined Highway network sections experience to determine 5 categories as shown in the following table:

Table D 3.3									
Estimated Maximum Traffic Flow									
	00:00-06:00	Total	06:00-12:00	Total	12:00-18:00	Total	18:00-00:00	Total	Daily Total
	Vehicle Movement Every		Vehicle Movement Every		Vehicle Movement Every		Vehicle Movement Every		
Very High	2.5 seconds	8640	1.25 seconds	17280	1.25 seconds	17280	2.5 seconds	8640	51840
High	5.seconds	4320	2.5 seconds	8640	2.5 seconds	8640	5 seconds	4320	25920
Medium	30 seconds	720	7.5 seconds	2880	7.5 seconds	2880	10 seconds	2160	8640
Low	90 seconds	240	30 seconds	720	30 seconds	720	60 seconds	360	2040
Very Low	5 minutes	72	2 minutes	180	2 minutes	180	5 minutes	72	504

The length of time placed in the 'Vehicle Movement Every' column was based on the engineers estimate of traffic flow based on the number of car lengths at 4m between vehicles travelling 30 mph, thus 1.25 seconds is approx. 4 car lengths, 2.5 seconds is approx. 8 car lengths, 5 seconds is approx. 17 car length etc.

4 Footways

TCBC have adopted the same principles as applied to carriageways to their footways, however, in Torfaen there are only two active footfall counts, both located within the Blaenavon heritage town which with a population of just under 5,000 is considered a rural community, despite its world heritage status. Average daily footfall over the last 12 months at both sites has been just under 1,000 pedestrian movements per day.

The data that CSS Wales has used to define the information has only two pedestrian counts in main towns which fall between the 5,000 and 10,000 pedestrian movements per day: Taff Street Pontypridd and the shopping centre Port Talbot. Whilst the sample is small both areas represent the estimated profile of Pontypool, the County town of TCBC, with a population of around 36,000.

Therefore the band 5,000 to 10,000 pedestrian movements per day has been used to define the Town Centre pedestrian areas category.

It should be noted that the estimated footfall in Cwmbran town centre is estimated to be nearer the City Centre pedestrian count but this is privately owned and maintained,

and so is not included in these calculations. The following tables outlines the other categories used to define the pedestrian network:

Table D 4.1

Footway Network Hierarchy Category	Approximate Footfall Count
Pedestrianised zones and footways used by thousands of people per day. Very high use areas in cities such as Newport and Cardiff	Greater than 15,000
High use pedestrianised zone and footways in town centres	5,000 to 10,000
Footways outside busy public buildings such as train/bus stations, hospitals, schools and colleges or small parades of shops etc. that experience significantly higher levels of use than the adjacent footways	1,000 to 5,000
Footways linking housing or industrial estates to other centres or routes	500 to 1,000
Footways in housing areas	Less than 500
Little Used Rural Footway	Less than 200

Due to current lack of pedestrian count data, a model based upon local knowledge has been developed by TCBC engineers to better describe estimated pedestrian movements. Based on four, six hour time segments a total number of pedestrian movements has been based on the combined Highway network sections experience to determine 5 categories as shown in the following table:

Table D 4.2

Estimated Maximum Pedestrian Footfall

	00:00-06:00	Total	06:00-12:00	Total	12:00-18:00	Total	18:00-00:00	Total	Daily Total
	Pedestrian Movement Every		Pedestrian Movement Every		Pedestrian Movement Every		Pedestrian Movement Every		
Very High	5 min	72	10s	2160	5s	4320	15s	1440	7992
High	30 min	18	15s	1440	10s	2160	30s	720	4338
Medium	1 hr	6	90s	240	30s	720	1m	360	1326
Low	3 hrs	2	3m	120	90s	240	3m	120	482
Very Low	6 hrs	1	10m	36	6m	60	10m	36	133

The WHMI 2016 contains a list of criteria that could be used in establishing a footway hierarchy but TCBC concur with the CSS Wales guidance in that, as yet, there is no

evidence to prove that these factors increase safety risk to users and so have not been included.

5 Structures

In TCBC the structures hierarchy is calculated against the safety risk for users in association with the risk to the functionality of the network, such as loss or restriction (weight limit) of the asset. In TCBC where a structure is the primary method of gaining access to a community even though this might be for a small number of people then the structure has been categorised with regard to those users rather than the network as a whole.

The hierarchy has been defined thus:

1. Vital Structure: This is a structure that is vital to the network and if restricted or out of service would cause very significant adverse effects, such as, major traffic delays or loss of access to emergency services etc.
2. Important Structure: This is a structure that is important but not vital to the functioning of the network and if restricted or out of service would result in inconvenience to the network, such as, slower or longer routes due to diversion or longer times to access for emergency services.
3. Standard Structure: This category contains all other structures.

Initially the above categories have been matched to the hierarchy for roads and footways as these have already have defined use parameters:

Table D 5.1

Road Bridges, Culverts, Retaining Walls etc.

Carriageway Hierarchy	Structure Hierarchy
Strategic Route	2. Important Structure
Main Distributor	
Secondary Distributor	
Link Road	3. Standard Structure
Local Access Road/Minor Road	

Table D 5.2	
Road Bridges, Culverts, Retaining Walls etc.	
Footway Hierarchy	Structure Hierarchy
Prestige Walking Routes	2. Important Structure
Primary Walking Routes/Zones	
Secondary Walking Routes/Zones	
Link Footways	3. Standard Structure
Local Access Footways/ Minor Footways	

In Torfaen it has been decided to use the rating of Vital Structure to describe an additional factor of Sole access to a community and to not use the rating associated with Standard Structure, as this best describes the local conditions.

Table D 5.3	
Torfaen Structures Hierarchy	
Sole Access to Community	Vital Structure
Major Traffic Disruption and Lengthy Diversion Route	
Major Traffic disruption or Lengthy Diversion Route	Important Structure
Susceptible to Rapid Failure	
Significant social or Economic Impact	
Structure of Local/ Historical Significance	

6 Street Lighting

In 2008 TCBC agreed to reduce the Council's Carbon footprint and adopted a policy of switching off or part night lighting street lights to achieve this. Historically the safety hierarchy of street lights has been based on the electrical safety of individual columns, however, to ensure that there was no increased safety risk or legal issues by deactivating lights a safety risk exercise was undertaken to identify those lights that were to remain in lighting during the hours of darkness. This included roundabouts, junctions, roads with traffic calming and lights within 30 mph areas to meet the requirement of the Road Traffic Regulation Act 1984, Section 82(1)(a).

Maintenance of the asset is carried out via a Term Contract which includes times for attendance for faults and outages.

Traffic Signals

Of the categories relating to traffic signals in CSSW's Risk Based Approach to Highway Management – Rationale Behind the Approach and the WMHI 2016, TCBC have used two; 'Vital Junctions' and 'All Other Signals'. Due to the limited number of traffic signal controlled junctions in the Borough all illuminated traffic signals at any junction in the Borough are classed as vital, and all traffic signal controlled pedestrian crossings are classed in the All Other Signals category.

TCBC operate their traffic signals via a fixed term contract which reflect the above categories.

Section 6

TORFAEN COUNTY BOROUGH COUNCIL

HIGHWAY DRAINAGE CLEANSING SERVICE

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	March 2019
Author	Mark Strickland
Issued to	
Version No	2.6

1. The Service

As the Highway Authority, Torfaen County Borough Council has a duty imposed by the Highways Act 1980, to maintain a network of roads that is safe to use. To minimise the safety risk to users, due to standing and running water, systems of road drains, channels, gutters and pipes have been provided to drain rainwater off the road surface. These drains channel and gutter require regular inspection and where necessary maintenance work to ensure they work as designed.

To carry out this operation Torfaen County Borough Council employ a dedicated road drain cleaning vehicle (Gully sucker) and crew of two operatives. The road drains, channels and gutters serving the highway are inspected annually and where there is evidence of an impediment to the operation of the asset works are either carried at the time or programmed to ensure the safety risk of flooding is minimised. A schedule of inspections and/or cleansing has been complied and records of inspections and work carried out are kept to provide a defence under Section 58 of the Highways Act 1980.

2. The Asset

The Authority at April 2018 has approximately 18,000 highway drains of various types and construction in the highway. There is an estimated 350Km of drainage pipework together with associated inspection chambers and catch-pits whose maintenance lies with Torfaen County Borough Council. The rainwater from the highway system is discharged into two areas.

Welsh Water Combined and Surface Water sewers, (which are treated at the Ponthir Waste Water Treatment works) and the watercourses and river running through the Borough.

3. Operational Policy

Planned gully cleansing operations will be carried out during normal Council working hours with records being kept of work carried out and amounts of waste generated. Each working day a crew will be assigned either:

1. a geographical zone in which they will be tasked to inspect, cleanse and report or cleanse and report any defects with regard to the road drains,

2. a time targeted non-scheduled works programme associated with maintaining the highway drainage system.

Pre filling of the Gully sucker with water will take place at the end of each working day unless sub-zero temperatures are forecast, when the vehicle will always be parked up under cover and refilled as appropriate. During days when compulsory testing is required on the Gully sucker or when it is unavailable due to mechanical breakdown the operatives will be supplied with an alternative method of transport and detailed to inspect a geographical zone only, with cleansing works being carried out as and when the vehicle becomes available.

Where reports of ponding or flooding due to defects in the road drainage system are received the safety risk associated with that location will be assessed, and a works programme, generated if appropriate and required and will provide a target completion date for these proposed actions.

4. Cleansing Frequency

The highway drainage assets have been split into geographical zones each containing between 90 and 130 gully drains. The Authority will carry out a coarse initial visual inspection to identify obviously blocked road drains, and these will be targeted for scheduled cleansing within an individual zone. Where defects are not immediately visually apparent and rainfall results in water ponding due to the road drain not working, the Authority will, when resource allows carry out proactive surveys and record the location of any problem areas. All reports from non-authority agencies and individuals will be investigated based on the timescales set out in the Gully Cleansing Risk Matrix, and any works resulting from these inspections will be included in the non-scheduled works programmes. Each Zone will be allocated to the cleansing crew and works carried out on a daily basis with those Zones requiring traffic management due to elevated safety risk being fitted into the schedule as resource allows. The Authority will endeavour to visit each zone within a twelve month period.

5. Operational Issues

It is accepted that the policy of inspection and then cleanse of gullies will rarely identify any blocked connecting pipes or carrier drains. These will become apparent after rainfall and where these cause a significant safety risk to highway users they will be addressed as they are reported or observed.

Where the gully drain has been cleared, empirical evidence shows that the majority of blockages are caused by outside influences such as tree root ingestion or by damage by Statutory Utility contractors. As these problems are discovered an assessment of the safety risk will be carried out and this then fed into an ongoing planned works programme for excavation and repair. This programme will be prioritised, however where the damage can be proved to be as a result of Statutory Undertakers the Authority will utilise the provisions of the New Street Work Act 1991 to reclaim any costs incurred.

There will be streets and individual sites where access to a gully or series of gullies will be prevented by parked vehicles, where this is the case, the crew has been instructed to attempt to identify the owner and have the car moved at the first visit. This information will be logged on the daily work sheet as this will have an effect on the number of gullies that be cleansed in any day. If the owner cannot be found at the time of the first visit then the crew will make a further attempt within 5 working days, if this is unsuccessful or operationally impractical, the safety risk of not cleansing the gully will be assessed and a decision recorded. If after reference to the Gully cleansing Risk matrix the safety risk is deemed as significant then other agencies will be employed to remove the obstruction on the highway.

7. Unscheduled Cleansing (Reactive Drainage Work)

Where blocked gullies are reported outside the cleansing schedule these will initially be assessed by an experienced officer using the Gully Cleansing Risk Matrix and any appropriate action taken in line with the guidance. If the officer decides to vary from the guidance then, the reasons for this deviation, and the actions taken, will be recorded.

8. Torfaen County Borough Council's Responsibilities and Duties

There is a perception that home/land owners adjacent to the highway are owed a 'duty of care' to have the road drainage protect their property in times of rainfall or storm. To date the legal system does not recognise this, and holds that if the Authority has an agreed schedule of maintenance and this in compliance then the Highway Authority has a defence under Section 58 of the Highway Act 1980. The Authority will always investigate these complaints/requests for service in a timely manner but not always have the resources or ability to rectify them to the satisfaction of the resident or landowner with regard to their property.

- It is known that untreated discharge from gully cleansing operations carry high levels of pollutants. To minimise the environmental effects, where it is obvious, or it has been recorded that a road drain discharges directly into a watercourse cleansing operations will be carried out in line with the following hierarchy:
- 1. Hand cleansing
 2. Cleansing using clean water (high pressure jetting)
 3. Cleansing using vacuum action only
 4. Cleansing using vacuum action and clean water (high pressure jetting)

The 'blow back' facility should not be used on these drains as pollutants contained in the vehicle holding tank are harmful to the environment and are not adequately filtered.

Sandbags: TCBC keep a small stock of sandbags for highway emergencies, and do not issue these to the general public. The Council will only deploy sandbags in the event that an experienced officer has made and recorded the necessary risk assessment for both their placement and retrieval.

GULLY CLEANSING RISK MATRIX

Measured and Scheduled response will have a tolerance of 10% to allow for unforeseen emergencies and operative sickness.

Description	Safety Risk Score
Strategic Route	8
Main Distributor	6
Secondary Distributor	4
Link Road	1
Local Access Road	0
Description	Safety Risk Score
Located where if blocked will cause a known significant safety danger to highway users	2
Located where if blocked will require an on-site assessment of the safety danger to highway users	1
Located where if blocked does not cause a safety danger to highway users	0
Description	Safety Risk Score
Gully is located where a drivers view of any standing water would be obscured, such as a dip or a corner	2
Gully is located where the drivers view of any standing water is not obscured or on a hill where the gully above and below is also blocked	1
Gully is located on a hill and the gully above and below are working	0
Description	Safety Risk Score
If blocked will allow rainwater to flow over vehicle wheel track	3
If Blocked will allow rainwater to flow over footway	2
If blocked rainwater will remain within carriageway channel	1
If blocked rainwater will not flow over footway	0
Add Scores from Road Classification, Cleansing Priority, Road Alignment and Gully Sensitivity	
Response	Safety Risk Score Total
Immediate response (area made safe and gully attended within 24 hours)	11 - 15
Measured response (gully attended within 1 calendar month)	6 - 11
Schedule response (gully will be cleansed next cycle)	0 - 5

TORFAEN COUNTY BOROUGH COUNCIL

SKID RESISTANCE POLICY

FOR THE ADOPTED HIGHWAY

2019 TO 2025

Date	March 2019
Author	Mark Strickland
Issued to	
Version No	2.2

1 Introduction

This instruction sets out Torfaen County Borough Council's approach to monitoring skid resistance of carriageways and interpreting data arising from any measurement made. It also sets out the requirements to ensure that new surfacing will have appropriate surface characteristics to develop adequate levels of skid resistance. It makes reference to the Highways England's Standards HD 28/15 and HD 36.(DRMB 7.5.1).

This instruction applies to all surfaced carriageways and surfaces designed to be shared with pedestrians on the adopted highway network. Requirements for surfaces used only by pedestrians will be described separately.

The procedures adopted to monitor skid resistance on the network are risk based and rely on an integrated approach involving Torfaen County Borough Council highway and traffic practitioners and outside Contractors.

In this document, the term "skid resistance" refers to the frictional properties of the road surface measured using a specified device under standardised conditions. The term always refers to measurements made on *wet* roads, unless specifically stated otherwise. These measurements are used to characterise the road surface and assess the need for maintenance, *but cannot be related directly to the friction available to a road user making a particular manoeuvre at a particular time.*

This Instruction has been made to accommodate the changes in procedures introduced in HD 28/04 and IAN 98/08.

All data related to the measurement and ongoing monitoring of skid resistance is to be treated as confidential between the Council and its Consultant and must not be communicated to Third Parties (including the Police) without the written consent of Torfaen County Borough Council.

2 Road Network Identified for Routine Monitoring

2.1 Network Review

A risk assessment of the Torfaen CBC network was undertaken in November 2015 to confirm that the Sideways-force Coefficient Routine Investigation Machine

(SCRIM) network met the requirements of the Highways Act 1980 and current maintenance guidance. The skid resistance of all the network was assessed using five years of Injury Road Traffic Collision data and Traffic Information supplied by Torfaen CBC. It was concluded that the risk of Road Traffic Collisions (RTC's) occurring on the Classified Un-numbered Roads (R) and the Unclassified roads (U) was low enough to not warrant an annual survey. It was also noted that many of the Rural R and U roads were unsuitable for SCRIM survey due to lane width preventing the vehicle obtaining survey speed.

2.2 Principal Road Network (PRN) and B Classified Road Network (CRN)

For the purposes of this instruction the PRN and CRN are defined as the roads which generally carry 'A' road traffic and 'B' road traffic. These roads are identified in Appendix A.

2.3 Method of Survey

Routine monitoring of skid resistance is carried out using a SCRIM vehicle operated in accordance with BS 7941-1 and HD28. The Single Annual survey method will be used to determine the Characteristic SCRIM Coefficient (CSC) for 10m sub-sections of the network. Under this procedure the extent of the A and B road networks identified in Appendix A will be surveyed once each year and in successive years the surveys will be carried out in rotation during early season, mid-season and late season.

Please note: All references to CSC in this policy will also include the following caveat:

"Until the fourth year of operation, i.e. when an early, mid or late season survey is repeated, the Mean Summer SCRIM Coefficient equivalent will be quoted, where the single summer reading will be adjusted by the SCRIM Seasonal Factor, which is obtained from surveys of benchmark sites at three times during the testing season."

Routine monitoring of Sensor Measured Texture Depth is undertaken annually as part of the data collection for the SCANNER survey to determine Best Value Performance Indicators.

2.4 Data Storage

The Council's Pavement Management System (PMS) is used to store and process the survey data.

2.5 Investigatory Levels

Investigatory Levels are defined and reviewed as described in section 4.

2.6 Site Investigation

Site Investigations are carried out in accordance with section 5. They may also be instigated as part of accident investigation procedures.

2.7 Complaints about Skid Resistance

If complaints are received or other concerns are raised about skid resistance at any point on this network, then, if the location of the site lies within the SCRIM survey parameters, the data obtained from routine testing can be used to respond initially. Initially a Coarse Visual Inspection (CVI) will be undertaken and if appropriate a surface condition report relevant to the site will be prepared by Torfaen County Borough Council, in consultation with appropriate specialised Consultants or Contractors. Site specific testing will not normally take place unless agreed by Torfaen County Borough Council.

3 Road Network NOT Identified for Routine Monitoring

3.1 Network

These are all other adopted, surfaced roads that are not included in Appendix A of the Skid Resistance Policy. These roads are deemed not appropriate for routine monitoring and include a small number of R roads and the majority of unclassified roads.

No routine survey of these roads is to be undertaken although testing may be deemed to be necessary on a site specific basis following complaints, repeated incidents of damage involving vehicles in wet conditions, regular damage to street furniture or as part of accident investigation procedures. Testing will only be undertaken after an initial assessment of the data required for a site investigation (except test results) and

consultation with an appropriate Consultants or Contractors, and following approval by Torfaen County Borough Council.

Site specific testing will be undertaken either as part of the routine SCRIM survey or as a separate exercise using the Griptester. The Pendulum Skid Tester will not be used.

The CSC will be derived in the normal manner for results from SCRIM surveys. The results from Griptester surveys will be converted to equivalent CSC values using correlations developed by the County Surveyors' Society Griptester User Group.

3.2 Data Storage

The Council's Pavement Management System (PMS) is used to store and process the survey data from SCRIM surveys. Equivalent CSC values derived from Griptester surveys will be stored on the PMS.

3.3 Investigatory Levels

Investigatory Levels are defined as described in section 4 and should be recorded on the PMS.

3.4 Site Investigation

Site Investigations are carried out in accordance with Section 5.

4 **Investigatory Levels**

4.1 Assignment

The network is divided up into sites based on the definitions in HD28 and each of the defined sites is assigned a Site Category and an Investigatory Level (IL). The IL assigned will be based on the values in Table 4.1 of HD28.

Where adjustments are made to the use of the network which would mean a redefinition of site category is required (e.g. the installation of a pedestrian crossing

or a new section of road is opened), then the lowest of IL for the appropriate site category will be adopted, unless a site specific risk assessment undertaken by a qualified Safety Engineer, indicates that a higher value is appropriate. This risk assessment should address the factors detailed in paragraph 4.12 of HD28.

For sites not on the road network identified in Appendix A, the Site Categories and ILs will be determined initially by pavement engineering staff as part of the site investigation process and will generally be within the bands in Table 4.1 of HD28. These will be reviewed as part of the investigation process and the values assigned will be recorded on the PMS.

4.2 Review

Reviews of ILs will be undertaken in the following circumstances:-

- When SCRIM results indicate that a section lies below the current IL and the site investigation procedure is invoked.
- When site-specific accident investigations are being undertaken.
- When changes are made to the network.

Any review of IL's will be instigated by Torfaen County Borough Council using appropriate consultants or contractors and the following information should be obtained as a minimum:-

- The latest CSC and Investigatory Level data from the Pavement Management System.
- Site details:-
 - changes that have taken place in the site use or road layout e.g. the installation of traffic signals, pedestrian crossings or roundabouts.
 - relevant local factors such as non-injury accidents, complaints or repeated reports of damage.
- Details of accidents extracted from the Police Authority's road accident system (currently Macdonald Douglas database) and validated by Capita Symonds Road Safety Engineering Department, and data input into the Capita Symonds AccsMap system. Only accidents occurring in the previous 36 months should be considered and only wet road accidents will be used against SCRIM survey results. Torfaen County Borough Council,

using appropriate consultants or contractors, will review this data to establish, if possible, the extent to which the road surface is a factor in the recorded accidents.

The principles outlined in HD28 should be followed in the review process and any adjustments deemed necessary to Investigatory Levels should be made in steps of 0.05 units of CSC.

There are two sets of circumstances where the inter-relationship between wet road accidents and SCRIM results will have the potential to affect the SCRIM Investigatory Level. These are:

- Where CSC is below Investigatory Level and there are no recorded wet road accidents within the last 36 months, there is potential to reduce the Investigatory Level.
- Where analysis of accident records show there are wet road accidents but the CSC is above Investigatory Level, there is scope to raise the Investigatory Level.

Recommendations to adjust the Investigatory Levels shall be agreed by Torfaen County Borough Council for approval prior to implementation.

The basis of decisions to amend Investigatory Levels should be recorded together with confirmation that the Pavement Management System has been updated accordingly.

4.3 Texture Depth

The Investigatory Level for texture depth (Sensor Measured Texture Depth) on all sites will be 0.7mm.

5 **Site Investigation**

5.1 Purpose

Sites where the analysis of Accident details suggests a concentration of wet surface accidents or sites where the CSC is at or below the IL require a site investigation. The objective is to:

- Determine whether a surface treatment is justified to reduce the risk of accidents, particularly accidents in wet conditions.
- Determine whether some other form of action may be required.
- Determine whether the current IL is appropriate.
- Determine whether to keep the site under review and not carry out any works.

5.2 Procedure

Torfaen County Borough Council will instigate a site investigation and will follow the Site Investigation and associated procedures detailed in Chapter 5 and Annexes 4 & 5 of HD28 shall be followed (with the exception of 5.3 & 5.4).

Sites requiring investigation shall be identified and prioritised as soon as practicable after the CSC values have been received from the routine SCRIM survey.

Site prioritisation will be on the basis of the amount by which the skid resistance is below the IL. If a substantial number of sites are identified by this procedure then further prioritisation on the basis of other factors such as traffic type and volume will be necessary.

A programme of remedial treatments will be developed from the conclusions of the site investigations and priority should be given to treating the following sites:

- Where the accident history shows there to be a clearly increased risk of wet or skidding accidents.
- Where the skid resistance is at least 0.05 CSC units below the Investigatory Level.
- Where low skid resistance is combined with low texture depth (less than 0.7mm).

At all sites where surface treatment is recommended, slippery road warning signs shall be erected and maintained until the treatment is carried out. This shall be done as soon as practicable after the identification of such sites.

5.3 Records

Appendix B details the content of a site investigation report, a copy of which should be held on the Pavement Management System.

6 Properties of Surfacing Materials

Specifications for all surfacing laid in maintenance works (including patching) and new construction will include requirements for Polished Stone Value (PSV) and Aggregate Abrasion Value (AAV) of the aggregate and texture depth of the surface.

The PSV and AAV shall be selected from the tables in the current edition of HD36. The designer should record the commercial vehicle flow used and the source of that data.

For sites on the road network identified in Appendix A and other locations where Investigatory Levels have been assigned, then the PSV specified should be derived from the IL held on the pavement management system for that location and the commercial vehicle flow.

For all other sites, the site definition and the commercial vehicle flow should be used to determine the PSV required. (This is because a non-standard value of IL may apply on sites subject to IL reviews or accident investigations).

Texture Depth values for new surfacing, other than Thin Surface Course Systems, measured by the volumetric patch method (BS EN 13036-1), shall be determined from the table below :-

Site Description	Texture depth
Roads subject to a speed limit of 40mph or above	1.5mm

All other roads	1.0mm
-----------------	-------

For Thin Surface Course Systems, texture depths measured by the volumetric patch method (BS EN 13036-1) shall be as shown below:-

	Untrafficked	After 2 years
Roads subject to a speed limit of 40mph or above	1.5	1.0
All other roads	1.2	0.8

7 Early Life Skid Resistance of Surfacings

IAN49/03 provided advice for Slippery Road signs to be erected, for up to six months, after a road had been newly resurfaced. This advice has been superseded by IAN49/13 which has been produced after more research; the conclusion of IAN49/13 is that there is an increase in road traffic collisions on all newly resurfaced roads and not just Thin Surfacings.

IAN49/13 also states that even though there is a high chance of road traffic incidents occurring on newly resurfaced roads, the probability of a fatal injury occurring is significantly lower and the probability of incidents occurring on high risk sites is reduced, however more incidents were recorded on lower risk sites.

IAN49/13 recommends that Highway Authorities no longer need to erect slippery road signs along the length of newly resurfaced road.

8 References

- Design Manual for Roads and Bridges, TSO, London
- HD28/04, Skid Resistance (Volume 7, Section 3, Part 1)
- HD36/99, Surfacing Materials for New and Maintenance Construction (Volume 7, Section 5, Part 1)

APPENDIX A

Table A1 Roads to be included in routine SCRIM surveys

Road No.	1.1.1.1.1 Details	1.1.1.1.2 Lane Km
A4043	Jct A472 to B4246, Blaenavon	19.820
A4051	Jct Croes-y-Mwlach R/A to Jct A4042 Re-Chem R/A	15.669
A472	Jct A4042 Pontypool R/A to Caerphilly County Boundary	13.060
B4236	Newport CC Boundary to A4042 Turnpike R/A	7.500
B4246	Jct. A4043 to Monmouthshire County Boundary at R50	22.320
B4248	Jct. B4236 to Monmouthshire County Boundary	7.480
R 350	Henllys Way R/A to 30mph zone Avondale Road	6.050
R390	A 4042 Crown R/A to 30mph zone Newport Road	2.824
R98	A 4042 Court Farm R/A/ to 30mph zone Usk Road	0.910
Unclassified	A472 junction to 30 mph zone Old Crumlin Road	5.474

APPENDIX B

Content of a Site Investigation

The Site Investigation can consider the following list of headings and associated items for consideration. A written assessment is required under each heading taking account of the relevant items listed. References to other supporting documents will be made where necessary.

The following guidance is indicative of the information that may be included based on the specifics of the location and the event being investigated.

1 Site location and use:

- What is the location and nature of the site?
- Are there any features that could be expected to require road users to be able to stop or manoeuvre to avoid an accident? For example, junctions, lay-bys, other accesses, crossings, bends or steep gradients.
- What are the site category and the current Investigatory Level? Has there been any substantial change in the amount or type of traffic using the road that would influence the requirement for skid resistance and could require the Investigatory Level to be changed?

2 Pavement condition data:

- What is the CSC, by how much is it below the Investigatory Level and over what length? Is the skid resistance uniform along the site or are there areas of lower skid resistance or large changes in skid resistance? Is the lowest skid resistance in locations where road users have a specific need to stop or manoeuvre? (The risk of accidents generally increases as the skid resistance falls, but the increase in risk will be greater for sites where the road user is likely to need to stop quickly or manoeuvre.)
- Are there any individual 10m lengths that fall significantly below the mean for an averaging length, and is the location of such lengths significant, e.g. a short length of low skid resistance within a sharp curve.
- Does the site contain a sharp bend to the left in combination with traffic braking or accelerating, e.g. a sharply curved roundabout approach or exit? In these circumstances the offside wheel path can become more polished than the

nearside wheel path and the skid resistance in the offside wheel path can be up to 0.05 units CSC lower than that measured in the nearside wheel path. However, this does not mean the skid resistance is more than 0.05 units CSC below the Investigatory Level, because the Investigatory Level will have been raised in the vicinity of the curve to compensate for this effect (Chapter 4).

- What is the texture depth and do areas of low texture depth (below 0.7mm SMTD) coincide with areas of low skid resistance?
- Are there any extreme values of rut depth or longitudinal profile variance that could affect vehicle handling or drainage of water from the carriageway?

3 Accident history:

- A methodology for analysing the accident history is given in Annex 5 of HD 28.

4 Site inspection:

- Has a visit to the site been carried out? If so, then what range of weather and traffic conditions has been observed and over what period? If not, then what other information has been drawn upon?

5 Visual assessment:

- Is a visual inspection of surface condition consistent with the available survey data?
- Skid resistance and texture depth are generally measured in the nearside wheel track in lane one. Is the rest of the area of the maintained pavement surface visually consistent with the measured path, or are there any localised areas of polished surfacing, low texture depth, patching or areas otherwise likely to give rise to uneven skid resistance? If it is likely that the skid resistance of other lanes could be lower than the lane tested then additional surveys may need to be carried out to investigate this. This could occur, e.g. if the surface in other lanes (including the hard shoulder) is different to the lane tested, and these lanes carry a similar volume of heavy traffic to the lane tested.
- If so, is the location such that the lack of uniformity is likely to increase the risk of accidents occurring?
- Is the area of the maintained pavement surface free from debris and other sources of contamination? Is water known to drain adequately from the carriageway during heavy rain? Is the pavement free of other defects such as potholes?

6 Road users:

- What is the volume and type of traffic, including vulnerable road users? Are observed traffic speeds appropriate to the nature of the site? If there is significant variation in the speed, type or volume of traffic during the day, have observations been made in an appropriate range of traffic conditions?
- What types of manoeuvres are made and what are the consequences if not completed successfully, e.g. head-on or side impact at speed are likely to have severe consequences? Is there any evidence that road users consistently fail to negotiate the site successfully, such as tyre tracks into the verge?

7 Road layout:

- Is the road design still appropriate for the speed and volume of traffic? Is the layout unusual or likely to be confusing to road users?
- Is the carriageway particularly narrow and is a hard shoulder or 1 metre strip provided? Is the road layout appropriate for the number and type of vulnerable road users (pedestrians, cyclists, motorcyclists, equestrians, bus and tram users)?
- Are junction sizes appropriate for all vehicle movements? Are right turning vehicles adequately catered for? Are priorities at junctions clearly defined? Are traffic signals operating correctly and are they clearly visible to approaching motorists?

8 Markings, signs and visibility:

- Are all pavement markings, warning and direction signs appropriate and effective in all conditions (e.g. day, night, fog, rain or coloured pavement surface)? Have old pavement markings been removed properly? Are there any redundant signs that could cause confusion? Are signs or other roadside objects on high-speed roads adequately protected from vehicle impact?
- Is visibility adequate for drivers to perceive the correct path? Do sight lines appear to be adequate at the through junctions and from minor roads or other accesses? Is the end of likely vehicle queues visible to motorists? Does landscaping, taking into account future growth of vegetation and the effects of wind and rain, reduce the visibility including visibility of signs?

9 Additional information:

- Are any other sources of information available, such as reports or visual evidence of damage only accidents, incidental damage to street furniture or reports from the Police? Such reports are likely to be subjective but are relevant if the reliability of the information is borne out by observations of the site.

10 Recommendations

Following the investigation a clear recommendation must be given of the actions to be taken. Normally it will be one or more of the following:

- Surface treatment – if it appears that improving the skid resistance or other surface condition will reduce the risk of skidding accidents. When this option is recommended it shall require the erection of ‘slippery road warning signs at the beginning of the affected section, as soon as practicable after the completion of the site investigation.
- Road Safety Engineering measures – if the investigation identified some characteristic of the site or user behaviour that could be improved by engineering measures. An outline of the measures considered appropriate should be given which could form the brief for Torfaen County Borough Council to commission development of a scheme.
- Requirements for additional maintenance – such as additional sweeping, cleaning road signs or renewal of road markings.
- There is no justification at present for treatment – continue to monitor and review again in at a suitable time in the future.

A signed copy of the report detailing all contributors shall be presented to Torfaen County Borough Council for consideration.