

# Peterborough Highway Services

## Highway Maintenance Plan 2018–2023



## Peterborough Highway Services

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# INTRODUCTION

Everyone who lives in or travels through Peterborough will use the highway network, many on a daily basis. Those individuals will therefore have a very clear view on how the network meets their needs, whether this is in its design or how it is maintained. This will also have a significant impact on their view of Peterborough City Council (PCC) who are responsible for the maintenance of the majority of the highway network within the Peterborough area.

The Highway Maintenance Plan is intended to provide a reference to Councillors, officers and all those with an interest in how Peterborough's highway network maintenance is managed. The approach taken is to follow a risk based approach to asset management in line with the Well-Managed Highway Infrastructure Code of Practice.

Within this document, the aims and objectives of Peterborough Highway Services (PHS), the partnership between the Council and their delivery partner Skanska will be outlined. This will also provide the necessary links to the Council's Local Transport Plan (LTP), Sustainable Community Strategy and the Highway Asset Management Policy and Strategy. This establishes a consistency between community aspirations and how the highway maintenance service is delivered, within financial constraints.

The highway network represents the authority's most valuable asset (currently estimated at around £4bn). The value of this asset can be identified by more than just the actual cost of its physical replacement. There is value associated with serving the community's need to travel either by motorised or non-motorised transport, or by allowing the easy distribution of goods for commerce and industry.

As the local highways authority, the Council has an absolute duty under the Highways Act 1980 to "*maintain the highway network in a safe condition for all highway users*". Failure to comply with this duty could result in the death or injury of highway users, which may lead to both criminal and civil action being taken against the Council. The intent of the Highway Maintenance Plan is to minimise the risk of any such injury or loss occurring within the constraints that the service operates under.

In common with other services provided by the Council, highway maintenance is carried out against a backdrop of increased expectations and limited resources. It is therefore essential that the use of all available resources is carefully considered and directed to maximum effect. The Highway Maintenance Plan promotes good practice and best value so as to deliver effective highway maintenance within the Peterborough area within a risk based approach.

The Highway Maintenance Plan's objectives are;

- To ensure that Peterborough City Council meets its statutory obligations as the local highway authority under the Highways Act 1980;
- To ensure that the provision of highway maintenance duly accords with the Council's Sustainable Community Strategy, LTP and Highway Asset Management Policy and Strategy aims;
- To improve the general understanding of how highway maintenance is carried out within the Peterborough area;
- To inform all those who have an interest in how the highway network is maintained in the Peterborough area;
- To develop effective policies for the maintenance of the entire highway network within the Peterborough area based upon good practice, updating these as and when necessary;
- To maximise the benefit of any investment made in maintaining the highway network for all highway users and so promote Best Value in the provision of highway maintenance;
- To seek improved means of procuring work and services;
- To improve the condition of the highway network wherever possible.

It seeks to meet the above objectives by;

- Considering the current condition of the highway by using survey data, analysing and commenting on the information gained;
- Assessing the risk of observed defects in line with the environment of the site e.g. traffic flows, position, size, user demographics etc.;
- Identifying factors that are currently and anticipated to affect how the highway network will be maintained;
- Reviewing the performance of PHS in maintaining the highway network in its area and so providing best value to all users in the Peterborough area;
- Reviewing how the highway network is currently being maintained in terms of policy and methodology;
- Providing targets for the future maintenance of the highway network within the Peterborough area;
- Identifying and describing the resources allocated to the maintenance of the highway network;
- Utilising the duties and powers that the Council has in maintaining the highway network;
- Relating how the Council maintains its highway network to the guidance given in "*Well-Managed Highway Infrastructure Code of Practice*" and the City Council's own Highway Asset Management Policy and Strategy to identify shortfalls and take measures to address these.

# Section 1.0 Highway Maintenance Strategy

## Context

Peterborough is an area of contrasts. It is a long established city with a cathedral dating back to pre-Norman times and areas have developed naturally around this. However, Peterborough was designated a 'New Town' in 1968 and the Peterborough Development Corporation (PDC) was established to double the size of the population in close partnership with Peterborough City Council.

The Corporation devised a master plan that would concentrate the new development in four new residential townships however only three of the proposed original four were completed. Currently a further new township called Hampton consisting of around 5,000 houses is being constructed to the south of the city. Another new township to the south of Hampton between the A15 and A1(M) is also planned, and will consist of 5,350 houses. Both of these new developments include commercial, retail and education facilities.

In April 1998, the Council achieved Unitary Status and became responsible for the wider Peterborough area including many rural village areas, sharing boundaries to the north with Lincolnshire, Cambridgeshire to the south/east and Northamptonshire to the west. In March 2017 Peterborough and Cambridgeshire became part of the Cambridgeshire and Peterborough Combined Authority.

The current population of Peterborough (2016) is estimated to be around 198,100 (2014 Estimates and Forecasts Report) split between the Peterborough urban area of 175,600 and the surrounding villages and rural area of 22,500. This will further grow with the continued development in the Hampton Township, Paston Reserve, Stanground South and Great Haddon development areas.

The highway network within the Peterborough area has developed to serve the needs of a growing community throughout its history. When the expansion of a community is slow, so is the increase in highway infrastructure. However, the rapid expansion linked to 'New Town Status' meant the extensive construction of new sections of highway network. Peterborough, in common with other 'New Town' areas now needs to consider how to react to large areas of the highway network currently reaching the end of its useful life, and make future provision for the current infrastructure expansion it is experiencing.



Figure 1 – Fletton Parkway

## **Aims and Objectives**

In order to develop the Highway Maintenance Plan it must align with the Council's Strategic Priorities. These are to;

- Drive growth, regeneration and economic development;
- Improve educational attainment and skills;
- Safeguard vulnerable children and adults;
- Implement the Environment Capital agenda;
- Support Peterborough's culture and leisure trust Vivacity;
- Keep all our communities safe, cohesive and healthy, and;
- Achieve the best health and wellbeing for the city.

Furthermore they must also adhere to the Council's Sustainable Community Strategy. This outlines the Council's commitment to improve services and promote the economic, environmental and social well-being of the area. The four priorities identified within the strategy are to;

- Creating opportunities – tackling inequalities;
- Creating strong and supportive communities;
- Creating the UK's environment capital, and;
- Delivering substantial and truly sustainable growth.

The Council, through its Asset Management approach and Performance Management Framework, ensures that all services identify how they contribute to the achievement of the corporate aims and objectives. Every service area generates its own service plan that directly links service objectives to corporate objectives and, thereby, to the implementation of the Sustainable Community Strategy. Service objectives are set and monitored on a frequent basis and many correspond with National Indicators, reported on as part of the Framework monitoring process.

The Highway Maintenance Plan must have regard to the aims and objectives of the Corporate Performance Plan which, in turn, links to the Sustainable Community Strategy. By doing so, it seeks to maximise the contribution of Highway Maintenance to meeting those objectives.

It seeks to do this by clearly identifying the aims and objectives of highway maintenance in Peterborough. The Strategy also combines with other Council policies and plans with the aim of maximising the benefits to the community by improving co-operation between PHS and other internal and external stakeholders.

The Strategy recognises that the highway network is the authority's largest and most valuable asset. As part of the Council's Performance Management Framework, the Highway Maintenance Strategy identifies the aim "to maintain the Authority's most valuable asset both efficiently and professionally whilst providing an accessible and responsive service to the population of the Peterborough area". The following broad aims have been identified;

- Provide effective asset management for all highways assets
- Provide effective routine maintenance of the highway network;
- Provide effective planned maintenance of the highway network following asset management principles including consideration of risk;
- Provide a rational and reliable Winter Maintenance Service, and;
- Provide a risk based inspection regime for highways.

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Delivering these outcomes cannot be achieved by PHS alone, which is why partnership working is so important. As such we will continue to build on our successes with various Partners including Cambridgeshire Constabulary, the Primary Care Trust, Vivacity and many others to make this ambition a reality for the City and its residents.



**Figure 2 – Highways Inspections**

## **Scope of Highway Maintenance**

Highway maintenance is a wide ranging service following a continued risk based approach to asset management. The risk based approach includes how we respond to customer enquiries, inspection results and life cycle planning for scheme selection. Highway maintenance includes the following activities:

- **Reactive maintenance** responding to inspections, complaints or emergencies;
- **Routine maintenance** providing works or services to a regular consistent schedule generally for patching, repainting of faded road markings, investigating problems with highways drainage, and barrier and fencing repairs following an accident;
- **Programmed or planned maintenance** providing larger schemes, primarily resurfacing, surface treatments or reconstruction of carriageways or footways to a planned schedule;
- **Regulatory maintenance** inspecting, regulating and enforcement activities of others in line with the Highways Act, much of this work will be undertaken by the Traffic Manager and their team, under the statutory duty for network management;
- **Winter Service** providing salting and clearance of snow and ice;
- **Emergency Response** providing a 24 hour emergency response for adverse weather conditions and other emergencies.

## **Related activities**

There are a number of related functions which are not specifically dealt within detail in this strategy, but which on occasion affect highway maintenance activity. They also have the potential to be delivered through joint working, co-operation and co-ordination with third parties. These include;

- Asset Data Management;
- Network management, including utility company activity;
- Highway development control;
- Highway Engineering Improvements;
- Street cleansing;
- Public transport providers;
- Town centre management, including use of public space;
- Maintenance of surface water drainage systems, and watercourses
- Environmental management including trees, verges and soft landscaping.

In Peterborough there are regular co-ordination meetings and the positive reinforcement of collaborative and partnership working. All activities on the highway are carefully planned and programmed to maximise value for money and minimise disruption to road users.

## Section 2.0 Peterborough's Highway Network

The highway network within the Peterborough area has developed over many years. This has led to an extensive and varied network that contains roads that were designed to the national standards of their time. The network includes old urban residential streets, rural lanes, fen roads and newer roads such as those at Hampton and the Parkway system, of which some sections are over 35 years old.

Over time, responsibility for the maintenance of the network has changed, as have design standards.

In order for the authority to be able to properly manage the highway network, it is important to maintain significant levels of asset data. This information includes the following;

- Name;
- Location;
- Size;
- Classification/ Hierarchy;
- Status;
- Present condition monitored using a mix of Scanner data, SCRIM data, Course Visual Inspection (CVI), Footway Network Survey (FNS) and inspectors condition assessment.

The above applies to all features contained within the adopted highway such as;

- Carriageway;
- Footway / cycleway;
- Verges
- Structures;
- Highway drainage;
- Signs;
- Street lighting, and illuminated bollards
- ITS Equipment.
- Lines
- Reflective road studs
- Non illuminated bollards

Over the life of the last plan the Council improved the level of information it holds through projects such as the;

- Asset Inventory database survey;
- Highway condition surveys that are routinely undertaken;
- Initial life cycle planning for major asset types.

This awareness of the network, and the issues relating to it will enable a more effective approach towards achieving better asset management, which is a developing requirement of highway authorities<sup>1</sup>. Such asset management approaches allow for better direction of resources based upon risk.

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<sup>1</sup> Department for Transport Incentive Fund 2016-2021

**Carriageway Hierarchy**

The roads within Peterborough, as nationally, are broken down into basic classifications which are as follows;

- Motorway – Highways England responsibility
- A (trunk) – Highways England responsibility
- A (principal);
- B;
- C,
- Unclassified.

Highways England (HE) is responsible for the maintenance of motorways such the A1(M) and trunk roads such as the A1, A47(T) (east of the A1) and their maintenance is carried out by their delivery partners. PHS is responsible for the entire remaining adopted highway network including the principal A, B, C and Unclassified road, the total length of these calculated from the street gazetteer have been summarised in Table 2.

All of the roads mentioned are adopted public highway which are maintained at public expense. There are other roads in the Peterborough area that, although not adopted, may have highway rights such as Public Rights of Way (PRoW). In these instances, the maintenance responsibility usually rests with the land owner although the Local Authority has a statutory duty to ensure they are available for use and not obstructed.

The Council’s adopted highway network is broken down within Tables 2-4 below. Furthermore, definitions of each category and their hierarchy can be found within Table 5.

<b>Length by Classification (km)</b>	
A Road	122
B Road	56.5
C Road	202.9
Unclassified	550
<b>Total (km)</b>	<b>931.4</b>

Table 2 – Physical Parameters of Peterborough’s Carriageways by Classification

Carriageway Hierarchy		
Category	Description	Length km
2	Strategic	84.9
3a	Main Distributor	54.1
3b	Secondary Distributor	150.79
4a	Link Road	99.07
4b	Link Access Road	542.54
<b>Total (km)</b>		<b>931.4</b>

Table 3 – Physical Parameters of Peterborough’s Carriageways by Hierarchy

Footway and Cycleway Hierarchy		
Category	Description	Approx. Length km See Note below
1a	Prestige Zones	3.1
1	Primary Routes	17.9
2	Secondary Routes	96.7
3	Link Routes	270.8
4	Local Access Routes	1245.5
<b>Total (km)</b>		<b>1634</b>

Table 4 – Physical Parameters of Peterborough’s Footway and Cycleway Network by Hierarchy

**Note** – All carriageway, footway and cycleway extents are recorded accurately as polygons with an accurate area (in m<sup>2</sup>). However the hierarchy details are held against the inspection linear routes. Off road footpaths and cycle paths are recorded on GIS accurately, therefore their lengths are accurately calculated from those asset records. The footways at the side of roads are recorded for inspections using a road centreline. This data has therefore been calculated assuming that all residential roads have two footways thereby using a measurement of double the road centreline. All rural link roads have been assumed to have no footways.

It is planned to capture an accurate footway centreline dataset in the near future and this table will then be updated.

It is also anticipated that approximately 3km of unclassified carriageway will be adopted each year from new developments currently taking place within Peterborough and this will continue at a similar rate throughout the life of this plan.

**Carriageway Hierarchy**

<b>Cat</b>	<b>Category description</b>	<b>CoP* - Type of Road General Description</b>	<b>Detailed Local Authority Description</b>
N/a	Motorway	Limited access, motorway regulations apply	None in Peterborough
2	Strategic Route	Trunk roads and some Principal "A" roads between Primary Destinations	'A' roads serving fast moving regional and national traffic. Includes Peterborough's busiest Parkway dual carriageways.
3a	Main Distributor	Major Urban Network and Inter-Primary Links. Short-medium distance traffic	Major urban routes connecting the strategic network. Includes remaining 'A' roads as well as busier 'B', 'C' and Unclassified roads.
3b	Secondary Distributor	B and C class roads and some unclassified urban routes carrying bus, HGV and local traffic with frontage access and frequent junctions	Lighter trafficked rural 'B' roads linking larger villages. Urban 'C' and Unclassified roads with a frequent bus service of 20mins or less.
4a	Link Road	Roads linking the Main Distributor network to the Secondary Distributor network with frontage access and frequent junctions	Busier 'C' roads and very lightly trafficked 'B' roads, linking the main and secondary distributor network. In urban areas, residential distributor roads and roads with a less frequent bus service of 30mins or more.
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic	Remaining 'C' and Unclassified roads providing local access. In urban areas, housing estate roads, terraced streets, industrial estate service roads etc. In rural areas, minor side roads and narrow lanes serving limited numbers of properties.

Table 5 – Definition of Highways Categories

Carriageway hierarchy will not necessarily be determined by the road classification, but by functionality and scale of use. The above table has been developed using the 'Well-Managed Highway Infrastructure' Code of Practice (CoP) as a reference point from which local hierarchies have been developed.

The carriageway hierarchies were last reviewed in June 2018 and signed off by the Head of Peterborough Highway Services. They will be assessed by the inspector at each inspection to confirm that they are still relevant. If it is felt that they are not then this will be referred to the Council client staff for review including the details of any change in circumstances.

## Footways and Cycleways

PHS utilises the Code of Practice for Well-Managed Highway Infrastructure (October 2016). This document advises that the footway and cycleway networks should be broken down into alternative classifications which relates to its level of daily use. This classification directly impacts on how a particular section of the network should be maintained based upon risk. The classifications and definitions are displayed in Tables 6-7 below;

### Footway Hierarchy

Category	Name	Description
1a	Prestige Walking zones	Very busy areas of towns and cities with high public space and street scene contribution.
1	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.
2	Secondary walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres etc.
3	Link Footways	Linking local access footways through urban areas and busy rural footways.
4	Local Access Footways	Footways associated with low usage, short estate road to main routes and cul-de-sacs.

Table 6 – Definition of Footway Hierarchy Categories

### Cycle Route Hierarchy

Category	Description
A	<b>Cycle lane</b> forming part of the carriageway, commonly 1.5 metre strip adjacent to the near side kerb. Cycle gaps at road closure point (no entries allowing cycle access)
B	<b>Cycle track</b> , a highway route for cyclists not contiguous with the public footway or carriageway. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated
C	<b>Cycle trails</b> , leisure routes through open spaces. These are not necessarily the responsibility of the highway authority, but may be maintained by an authority under other powers or duties.

Table 7 – Definition of Cycleway Hierarchy Categories

The footway/cycleway hierarchies were last reviewed in June 2018 and signed off by the Head of Peterborough Highway Services. They will be assessed by the inspector at each inspection to confirm that they are still relevant. If it is felt that they are not then this will be referred to the Council client staff for review including the details of any change in circumstances.

## Section 3.0 Resources

This section seeks to identify and quantify the resources used for highway maintenance within Peterborough. This will also include financial, human, contractual and equipment resources.

### Peterborough Highway Services

PHS is a partnership between Peterborough City Council and its service provider Skanska.

This contract was awarded in August 2013 and started during October 2013. It replaced several contracts that focussed on individual elements of the highways industry for example, street lighting or maintenance. As a result PHS are responsible for all aspects of improving and maintaining Peterborough’s highway network including;

- Roads;
- Bridges
- Drainage;
- Street lighting, and;
- Professional Services.

This contract is ten years in length with options for further extensions should performance targets be met or exceeded. As a result the contract is expected to run until at least 2023.

### Governance

The partnership operates a simple governance structure comprising the Peterborough Highways Strategic Board (PHSB) and the Peterborough Highways Operations Team (PHOT), which are outlined within Table 8 below. The purpose of the Strategic Board is to provide strategic direction and monitor the performance of the contract. The Operations Team are responsible for leading and managing all aspects of service delivery and performance, influence and inform strategic direction and direct the delivery teams.

Meeting	Direction /Guidance	Attendees	Purpose	Reporting	Escalations
Peterborough Highway Services Strategic Board		Senior Partnership Directors	Strategic direction		
Peterborough Highway Services Operational Team		Senior Managers	Operational Management		
Performance Groups		Representatives from each team as appropriate	Health and Safety, KPI's, Efficiency, Asset Management , Programme Management and Contract Management Groups		

Table 8 – Peterborough Highways Services Governance Diagram

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The PHSB is then accountable to the Growth and Regeneration Directorate and ultimately Peterborough City Council. This is measured through the submission of Key Performance Indicators as specified within the Highways contract and also by and feedback which may be received from Councillors or the electorate.

The partnership between Skanska and Peterborough City Council has proved to work well over the first five years of the contract. A joint collaborative group successfully achieved Band 3 on the Department for Transport's Incentive Fund. This helped to ensure that Peterborough maintained its level of capital funding. As part of this process the Council participates in a joint Asset Management Working Group containing authorities who are also Skanska customers. Skanska facilitate this and it is a good opportunity for improving knowledge of asset management best practice.

**Financial Resources**

Funding sources for highway maintenance within Peterborough are usually split into three categories and are outlined within Table 9;

Scheme Type	Funding Stream	Typical Use
Major Schemes	Major Schemes exceeding £500k in value	Major improvements
Large Schemes	LTP Capital Maintenance Allocation	Carriageway Resurfacing
Medium-Small Schemes	PCC Capital and Revenue Budget Allocation	Footway Slab Replacement and Micro Asphalt Treatments. Inspector Defined Schemes and Reactive Maintenance.

Table 9 – Definition of Schemes and the appropriate Budget

Capital and revenue allocations vary on a year by year basis due to changing priorities within the authority. Figure 3 below shows the annual breakdown of expenditure for the previous five years. This figure has remained consistent at approximately £3 million. This figure excludes structures, street lighting and any external grant funding that PHS has received during this period and new infrastructure schemes progressing through LTP funding which may result in indirect highway maintenance. Major schemes funding is not included which can amount to as much as £20m in any given year. This money comes from a variety of sources including external grants and internal capital investment.

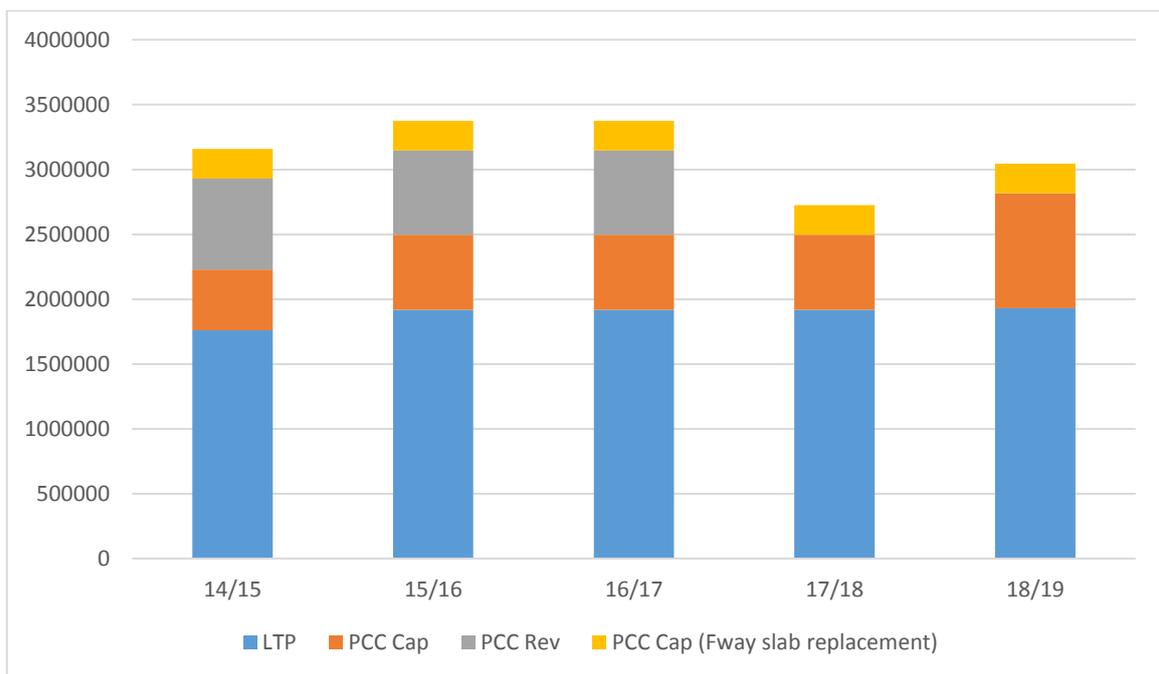


Figure 3 – Highway Maintenance Scheme Funding

As can be seen from the above, the most significant aspect affecting the expenditure profile is the additional maintenance benefit accruing from LTP schemes, funding for the LTP comes from a grant from Central Government. All other funding streams are generated locally including revenue funding for reactive maintenance.

## **Human Resources**

Peterborough Highways Services combines employees of Peterborough City Council and Skanska working in partnership to improve the local highway network for the benefit of all residents and businesses. To assist with this, the partnership has moved to a shared depot facility at Dodson House. The shared depot accommodates both office and depot staff and will also leave a legacy for the Council.

A summary of the roles and responsibilities of each team related to highways maintenance are outlined below;

### **PHS Operations Delivery Team**

Staff level;

- 14 full time equivalent

Responsible for;

- General routine maintenance;
- Structural maintenance schemes (carriageway and footways);
- Safety inspections;
- Condition surveys;
- Serving of notices and enforcement of HA1980 (including skips and scaffolding);
- Minor traffic management issues
- Maintenance of Public Rights of Way (PRoW);
- Winter Maintenance;
- Street works Inspections,
- Emergency out of hour's service.

### **Street Lighting Maintenance Team**

Staff level;

- 10 full time equivalent

Responsible for;

- Traffic signs (illuminated);
- Street Lighting,
- Traffic bollards (illuminated)

### **Highway Structures Team**

Staff level;

- 4 full time equivalent

Responsible for;

- Bridge Inspection;
- Design of Bridge Refurbishment and Maintenance Revenue scheme;
- Design of Capital Structures scheme,

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- Non – Highways structural design input (on behalf of other departments).

Drainage

Staff level;

- 4 full time equivalent.

Responsible for;

- Design and maintenance of the Council's drainage,
- Management / approval of Developers schemes and promotion of SUDS
- Delivery of Lead Local Flood Authority responsibilities on behalf of wider council
- Non - Highway Drainage investigations (on behalf of other departments)

## Section 4.0 Highway Inspections

PHS undertakes a range of safety inspections to ensure that the highway network;

- Conforms to the aims and objectives of this plan,
- Ensures PHS conform to its statutory responsibilities.

The range of inspections that are undertaken are summarised below.

### **Safety Inspections**

Safety inspections are used to identify defects likely to create a danger or cause serious inconvenience to users of the highway network, the wider community and therefore require attention at timescales determined by risk. Safety Inspections are carried out on the entire adopted highway network within the Peterborough area.

The identification of defects takes place through;

- Routine Safety inspections,
- Additional inspections identified whilst carrying out other duties on the network or following a third party report.

### **Risk Assessment**

In accordance with the recommendation in the Well-Managed Highway Infrastructure Code of Practice the speed of response to identified defects has been developed from a process of risk assessment and significance. This means that the risk should be assessed by the probability that it will occur and the resultant impact. Depending on the seriousness of the defect a less immediate response time may be required.

The risk matrix and risk register for routine highway defects is detailed in Table 10-11.

Although it is not possible to identify every risk, the risks identified in the Peterborough risk register for Highway Safety Defects cover a wide range of issues, however it is not prescriptive. On-site judgements will take into account the particular circumstances of any defect such as;

- The nature of the defect;
- The location of the defect relative to other highway features such as junctions and bends;
- The position of the defect relative to the traffic (especially those of vulnerable users) such as in traffic lanes or wheel tracks walking and cycling routes;
- The nature and extent of interaction with other defects,
- Forecast weather conditions, especially potential for freezing of surface water.

PROBABILITY OF RISK	IMPACT OF RISK					
		Very High (5)	High (4)	Medium (3)	Low (2)	Very Low (1)
	Very Likely (5)	25	20	15	10	5
	Likely (4)	20	16	12	8	4
	Possible (3)	15	12	9	6	3
	Unlikely (2)	10	8	6	4	2
	Rare (1)	5	4	3	2	1

Table 10 – Highway Maintenance Risk Matrix

Risk Factor	Defect Category	Priority Response	Priority Response Time
25	1	A	Up to 2 hours from inspection
15-20	1	B	Up to 24 hours from inspection
9-12	2	C	Up to 7 days from inspection
5-8	2	D	Up to 28 days from inspection
1-4	2	E	Defect low risk, monitor and if necessary review at next inspection or repair during next available programme.

Table 11 – Highways Maintenance Risk Register

## Response

PHS, in accordance with best practice defines a defect as one of two categories. This corresponds with those adopted in England by HE in respect of motorways and trunk roads which are;

- **Category 1** – Those that require prompt attention because they represent an immediate or imminent hazard or because there is a risk of short-term structural deterioration,
- **Category 2** – All other defects.

### Category 1

Category 1 defects are to be made safe or repaired within 24 hours from the time of identification. Some may require immediate attention as described below however those identifying defects are able to apply faster response times if they deem it necessary according to individual circumstances and location. This is left to the discretion of the inspector who may use their judgement to escalate the response time based upon experience and risk assessment.

Where signing and guarding is required to make a defect safe, an arrangement for a system of regular inspection should be established to ensure that such signing and guarding is maintained in a proper condition.

Very dangerous defects require a response time of two hours. These are defects which due to their nature and location represent a particularly high risk.

When a Category 1 defect is identified within a larger area of deterioration, only that part of the area which meets the criteria for Category 1 defects shall be treated as a Category 1 defect with the remainder being treated as a Category 2 defect unless it is impractical to do so.

Some Category 1 defects are associated with utility trenches/openings governed by the requirements of the New Roads and Streetworks Act (NRSWA). If the reinstatement is still within its guarantee period, is outside its specified tolerances and is within the Category 1 criteria and the utility fail to act within the agreed timescale then the defect should be made safe and all costs recovered from the relevant utility.



Figure 4 – Patch Repair of Pothole Style Defect

## **Category 2**

All defects identified during safety inspections that are not categorised a Category 1 are automatically classified as Category 2.

Category 2 defects have been further categorised according to priority, high (H) medium (M) and low (L).

Category 2 response times are appropriate to the various categories of defect and are based on the risk probability and its likely impact. This takes into account the likelihood of further deterioration before the next scheduled inspection.

The decision whether to record those defects which are considered low risk [Cat 2 (Low) – response E] and have no determined response time remains at the discretion of the Highway Inspector.

The response for this lowest category could be in the form of submitting a recommendation for surface dressing, a structural maintenance proposal, review at the next inspection or increase inspection frequency for monitoring based upon a risk assessment.

### **Case Study - Innovative Pothole Repairs**

During 2015, teams from alongside members of neighbouring authority's, trialled a pothole machine, loaned from Skanska's Swedish business known as the "Dragon".

The unit can successfully fill in pothole repairs at a reduced time and financial cost in comparison to traditional methods and reflects Peterborough's proactive attitude to asset management and maintenance. With assistance from experienced overseas staff and a £50,000 allocation to use the machinery, the Dragon and members of PHS proceeded to undertake 264 repairs throughout the authority.

This trial was well received and has since been implemented as an annual programme.



**Timescales**

Once the defect has been classified a response time will be given to it based upon risk. This is based on the category and sub category of the defect. This is detailed in Table 12 below;

<b>Defect</b>	<b>Response</b>	<b>Timescale</b>
Cat 1	Response A	2 hours
Cat 1	Response B	24 hours
Cat 2 (High)	Response C	Up to 7 days
Cat 2 (Medium)	Response D	Up to 28 days
Cat 2 (Low)	Response E	More than 28 days - monitor and if necessary review condition at the next inspection or repair during the next available programme.

**Table 12 – Defect Categorisation and Timescales**

The timescales represent the minimum expected response however those identifying defects are able to apply faster response times if they deem it necessary according to individual circumstances and location. Tables 13 - 16 below outline the various types of defects, how they are categorised and the timescales that PHS will adhere to in order to ensure that the issues are rectified.

PHS will endeavour to adopt a “First Time Fix” policy to all identified defects on the highway network, however for more complex defects a hazard may initially be treated as a Response A or B and ‘made safe’ prior to a more substantial intervention taking place.

Highways Inspections are scheduled to ensure that no more than three Inspectors will be undertaking site visits at any one time. This ensures that the workforce is managed effectively and ensures service levels are maintained.

It is important for Inspectors to consider the availability of contractor resource when scheduling inspections in order to ensure response times are met. Inspections should not be programmed on Friday’s or before public holidays (Good Friday, Christmas Day etc.).

Safety Inspection Intervention Levels				
Ref	CARRIAGEWAYS			
	Defect Type	Intervention Level	Hierarchy (location) 2, 3a, 3b	Hierarchy (location) 4a, 4b
			Response	Response
1	Pothole (>150mm in all horizontal directions) Raised or missing block/channel Ridge, hump or depression Gap / crack (>20mm wide)	=> 75mm	A	B
		40 – 74mm	B	B
		20 – 39mm	D	E
	Edge Damage - encroaching beyond the inner edge of an edge line marking or where no marking encroaches 150mm or more into the running surface	As pothole		
	Edge Damage - within the inner edge of an edge line marking or encroaches less than 150mm into the running surface	=> 100mm	D	E
	Sunken cover or level difference within frame	=> 75mm	A	B
		40 – 74mm	B	B
		20 – 39mm	D	E
	Missing cover	All	A	A
	Polished cover	All	D	D
	Drainage - Blocked drainage feature or system (gully silted above outlet) causing standing water 1.5m or more from edge of carriageway 2 hours after cessation of rainfall	Yes/No	B	C
	Flooding - Property inundation as a result of defective highway drainage	Yes/No	A	A
	Flooding - substantial running water across carriageway	Yes/No	A	B
Footway intervention limits are to be applied to areas of carriageway designated for pedestrian use such as pedestrian/zebra crossings, refuges with adjacent drop crossings and adjacent to tactile paved crossing points				

Table 13 – Carriageway Safety Inspection Summary Table

Safety Inspection Intervention Levels				
Ref	VERGES			
	Defect Type	Intervention Level	Hierarchy (location) 2, 3a, 3b	Hierarchy (location) 4a, 4b
			Response	Response
2	Sunken area edge adjacent and parallel to carriageway edge (rural area)	> 100mm	C	D
		75 – 99mm	D	E
	Sunken area adjacent to and running parallel with footway edge (urban area with kerbed carriageway)	> 100mm	C	C
		75 – 99mm	C	D
		40 – 74mm	D	E

Table 14 – Verge Safety Inspection Summary Table

Safety Inspection Intervention Levels				
Ref	FOOTWAYS AND CYCLEWAYS			
	Defect Type	Intervention Level	Hierarchy (location) 1a, 1	Hierarchy (location) 2, 3, 4
			Response	Response
3	Trip / Pothole	=> 25mm	B	B
		20 – 24mm	C	C
	Trip / Rocking slab or modular paving (Inc Kerbs)	+/- 20mm	B	B
		+/- 15 to 19mm	D	E
	Trip /Rocking kerb (adjacent to footway or other pedestrian area)	+/- 20mm	B	D
		+/- 15 to 19mm	D	E
	Trip / Horizontal Gap	More than (20mm wide x 20mm deep)	B	C
		More than (20mm wide x 10mm deep) less than (20mm wide x 20mm deep)	D	E
	Rapid change of profile ( Crowning/depression)	> 50mm extending in plan direction 500mm or less	C	D
		> 30mm and < 50mm in plan direction 500mm or less	D	E
	Sunken cover or level difference within frame	> 30mm	B	B
		20 – 30 mm	C	D
	Missing cover	All	A	A
	Polished cover	All	D	D
Drainage - Blocked drainage feature or system (gully silted above outlet) causing standing water 2 hours after cessation of rainfall sufficient to prevent use	Yes/No	B	B	
Flooding - Property inundation as a result of defective highway drainage	Yes/No	A	A	
Flooding - substantial running water across footway/cycleway	Yes/No	C	C	

Table 15 – Footway and Cycleway Inspection Summary Table

Safety Inspection Intervention Levels			
Ref	GENERAL HIGHWAY FEATURES		
4	Defect Type	Hierarchy (location) 2, 3a, 3b, 4a, 4b	
		Intervention Level	Response
	Road markings	70% loss of effective markings – Stop or solid centre line	C
		70% loss of effective markings – Other	D
		30% loss of effective markings – Stop or solid centre line	D
		30% loss of effective markings – Other	E
	Road studs	Missing with hole left in c/way	As pothole
		Displaced item on c/way	A
		Defective or ineffective item/s	E
	Fencing	Damaged or misaligned Safety Fence	B *1
		Safety Fence out of specification	E
		Damaged/misaligned Pedestrian Barrier	B *1
		Pedestrian barrier out of specification	E
	*1For fencing these response times are “to make the site safe “		
	Non-illuminated Signs	Mandatory sign badly worn, missing or obscured	B
		Warning or Regulatory sign badly worn, missing or obscured	D
		Other sign badly worn, missing or obscured	E
	Illuminated Signs/Bollards/Signals	Any - badly worn, missing, obscured, failed, exposed wiring etc.	Refer to Street Lighting or Traffic Signals Team
	Hedges and trees*2	Unstable tree or branch causing danger of collapse onto highway	A*2
		Overhanging tree <2.1m high over footway Overhanging tree <2.4m high over cycleway Overhanging tree <5.1m high over carriageway	D*2
Oil / debris / mud / stones and gravel on a carriageway that are likely to cause a hazard		Present on running surface of 'live lane'	Refer to Street Cleansing
	Present on running surface not normally trafficked (e.g. adjacent to splitter island or off line on roundabout)		
Street furniture	Damaged street furniture causing a significant hazard	B	
*2 Inspectors are not qualified to complete detailed tree inspections rather they are expected through their inspection duties only to take note and act where there is encroachment or visibility obstruction and any obvious damage that could threaten the safety of highway users. Support should be sought from qualified arboriculture trained staff as and when necessary. Inspectors are not expected to complete condition surveys of trees beyond identification of a tree/branch that is visibly hazardous and likely to pose a danger to highway users by falling onto the highway			

Table 16 – General Highway Features Inspection Summary Table

**Safety Inspection Frequency**

Safety inspections within the Peterborough area are undertaken regularly and are outlined in Table 17 below. These have been derived from and compared against the recommended frequencies as given in the 2016 Code of Practice. Inspection officers have the option to carry out additional inspections if they feel that the route may deteriorate before the next scheduled inspection. Inspectors can also recommend a review of the hierarchy of a street section if there is sufficient evidence to warrant it.

Feature	Cat	Description (As CoP Table 1& 2 Section 8)	Code of Practice Recommended Frequency	Peterborough City Council Frequency	Inspection method
Roads	2	Strategic Route	1 month	1 month	Driven*2
	3a	Main Distributor	1 month	1 month	Driven*2
	3b	Secondary Distributor	1 month	3 months*1	Driven*2
	4a	Link Road	3 months	6 months*1	Driven*2
	4b	Local Access	12 months	12 months	Driven*2
Footways	1a	Prestige Area	1 month	1 month	Walked
	1	Primary Walking Route	1 month	1 month	Walked
	2	Secondary Walking Route	3 months	3 months	Walked
	3	Link Footway	6 months	6 months	Driven
	4	Local Access Footway	12 months	12 months	Driven
Cycleway	A	Cycle Lane	As for roads	As for roads	As for roads
	B	Cycle Track	6 months	12 months*1	Walked/cycle
	C	Cycle Trails	12 months	12 months	Walked/cycle

\*1 Note: these inspection frequencies deviate from those defined in the Code of Practice for Well Managed Highway Infrastructure that does recognise the need for local authorities to interpret the guidance to suit their own local circumstances. This departure from the Code is necessary following consideration of the availability of resources within the Unitary Authority.

\*2 Note: where adjacent footway inspections are designated as 'walked' these roads will be inspected on foot at the same time as the footway

Table 17 – Safety Inspection Frequency Summary Table

### Driven Inspections

Where two Highways Inspectors are required the responsibility for the inspection will be taken by one person defined as the 'Inspector' with the second acting as an assistant. The following rules must also be adhered to;

- Driven Inspections are to be undertaken from a slow moving vehicle with a dedicated driver and Inspector in a suitable vehicle appropriately liveried;
- The following maximum speeds have been defined for inspections carried out from a moving vehicle;
  - High Speed Roads 50mph and above (carriageway only) – 40mph
  - Urban Roads <50mph (carriageway , footway or joint) – 20mph
- Notwithstanding the above the Inspector must use his discretion to determine a suitable speed having regard to all the circumstances including the prevailing weather and road conditions;
- Consideration must be given to the safety of the inspection team and other road users during driven inspections;
- Where footways are inspected from a moving vehicle and exist on both sides of the road the road is to be driven in both directions in order to give a clear view of the footway from the passenger seat;
- Where an Inspector's view of the footway is obscured by two or more cars parked in a row or other significant obstruction consideration should be made as to whether that section of footway should be inspected on foot. Inspectors are sufficiently experienced to judge whether a walked inspection is justified having regard to all the circumstances including the general age and condition of the footway either side of the obstruction, and;
- All slabbed footways are to be walked regardless of category or hierarchy.

### Walked Inspections

When carrying out walked inspections the Inspector is required to walk both footways (either side of the road) and identify defects over the whole highway as appropriate. Further passes may be necessary in wide pedestrian areas or alternatively arrangements can be made to carry out walked inspections in pairs to increase efficiency.

### Routine Condition Surveys

These surveys are carried out annually and coincide with a safety inspection. They are undertaken by the Area Highway Inspector. The survey is a basic assessment of the condition of a highway feature based on a 1 to 5 scale, with 1 representing a near perfect feature and 5 representing totally failed feature.

These scores are recorded and used in the selection of sites for inclusion in planned maintenance programmes in following years.

Where a Highways Inspector believes that it is not economically viable to restore a section of the network to a satisfactory condition with limited maintenance works, the Highway Service Delivery Manager shall be informed and this site will then be included in the Highway Maintenance Scheme proposals. It will then be surveyed and rated accordingly following asset management best practice.

Inspectors should have particular regard for surface treatments that may be appropriate for inclusion on future programmes – such as surface dressing, micro asphalt and slurry seal.

## **Recording of Inspections, Defects and Remedial Works**

It is vital that accurate and reliable records are maintained with regards to the highway maintenance activities undertaken. This is especially true in the area of safety inspections.

Currently records of highway maintenance activity are maintained on a highways management software package called 'Confirm', as supplied by Pitney Bowes. This system consists of a highway inventory identifying all adopted streets within the Peterborough area. It maintains records of all safety and additional network inspections and relates the inspection to any defect found and if required, any instruction for remedial action.

Following the completion of an inspection the inspector will provide a condition score of the section inspected, confirmation of whether it should be considered for a scheme (Road markings, patching and surface treatments), whether additional inspections are temporarily required, whether the road hierarchy is still appropriate and additional supporting comments for any recommendations made.

The records contained in the Pitney Bowes Confirm system are retrievable and help protect the Council should a claim be made relating to the condition of the highway network. It is therefore imperative that anyone undertaking either safety inspections or issuing instructions for works ensures that an accurate record of their actions is entered onto the system. This may either be done directly onto the main Confirm system or, preferably onto the hand-held devices, where provided.

A brief outline of the functionality of this system is as follows;

- Maintains a highway inventory containing all adopted streets in the Peterborough area;
- Generates inspection routes for the Council's Highway Inspectors;
- Records inspection details;
- Relates details of defects to identified from inspections;
- Relates instructions for remedial works to defects/inspections;
- Issues either electronic instruction to contractor;
- Establishes the status of instruction;
- Records details of actual remedial work undertaken and submits a request for payment by contractor;
- Records and reports on financial matters;
- Reports on the highway maintenance aspect of a streets history;
- Reports on performance relating to highway inspections, and;
- Reports on performance relating to contractor performance.

## **Inspector Training**

If PHS is to provide evidence that is to be used in court, it is essential to be able to demonstrate that the individuals who complete inspections are adequately trained. Inspectors receive formal 'Highway Inspector' training to ensure they are competent in the completion of inspections.

PHS Highway Inspectors will complete the 'LANTRA' 'Highway Inspector Training Scheme' (or similar) prior to participating in safety inspections as the nominated Inspector. This training is not mandatory for the assistant role. Assistant Inspectors as part of their role and training programme, will carry out inspections under guidance from a LANTRA 'Trained PHS Highway Inspector'. Assistant Inspectors will complete the LANTRA Training course within 12 months of commencing the role.

## Section 5.0 Operational Procedures

### Structural Condition Surveys

The main purpose of surveys is to collect data so it can effectively prioritise planned maintenance work and to build a comprehensive picture of the condition of the asset. Priorities, timing and appropriate treatments can then be selected by using United Kingdom Pavement Management System (UKPMS) and local engineering judgement, to give optimum results in terms of maintenance costs against preservation of asset value.

Structural condition surveys also support the following operational/reporting purposes to;

- Identify priorities for planned maintenance;
- Support the Local Transport Plan and other funding bids, and;
- Report network condition against criteria for National Indicators (NIs).

The use of the UKPMS is mandatory in all cases where survey assessment are undertaken to provide National Indicators. The UKPMS also gives outputs regarding asset condition, treatments required and possible budgetary requirements. Before a software house can market a UKPMS they need to pass independent testing to confirm they comply with the national requirements. The systems on the market have all been developed to a national specification and incorporate rules and parameters which will enable the same condition scores and treatment recommendations to be output, irrespective of which system provider is used. PHS works in partnership with other Authorities in using WDM Ltd UKPMS software, giving a vastly reduced procurement cost to both organisations. As well as the software being independently tested each type of survey have annual health checks and only accredited suppliers can undertake these road condition surveys.

The Council is part of an Eastern Region consortium which has procured Highway Condition Surveys (machine based surveys only) jointly via Eastern Shires Purchasing Organisation (ESPO). This contract runs from 1 April 2013 to 31 March 2017, extendable by two years. The present service provider is WDM Ltd. This consortium achieves economy of scale in providing road assessment surveys.

The quantity and location of these surveys are reviewed on a regular basis after considering changes either in policy or to the highway network. The previous year's survey coverage and NIs are detailed in Appendix 1.

## **Description of Survey Types**

PHS undertakes several types of survey to determine the condition of the principle road network, these are outlined below;

### **Sideway-force Coefficient Routine Investigation Machine Survey (SCRIM)**

The maintenance of adequate skid resistance on running surfaces is an aspect of highway maintenance which contributes significantly to network safety. Measurement of skid resistance requires the use of specialist testing equipment. Roads carrying high traffic levels, particularly those with large numbers of heavy vehicles, are most prone to loss of skid resistance. The SCRIM survey establishes the skid resistance of a road surface by using a specially adapted vehicle installed with an additional wheel offset by 20 degrees. As the vehicle is driven at the test speed of 50kph, a controlled flow of water is applied to the road surface ahead of the wheel. A measurement is taken of the sideways force applied to the wheel which is then used to provide the SCRIM value. The results of this test will draw attention to areas of the network that have poor skid resistance values and therefore pose a potential hazard for the highway user. The Design Manual for Roads and Bridges provides details for the investigatory levels for skid resistance which will vary, depending on the character of the site.

100% of the principal road network is surveyed annually, however, the timing of this survey is staggered each year, between Early, Mid and Late season, to allow a characteristic SCRIM co-efficient value to be produced for each section of the network using the Annual Survey Method. This methodology is recommended by the Code of Practice for Highway Maintenance Management, as this reduces between-year variations of skid resistance.

The survey data is used to target surface improvements to sites where casualty reduction can be expected.

No surveys are carried out on the non-principal and unclassified network.



Figure 5 – SCRIM Survey Vehicle

## **SCANNER survey**

The SCANNER survey has been introduced following national problems of inconsistency and as a replacement to the Deflectograph survey, as a network management tool. The SCANNER survey became mandatory in England in 2004/05 for reporting of Best Value Performance Indicators BVPI 223 (Principal Rds) and 224a (B & C roads), which were then replaced by National Indicators NI168 & NI169 respectively. These national reports have now been superseded by the national reporting for

- 130-01 Principal roads where maintenance should be considered;
- 130-02 Non-principle classified roads where maintenance should be considered;
- 130-03 Skidding resistance data &
- 130-04 Carriageway works done data.

The survey involves a specially adapted vehicle which is driven at normal traffic speed over the highway network to measure and record surface characteristics, such as;

- Wheel path rutting;
- Cracking;
- Texture profile;
- longitudinal profiles;
- Survey speed;
- Road geometry, and;
- Spatial co-ordinates of sections and data.

These are fast surveys with real time processing of condition information that have been introduced with the aim of providing both reliable and repeatable information for the assessment of carriageway condition.

The SCANNER survey is presently undertaken on A, B, C roads to report the National Indicators; the coverage is laid down in the guide lines for NI production. Also, this same information forms the basic condition information used to prioritise the forward works programme for carriageway resurfacing works. From 2010 the coverage of the SCANNER survey was extended to Unclassified roads which have a hierarchy of Secondary Distributor or higher. This allows the condition assessment and funding of the carriageway surfacing refurbishment of the Strategic Route, Main and Secondary Distributors to be based on the same base condition data.



Figure 6 – SCANNER Survey Vehicles

### **UKPMS Coarse Visual Inspection Surveys (CVI)**

This survey is primarily a carriageway survey, but covers the full highway width including footways, verges and cycleway, it establishes road condition by visual means and survey data is collected from a driven inspection of the network. These surveys are carried out using parameters set within the UKPMS. Visible defects across the full highway are recorded and classified within the criteria of UKPMS, the defect criteria are;

- Edge deterioration;
- Cracking;
- Rutting;
- Wheel track cracking;
- Settlement;
- Surface deterioration;
- Surface course deterioration, and;
- Joint seal (concrete carriageways).

This data is then processed using UKPMS compliant software from which a score is derived. This survey is only used on the unclassified road network, a proportion of the unclassified network is surveyed annually, as well as locations which have been submitted for the carriageway resurfacing forward programme. The condition score is then used as the base condition data in assessing the merit of the scheme against other scheme similarly submitted for consideration for the forward works programme for carriageway resurfacing.

Currently, CVI surveys are carried out by a specialist third party on behalf of PHS.

### **Footway Network Survey (FNS)**

To inform the overall condition of the footways across Peterborough we use the Footway Network Survey (FNS). We started these surveys in 2016/17 and look to visually inspect all the footways across Peterborough every four years.

There are four conditions reported for the FNS and these are

1. As new (AS)
2. Aesthetically impaired (AI)
3. Functionally impaired (FI)
4. Structurally unsound (SU)

The survey is to be used a network condition tool and then the Engineer will carry out an inspection to determine the treatment and scheme identification.

## Section 6.0 Structural Maintenance Assessment Procedure

### Scheme Selection Criteria

It is unlikely that sufficient resources will ever be available to undertake all of the necessary highway maintenance schemes required at any one time. Therefore, it is important to establish a clear and sound means of prioritising sites that require major works. The Highway Maintenance and Asset Management Team have adopted a more rigorous use of asset management data when prioritising maintenance scheme bids into a works programme. Further data is being captured that facilitates the development of provisional rolling three year core maintenance programmes, ensuring that maintenance budgets are allocated to achieve maximum return on the investment. This rolling three year maintenance programme creates greater opportunities for co-ordinating and programming maintenance work with other programme areas, such as traffic management/engineering schemes to reduce scheme costs.

The government has encouraged local highway authorities to adopt the UKPMS methodology so that maintenance needs can be consistently assessed at a national level. This may be done using either the Course Visual Inspection (CVI) or SCANNER survey.

Peterborough undertakes both of the above surveys over part of the highway network each year as can be seen in Appendix 1. This shows both the current survey regime in Peterborough and the recommended national survey regimes as given in the Code of Practice

Where UKPMS data is available, it is used as a means of prioritising the forward works programme for carriageway resurfacing/reconstruction schemes on the road network. However, on all other elements of the network, a local methodology is currently employed to determine scheme selection. Additional data is used for this including the mapping of the previous year's highway defects using a thematic map on GIS. This both confirms the data that has already been highlighted and indicates other roads that may require a manual assessment as part of the scheme consideration process. Locations of previous insurance claims and the Highways Inspectors condition assessments / recommendations are also considered.

### Carriageway Schemes

Engineers interrogate the SCANNER Road condition data for parts of the network which have a Road Condition Index (RCI) of over 40 (amber). The condition data is overlaid onto plans of the network and where clusters of scores >40 occur a possible scheme is highlighted. The total RCI score for a highlighted scheme location is then divided by the proposed scheme length to give a basic score.

Unclassified roads are not surveyed by the SCANNER method and their assessment for schemes are based on CVI surveys, with up to 25% of the Unclassified Network being surveyed each year including locations which are identified for consideration on recommendation from Highway Inspectors and other members of Peterborough Highway Services. The CVI survey also gives a Road Condition score, but it cannot be compared to the SCANNER RCI.

These basic scores are then factored a further two times, as detailed in Table 18.

Hierarchy Factor		Location Factor	
Hierarchy	Score	Location	Score
Strategic Route	1.5	Urban/industrial/commercial	1.3
Main Distributor	1.4	Sub-urban (parkways and schemes which have both rural and urban sections)	1.2
Secondary Distributor	1.3	Rural	1.1
Link Road	1.2		
Local Access Road	1.1		

Table 18 – Highway Maintenance Location Factors

There is also an Engineer’s veto/enhancement which takes into consideration additional risk factors such as schools, places of worship or shops etc. The veto may be used because of future major developments or the condition basic score does not warrant the location to resurfaced or treated. When this occurs the Engineer will record in writing the reason for the decision.

As there is no direct link between SCANNER and CVI scores, possible future schemes are split into two categories;

- **Category One** - Contains all proposed resurfacing and surface treatment schemes on the Strategic, Main and Secondary Distributor Hierarchies, which is funded by the Local Transport Plan (LTP) settlement from Central Government. All these routes are routinely surveyed by the SCANNER survey machine.
- **Category Two** - Contains all proposed resurfacing and surface treatment schemes on the Link and Local Road Hierarchies, which is funded by a proportion of the Peterborough City Council Capital budget.

### **Footway Schemes**

The Local Transport Plan consultation process identified a clear public preference for replacing slab footways with bituminous footways. Therefore, a slab replacement footway programme has been undertaken over recent years with a policy of bituminous refurbishment as a construction treatment (unless the site is within a conservation area).

Along with the Footway Network Survey (FNS) the Area Highway Inspectors assist in the identification of potential sites for structural footway / cycleway maintenance works. However, other members of Peterborough Highway Services also identify sites for consideration.

All sites are inspected annually as a minimum by a Highway Inspector and a “Condition Level” is applied, based on the definitions contained within Table 19. This is an assessment of the structural condition and the level of possible risk of public liability claims. This condition data is considered as part of the scheme assessment process. Locations of defects over the previous year and locations of previous insurance claims are also considered along with the factors above.

Condition Level	Definition
1	As new no defects
2	Good condition requiring little local remedial work. No public liability defects
3	Average condition containing numerous defects (some possibly public liability) requiring local remedial action. This level may indicate preventative maintenance required
4	Below average condition with many defects (high number of public liability defects). This level indicates a condition where resurfacing may be required
5	Severely deteriorated condition requiring reconstruction

Table 19 – Highway Maintenance Condition Factor

In addition, a number of other factors are applied to prioritise footway / cycleway schemes. It is important to direct resources to areas of the network based upon risk having considered level / type of use and the asset’s condition. As a result a “hierarchy factor” is applied that can be seen in Table 20 with higher values applying to heavily used sections of the footway / cycleway network.

Cycleway		Footway	
High use cycleway	4	City centre	5
Medium use cycleway	3	Busy urban	4
Low use cycleway	2	Urban or busy rural	3
		Rural	2

Table 20 – Highway Maintenance Hierarchy Risk Factor

Consideration also needs to be given to the cost implication if structural footway/cycleway maintenance works are not carried out. If a section of the footway / cycleway network is allowed to deteriorate, it may mean that either a higher level of remedial works, such as patching, will be required to ensure that the public are not put at risk, or that a more expensive method of maintenance will be required. Table 21 illustrates the factors applied to take this aspect into account and Table 22 outlines an example of this process.

Description	Factor
Little additional cost incurred by deferring scheme	1
Moderate additional cost incurred by deferring scheme mainly due to the cost of remedial works required to ensure that the site is safe	2
High level of additional cost incurred by deferring scheme due to remedial works required to ensure that the site remains safe or where delay would result in more expensive treatment at a later date	3
Very high level of additional cost incurred by deferring scheme leading to substantially more expensive treatment being required at a later date	4

Table 21 – Highway Maintenance Cost Factors

Parish/ Ward	Location	Section	Type	Treatment	Condition Score	Hierarchy Factor	Cost Factor	Total Score
Orton Southgate	Bakewell Road	Entire Length	Footway	Reconstruct	3	3	2	18
City- Stanground	Brodsworth Road	Entire Length	Foot / Cycleway	Resurface	4	3	2	24

Table 22 – Example of Footway Re-surfacing Criteria

Having established the applicable factors to the surveyed site, the factors are multiplied together and ranked against each other up a maximum value of 100. The results are then analysed and other factors including conflict with other planned works are considered. Judgement is then used to decide on which schemes should go forward for inclusion in the footway/cycleway maintenance programme.

### Case Study- Annual Slab Replacement Programme

In order to improve the highway network for pedestrians PHS allocates approximately £230,000 per year to replacing paving slabs with alternative surfaces. This is due to potential injury claims (trips and falls caused by uneven slabs) and also the age and condition of such footways.

The benefits of this replacement programme is that small older slabs are replaced by a continuous bituminous surface. In addition to having a renewed asset which will last several years, reducing maintenance costs there are also mobility benefits.

User groups who benefit from having smoother surfaces include older residents and those with mobility impairments.

The photographs below show a section of footway at Church Street, Werrington before and after resurfacing which continues to serve the local community.



## Section 7.0 Planned Maintenance Methods

There are many different types of highway maintenance techniques that can be employed by PHS to rectify a defect on the network. Tables 23-24 outline the approximate cost of a range of Carriageway and Footway/Cycleway treatments and includes;

- A description of the proposed works;
- The anticipated lifespan of the works, and;
- Approximate cost (per square metre).

<b><u>CARRIAGEWAY</u></b>	<b>Life</b>	<b>Cost per Sq. m</b>
<p><u>Reconstruction</u> Sometimes the condition of the road structure will deteriorate to a point where the only appropriate action left is to excavate the old road to a significant depth and totally rebuild the road to the required standard. Wherever possible, this event should be avoided by the timely use of other less extensive and expensive methods. Reconstruction of urban roads will undoubtedly involve conflict with underground mains and service supplies, which also complicate and add to the cost of any scheme. This method should restore a full design life to the road subject to adequate future maintenance.</p>	20-30 years	£105.00
<p><u>Full Depth Recycling</u> This process seeks to reconstruct a road that has become weakened and lost its shape. Its use will restore strength and return the road back to an acceptable surface regularity. The process involves the controlled breaking up of the existing road surface which then can either be recycled on site (using specialized equipment) or transported off site (to recycling plants that are able to recycle the material for transport) and returned back to site and re-laid. A new surface course is, however, always applied to a recycled road. The technique is still developing as an environmentally friendly means of maintaining certain roads. Certain sites may have too many constraints for the process to be practical</p>	15-20 years	£ 68.00
<p><u>Resurfacing</u> There are two options available when resurfacing a road - <i>overlay</i> or <i>inlay</i>. The option used will be dependent on the site. The aim of resurfacing is to restore the surface course of a road. Both processes generally use new materials. Materials used may include hot rolled asphalt (HRA) or surface course. The choice of material and depth to which it is laid will be dependent on the site. Any necessary remedial work to the underlying road structure is carried out prior to the laying of the binder or surface course.</p>		
<p><u>Overlay</u> usually involves the laying of a new surface course (40 – 50mm thick) over the existing road. As the constructed road depth is effectively being increased, there is a notional increase in road strength as well. Not all sites are suitable for overlay. This is especially true in urban areas where the increase in road level would have implications relating to kerb face and effects on adjacent properties.</p>	7-15 years	£30.00

<b><u>CARRIAGEWAY</u></b>	<b>Life</b>	<b>Cost per sq. m</b>
<p><u>Inlay</u> involves the removal of the existing road surface and sometimes all or parts of the binder course and it is replaced with new material. Therefore, the final surface level will be the same as the original albeit with improved surface regularity. As the overall construction depth is not increased, there is no real increase in road structure strength. Inlay is used where site constraints mean that an overlay is not possible.</p>	7-15 years	£ 60.00
<p><u>Retread</u> This process typically recycles the top 75mm of road surface by scarifying the surface down to that depth, restoring the surface regularity by harrowing and adding additional aggregate where required before mixing with a bitumen emulsion binder. This is then compacted and surface dressed immediately. The advantage of the process is that it is environmentally friendly by reducing the quantities of primary aggregate used and it does not add to the load imposed on the underlying sub-grade. However, the result is not as strong as a newly resurfaced road and its use is currently restricted in Peterborough to fenland areas where the lack of additional loading to the weak underlying soil is important. Also the following year a re-tread scheme should be surface dressed, to ensure the council gets the maximum life from this process.</p>	7-10 years	£23.00
<p><u>Micro Asphalt</u> Although this process has been around for several years, it is still being developed by specialist contractors. The material is a mixture of bitumen emulsion and small aggregate applied to the road surface, usually in 2 layers to a depth of 10 to 15mm. Its main use is to cover a surface course that is beginning to fail whilst having the ability to smooth out minor undulations. The process does not add any strength to the road. Any significant defects require attention through patching prior to the application of micro asphalt.</p>	7-10 years	£14.00
<p><u>Surface Dressing</u> This process has been used to as a preventative means of maintenance for many years. The aim is to seal an existing road by applying a controlled rate of bitumen emulsion and then restore surface texture. Although the process sometimes has a negative image with the public due to loose chippings (present for a short time after the works), it is a very cost effective way of maintaining the integrity of a road structure, especially for rural routes. It significantly extends the life of the road before resurfacing or reconstruction works are required. The process does not add strength to a road nor does it remove any surface irregularity. Any significant defects require attention through patching works prior to the application of the surface dressing.</p>	7-10 years	£ 7.00

Table 23 - Maintenance Methods for Carriageways

<b><u>FOOTWAYS / CYCLEWAYS</u></b>	<b>Life</b>	<b>Cost per Sq. m</b>
<p><u>Reconstruction</u> This means the existing footway structure is removed and a totally new footway constructed. This technique will be generally used where the existing footway structure did not meet current standards or where a slabbed footway is being replaced with asphaltic concrete. Usually, construction depth for a new footway is 170 mm.</p>	25 years	£125.00
<p><u>Resurfacing</u> This method has traditionally been the most commonly used. It involves the removal of the existing surfacing material, usually to a depth of 70mm and resurfacing with new materials.</p>	25 years	£ 102.00
<p><u>Overlay</u> On suitable sites, it is possible to overlay the surface of an existing footway with a new surface course. This method uses the existing structure for strength whilst restoring the surface regularity and visual appearance of the footway.</p>	15 years	£ 50.00
<p><u>Slurry Sealing</u> This method is effective in sealing an existing footway where the surface course is beginning to fail. It involves the application of a thin layer of bitumen emulsion and fine aggregate. In addition to extending the life of a footway by preventing water ingress, it also provides a consistent colour and texture. If significant defects are present, they should be dealt with prior to the application of the slurry seal.</p>	6 years	£ 6.50

Table 24 - Maintenance Methods for Footways/Cycleways



Figure 7- Highways Inspections

## Section 8.0 Winter Service

As the highway authority for the Peterborough area, PHS has a duty under Section 41 of the Highways Act to “ensure so far as is reasonable practicable, that safe passage along a highway is not endangered by snow or ice”. There is also an additional duty under Section 150 of the act to remove obstructions, including snow from the highway.

Winter Service may be divided into two main types;

- **Precautionary** - This describes action taken by the authority to prevent the formation of a hazard such as frost or ice, and;
- **Reactive** - This describes action taken to remove a hazard that has already formed such as accumulations of snow or ice that have formed on the network.

PHS is responsible for 930km of highway, as a result it is not practicable to treat the whole network. Therefore PHS has adopted a reasoned policy to determine what streets will be treated as part of the precautionary winter service programme.

The selection criteria for determining what sections of the network receive precautionary treatment are as follows;

- Principal roads (A roads that are not Trunk Roads);
- Roads carrying the heaviest commuter traffic;
- Roads linking centres of population;
- “B” and “C” class roads;
- Roads that link to treated routes within adjacent authorities;
- Heavily trafficked city centre pedestrian areas and footways;
- Pedestrian/Cycle routes passing over/under bridges/subways with steep inclines, and;
- Bus routes with a service interval 10 minutes or less.

Full details of the Winter Service provided by the council, can be found in its Winter Service Operational Plan, which is held by PHS and reviewed annually.

### Case Study- PHS Winter Service Enhancements – Pre-wet Treatment

Every year gritters spread salt on key road links to ensure driving, particularly during inclement weather can be undertaken safely.

Traditionally this is undertaken by spreading crushed rock salt on the highway. However because this is spread, usually before the onset of snow and ice, it is liable to be removed from the carriageway before it is of practical use.

In 2014 trials of a liquid and salt mixture known as “Prewet” was used in Peterborough for the first time and proved to be successful. In addition to no incidents or issues being reported, it was found that this type of salt was over 30% more effective than traditional salt spreading techniques because it could stick to the road rather than bouncing off. This led to four times less salt being used to provide the same level of service.

This meant that there was a direct cost saving to the Council for materials used and there were also additional environmental benefits because less salt was likely to bounce onto nearby verges and contaminate them.



# Appendix 1: Highway Surveys

HIGHWAY SURVEYS										Notes
Principal Road BVPI's										
BVPI	PCC Survey Strategy/Network Coverage	DfT Guidance (minimum survey coverage)	PCC Survey strategy equivalent or better than DfT guidance	Year of Survey	Figure	Rule set	Merge Method	Criteria	Comments	
96	Principal Roads / 100% in both direction annually		✓	2004_2005	21.32%	RP5.01P1	Variable	TTS	First year of mechanical surveys on this category of road	
223	Principal Roads / 100% in both direction annually	100% coverage in one direction or 50% in both directions annually - reported over two years to give 100% coverage	✓	2005_2006	8.00%	RP6.01	Variable	SCANNER	Rule set change dramatically affected figure	
223	Principal Roads / 100% in both direction annually	100% coverage in one direction or 50% in both directions annually - reported over two years to give 100% coverage	✓	2006_2007	5.00%	RP7.01	Variable	SCANNER		
223	Principal Roads / 100% in both direction annually	100% coverage in one direction or 50% in both directions annually - reported over two years to give 100% coverage	✓	2007_2008	1.00%	RP8	Variable	SCANNER	Rule set change dramatically affected figure	
N168	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2008_2009	2.00%	RP8.01	Variable	SCANNER	BV 223 replaced by N168	
N168	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2009_2010	2.00%	RP9.01	Variable	SCANNER		
N168	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2010_2011	2.00%	RP10.01	Variable	SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2011_2012	3.00%	RP10.01		SCANNER	N168 replaced by Single Data List 130-1 in April 2011	
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2012_2013	1.00%	-		SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2013_2014	1.00%	-		SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2014_2015	1.00%	-		SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2015_2016	1.00%	-		SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2016_2017	1.00%	-		SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2017_2018	1.00%	-		SCANNER		
130-1	Principal Roads / 100% in both direction annually	100% coverage in both directions reported over two years	✓	2018_2019	0.00%	-		SCANNER		

The BVPI figure has steadily fallen, although it should be noted that the figures cannot be compared on a like for like basis due to the survey techniques used and rule sets applied. The network condition seems to have plateaued at around 9%. The SCANNER figure has dramatically reduced due to the changes in the way the defects are weighted and the thresholds used to calculate the figures. In 2004/05 the figures were high nationally because these thresholds were set too low and minor defects triggered them. A review was undertaken and a new set of weightings and thresholds has subsequently been adopted.

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Non Principal-Classified Road BVPI's										Notes
BVPI	PCC Survey Strategy/Network Coverage	DfT Guidance (minimum survey coverage)		Year of Survey	Figure	Rule set	Merge Method	Criteria	Comments	
97a	Non Principal (Classified) / 100%			2004_2005	14.04%	RP5.01P1	Variable	CVI Survey	Rule set change dramatically affected figure	
97a	Non Principal (Classified) / 100%			2005_2006	17.27%	RP6.01	Variable	CVI Survey	100% survey using CVI for historical comparison	
224a	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in one direction for B roads and at least 10% in one direction for C Roads - reported annually	✓	2005_2006	16.00%	RP7.01	Variable	SCANNER	First year of mechanical surveys on this category of road	
224a	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in one direction for B roads and 50% in one direction for C Roads - reported over two years	✓	2006_2007	10.00%	RP7.01	Variable	SCANNER		
224a	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in one direction for B roads and 50% in one direction for C Roads - reported over two years	✓	2007_2008	4.00%	RP8	Variable	SCANNER		
NI169	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2008_2009	5.00%	RP8.01	Variable	SCANNER	BV224a replaced by NI168	
NI169	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2009_2010	6.00%	RP9.01	Variable	SCANNER		
NI169	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2010_2011	7.00%	RP10.01	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2011_2012	8.00%	RP10.01	Variable	SCANNER	NI169 replaced by Single Data List 130-2 in April 2011	
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2012_2013	8.00%	-	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2013_2014	8.00%	-	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2014_2015	7.00%	-	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2015_2016	6.00%	-	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2016_2017	5.00%	-	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2017_2018	5.00%	-	Variable	SCANNER		
130-2	Non Principal (Classified) / 100% in both directions for B roads and one direction for C Roads	100% coverage in both directions for B roads and in one direction for C Roads reported over two years	✓	2018_2019	5.00%	-	Variable	SCANNER		

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Unclassified Road BVPI's										Notes
BVPI	PCC Survey Strategy/Network Coverage	DFT Guidance (minimum survey coverage)		Year of Survey	Figure	Rule set	Merge Method	Criteria	Comments	
97b	Non Principal (Unclassified) / 100% annually	25% annually - reported on current years data set only	✓	2004_2005	15.44%	PR5.01P1	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually - reported on current years data set only	✓	2005_2006	17.67%	RP6.01	Variable	CVI Survey	this year. Data collection and reporting remain the same as previous years	
224b	Non Principal (Unclassified) / 50%	25% annually reported over 4 years to give 100% coverage	✓	2006_2007	21.00%	RP7.01	Variable	CVI Survey	First year of 4 year reporting	
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2007_2008	19.00%	RP8	Variable	CVI Survey	4 year reporting	
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2008_2009	19.00%	RP8.01	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2009_2010	19.00%	RP9.01	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2010_2011	19.00%	RP10.01	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2011_2012	22.00%	RP10.01	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2012_2013	17.00%	-	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2013_2014	18.00%	-	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2014_2015	16.00%	-	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2015_2016	15.00%	-	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2016_2017	16.00%	-	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2017_2018	15.00%	-	Variable	CVI Survey		
224b	Non Principal (Unclassified) / 50% annually	25% annually reported over 4 years to give 100% coverage	✓	2018_2019	17.00%	-	Variable	CVI Survey		

50% of the network is nominally sampled each year.

# Appendix 2: Forward Work Programmes (Carriageway and Footway)

HIGHWAY MAINTENANCE PROGRAMME 2017/18				
<b>LTP £1,918k (Indicative budget)</b>				
Ward	Street	Description	Estimated Cost	Comments
Park/East	Easfield Road (surfacing Joint south of Newark Ave to Broadway Jct)	Carriageway surface dressing treatment	£ 487,366.00	The delivery of some proposed schemes may be affected by other work including utility projects being carried out on the Peterborough City Council highway network and may have to be deferred from the programme for this financial year. Should this be the case then the reserve scheme will be will be delivered or another scheme brought forward assuming funding needs are met.
Orton Longueville	Malborne Way (Herlington to Jct 2)			
Orton Waterville	Goldhay Way (Surfacing joint south of Sissley to Misterton T/L's)			
Barnack	B1443 (Uffington Rd, Barnack to SD joint at King Street)			
West	Holywell Way, East (Penyale to Thorpe Rd)			
East/Eye, Thorney & Newborough	Parnwell Way (Oxney Rd to Jct 8)			
North	Bourges Blvd (Jct 41 Taversers/Westfield Jct 42 Maskew Ave, <b>both directions</b> )			
North	Bourges Blvd (Jct 42 Maskew Ave Jct to Jct 18 A47/Lincoln Rd, <b>both directions</b> )			
Glington & Castor	A15 Werrington Bypass (two sections east of Glington Rbt)			
Gunthorpe/Eye, Thorney & Newborough	A16 Spalding Road (A47 Rbt to LCC/PCC Boundary)			
Glington & Castor	Rippons Drove (east) - Retread			
East	Padholme Road (Carr Road to Newark Road roundabout)		£ 415,000.00	
Paston & Walton	Mountsteven Avenue (Zebra crossing near school to Fulbridge Road)	Resurface carriageway	£ 300,630.00	
Ravensthorpe	Jct 62 roundabout Bretton Way/Gresley Way)		£ 200,860.00	
Orton Waterville & Orton Longueville	Oundle Road jct Lady Lodge Drive		£ 152,124.00	
Eye, Thorney & Newborough	B1167/B1040 Thorney crossroads		£ 204,252.00	
Wittering	Old Leicester Road jct Kings Cliffe Road, Wansford		£ 45,000.00	
Eye, Thorney & Newborough	Werrington Bridge Road (place to place resurfacing)		£ 92,768.00	
Eye, Thorney & Newborough	Whittlesey Road, Thorney		£ -	
Stanground South	Junction 4 roundabout	£ -		
		Reserve Scheme	£ -	
		Reserve Scheme	£ -	
			£ -	
		Scheme support inc design	£ 20,000.00	
			<b>£ 1,918,000.00</b>	
<b>PCC Capital £578k (Indicative budget)</b>				
Ward	Street	Description	Estimated Cost	Comments
West	Thorpe Wood Road (Jct 15 A47/A1260 to Joint south of Woodman Pub)	Carriageway micro- asphalt surface treatment	£ 305,355.00	The delivery of some proposed schemes may be affected by other work including utility projects being carried out on the Peterborough City Council highway network and may have to be deferred from the programme for this financial year. Should this be the case then the reserve scheme will be will be delivered or another scheme brought forward assuming funding needs are met.
Ravensthorpe	Axiom Avenue (Cranford Drive to End)			
Glington & Castor	Beech Road (Helpston Road to Oak Road)			
Glington & Castor	Chestnut Close (Beech Road to End)			
Glington & Castor	Oak Road (Elm Crescent to End)			
Glington & Castor	Elm Crescent (Oak Road to Beech Road)			
Glington & Castor	Welmore Road (Peakirk Road to Ashburn Close)			
Glington & Castor	Scotts Road (Welmore Road to Vergette Road)			
Glington & Castor	Neaverson Road (Scotts Road to Holmes Road)			
Glington & Castor	Holmes Road (Vergette Road to End)			
Glington & Castor	Walker Road (Scotts Road to Holmes Road)			
Glington & Castor	Vergette Road (Holmes Road to End)			
Barnack	B1443 Glington Road (Towgood Close (joint) to Woodgate)			
Park/Central	Granville Street (Dogsthorpe Road to Park Road)			
Park	Huntly Grove (Dogsthorpe Road to Park Road)			
North	Cambridge Avenue (Lincoln Road to Silverwood Road)			
Gunthorpe	Gunthorpe Road (Rydall Court to A15 Jct 21)	Footway slurry seal surface treatment	£ 122,620.00	The delivery of some proposed schemes may be affected by other work including utility projects being carried out on the Peterborough City Council highway network and may have to be deferred from the programme for this financial year. Should this be the case then the reserve scheme will be will be delivered or another scheme brought forward assuming funding needs are met.
West	Ringwood (Bretton Way to End)			
Paston & Walton	Guthlac Ave (Croyland Road to End)			
East	Cycleway Parnwell (Saltersgate to Finchfield)			
Park	Vere Road (St Pauls Road to Alexandra Road)			
Park	Northfield Road (St Pauls Road to Exeter Road)			
Park	Pevehill Road (St Pauls Road to Alexandra Road)			
North	Scotney Street (Lincoln Road to Crown Street)			
North	Crown Street (Lincoln Road to No 200)			
North	Tennyson Road (south side) (Fulbridge Road to No 47)			
North/Park	St Pauls Road (Lincoln Road to Fulbridge/Pevehill Road)			
North	Link path (Burns Close to St Pauls Road)			
North	St James Avenue (Portland Avenue to End)			
North	Portland Avenue (St Pauls Road to Shakespeare Avenue)			
North	Lister Road (Portland Avenue to Cowper Road)			
North	Cowper Road (St Pauls Road to Lister Road)			
North	Gilpin Street (St Pauls Road to Rock Road)			
North/Park	York Road (Lincoln Road to Alexandra Road)			
North/Park	Rock Road (Lincoln Road to Alexandra Road)			
North	Anthony Close (entire length)	Footway resurfacing	£ 35,025.00	
West	Longthorpe Green (Holywell Way to end)	Footway resurfacing	£ 35,000.00	
		Safety fence inspections/work	£ 50,000.00	
		Capital Gullies	£ 65,000.00	
			<b>£ 613,000.00</b>	
<b>Footway Slab replacement Ring fenced £230k (Indicative budget)</b>				
Ward	Street	Description	Estimated Cost	Comments
West	Harewood Gardens (Suffolk Close to Upton Close)	Footway slab replacement	£ 47,225.00	The delivery of some proposed schemes may be affected by other work including utility projects being carried out on the Peterborough City Council highway network and may have to be deferred from the programme for this financial year. Should this be the case then the reserve scheme will be will be delivered or another scheme brought forward assuming funding needs are met.
Bretton	Flaxland (Benland and up cycleway)		£ 31,550.00	
Ravensthorpe	Atherstone Avenue (Buckland Close to Bradwell Road)		£ 112,775.00	
East	Norman Road		£ 35,450.00	
			£ -	
			£ -	
Consultant support			£ 3,000.00	
			<b>£ 230,000.00</b>	
<b>Reserve Scheme</b>	To be delivered during 17/18 assuming budget can be found, otherwise to be deferred to future year			