

South Tyneside Council

Footway Life Cycle Plan



Contents

Introduction	3
Footway Lifecycle Plan	4
Footway Asset Data Management	6
Footway Inventory	6
Footway Condition	7
Lifecycle Modelling Methodology	8
Footway Treatments	8
Footway Treatment Triggers	8
Preventative treatment of bituminous footways	9
Public safety, defects and claims	9
Scenario Analysis:	10
Projected Footway Network Condition	10
Projected Backlog	11

Introduction

Asset management has been widely accepted by central and local government as a means to deliver a more efficient and effective approach to management of highway infrastructure assets through longer term planning, ensuring that standards are defined and achievable for available budgets. It supports making the case for funding and better communication with stakeholders, facilitating a greater understanding of the contribution highway infrastructure assets make to economic growth and the needs of local communities.

The demand for a more efficient approach to the management of highway infrastructure assets has come to prominence in the light of the financial challenges faced by both by central and local government.

To encourage an aligned approach to the delivery of asset management, in 2014 the Department for Transport announced an unprecedented £6 billion to be spent on tackling potholes and improving local roads between 2015 and 2021. A proportion of this funding is set aside to reward councils who demonstrate they are delivering value for money in carrying out cost effective improvements.

Footway Lifecycle Plan

This document sets out the 10-year lifecycle plan for the footways managed by South Tyneside Council which comprise some 905 km's and have a total gross value of £120.8m (GRC, from 17/18 WGA reports). The aim of this lifecycle plan is to provide decision-making support to South Tyneside Council on how to best manage their footway stock over the following 10 years.

The lifecycle plan is based on the results of extensive modelling; using sophisticated analytical techniques to determine the most cost-effective footway treatment programme across all of the footways managed by South Tyneside Council. The model was run with different budgets – £1.5m and Do Nothing projected as a backlog and mean condition over the next 10 years. This enables a comparison of the outcomes in terms of footway condition for two budget profiles, to support investment planning.

This lifecycle plan will inform South Tyneside Council's decision-making regarding the management of their footways over the next 10-year period, with the following considerations:

- Cost-effectiveness: maximising the benefit of maintenance spending
- Investment planning: comparing investment profiles; forecasting budgetary requirements
- Public safety: ensuring that trip risks are effectively managed and claims are minimised
- Acceptable condition levels: maintaining
- Performance management: monitoring performance against targets

The process for the lifecycle plan is presented below:

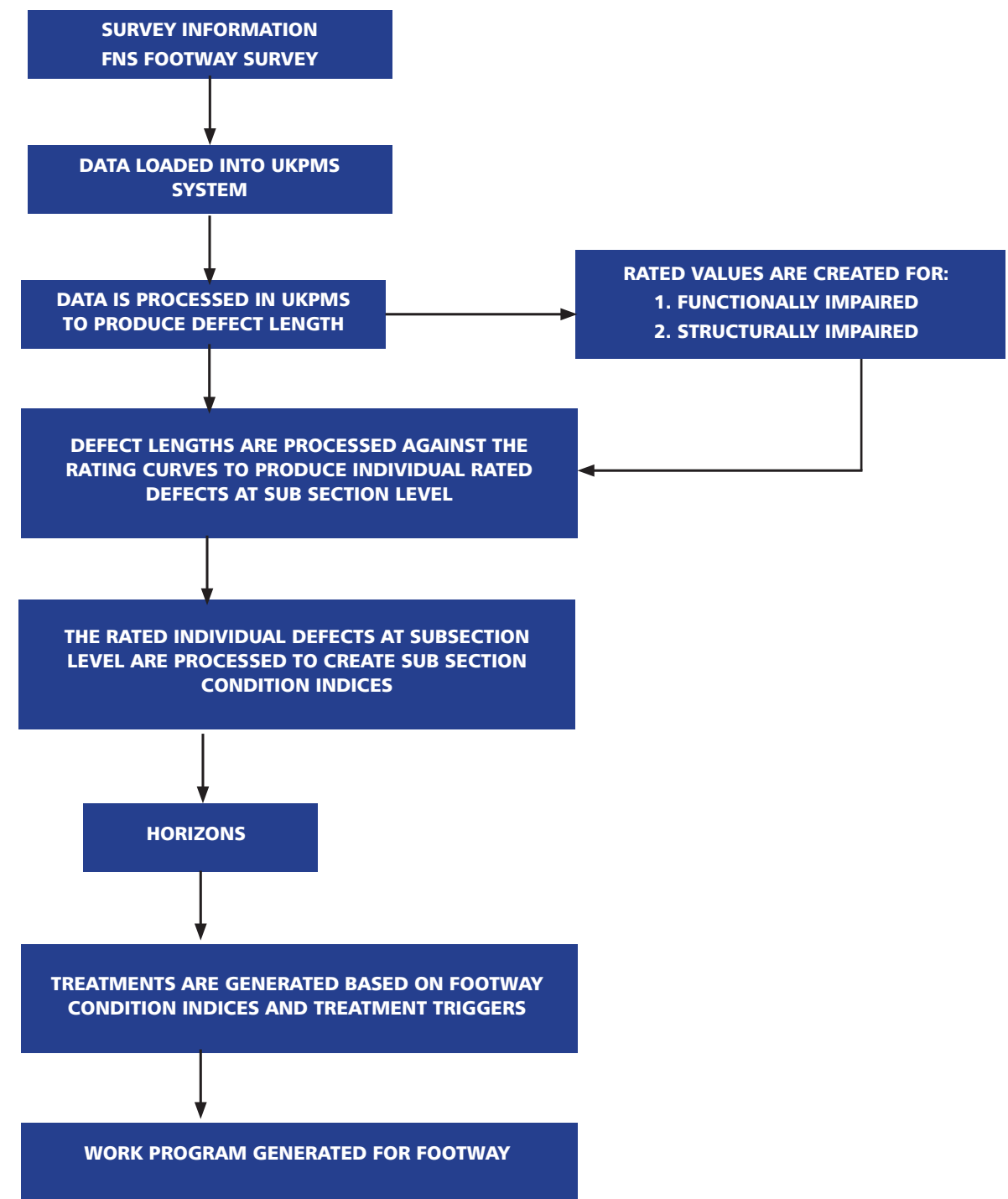


Figure 1 - process for the Lifecycle

Footway Asset Data Management

Footway Inventory

The following tables and charts provide a statistical overview of South Tyneside's footways by hierarchy (using standard UKPMS classification) and surface type. Footway inventory has been collected through Footway Network Surveys (FNS) and collects both extent, construction type and width. The length of hierarchy and construction of the footways is presented in the pie charts below:

Footway by Hierarchy Length

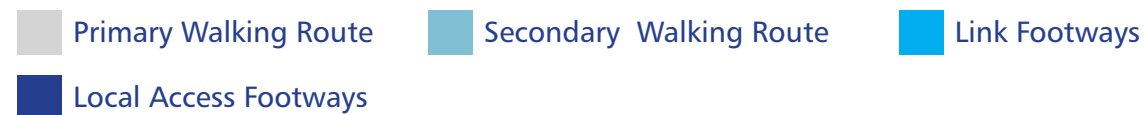
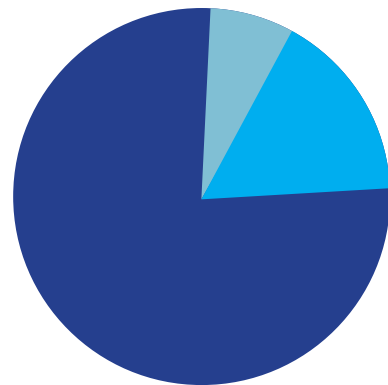


Figure 2

Footway by Construction Type

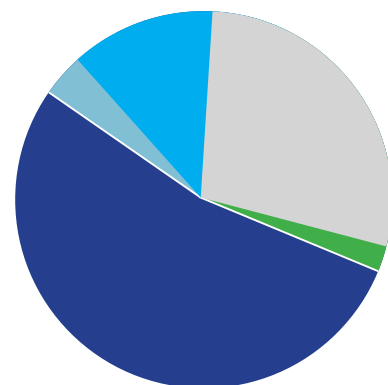


Figure 3

Footway Condition

South Tyneside Council uses the UKPMS Footway Network Survey (FNS) to record the condition of its footways. The FNS is a walked survey undertaken by UKPMS-accredited inspectors, who report footway condition according to four levels:

- **Condition level 1: As New (AN)**
- **Condition level 2: Aesthetically Impaired (AI)**
- **Condition level 3: Functionally Impaired (FI)**
- **Condition level 4: Structurally Unsound (SU)**

South Tyneside Council uses the FNS variant which provides the most amount of information, known as the "Enhanced Survey, Option 3" variant, which records footway inventory (pavement type and footway width) and defect lateral extent alongside the condition level.

The condition category and extent are recorded for every part of the Footway network. Where condition does vary across the Footway, surveyors are instructed to record the "worst" condition category that applies, NOT the majority condition level.

The condition levels apply to all types of Footway construction although the detailed definitions and guidance for surveyors that relate to each surface type do vary. This has benefits in terms of survey simplicity and productivity. The surveyor records the predominant surface type. The following table shows the different type of footway construction and the corresponding defect Band category and the percentage.

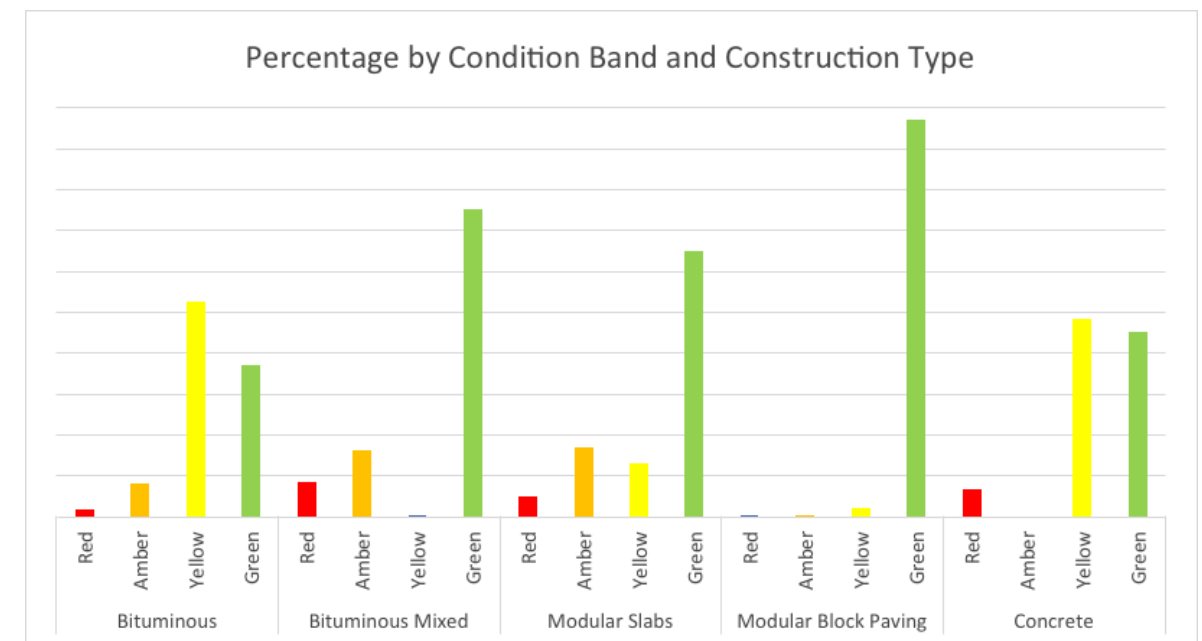


Figure 4

Lifecycle Modelling Methodology

In order to produce useful outputs using only FNS condition data, Yotta developed a custom modelling methodology within South Tyneside's Horizons project environment. The methodology is described here in order to aid interpretation of the results. Full details on all modelling parameters are contained within the Horizons reports for the relevant Treatment Sets and Works Plans.

Footway Treatments

Types of treatments undertaken for the Footway analysis are detailed below, split into the relevant asset group, treatment name and treatment description:

ASSET GROUP	TREATMENT NAME	TREATMENT DESCRIPTION
Bituminous Surface & Mixed Bituminous surface	Slurry seal	Slurry seal
Modular Slabs	Replace Flag	Replace Flags to flexible construction
Modular Block Paving	Relay Flag	lift and relay 63mm pre cast concrete flags
Modular Block Paving	Renew Flag	lift and renew 63mm pre cast concrete flags
Concrete	Concrete patch	Concrete Patch

Table 1

Currently the asset groups and treatments have been assigned according to the pavement type, although in future modelling this may be further broken down by the footway hierarchy, which would allow different service levels to be adopted according to their importance.

Footway Treatment Triggers

Footway treatments are carried out based on the defect coverage and type. Defects for both categories are treated with minor treatments when the coverage of defects is less than 50% of the footway section area and with major treatments when the coverage of defects is more than 50% of the footway section area. The Type of Treatments undertaken for different type of surfaces are as follows:

DEFECT TYPES	TREATMENT TRIGGER AT DEFECT PERCENTAGE(AREA)	TYPE OF SURFACE	TREATMENT
Structurally Impaired or Functionally Impaired	> 50% Major Treatment	Bituminous	Slurry Seal
		Mixed Bituminous	Slurry Seal
		Modular Slab	Replace Flag to Bituminous surface
		Block Paving	Replace Slab
	Concrete	Concrete Patch	
	< 50% Minor Treatment	Block Paving	Relay Treatments

Table 2

Preventative treatment of bituminous footways

Slurry sealing of bituminous surfaces is applied in the model as a short- to medium-term preventative treatment. The general approach is to favour slurry-sealing on bituminous footways before they deteriorate to the Structurally Unsound FNS condition band. The medium- to long-term DBM surface treatment is applied to bituminous footways in the Structurally Unsound condition band. In addition, the model allows for DBM surface treatment of previously slurry-sealed footways once their condition degrades to a predetermined level.

Slurry seal treatment is roughly one-third the cost of DBM surface, so the intent of this approach is to offset costs into the future while still maintaining footway condition to an acceptable standard.

Public safety, defects and claims

A key consideration in footway management is public safety, due to the increasing potential for trip hazards as footway condition deteriorates. If incidents do occur, councils may be liable for damages (and in any case, will incur financial and resource costs in processing claims). For these reasons, it is in the Council's interest to minimise trip hazards.

Modular pavements (flags and blocks) present higher trip risks than continuous pavement surfaces (bituminous and concrete). This is due to the nature of their construction, the resulting surface profile, and their deterioration patterns.

As such, intervention levels for modular pavement footways were set lower than for their equivalent bituminous and concrete footways in the same hierarchy. Essentially, this means that flagged and block-paved footways should not be allowed to deteriorate as far as bituminous/concrete footways before a remedial treatment is applied.

Within the modelling criteria footway defects have been used to aid the prioritisation of footway treatments. This data is a live feed from South Tyneside Councils operational system, Mayrise. Footway defects collected over the past 10 months on the network are presented below in Horizons:

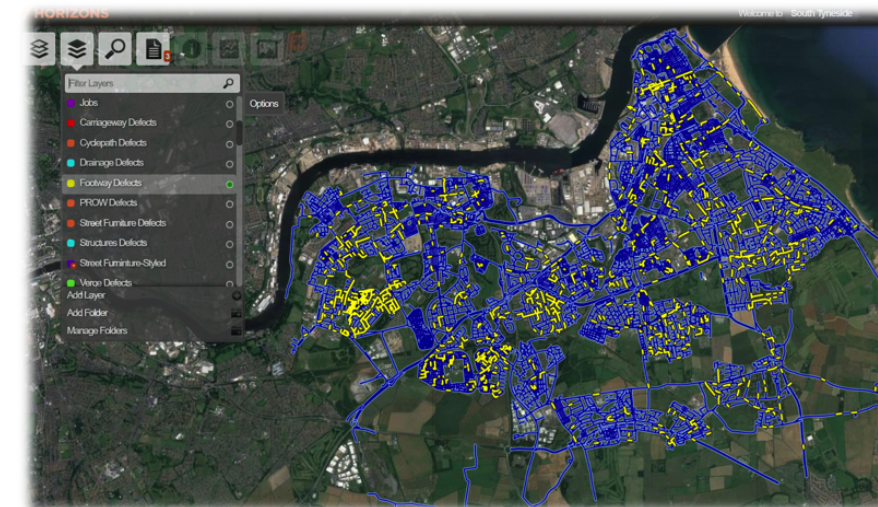


Figure 5 - Footway Defects represented in Horizons

The above data set does not yet represent a full cycle of defects across the entire network yet, but once this is complete, provides additional detail to prioritise and target maintenance effectively across footways across South Tyneside.

Scenario Analysis:

Key results of the lifecycle modelling are presented in this section for the budgetary scenarios considered, consisting of annual planned maintenance budget of £1.5m vs a Do Nothing (zero budget) scenario. All other modelling variables remain consistent across both scenarios.

Projected Footway Network Condition

The footway network condition scores resulting from the two budgetary scenarios considered are given in the graph below, as the mean condition score across the whole footway network (using the FNS condition scoring system). This is shown for both scenarios over the 10-year period in the graph below:

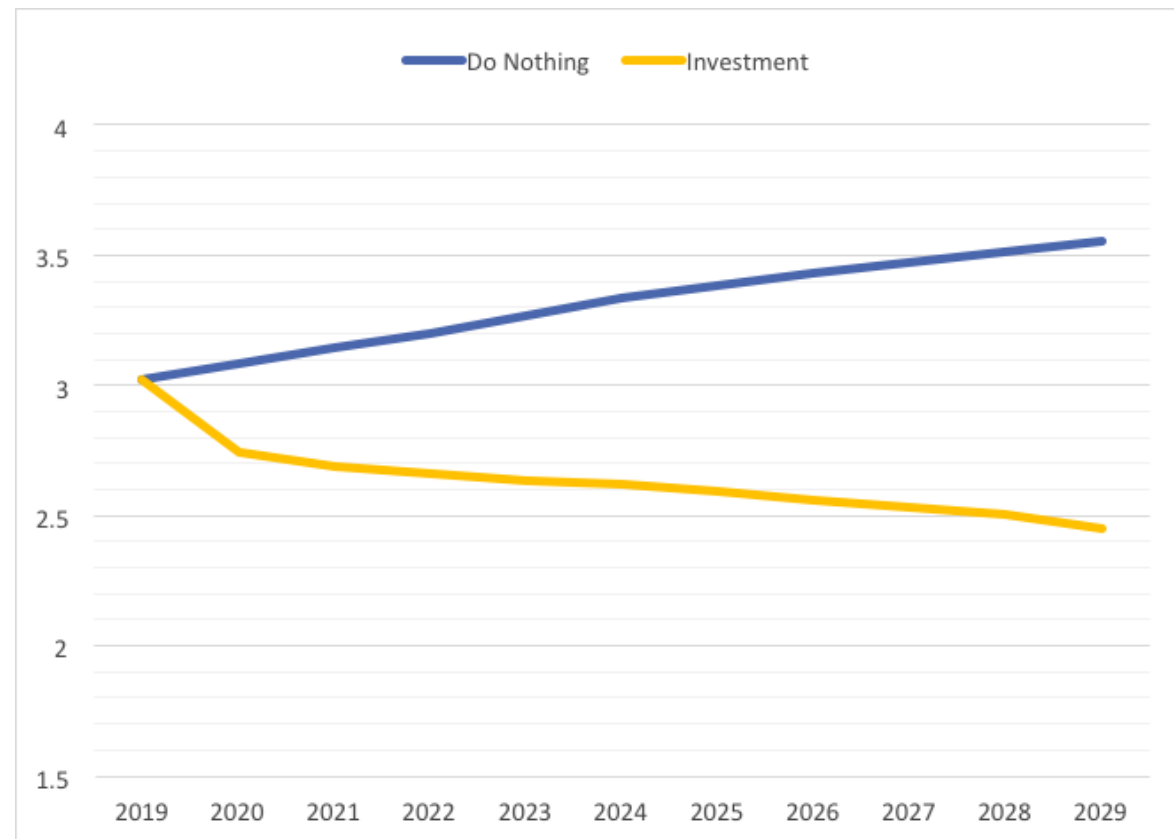


Figure 6 - Mean footway Condition

Projected Backlog

The figure below presents the backlog of treatments comparing both scenarios. The backlog of treatments only represents those treatments that meet the minimum length criteria and does not address small isolated defective lengths. Short lengths may be address by reactive work and localised patching.

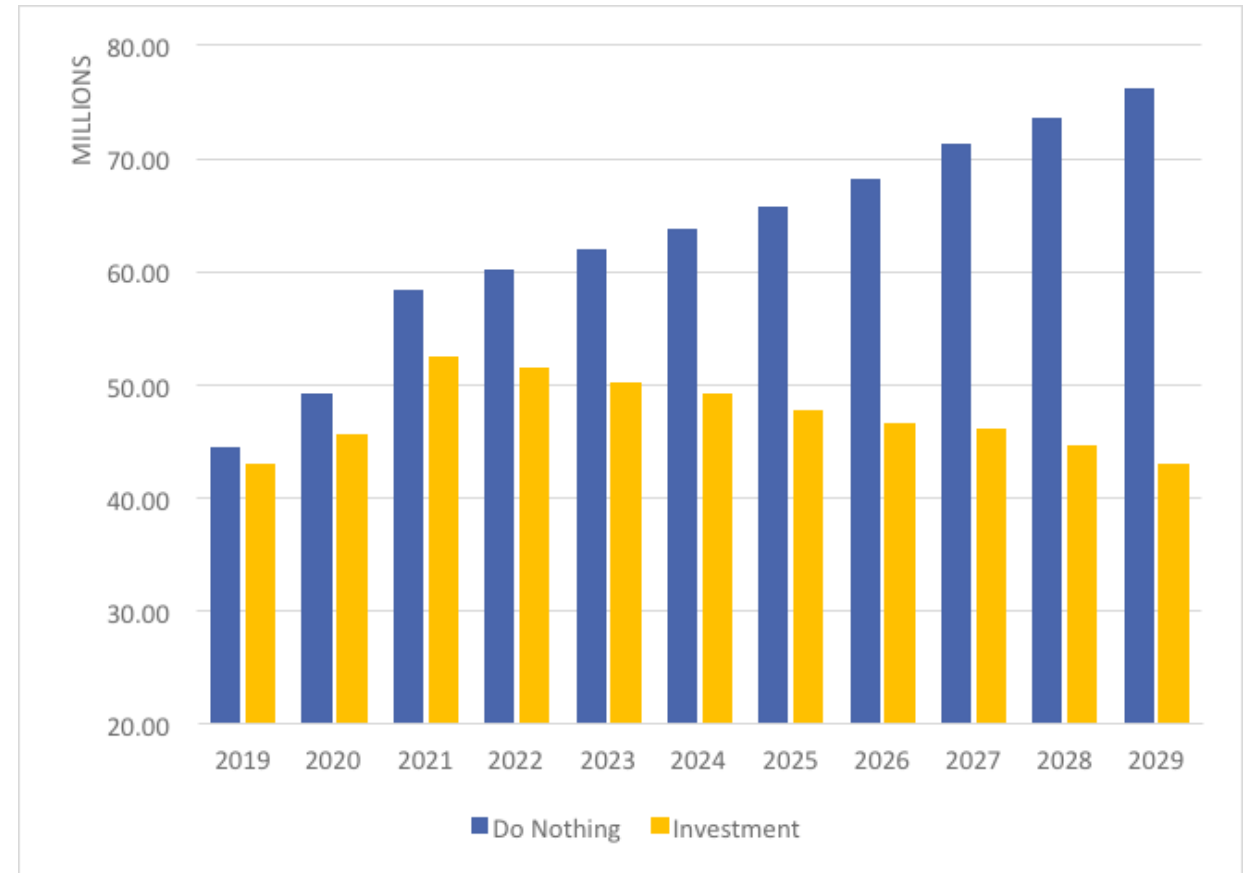


Figure 7 – Projected Backlog of treatments

The modelling presenting above are currently being developed further to include previous works complete to enable more accurate projections over time. In addition, the analysis methodology used to select treatments will be further enhanced to take into account recently revised Footway hierarchies in accordance with the Code of Practice.

For more information about South Tyneside Council:

 www.southtyneside.gov.uk

 0191 427 1717

If you know someone who needs this information in a different format, for example large print, Braille or a different language, please call Marketing and Communications on 0191 424 7385.



South Tyneside Council