



## MODELLING

Appia has extensive knowledge in modelling and monitoring of the highway asset to determine how the network is performing in accordance with national measures and locally defined service levels. Scheme Engineer® has been very successful in this respect and has been used:

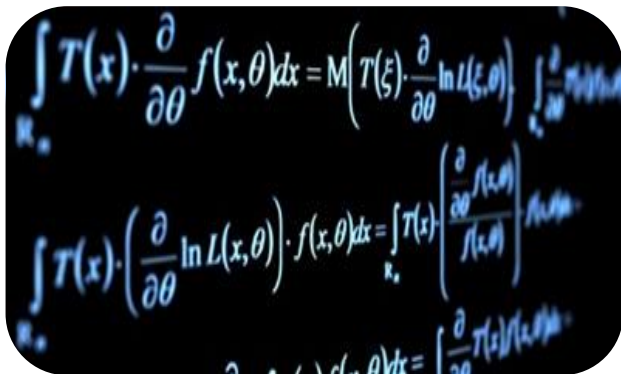
- By the successful bidder for the Portsmouth PFI
- For creating the outline business case for the Sheffield PFI, to demonstrate affordability
- By several companies bidding for the latest round of PFIs
- By banks and funders for monitoring performance of DBFOs and for ensuring that the network is performing as required.
- To determine maintenance requirements for Local Authority Highway networks for 5 and 10 year periods.

### DATA REQUIREMENTS

In order to model the condition and performance of a highway network you will need a representation of your network and one or more of the following:

- UKPMS visual survey Information CVI/DVI/FNS
- UKPMS Scanner Data
- Construction Information (GPR)
- Surface Type
- Deflectograph
- DCP Data
- SCRIM/Griptester
- Budget information
- Treatment options
- Lifecycle plans

Our modelling utilises all relevant data to prioritise deficient sites, to determine performance and to determine economical maintenance solutions.



### THE PROCESS

Appia liaises with clients to determine specific requirements for the modelling:

- Forward works programme with current budget
- Future DRC predictions
- “What if” scenarios
- Monitoring of network handback requirements
- Net Present Value calculations

The amount of information required to develop and populate a condition projection model is generally not available in highway authorities; Appia can use their own condition projection models based upon years of experience to condition project your data, specific models being available for:

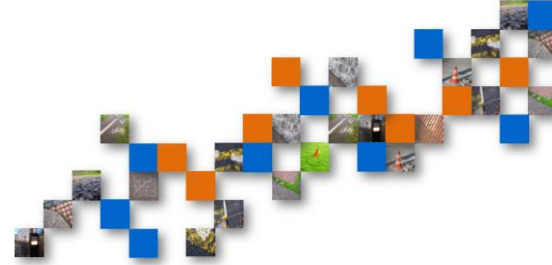
- Hot Rolled Asphalt
- Dense Bitumen Macadam
- Thin wearing course systems
- Covered concrete etc.



All of the above deterioration models are available for various construction thicknesses, as deterioration rates can be a function of the pavement thickness as well as of traffic flows, which determine the deterioration rate.

If you have the required data, a bespoke projection model can be created or alternatively we can also use the UKPMS deterioration model, although the PCIS support contractor advises that this model is used “with caution” due to the amount of assumptions you are required to make for it to work.

The model requires the configuration of a local treatment regime for the highway network being assessed. Appia usually hold a workshop with Local Engineers to assess the treatments being used and to agree their expected lives and on-going lifecycle plans.



## .../MODELLING

Typically, the following information would be required:

Treatment	Application	Cost (m2)	Life	2 <sup>nd</sup> Treatment
Resurface HRA (40mm depth)	Principal and Classified Carriageways	£xx.xx	14	Racked in Surface Dressing (10/6)
TWCS (25mm depth)	Principal and Classified Carriageways	£xx.xx	6	Resurface HRA (40mm depth)

To enable a realistic model to be created, realistic scheme lengths need to be created and a transparent, logical method of creating schemes used for determining works and future works on the network. These are generally created using the default scheme creation settings within Scheme Engineer.

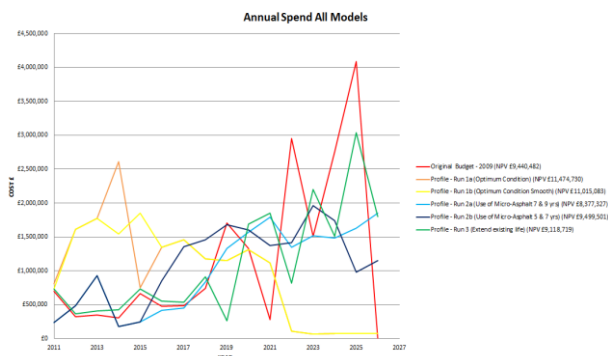
### REPORTING

Appia acknowledges that any modelling carried out needs to be easily understood, and easily communicated to decision makers and budget holders.

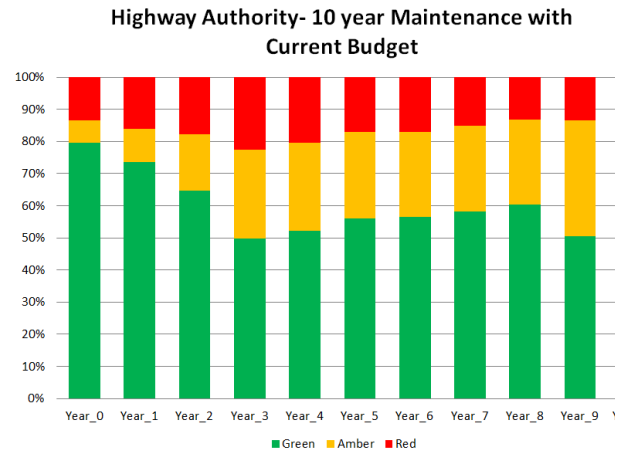
At the end of the modelling process we will document the model, including data settings and assumptions in technical document and will make recommendations as to how the highway authority should move forward and continue to develop their own model.

Typical Reports are:

#### 1. Net Present Value assessing different treatment strategies



#### 2. The network condition over time with current budget spend



#### 3. GIS Mapping for planning of works



Highway Authorities are under pressure to maximise the value from their limited budgets and need to be able to determine how best to improve asset utilisation across their network. They need to reduce the costs of maintaining these assets, optimise their maintenance regimes, and to consider a range of treatments and funding scenarios in order to extend the life of these assets; Scheme Engineer® can enable this.

Our modelling is intended to empower maintenance practitioners to enable them to make the best decisions, and to develop optimal strategies for maintenance practice and funding.

To discuss how we can help you, please contact one of our team today:

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