Realising savings from precise asset condition measurements

Investing in accurate condition measurements of a highway network can lead to better decisions around procurement, reduce costs and ultimately improve surface quality, says Marc Tite.

Introduction

It is increasingly common for highways teams to be challenged by procurement colleagues, senior managers or finance departments to offer a saving for new contracts when coming to the end of a current term maintenance or framework arrangement.

So how are you going to deliver savings on your contracts going forward, what are the options enabling you to do this and what is in your actual control?

Information held by a local highway authority about its assets, their condition and status represents the best way to prove to contractors that you know what you have and what needs to be maintained. This may seem logical, but increasingly this is not always the case.

Most asset owners know intuitively that by aligning this with their highway infrastructure asset management plan they should be able to give potential contractors the best information. But how?

As stated in the Highway Infrastructure Asset Management Guidance, an asset management plan should provide information on how a network is managed, its performance requirements and the programme of works. To achieve this we have to start by considering what asset information is available.

And to understand how an asset is performing, we have to ask if the data behind the information is current, appropriate and complete. Having a robust asset register, pavement construction records and carrying out regular condition surveys help to keep this information current. However it is worth not under estimating the scale of doing this and the ramifications if you do not. This is where accurate measurements come into play.

↑ Accurate road condition measurements can help authorities to better understand their assets

↑ Rich data helps highways run efficiently GAIST

Measuring accurately

If the survey data and asset register data are off by 10% at source it can have a massive financial impact later on. If budgets are over estimated it could be tempting to hold onto the reserve but this could be money that a council is able to allocate elsewhere, such as for children's services.

On the flip side, if the measurements were under estimated then a highways team could be under funded and never meet required performance indicators. Nothing is gained by an inaccurate contract.

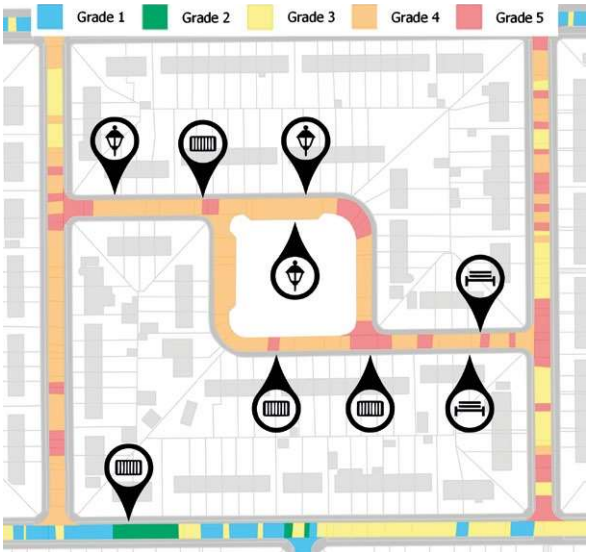
It also would not give confidence to senior managers or Section 151 officers that a highways team really understands its assets. For example, looking at long term 25 year modelling or potential multi million pound investments, a 10% error of £10M is £1M, which equates to a few extra capital investment schemes being delivered or not for many local authorities.

It is also politically damaging, economically stunting and detrimental to a local authority's reputation if a budget is spent in such a manner. Plus also a hit to the teams who work so hard to plan and deliver this work and in doing so helping to dispel any misconceptions about the level of skill and experience required to carry out highway tasks.

Carriageway and footway widths

When measuring simple things like carriageway and footway widths it can be easy to look at nominal widths, but this can lead to huge inaccuracies. This is why getting the most accurate surveys where the carriageway, footway and other assets are mapped and spatially referenced is important.

It goes back to that 10% error point: getting this wrong in today's financial climate could mean the difference between a broader budget being in



↑ Carriageway widths can fluctuate along the length of a road

place to look after vulnerable people in vital services elsewhere.

Looking at the carriageway, the image above shows how carriageway widths can fluctuate along its length. If using a standard nominal width measurement across the whole carriageway length, you could be around 15% out on unclassified roads and as much as 25% out on the principal road network.

For instance, looking at the junction mouths highlights huge variables in the widths, as well as things like laybys, parking bays and central reservations. You can see there are many nuances when looking at a local road layout.

Considering different uses

It is similar with footways, their widths fluctuate along with their surface materials and condition. As can be seen from the photograph below the footway consists of various widths.

The footway in the picture is in a suburban location that has to contend with multiple uses, such as vehicle crossovers allowing local residents to gain access to their properties, which increases the width and uses a different surface material.

Moreover, grass verges to allow segregation between highway users create a narrower footpath which is often of bituminous construction. Providing access to public transport necessitates a change in footpath width, along with a flagged surface material and a raised kerb.

The footway is also where a number of other assets are located which impact the width of the footway, such as utility apparatus (telegraph poles and cabinets), highway electrical assets (street lighting and signals) and other assets (bollards, barriers and trees).

These can all have a significant impact on how the surface area of a footway is calculated. Having accurate data can also help authorities to develop a picture of what they need to maintain for public use and where their liabilities are.

Sharing knowledge of your asset base beyond the carriageways and footways cannot be under estimated.

Having quality, current, appropriate and complete infrastructure asset information will support the position of knowledge that a highways team is trying to provide in order to reduce the potential risks in future maintenance programmes and contracts.

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Lifecycle modelling

These measurements have implications when the data feeds into lifecycle modelling and forward works programmes, which enable potential contractors to understand what are the asset management aims of a highway authority. If your base data is not accurate, any modelling carried out would not be right too and will give the highway authority incorrect data to pass onto their stakeholders.

When talking about procurement and how all this data feeds into that process we need to discuss risk, particularly risk to the contractor. A bidding contractor would look to tender documentation to estimate the extent to which the highway authority has a clear understanding of how its infrastructure is performing.

Supplying the local authorities' highway infrastructure asset management plan at this point in the process would allow the highways team to demonstrate a clear understanding of its current position and future plans for the maintenance of the network.

If there are any uncertainties or anomalies in the information then the tendering contractors will need to find ways to mitigate the risk.

The most common way to mitigate any risk for a contractor would be to increase its costs. Given the various lengths of contracts this could create over inflated costs, especially if they consider 25% error rates.

Conclusion

By being able to demonstrate a good understanding of asset data along with sound repeatable condition data, a highway authority can validate to a contractor the type of asset, how much they have, where they are and just as importantly how they are performing.

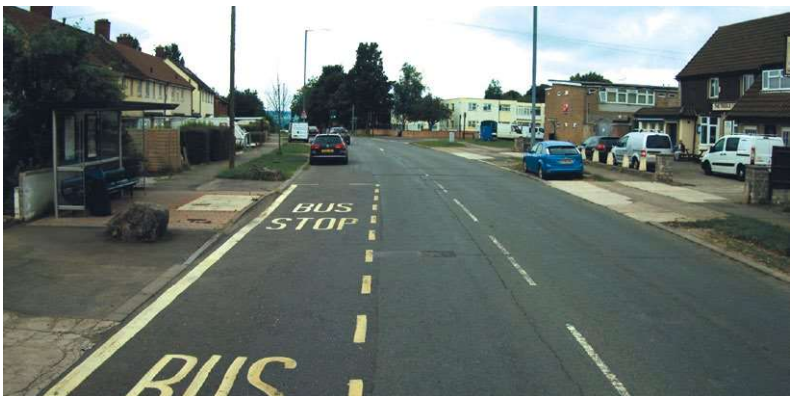
Having easily accessible data to hand would allow a highway authority to prove its confidence in the data, which would help to drive down the price of a contract, as there would be fewer unknowns in the system and therefore reduce the risk.

If you truly want to have better decisions that lead to better procurement, do not underestimate the money that can be wasted from inaccurate measurement data on existing networks. Ten percent inaccuracies could lead to an even greater strain on services (including highways, but also elsewhere) that are already under huge pressure from a changing financial landscape.

● Further details about asset condition will feature in a CIHT webinar on 17 February at 1pm. To take part, visit *ciht.org.uk/events*

Acknowledgement

This article has been peer reviewed by the CIHT Asset Management Panel.



→ Footways often feature varying widths, as here in a suburban setting