

## **APPLICATION FOR FUNDING - TRANSPORT ASSET MANAGEMENT**

### **NEWCASTLE CITY COUNCIL - ELEMENT 2**

#### **1.0 THE ROLE OF THE CITY**

Newcastle is a cosmopolitan city and home to a population of 266,000 residents, and hosts 143,000 jobs attracting 80,000 people from outside the City to work. Newcastle, working closely with our partners in Gateshead, has been transformed over recent years and is now recognised as a model of cultural regeneration. The City is widely recognised as the regional capital for the North East of England and acts as a focal point for professional and business services, Higher and Further Education, the day and night time cultural and leisure economy. The City is the urban core of the wider Tyne and Wear City-region, providing access to the national railway and trunk road networks, and air travel at Newcastle International Airport. These transport gateways are vital to the growth and prosperity of the North East.

#### **2.0 HIGHWAYS ASSET MANAGEMENT**

This document sets out how Newcastle has implemented an asset management approach to the delivery of its services and the importance it attaches to the collection and updating of asset inventory and condition data to deliver a continually improving service.

##### **2.1 History**

In April 2004, the Council began the development of its Highways Asset Management Plan (HAMP) with OPUS Consultants supporting the process. The plan began with a review of current practice within the authority to determine how current working arrangements fit in to an asset management approach. Results from this review identified a number of areas where significant improvements could be made in order to implement asset management best practice. Newcastle took the decision to introduce a number of these improvements to demonstrate an asset management approach before publishing the HAMP document.

The Asset Information Strategy contained in the HAMP was developed with a statistically significant number of inventory and condition surveys. In terms of inventory, we have now completed:

- 95% of the City's carriageway network
- 60% of the City's footway network
- 100% of the City's highway structures
- 30% of the City's street furniture, barriers and signs

In terms of condition, we have consolidated our existing data and have information for:

- 100% of the City's carriageway network
- 60% of the City's footway network
- 75% of the City's highway structures
- 30% of the City's street furniture

## 2.2 Use of the HAMP

The HAMP, populated by good asset inventory and condition information and first published in 2006, is proving an extremely powerful tool. The introduction of the HAMP, and more importantly the implementation of the asset management process, has led to a significant improvement in strategic, long-term decision making, enabling the Council to make better use of the budgets available and provide a more robust and efficient service to road users and residents. Our entire highway maintenance activities are now based on the analysis of the asset information and the validity of this approach is recognised by all stakeholders in the process, including the Council's Executive, all members and highway maintenance professionals.

In association with OPUS, we developed a Carriageway Treatment Prioritisation Model to determine the backlog in road condition and predict the future condition of the network over a 10 year period based on a number of funding scenarios. This enabled the development of a 5 year rolling forward works programme for the strategic road network and a 3 year rolling forward works programme for the unclassified roads. These programmes are updated annually for both roads and footways to take account of the most up to date SCANNER and CVI information. This process forms part of the increasing role of local democracy through informed choice. It enables residents and Members to be fully informed about the condition of the network and be engaged in the prioritisation of highway works to reflect the needs of the local communities while ensuring that these meet the technical requirements determined by the asset management approach.

## 2.3 Financial Considerations

In addition, the HAMP has highlighted a need for increased maintenance spending over and above current revenue and capital budgets in order to prevent further deterioration in the condition of the highway. This has enabled the securing of an additional £2m per annum from Council funds to help to address maintenance backlogs, 2008/09 being the fifth year in which this budget has been allocated. As a direct consequence, deterioration of the condition of the road and footway networks has been arrested, and in some areas has led to a slight improvement in condition. In earlier years, the condition of carriageways and footways were the focus of much of the expenditure but as the most serious of the defects have been addressed we have been able to broaden the scope of the expenditure to include street furniture, signs and traffic signals.

Benefits that have accrued from this approach to maintenance include a reduction in the number of public liability claims, and Newcastle is one of the few local authorities that are going against the national trend of spiralling claims and payments. The general improvement in the condition of the carriageways and footways, together with a robust risk management approach to highway inspection and repairs has seen a significant reduction in the number of claims against the Council, peaking at around 1200 claims in 2000/01 and falling to less than 300 in 2007/08. This has resulted in major reductions in the value of successful compensation claims against the Council and the premiums for public liability insurance, falling from £1.9m in 2005 to £1.2m in 2008/09. As insurance claim numbers continue to fall and the defence rate increases, it is anticipated that the insurance premium will continue to reduce in real terms.

## 2.4 Future Developments

Because asset management underpins everything we do, we have chosen to illustrate the success of this approach by considering two areas that are not simply maintenance considerations. We recognise that our HAMP is essentially about the maintenance of the highway network and that a Transport Asset Management Plan is the next step. However, it is still possible to use the asset management approach and asset data to shape and inform decisions around transportation issues as the two studies that follow demonstrate.

Newcastle City Council published its first Highways Asset Management Plan (HAMP) in October 2006. The HAMP supports the main objectives set out in the Tyne and Wear Local Transport Plan (LTP). The Council invested a significant amount of time and resources in collecting and analysing

highway asset inventory and condition information to produce a meaningful HAMP. The asset information strategy and improvement actions contained in the HAMP recognise the importance of maintaining, developing and improving the asset information to drive improvements in the management and delivery of the Council's highways services.

The implementation of highways asset management has seen the Council continue to invest in the collection and analysis of the asset data since the publication of the HAMP in 2006. Newcastle work closely in partnership with the neighbouring local authorities in Tyne and Wear to develop all aspects of asset management and commission works jointly where possible to ensure better value for money and a consistent approach to asset management across the area.

### **3.0 TRAFFIC SIGNALS**

#### **3.1 Background**

Newcastle City Council has almost 300 traffic signal controlled crossings and junctions. As a dense urban area with significant traffic flows within the city, the reliability of these systems is vital to manage congestion and the economic growth and social life of the city and region. This comes at an environmental and financial cost with almost 1,000 tonnes of CO<sup>2</sup> production associated with the energy consumption and a maintenance budget of £350,000. Efficient management and maintenance of these signals is essential to reduce costs and environmental impact.

As part of Newcastle's asset management project, a complete survey of the signals installations has been carried out, including equipment, configuration, as well as equipment age and condition of the asset. The collection of this data took 60 days with an additional 10 days for data processing and upload into our highway inventory database, Insight from Symology. At present, the asset information on traffic signals is updated manually but a project has commenced to implement field to office technology so that any attendance at an installation is captured automatically and the asset information immediately updated to show changes in equipment, fault history and other condition information. This is working well and will complement the established field to office system used to capture highway defects by the highway inspection team and by building on this experience the traffic signals data capture project will be cost effective.

A recent development has been to combine the asset information with aerial photography from Google Earth to provide a 'real world' view of signal installations. This has enabled a greater understanding of the configuration of a junction, including environmental elements such as trees and shrubs, than can be readily observed from site drawings. In some cases this reduces the need for site visits or can act as a reminder of site conditions at a future date.

#### **3.2 ELV Signals Equipment**

Newcastle is in partnership with Siemens in piloting Extra Low Voltage (ELV) traffic signal equipment. ELV systems offer a number of advantages over more traditional technology, including significantly reduced energy consumption (in the order of 63% reduction), higher levels of reliability, lower levels of routine maintenance and increased safety through higher visibility and reduced electric shock risk in the event of a collision with the equipment. These systems are cost effective when looked at in whole life terms and it is our intention to use ELV equipment in all new installations where the appropriate functionality is available. Having collated all the traffic signal asset and condition data we now have implemented a 5 year forward works programme to renew or upgrade the various signals within the City.

In determining the programme of replacement, asset information has been used to address three principal criteria:

- Is the appropriate ELV functionality available for the configuration of the junction?

- What is the energy consumption of the existing installation to assist in determining the payback period of the ELV alternative and the reduction in CO<sup>2</sup>?
- Is the condition and level of maintenance required for the existing equipment such that this is the cost effective point at which to carry out an ELV replacement?

This process will ensure that the programme delivers value for money, optimises the environmental benefit and provides a modern, fit for purpose traffic signals network.

### **3.3 The Wider Region**

Newcastle City Council's Traffic Signals Group provides a service for all traffic signals under local authority control from the Scottish border to the North Yorkshire border and from the North Sea to the Pennines. We are the lead authority for the five councils of Tyne and Wear under a Joint Service Arrangement. We have won maintenance contracts for Northumberland, Durham and Darlington under open market procurements and provide traffic signals management consultancy for Middlesbrough Council. In addition, capital works are delivered under open market procurements for these areas. We believe that this co-operation between authorities over such a large geographic area offers a unique opportunity to deliver a uniform, standardised service and value for money.

The asset management approach used in Newcastle would benefit all of the authorities indicated above. Initial discussions with our partner authorities on providing the same service for their assets have been met with an enthusiastic response. This will involve hosting their traffic signals asset data on our database in the same way as we do for our own. Some of these authorities use Insight for their asset management and some use other systems, so we are exploring the most cost effective method of sharing the asset information which may involve updating their systems directly or providing a viewing and reporting facility on our own system.

Discussions with our partner authorities have indicated that this combination of asset data capture and the programming of ELV replacement provide a sound business case for the updating of their traffic signal portfolio and we anticipate that this will be rolled out over the North East region within two years.

Newcastle is taking a lead role in the development of a UTMC facility for Tyne and Wear. This will be phased in over the next 3 to 5 years to ensure each element of the UTMC is fully functioning before adding further elements.

Local authorities in the Teesside area are well aware of our intention and wish to be involved in this project. Whilst the busy urban areas of Tyne and Wear and Teesside are separated from each other geographically there will be economies of scale reducing overall costs.

We have recently met with Leicester, Kent, Glasgow, Edinburgh and Nottingham authorities and plan to meet with Liverpool City Council to share best practice in traffic signals, asset management and view operational UTMC systems.

## **4.0 SUPERROUTE**

### **4.1 Strategic Objectives**

The aim of Tyne and Wear's Transport Strategy is to support and enhance the drive to regeneration and greater economic prosperity. To achieve this, the strategy embraces the following approaches;

- Maintaining and improving levels of personal accessibility and linkages within, between and beyond the boundaries of Tyne and Wear
- Ensuring transport systems, especially public transport networks, are safe, secure and free from the fear of crime whilst reducing the incidence and severity of transport-related accidents and casualties
- Tackling transport inefficiency arising from excessive demands and operational constraints on transport systems by delivering sustainable measures to combat congestion.
- Reducing the adverse impacts of transport on our environment, especially with regard to air quality, noise and its contribution to climate change and resource consumption

It is our strategic aim to provide a high quality highways infrastructure that will support and promote public transport. This is a key element in reducing congestion and improving air quality. Newcastle City Council are developing the HAMP to produce a fully integrated Transport Asset Management System to integrate the transportation functions.

#### 4.2 Superoute

'Superoute' is a high quality network of bus services across Tyne and Wear. The concept was established in autumn 2002 and is now an established brand in the region. Superoute is operated and administered in partnership by a Board which comprises senior representatives from the region's three main bus operators (Arriva, Go North East and Stagecoach), Nexus (the Tyne and Wear Passenger Transport Executive) and the five metropolitan councils in the area. Superoute branding requires the total journey experience by bus to be an improvement on standard bus services and the three main objectives of this initiative are to:

- increase the number of people using buses (to reverse a spiral of decline in bus use in Tyne and Wear), by improving the overall quality of the bus product
- encourage modal shift
- address transport- related social exclusion by retaining and eventually expanding the bus network

The objectives of Superoute are consistent with Local Transport Plan (LTP) objectives, and delivery is via the LTP programmes and funding. Every Superoute uses modern low-floor vehicles on routes benefiting from extensive bus priority measures, with high-quality shelters and passenger information.

Currently there are over 40 Superoutes covering about 30% of the bus network in Tyne and Wear. Over 48 million passengers per year use the Superoute services (about 36% of all bus journeys). Bus patronage has grown on the Superoute network as the network has expanded. Investment in high quality vehicles by local bus operators has exceeded initial expectations and Stagecoach have recently ordered a number of low emission buses to operate on routes where improvements have been made.

Passengers have seen improvements in waiting environments and bus information by Nexus and bus passengers currently benefit from full timetable information at 98% of Superoute stops and 60% of stops have a shelter. The five Tyne and Wear local authorities have delivered around 40kms of bus priority measures across Tyne and Wear.

The bus operators report growth in usage on some routes, particularly in the urban areas of Newcastle and Sunderland and they are optimistic that this will continue.

#### 4.3 Use of Data

A number of routes are in need of improvements to bring them up to the Superoute high standards. The approach to improvements varies slightly across Tyne and Wear but there is a commitment from all partners to work together to improve and expand the network.

The required improvements have been identified using an asset management approach. Although Newcastle has completed an audit of its Superoutes, the other four Tyne and Wear partners are all at different stages. Since not all five authorities have equally well developed asset data, an audit of all Superoutes across Tyne and Wear has been started in order to identify transport problems experienced by the buses and collect inventory and condition information for the physical assets in the vicinity of the bus stops. This information has been collected by:

- Driven inspections in a bus along the entire Superoute network with experienced bus drivers to determine problems e.g. access restrictions due to parked cars, poorly positioned bus stops, traffic calming features, overhanging trees etc
- Detailed walked inspection to collect inventory and condition information for bus shelters, signs and lines, footways etc.

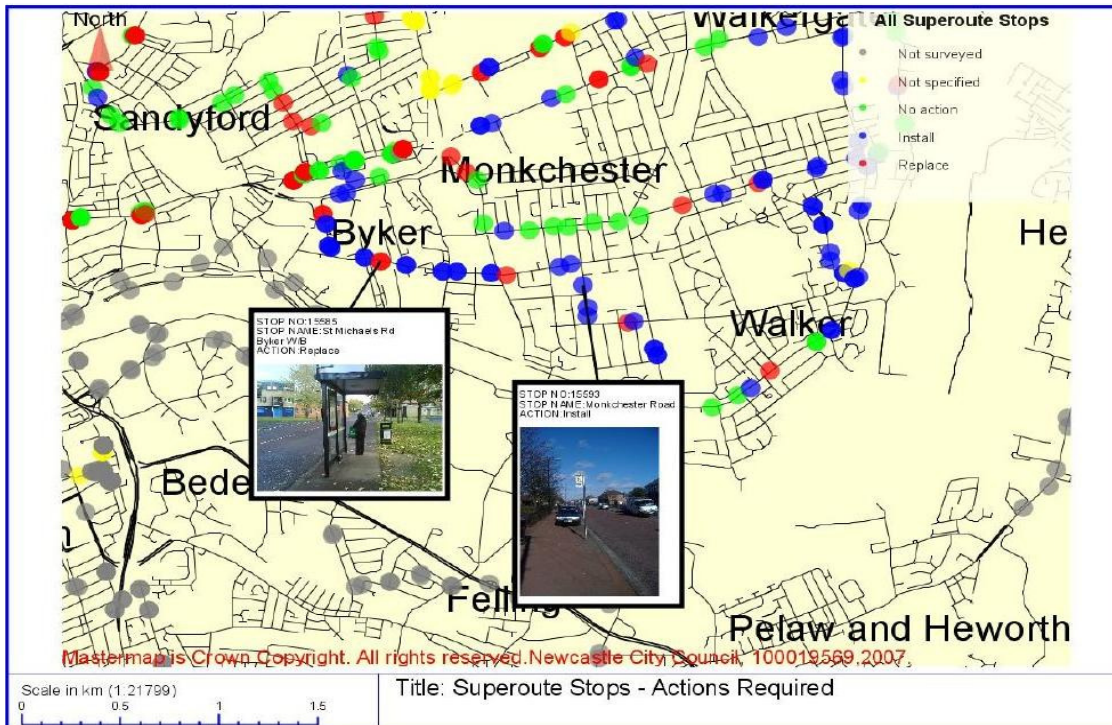
Newcastle has developed a database to support the asset information collected from the Superoute audits, SAP (Superoute Audit Program). SAP was conceived as a system to collect data relating to Superoutes on a corridor to corridor basis. The data is built up by defining

- Corridors – a collection of related routes with similar movements
- Routes – numbered bus routes
- Junctions – only included when the junction has to be negotiated by the driver
- Roads – links between two junctions for building up the network
- Bus stops – data is imported from Nexus files

A pre-prepared survey sheet is used to collect the inventory data to upload into the SAP database. Photographs taken during the surveys are also held on the database.

The information is accessible by all partners using the regional internet based Autowebmaps system developed in Newcastle on behalf of the Tyne and Wear authorities and Nexus.

The database is being used to identify maintenance and improvement requirements to prepare forward works programmes to be delivered and funded through the Tyne and Wear LTP process. Nexus have access to this database and have taken responsibility for carrying out regular inspections and assessments to identify maintenance and improvement requirements to be delivered by the LTP in the future. Nexus have now started to record information on this database from the other (i.e. not Newcastle) four local authorities where this has been made available. Newcastle will continue to provide IT support to Nexus for this database at zero cost.



Autowebmaps SAP Stops – Actions and Photos

Newcastle are analysing the information in the database, taking into account traffic figures, bus patronage and accident information to establish a 2 year programme of improvement works to be delivered during 2009/10 and 2010/11. The improvements will address:

- assets in need of immediate routine maintenance e.g. footways, bus shelters
- areas requiring traffic bus priority measures and waiting restrictions to improve accessibility along the whole route
- kerbs requiring raising at bus stops for accessibility
- build-outs to assist bus boarding
- removal of traffic calming incompatible with low floor buses
- locations of high usage bus stops and where appropriate, erect new bus shelters
- bus stops requiring a new pole, flag and passenger information board
- speed limits

Having this data available enables the co-ordinated delivery of improvements for the whole of the Superroute to ensure a continuous flow along the route and to avoid simply shifting bottlenecks to a different part of the route.

An analysis of accidents on the Superroutes in Newcastle has established in some instances, a significant number of accidents where buses have been involved. Such events may have an adverse impact on passenger perception of the safety whilst travelling on public transport. As a result, a number of speed limits within the City have been reduced after consultation with the bus operators.

It is intended that Newcastle work closely with the other 4 local authorities to apply the approach taken in Newcastle across Tyne and Wear so that bus passengers travelling throughout the area will see a consistent approach to the Superoutes and improvements in the quality of the highway infrastructure.

Newcastle's Network Management Plan highlights Superoutes and the co-ordination of carriageway and street works as essential to minimise disruption to the travelling public. This approach fits perfectly with the 5 year programme of highway improvement works which is identified within our HAMP and the future development of an integrated transport asset management approach. Co-ordinating highway capital and revenue budgets will complement the investment agreed with Nexus.

## **5.0 CHAMPION'S ROLE**

In 2004, Newcastle were one of the first authorities in the country to start developing a HAMP. It soon became apparent that there were lessons to be learnt from our experience that other authorities could benefit from, even before the HAMP was published. Newcastle are committed to sharing information and best practice for the benefit of other authorities and demonstrated this by publishing the HAMP on its website. Newcastle gave formal presentations to the other local authorities in Tyne and Wear, the North East Technical Advisors Group and at a national Asset Management conference in Birmingham. We have advised our partners in Tyne and Wear on the development of their asset management plans and continue to work closely with colleagues in the north east to share good ideas and best practice through the North East Technical Advisors Group meetings. Newcastle have hosted a conference on behalf of the North East Technical Advisors Group on highways asset management with a speaker from New Zealand.

Newcastle have also hosted visits from a number of Authorities including Dublin, Cork and Coventry City councils, as well as visiting Sheffield, Portsmouth and Salford to disseminate information, advice and share best practice.

The Tyne and Wear partners have formed a highway maintenance 'theme' group under the banner of the LTP and work closely to share best practice and jointly procure works to ensure that a consistent and comparable approach is adopted across Tyne and Wear. The group is continually looking at improving the highway maintenance services and delivering efficiencies. As an example, the group are currently considering options to operate a single UKPMS system from Newcastle to ensure a consistent and cost effective approach to pavement management in Tyne and Wear.

Newcastle has a well established HAMP and has been recognised as a Best Practice example of an AMP by CIPFA in their recent report published June 2008, Local Authority Transport Infrastructure Review of Accounting Management and Finance Mechanisms.

Currently, Newcastle City Council are represented regionally at North of England Highway Authorities and Utilities Committee, North of England Traffic Managers Group and provide a regional service to the north of England for traffic signals.

It can be seen that Newcastle already provides leadership and support around the asset management of traffic signals across the whole of the North East region. The success of this approach has been recognised by our partner authorities and has resulted in a steady growth, both of the geographical area covered and the portfolio of services offered.

We have a clearly demonstrated track record in leading on asset management and realise the benefits to be accrued from this approach for all authorities. Newcastle is ready to build on its experience by acting as a champion on a wider regional or nationwide basis.

## 6.0 SUMMARY

The development of the HAMP has raised the profile of the highways services with politicians who quickly recognised the benefits of an asset management approach and demonstrated this by backing the highways maintenance budgets with an additional £10m funding over the last 5 years. The engagement of Members and residents in the preparation of forward works programmes, has contributed directly to the City' Sustainable Community Strategy. This additional funding together with a robust risk management approach has realised significant cashable savings through reduced insurance premiums that have been reinvested in the highways. This in turn has seen improvements in the condition of carriageways and footways as measured by the national and local performance indicators.

Newcastle's adoption of an asset management approach has produced a significant shift in the way we think about highway and transportation issues in the city and the wider region. Funding for these issues is always scarce and the use of asset management allows the allocation of resources in a way that drives up value for money and efficiency. It also provides a balance between stakeholder perception of needs and a risk management approach. It is almost impossible to imagine that we would revert to working practices and assessment methods that existed prior to the adoption of asset management.

Having said that, we recognise that the HAMP is only the first step in this process and although the data can be very useful in the addressing of transportation issues, a fully developed Transport Asset Management Plan must be the our next goal to ensure the benefits can be fully realised. With our position at the core of the Tyne and Wear conurbation and proving access points to most of the major transportation gateways for the region, it would be ideal if this could be developed into a Tyne and Wear TAMP. Having set out on this process as a pathfinder for the region, we are realistic about the achievement of this ideal in the short term. Our partner authorities are at different stages of the adoption of asset management principles and, indeed, of the development of asset management plans. It is therefore most pragmatic to proceed to developing a TAMP for Newcastle, albeit set in the context of the Tyne and Wear LTP and network management plan.

Newcastle is a forward thinking authority demonstrated by the implementation of asset management and the submission of a bid for Highways Maintenance PFI funding in 2006. Since that time, the authority has continued to increase knowledge in collaboration with both public and private organisations to further develop transport asset management in preparation for any future bids for PFI funding.

We will continue to act as a local champion and endeavour to bring our neighbours to our level of understanding of asset management and how it is the most effective method of achieving best value in the fields of highway and transportation management.