
**Manchester City Council
Report for Information**

Report to: Neighbourhoods and Environment Scrutiny Committee – 8
November 2016

Subject: Highway Reactive Maintenance Review

Report of: Interim Director of Highways

Summary

This report provides an update to the Highways Maintenance Report presented to the Neighbourhoods Scrutiny Committee in January 2016 regarding the methodology / approach associated with both the reactive and programmed maintenance programmes and details measures put in place to improve the service.

Recommendations

The Neighbourhoods and Environment Committee is asked to note the findings of the report.

Wards Affected: All

Contact Officers:

Name: Kim Dorrington
Position: Director of Highways
Telephone:
Email: k.dorrington@manchester.gov.uk

Name: Dave Lea
Position: Director of Commercial Services
Telephone: 0161 234 3265
Email: d.lea@manchester.gov.uk

Name: Kevin Gillham
Position: Citywide Highways Manager
Telephone: 0161 234 5148
Email: k.gillham@manchester.gov.uk

Background documents (available for public inspection).

None

1.0 Background

1.1 In January 2016 a report was presented to the Neighbourhood Scrutiny Committee detailing the approach for effective maintenance of the Highway. Following on from the report, further work was commissioned to review the performance of the service and identify where further improvements and savings could be made.

1.2 The previous report set out the Council's approach to highway maintenance and repair, and provided details in relation to the council's Highways Asset Management Plan (HAMP), the capital maintenance programme, the Key Route Network (KRN) and the Community Network and the reactive maintenance programme.

The main concerns expressed by the Committee were:

- The increasing number of pothole repairs and the inconsistency surrounding how some potholes are repaired where a neighbouring pothole is left;
- Value for money being provided by the main contractor (Manchester Contracts) and their sub-contractors. A representative of Manchester Contracts was asked to attend this Committee meeting;
- The lack of regular gully cleaning and the effect this was having on highway drainage.

1.3 During 2016 a review was commissioned to investigate the way the pothole and drainage repair service is undertaken. The review looked at all aspects of the service, from investigation of repairs through to the way the repairs and cleaning operations are undertaken on site and customers are updated.

1.4 The review has recommended a number of areas where improvements can be made in both the way that pothole repairs are managed and gully cleaning operations are scheduled and completed. What is clear is that due to the large increase in volume of highway repairs and the need to meet very challenging deadlines which has resulted in a greater reliance upon sub-contractors that a number of improvements were urgently required to deliver an improved and value for money service.

2.0 **Governance**

2.1 It has previously been recognised that strong and effective leadership is required to deliver the necessary improvements to the Highway Service. To achieve this all Highways Services (including Manchester Contracts) were recently brought under the common management of the new Director of Highways, within the Corporate Core, and reporting directly to the Chief Executive as detailed in a report to Personnel Committee on 10 May 2016. The previous management arrangements operated a client and commissioning role, and whilst they successfully delivered programmes of work, it is considered that the focus going forward must be to provide the best possible service with an agreed budget and resource allocation to respond to immediate, short term and long term asset management priorities.

2.2 An updated report was presented to the Personnel Committee on the 28 July

which built on the recommendations of the previous report and set out the future strategic direction of the Highway Directorate. The new structure brings together all Asset Management functions for the first time, meaning the inspection and delivery of reactive maintenance will now be carried out within the same team. This will create a closer working relationship between the Highway Inspectors and Manchester Contracts (and their sub-contractors) and will help to ensure better value for money, greater accountability, more customer focus and that maintenance targets are delivered in line with agreed timescales.

- 2.3 Whilst the high-level structure is now in place, the overall structure is still under development and will come in to place in 2017. This will ensure that the necessary skills, resources, contracts, governance and processes are in place to deliver the recommended improvements.

3.0 Highways Maintenance Improvement programme

- 3.1 The Pothole and Drainage Report made a total of 20 recommendations across 5 work streams aimed at improving service delivery, accountability, performance, and reducing costs. A number of the changes are now in place, and work is underway to implement the other recommendations. A Highways Asset Management project team has been established which will report into the Highways Strategic Board. Additional staff have been recruited to support this project and provide greater scrutiny of the quality of both highway inspections and repairs. The 5 work streams are listed below:

- Claims
- Inspections
- Symology
- SLA Failures
- Drainage and Gullies

A list of the recommendations from the pothole and drainage report is provided in Appendix A.

- 3.2 In addition, a number of operational improvements have been developed aimed at addressing the issues identified throughout the review process. Some are already in place, and the others are currently being developed through the new Asset Management Board.

Key operational improvements that have already been introduced are:

- Greater scrutiny of quality of repairs and invoices received;
- Rejection of any invoices where “additional work” is claimed unless previously agreed by MCC officers;
- Order works in a more cost efficient manner;
- Highways inspectors spray paint or chalk areas for repair so they can be easily identified by the works gangs;
- Manchester Contracts staff checking a sample of sub-contractors works and an additional Clerk of Works and Quantity Surveyor have

been appointed;

- Highway Neighbourhood Managers carry out checks on a sample of completed works and monitor on a developed spreadsheet;
- The sub-contractor can only claim for “enhanced” Traffic Management with prior agreement of Manchester Contracts;
- Highway Neighbourhood Managers are performing post-inspection checks of the information recorded by their Highways Inspectors;
- Clarity over the quality of repair that is expected, including edge sealing and over-banding.
- The sub-contractor and Manchester Contracts are taking a photograph immediately before and after each repair so the works can be checked before any payment is made. This means that for the first time all works can be checked rather than just a random sample. Please see attached photo example in Appendix B.

3.3 The measures listed above have been introduced over the course of the last 3 months. The post-works checks are showing there has already been a significant improvement in the quality of work produced and through checking more works post completion we are ensuring better value for money is achieved.

3.4 Whilst it is considered there have been early some improvements, particularly in relation to compliance and quality, it is recognised that further improvements can be made.

3.5 Work relating to the recommendations of the Pothole and Drainage review is ongoing, and progress is summarised below.

3.5.1 Claims

The report recommends regular meetings between the Highways Inspectors and better monitoring of the reasons and locations for claims.

Whilst there has always been communication between the teams, formal meetings have now been established between the two teams to promote better knowledge sharing with the aim of reducing the number of successful claims.

A long-term aim is to log details of claims on the same Symology GIS database that is used to record highway inspections and repairs. This will help to inform future inspection regimes and the development of future years' highways maintenance programmes.

3.5.2 Inspections

The restructure of the highways service discussed previously is included in this work stream. We have now begun the integration of the highways inspection and maintenance repair teams which will ensure that there is joint responsibility, supervision and management for all highway and drainage works. This essentially means that the same team will be responsible for

ordering the works and completing the repairs. The wider service redesign is currently under development, but this part of the re-structure has been accelerated as an early win.

A new Code of Practice is being developed: "Well Managed Highway Infrastructure – A Code of Practice". This will recommend an alternative approach to the way we undertake highway inspections. A longer term project would see highway condition data used to develop an improved inspection regime that is cognisant of the highway condition whilst adhering to industry best practice with respect to the frequency of inspections. This will be a significant piece of work to merge databases and then ultimately develop new inspection routes. It is anticipated this will take 12-18 months to implement.

For example, the new inspection regime may be driven by the Highway Condition GAIST surveys - i.e. Grade 1 roads are inspected every 2 years - Grade 2 roads every year, grade 3 every 6 months - grade 4 every 3 months and grade 5 every month. This would see the frequency of inspections governed by condition rather than usage

3.5.3 Symology

Symology is the software used by Highway Inspectors to provide details of their inspection routes, to log defects and raise works tickets to repair defects. A number of improvements have been made with immediate effect to improve the quality of information provided:

- Highways inspectors have been given additional training regarding the logging of defects;
- Improved Specification of repairs required;
- Managers are carrying out post-inspection checks to ensure the inspections provide sufficient detail to allow the works to be carried out accurately;
- Defects are being marked on the carriageway / footway so they can be easily identified;
- Traffic Management button to inform the contractor when enhanced TM is required;
- Linked orders so that an initial emergency repair can be ordered and linked to a more permanent patched repair at a later date;
- New Hand-held device being tested with better screen resolution and faster processing speed;
- Move to complete remote working;
- Photos taken by Highway Inspectors.

Other improvements with Symology that are currently in development are:

- Links to Gaist. The Gaist survey provides a condition rating for footways and carriageway. This information is to be uploaded to Symology so that highways inspectors can make a more informed decision when specifying works;

- Planned Maintenance programme on Symology. As above, adding the planned maintenance programme to Symology will allow highways inspectors to make a more informed decision when specifying works.

Whilst these measures will provide some short-term improvements, some more significant improvements are required to develop Symology so that it can provide a more robust means of monitoring and managing the whole defect process. This will need to be done in collaboration with Symology over the next 12-18 months.

3.5.4 SLA Failures

New contract monitoring and quality control measures have been introduced by Manchester Contracts and Citywide Highways. Manchester Contracts, their sub-contractors and their supervisors have been given clear instructions not to carry out any additional works without approval from the Highway Inspection team.

Regular inspections of a sample of repairs is being carried out by managers in both teams to ensure that works claimed have been completed and the quality is to the agreed standard. Previously only limited post-works checks were carried out by Manchester City Council. Defects now not repaired to the agreed standard are returned to the contractor (or their sub-contractor) for further repairs to be undertaken, these are recorded and are subsequently re-inspected following confirmation of works completion.

Manchester Contracts and sub-contractors are taking photographs of repairs immediately before and after they have been made so that a record of the repair can be held on Symology. This ensures that we have a complete picture of all repairs ; works orders; before photograph of sprayed out area and after photograph showing the repair. We are investigating ways for the Highways Inspectors to also take photographs. 10% on-site inspections will continue as it is important to physically see the repairs to check more closely on quality / materials etc.

The number of repairs being ordered is increasing due to the deteriorating state to the roads and footways. This is resulting in higher number of repairs falling outside the SLA. To address this in the longer term the report recommends an option appraisal is carried out to determine the most appropriate delivery method for the reactive maintenance service. It is anticipated this will be done over 6-9 months.

3.5.5 Drainage and gullies

Some of the current problems with drainage are a consequence of a significant reduction in investment and the resources deployed in this area, which was as a result of the need to reduce costs and make savings a number of years ago. Where previously there were 4 gully cleansing machines there are now only 2, meaning that only approximately 20% of the total gullies across Manchester are included in a cyclical cleansing

programme, the rest being picked up by highway inspectors and through CRM reports.

There are approximately 110,000 gullies on the highway network. In accordance with best practice it is recommended that all gullies are cleansed at least every 18 months. To achieve this more gully machines will be required, along with a team that can 'jet' persistent blockages and a couple of teams who can focus on 'dig-downs' and repairs.

The recording and management of the cyclic cleansing process and repairs should be through Symology so that an accurate picture of the state of the drainage network can be built up. This will help to inform future cleansing route strategies.

An options delivery report is being developed to determine the most cost effective method of clearing the backlog and providing a robust cyclical cleansing programme.

4.0 Preventative Maintenance

- 4.1 As detailed in the January 2016 Report, on roads where there is only surface wear, but structurally the road is sound, there is the option to resurface the road with microasphalt, which effectively re-seals the road and prevents water ingress.
- 4.2 At the start of 2015/16 we compiled a 3 year rolling programme of resurfacing and preventative treatment schemes. In 2015/16, just over £1m was spent on delivering an area-wide preventative micro-asphalt programme across those wards of the city that had previously received the fewest of these treatments in the past.
- 4.3 This year (2016/17), we are currently on programme to deliver about £800k of preventative treatments on roads across the city, with a similar value provisionally scheduled for 2017/18.

5.0 Highway Materials and Methods of Reinstatement

- 5.1 As part of our drive to improve the way repairs are made and achieve better value for money, we have recently carried out trials on two innovative products.

5.2 Viafix

Viafix is a cold laid material used to make quick pothole repairs that remains workable even in very low temperatures but hardens like traditional hot asphalt. Viafix uses technology which, on contact with water or moisture, not only cures into a highly durable material but also binds itself to wet areas.

Viafix provides a “one visit” permanent fix to potholes and can be used in cold weather.

Observations of repairs made using Viafix indicate the repairs are maintaining their integrity for a comparable period to standard bituminous materials.

5.3 Jetpatcher

This uses high power to blast bitumen into potholes for repairs. The process involves a three stage approach which is significantly quicker than the traditional approach, which requires excavation and then refilling with a bituminous material:

1. High velocity air is used to remove all dust and debris from the defect;
2. A cold bitumen emulsion is forced into every crack and crevice, sealing the defect and protecting it by preventing the ingress of water;
3. The aggregate mix is fired in at high velocity through the delivery hose, evenly coating the granules with bitumen emulsion.

The product is being used on a trial basis across a number sites across Manchester and the early indications are that the temporary repairs are very effective. Roads where the product has been tested are:

- Dobbinetts Lane;
- Clay Lane
- Ford Lane
- Sunbank Avenue
- Barnacre Avenue
- Whitecarr Lane
- Moorcroft Road
- Nell Lane
- Wheler Street

The system appears suitable for repair work at an earlier stage than would have been considered appropriate for conventional repairs and therefore stops deterioration at a less costly stage.

Tests have shown that good quality repairs can be achieved at a fraction of the cost of traditional patching. In Wythenshawe, the repairs were delivered for £12,750, where patching would have cost £36,900.

6.0 **Highways Planned Maintenance – future investment model**

6.1 Manchester’s highway network comprises a total of approximately 1,330km of road length and 2,500km of footways. The road network can be split into the following classes, based on national hierarchy:

- Strategic A roads (urban): 12%
- Secondary B roads (urban): 3%

- Secondary C roads (urban): 7%
- Local unclassified (urban): 78%

- 6.2 Our data shows that we currently have about 16% of the road network at either Grade 5 which need to be resurfaced urgently or Grade 4 which need resurfacing as soon as possible along with 9% of the footway network. The cost of keeping the roads in a steady state (once they are at an acceptable standard) is about £9m per annum.
- 6.3 Last year's reactive maintenance budget was £1,096,000 overspent. Without any investment it is anticipated this will increase by approximately 50% year on year with the current level of Capital Funding. Assuming the current annual Capital expenditure of just over £3m / year, over the next ten years, the model predicts that revenue funding for pothole repairs will rise to over £7m per year, with a total predicted revenue spend of £60m over the next 10 years. To address the growing backlog we are investigating alternative funding opportunities.
- 6.4 Whilst we continue to under invest in our asset the backlog cost is getting exponentially worse. Early intervention will therefore provide value for money in the medium to long term. It will significantly reduce the need for extensive pot hole repairs, reduce revenue costs and limit our liability to trip and slip claims .

7.0 Recommendations

- 7.1 This report is to provide the Committee with an update on the Highway Maintenance report presented to the Neighbourhoods Committee in January 2016 and details measures that have been put in place to provide and improve management and delivery of the Highways Reactive Maintenance service.

Recommendations	
Claims	
1	Regular meetings are held between the relevant claims and inspections staff to ensure a fuller understanding of the issues and the decision made in relation to claims.
2	A mapping exercise is undertaken, and regularly updated, using Symology to identify any hotspots in relation to claims
Inspections	
3	The structure of the team is reviewed to incorporate sufficient supervision and management to develop and implement a performance management framework for the inspectors.
4	Route optimisation is undertaken with respect to the condition survey data to try and smooth the spikes in work orders.
5	A project is undertaken to appraise the merits, and costs, of implementing a risk based approach to inspections which will complement the national guidance.
6	Integration of the maintenance and inspection teams is undertaken following the reorganisation of the Highways service.
Symology	
7	A visit is undertaken to Conwy Council to assess their implementation of the Symology system to inform our development of the system.
8	A schedule of rates is incorporated into the system to provide visibility around committed expenditure and enable the forecasting of reactive maintenance expenditure.
9	The devices used by the inspectors should be reviewed, in conjunction with ICT, based on the latest technology to ensure they are provided with equipment that is fit for purpose and ensures that Symology can be used consistently in the field.
10	Photographs of defects should be recorded on the system where appropriate.
11	Manchester Contracts fully implement the system to support both work scheduling and the live recording of completed jobs.
12	Recording of jobs is reviewed to ensure clarity to the reactive maintenance team and to enable the accurate reporting of the number of defects.
13	The methodology of how jobs which will require both a temporary and permanent repair due to the type of defect, the location, or both, is developed that ensures progress is accurately reflected in the system.
14	Further work is undertaken to determine how the data within the Gaist condition survey can be linked to the information within Symology.
SLA Failures	

15	An ongoing analysis of works missing the service level agreement needs to be completed following the implementation of a number of the other recommendations within above.
	Rectification of Defects
16	<p>Contract monitoring and quality assurance checks are implemented immediately in respect of all work undertaken by sub contractors. This could include:-</p> <ul style="list-style-type: none"> • The requirement to provide sufficient photographic evidence to support all work claimed in respect of repairing defects is added to the framework contract. <p>In the event it is not possible to make this amendment to the current contractual arrangements, then:-</p> <ul style="list-style-type: none"> • Resources are diverted to the on site management and checking of all sub contractors work at a level sufficient to provide assurance that only work that is delivered is paid for.
17	An option appraisal is undertaken of the long term approach to reactive maintenance to include the scope of works to be delivered in-house, the potential for collaboration with other Greater Manchester authorities, and, the potential for collaboration with other Greater Manchester authorities, and , the potential to appoi8nt an external contractor
<i>Drainage and gullies</i>	
18	A cyclical cleansing approach is adopted with a minimum frequency of 18 months for every gully.
19	An options appraisal is completed considering the cost of the previous recommendation and the most effective delivery method to both introduce this frequency of cleansing and address the current backlog of work.
20	Symology is used to record data in respect of cleansing to build up a picture of the condition of the network and to optimise the cyclical cleansing regime in future.



Before



After



Before



After