London Borough of Croydon

DEVELOPMENT AND ENVIRONMENT

Pothole Fund Application

Supporting Documentation - Annex

Croydon Council
Development and Environment
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May 2014
Section B - Potholes

B1-A: Has your authority aligned its maintenance programme to the Government’s highways maintenance funding years (i.e. 2011-2015 and 2015-2021)?

Croydon Council has been generating 4-year programmes to inform their budget allocations for the funding years since 2010. This put Croydon in the forefront of highway maintenance works programming and budget commitments, in accordance with the HMEP’s Pothole Review - Recommendation 5: Commitment of highway maintenance budgets.

Croydon collects carriageway and footway condition data annually to inform its carriageway and footway maintenance programme. This data is analysed according to engineering defects to UKPMS standards. Then, all the road sections are re-prioritised using Regenerate-SP (http://www.metisconsultants.co.uk/) based on the needs of the community such as bus routes, cycle routes, roads with traffic generators, etc. This tool then generates a ranked list of all the road sections within the Borough.

Figure 1: Extract of raw Course Visual Inspection condition data.

Figure 2: Extract of a re-prioritised road list using Regenerate-SP.
B1-B: Has your authority adopted the principle that ‘prevention is better than cure’ in determining the balance between structural, preventative and reactive maintenance activities in order to improve the resilience of the highway network and to minimise the occurrence of potholes in the future?

Croydon Council has adopted HMEP’s Pothole Review ‘prevention is better than cure’ approach (Recommendation 6: Prevention is better than cure) in its maintenance strategy. This has been adopted through the investment modelling that Croydon has been carrying out, which looked at Croydon’s carriageways and footways backlog, as well as, necessary steady-state funding and optimised forward works programmes.

To further develop investment modelling and strengthen their approach, Croydon has commissioned Metis Consultants Ltd., to develop further Regenerate-IM (http://www.metisconsultants.co.uk/), which adopts HMEP’s Lifecycle Planning Toolkit to support investment decisions, as well as, the level of funding required. Such an investment was done to help Croydon determine the balance between structural, preventative and reactive maintenance activities in order to improve the resilience of their highway network and minimise the occurrence of potholes in the future. This will also enable Croydon cover more ground with limited budgets.

![Figure 3: Extract of the investment modelling results for B&C roads.](image)

![Figure 4: Extract of the HMEP lifecycle planning toolkit for Croydon.](image)
B1-C: Has your authority ensured that appropriate competencies have been made available to make the right choices when designing and specifying techniques and materials for the maintenance and repair of highways? Note - these competencies can be secured through training, collaboration with neighbouring authorities or external advice.

In the past months, through the South London Highway Asset Management Consortium of which Croydon Council is a member, Metis Consultants Ltd. has been working on maintenance strategies that could be adopted by the group. This work presented the consortium with a clearer picture of where each authority in the group currently stands in terms of their treatment options, unit rates, etc.

Following-on from such work, Croydon together with Metis Consultants Ltd. has investigated further its maintenance strategies to specify the most suitable treatments and materials to be adopted for the repair of highways within Croydon. In accordance with the HMEP’s Pothole Review - Recommendation 7: Informed choices and Recommendation 8: Guidance on materials, this work looks at LoTAG’s London-wide Asphalt Specification and its adoption within Croydon. It endeavours to highlight the most suitable treatment options to be used depending on the different categories of roads within Croydon’s context. Discussions with the term maintenance contractor and the supply-chain are also being held to make sure that longer lasting treatments are adopted and layed to standard.

Going forward, Croydon is aiming to have a maintenance strategy set-up to inform decision-making to a better degree with respect to investment modelling and the development of the annual work programme.
Figure 6: Extract of the South London Highway Asset Management Consortium maintenance strategies charts.

Figure 7: Extract of the comparison of treatments, unit rates and treatment lives for Croydon’s maintenance strategies.

Figure 8: Extract of the decision trees adopted by Croydon to inform their maintenance strategies.
As per HMEP’s Pothole Review - Recommendation 15: Coordinating Streetworks, Croydon Council holds a Streetworks Co-ordination Meeting on a quarterly basis with a number of service utility companies such as, TfL, Thames Water, National Grid and Southern Gas Networks, as well as, neighbouring Boroughs (LB of Merton, LB of Bromley) and major contractors working in Croydon such as Skanska and Morgan Sindall. The main aim of this meeting is to co-ordinate major infrastructure works that will be undertaken by the relevant companies in the short and long term period. Thus, a 3-year programme on the A roads and a 5-year programme on the B,C & U roads is co-ordinated and agreed with the group every year.

Moreover, arising matters from current works are discussed together to agree on a way forward, whilst foreseen issues in upcoming works are flagged and resolved before the commencement of the works on-site. Streetworks performance is also discussed, in particular fixed penalty notices, where all stakeholders involved are evaluated and their works are reviewed.

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B1-D: Does your authority co-ordinate with other parties working on the highway short and long term programmes of work activities for up to four years in advance?

As per HMEP’s Pothole Review - Recommendation 15: Coordinating Streetworks, Croydon Council holds a Streetworks Co-ordination Meeting on a quarterly basis with a number of service utility companies such as, TfL, Thames Water, National Grid and Southern Gas Networks, as well as, neighbouring Boroughs (LB of Merton, LB of Bromley) and major contractors working in Croydon such as Skanska and Morgan Sindall. The main aim of this meeting is to co-ordinate major infrastructure works that will be undertaken by the relevant companies in the short and long term period. Thus, a 3-year programme on the A roads and a 5-year programme on the B,C & U roads is co-ordinated and agreed with the group every year.

Moreover, arising matters from current works are discussed together to agree on a way forward, whilst foreseen issues in upcoming works are flagged and resolved before the commencement of the works on-site. Streetworks performance is also discussed, in particular fixed penalty notices, where all stakeholders involved are evaluated and their works are reviewed.
B1-E: Has your authority considered the guidance provided in the ADEPT report Potholes and Repair Techniques for Local Highways and adopted as appropriate to your local circumstances?

Croydon Council has taken on board the ADEPT Potholes and Repair Techniques for Local Highways guidance document, as well as, HMEP’s Pothole Review – Recommendation 14: Quality of Repairs and Reinstatements twofold. Firstly, through the development of a permanent repairs strategy for potholes once they have formed, and secondly, through the production of an annual carriageway works programme that maintains not only the worst roads (red), but informs on those roads that require sealing before bad weather strikes (amber).

Permanent repairs in Croydon’s reactive maintenance strategy are outlined as those using hot-mix asphalt as a patch repair, rather than the traditional cold-mix pothole fillers. These are split into two categories depending on the number of potholes that are present on the same road section. Where localised potholes are present hot rolled asphalt is used as a patching material which reinstates the carriageway. However, where numerous potholes are present on the same road section, an innovative method of repairing potholes permanently is used - Nu-Phalt. This requires a 6-step process which involves, heating, scarifying, applying rejuvenation spray, laying new material, checking the asphalt temperature, and compacting. Being a thermal road repair system, leaves the patch without joints as it bonds the new patch with the adjacent material, hence, making the system a long term permanent repair. Further details: http://nuphalt.com/.

![Figure 11: Photo of a hot rolled asphalt patch – Drummond Road, Croydon.](image)

![Figure 12: Photo of Nu-Phalt works in process – Coulsdon Road, Croydon.](image)

The annual carriageway works programme in Croydon is based on carriageway condition data collected annually. This condition data is analysed according to engineering defects to UKPMS standards adopting Croydon’s treatment trigger levels. These trigger levels assign the most suitable treatment option based on the recorded defects. In Croydon’s case, these treatment options vary in depth depending on the carriageway condition. These include, 100mm deep plane and inlay, 40mm deep plane and inlay, and 25mm thick micro-asphalt surface dressing inlay or
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overlay depending on the height of the kerb. Then, all the road sections are re-prioritised using Regenerate-SP (http://www.metisconsultants.co.uk/) based on: engineering defects such as pothole frequency, financial spend such as the amount of money that has already been spent in repairing potholes, and the needs of the community such as bus routes and cycle routes. This tool then generates a ranked list of all the road sections within the Borough. This list is then used to inform the carriageway works programme such that the most important road sections are maintained first, whether it needs a deep or a thinner treatment, hence, making Croydon’s road network more resilient and pothole free.

Figure 13: Extract of the treatment trigger levels for Croydon.

Figure 14: Extract of the service measures from Regenerate-SP.
B1-F: Has your authority developed a detailed highway inspection manual and have put appropriate training in place for your Highway Inspectors?

In view of the HMEP's Pothole Review - Recommendation 11: Inspection and Training, Croydon Council has developed a Highways Inspections Manual Procedures document in 2008, which has been updated in July 2013 and is still in its implementation phase. This document together with time and motion studies that Croydon has carried out with external consultants on the highway safety inspectors, will see an interactive facilitated workshop session to understand what the inspectors do and how they do it to be able develop a common approach to all inspections. Together with this, Croydon will be mentoring the highway inspectors and hold self-audit training through regular workshop sessions.

Moreover, Croydon Council has made available funds for training of the highway safety inspectors to improve their competency in the identification and assessment of defects, including potholes. Also, TfL allocates funding under its ongoing Borough Training Programme for local highway authorities to help them train their staff in particular areas related to highways and transport design and management.

B1-G: Does your authority use technology and systems for the effective identification and management of potholes?

In accordance with HEMP's Pothole Review - Recommendation 12: Technology, Croydon Council uses ROCC for the effective identification and management of potholes. This facilitates communication between the highway safety inspectors, who raise task orders, Croydon engineers, who approve the work, and the term maintenance contractor. This system also allows tracking of works and reviewing of past task orders.
Moving forward, Croydon is currently trialling ROCC’s Uniclass mobile software for highways (http://www.rocc.com/mobile.html) to be used by the highway safety inspectors to enable them report road defects on-site as an alternative to the current paper-based system. This will make the identification and management of potholes more efficient and up-to-date.

Figure 16: Extract of Croydon’s ROCC system.

B1-H: Does your authority have a public communications process in place that provides clarity and transparency in the policy and approach to repairing potholes? This should include a published policy and details of its implementation, including the prevention, identification, reporting, tracking and repair of potholes.

Croydon Council has a public communications process in repairing potholes as advised by HMEP’s Pothole Review – Recommendation 3: Public communications. This can be found in: http://www.croydon.gov.uk/transportandstreets/rhps/roads/potholes. This information details the cause of potholes, its identification process, reporting, tracking and repair of defects such as potholes.

B1-I: Does your authority monitor public satisfaction with road, footway and cycleway condition and report annually through the National Highways and Transport Public Satisfaction Survey or their own surveys?

Croydon Council carries out public satisfaction surveys for road, footway and cycleway condition and repair through their term maintenance contractor. As recommended in HMEP’s Pothole Review - Recommendation 2: Public opinion surveys, Croydon uses these findings to benchmark performance with other neighbouring Boroughs in the South London Highway Asset Management Consortium and within London. These results are also used to inform investment needs and maintenance priorities that are then reflected in Croydon’s Highway Asset Management Plan and implementation action plan.
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B1-J: Does your authority adopt permanent repairs as the first choice when repairing potholes?

Croydon has adopted HMEP’s Pothole Review ‘right first time’ approach (Recommendation 10: Permanent repairs policy) in its reactive maintenance strategy. This is achieved by using hot-mix asphalt as a patch repair, rather than the traditional cold-mix pothole filler.

Croydon’s maintenance strategy for pothole repairs is split into two categories depending on the number of potholes that are present on the same road section. Where localised potholes are present hot rolled asphalt is used as a patching material which reinstates the carriageway. However, where numerous potholes are present on the same road section, an innovative method of repairing potholes permanently is used - Nu-Phalt. This requires a 6-step process which involves, heating, scarifying, applying re-juvination spray, laying new material, checking the asphalt temperature, and compacting. Being a thermal road repair system, leaves the patch without joints as it bonds the new patch with the adjacent material, hence, making the system a long term permanent repair. Using specialised equipment, the crew is specifically trained for the job and focusses on just doing patching works. This results in having expert crews repairing Croydon’s potholes to a greater standard, making the network more resilient and pothole free. Further details: http://nuphalt.com/.

Figure 17: Extract of the public satisfaction surveys carried out by the term maintenance contractor.

Figure 18: Photo of a hot rolled asphalt patch – Drummond Road, Croydon.
B1-K: Has your authority adopted dimensional definitions for potholes based on best practice as part of its maintenance policy?

Croydon Council has adopted dimensional definitions for potholes as per the HMEP’s Pothole Review – Recommendation 9: Definition of potholes. This was included as part of Croydon’s Highway Inspections Maintenance Procedures document which has been updated in July 2013 and is still in its implementation phase. In this document, potholes are defined as: ‘Bumps and depressions of 40mm or greater on the carriageway’. This will enable the highway safety inspectors to trigger relevant treatment options and ensure that permanent patching is carried out as the preferred approach.

B2: Does your authority adopt any innovative methods to help repair potholes? This could include, for example, specialist pothole maintenance crews.

Croydon has adopted HMEP’s Pothole Review ‘right first time’ approach in its reactive maintenance strategy. This is achieved by adopting an innovative method of repairing potholes...
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permanently. Croydon uses Nu-Phalt as a permanent pothole repair system. A 6-step process is undertaken which involves, heating, scarifying, applying re-juvination spray, laying new material, checking the asphalt temperature, and compacting. Being a thermal road repair system, leaves the patch without joints as it bonds the new patch with the adjacent material, hence, making the system a long term permanent repair. Using specialised equipment, the crew is specifically trained for the job and focusses on just doing patching works. This results in having expert crews repairing Croydon’s potholes to a greater standard, making the network more resilient and pothole free.


**TONY WHYATT – HIGHWAYS ENGINEER**

*I’m really optimistic about how this will save us time and money. We reuse most of the existing road material on-site and need to add only a small amount of fresh material to each repair.*

*There’s no noisy compressors, and the system cuts the number of vehicles and staff involved in each repair. We also minimise disruption to traffic – which is good for drivers – and these repairs can be driven over again almost immediately they’re finished.*

Read our Croydon case study

Figure 21: Extract of Croydon’s testimonial for Nu-Phalt - [http://nuphalt.com/credentials/client-testimonials/](http://nuphalt.com/credentials/client-testimonials/).

**B3: Does your authority use reporting tools to identify potholes in your local area?**

Croydon Council uses CTC Fill that Hole as part of its suit of reporting tools that can be used by the general public to report defects such as potholes identified within Croydon ([http://www.fillthathole.org.uk/authority/croydon](http://www.fillthathole.org.uk/authority/croydon)). Defects reported through this web application are directly reported to Croydon’s highway maintenance team, where the highway safety inspectors will then investigate further the logged-report and will revert back to both the customer and the highways team with a way forward.

Croydon Council has its own web-reporting tool which can be accessed through the Council’s website ([http://www.croydon.gov.uk/transportandstreets/rhps/roads/potholes](http://www.croydon.gov.uk/transportandstreets/rhps/roads/potholes)). Defects such as potholes that are logged on this system are forwarded directly to the highway maintenance team, where the highway safety inspectors will then investigate further the logged-report and will revert back to both the customer and the highways team with a way forward.

In addition, Croydon has created ‘My Croydon’, a mobile application that can be downloaded on various mobile platforms by the general public and used remotely when necessary ([http://www.croydon.gov.uk/transportandstreets/rhps/roads/potholes](http://www.croydon.gov.uk/transportandstreets/rhps/roads/potholes)).

Moreover, Croydon uses other traditional reporting tools through the Contact Centre, where pothole reports can be logged in by phone or by email through to the Contact Centre ([http://www.croydon.gov.uk/transportandstreets/rhps/highwayres](http://www.croydon.gov.uk/transportandstreets/rhps/highwayres)). Such reports will be then forwarded to the highway maintenance team, where the highway safety inspectors will then investigate further the logged-report and will revert back to both the Contact Centre and the highways team with a way forward.

Another reporting tool that will be widely used is the highway safety inspector’s mobile working devices. Croydon is currently trialling ROCC’s Uniclass mobile software for highways ([http://www.rocc.com/mobile.html](http://www.rocc.com/mobile.html)) to be used by the highway safety inspectors to enable them report road defects on-site as an alternative to the current paper-based system.
B4: Does your authority regularly consult and seek feedback on its highways maintenance regime, including potholes, with key stakeholders?

Croydon Council has developed its highway asset management plan (HAMP) in accordance with HMEP’s Highway Infrastructure Asset Management Guidance document. Hence, every section in the HAMP has been discussed with relevant internal and/or external stakeholders to inform the contents, as well as, the strategy and the implementation action plan. An example of this was the performance management section within the HAMP. As the HMEP’s Highway Infrastructure Asset Management Guidance – Section 7: Setting and measuring performance recommends, levels of service were discussed in depth with Croydon’s engineers, insurers, local members and targeted community groups. Together, short and long term targets were set to be achieved for all highway assets, outlining the level of risk involved in each.

Furthermore, investment modelling exercises carried out in the past years, which looked at Croydon’s carriageways and footways backlog, as well as, necessary steady-state funding and optimised forward works programmes, also required substantial consultation. Investment modelling strategies and results where discussed and communicated with Croydon’s committee members, Councillors and local members. This enabled the Council to understand the importance of funding highway maintenance, which reflected in the budget increase the authority’s highway maintenance pot had the following year.

Likewise, together with consultant expertise, Croydon has been working on its maintenance strategies. It endeavours to highlight the most suitable treatment options to be used depending on the different categories of road within Croydon’s context. Discussions with Croydon’s engineers and the term maintenance contractor and its supply-chain are currently being held to make sure that longer lasting treatments are adopted and layed to standard.

Figure 22: Extract of the Budget Reduction Impact business case presented to the Council in August 2012.
Moreover, Croydon has been consulting the general public on highway maintenance as per HMEP’s Pothole Review - Recommendation 3: Public communications through various other routes such as the Mobility Forum (http://www.croydon.gov.uk/healthsocial/userinvolvement/cmf/cmf), the Disability Forum, Neighbourhood consultation meetings, and the Croydon Business Improvement District (http://croydonbid.com/). These consultations inform various work such as the Local Implementation Plan and Equality Assessments for a number of projects, as well as, Croydon’s annual carriageway and footway maintenance programme. The latter is done through Regenerate-SP (http://www.metisconsultants.co.uk/) which prioritises road sections on the needs of the community such as bus routes, cycle routes, roads with traffic generators, etc.

Figure 23: Extract of Regenerate-SP consultation survey for the annual carriageway maintenance programme.

All such work is being fed back in the HAMP where at the end of every financial year, a Croydon state of the highway report will be produced from this to show key stakeholders, Councillors and the general community the progress that Croydon’s highway authority has made by adopting asset management principles, as well as, outlining areas where more attention will be given in subsequent years.

In addition to the above key stakeholders, the emergency services are also consulted on a regular basis for traffic management issues on various major projects, as well as, on emergency issues such as heavy rainfall and major flooding as those in March 2014.

BS5: Does your authority have an up-to-date vision and action plan to improve the walking environment and encourage walking?

In Croydon’s document, ‘We are Croydon; this is our vision’, the Council presents 6 objectives for Croydon by 2040, one of which being ‘A Connected City – a place defined by its connectivity and permeability, with one of the best digital, communications and transport networks in the country.’ This vision will be exploring connectivity on various levels, from walking and cycling through to international connectivity via Gatwick airport.

With particular reference to the walking environment, Croydon envisages to have an integrated network of safe walkways and cycle paths which will connect residents to the Borough’s public transport hubs and expanse of open and green spaces - encouraging some of the highest levels of cycling and walking in the capital.
In order to achieve this vision, Croydon has implemented the ‘Connected Croydon Programme’ which was started in 2012 and is envisaged to last through 2015. Connected Croydon is a programme of co-ordinated public realm projects and transport improvements that will transform Croydon metropolitan Centre and places across the Borough into more walkable and liveable places through investment in their streets, squares and spaces. Connected Croydon will create an attractive environment that will secure inward investment and establish the right conditions for a growing residential community, as well as, for those who work in and visit Croydon.

Further details: 

**B6: Please explain how you deliver your duty under NRSWA to ‘co-ordinate the execution of works of all kinds’, including for example permit schemes, noticing, co-ordination meetings?**

In line with the requirements of NRSWA (1991) under Section 59, Croydon Council upholds its duty to coordinate all works on the highway and under Section 60, statutory undertakers co-operate with the Council when they are managing and planning works on the highway. Further co-ordination of works takes place under Section 50, where Croydon issues licences to third parties to maintain and place new apparatus on the highway network. In furtherance of co-ordination, Croydon holds in-depth quarterly co-ordinations meetings with the relevant service utility companies where reports are tabulated to indicate potential conflicts and present performance monitoring data. Section 53 of the same act – Keeping a street register, has also been adopted. The street register has been upgraded many times and Croydon has risen to the challenge of each successive upgrade by meeting the deadlines set, the latest being the Electronic Transfer of Notifications version 6 (EToN 6).

Notwithstanding, in the early part of 2000 the existing NRSWA (1991) was reviewed and found that in its current form it was unable to meet the demands of present day needs and secondary legislation was required. In 2004, the Traffic Management Act (2004) was enacted. The mainspring of the act was to improve the performance of the road network and how it was being designed and used.

Through the use of primary and secondary legislation, Croydon is in a better position to co-ordinate and plan service utility work, its own work and other highway activity to minimise disruption on the network.

Part 2 of the Traffic Management Act (2004) also sets out the Network Management Duty (NMD) and makes it incumbent on all local authorities to expedite the movement of all vehicles, including pedestrians and cyclists on its network and the network of others. Co-ordination and planning is key to the successful adoption of the NMD.

Part 3 of the same Act details further Permit Scheme. Croydon adopted the Permit Scheme in 2010 and it has proved a valuable tool for co-ordinating works on the highway and has assisted in the Council in delivering its NMD. 100% of all permits received are evaluated and where traffic management is required Croydon’s team of Network Management officers attend pre-site meetings to discuss temporary traffic management measures that will reduce disruption on the network. They also make decisions on the timing of works or actively encourage collaboration of various
work promoters to reduce the time spent on the highway. Through the use of conditions, the Streetworks team can tighten working sites to ones that reflect a safer site for vulnerable users and better traffic management at the site.

Part 4 of the Traffic Management Act (2004) deals with Streetworks. Fixed Penalty Notices (FPN) and increase in other charges have given the Council the ability to penalise underperforming service utilities and challenge working practices. This work is undertaken by Croydon’s Highways Safety Inspectors who endeavour to reduce the number of overstays on the highway and promote safer work sites. Through the use of FPNs, the Streetworks team tries to achieve a robust street register that reflects actual works taking place on the Croydon network to enhance co-ordination and planning of all works promoters.

Part 5 of the same Act looks at the Highways and Roads. This stipulates that any works on the Strategic Road Network (SRN) or those effecting the TfL’s road network, are required to advise TfL’s forwarding planning team by a TMAN via Londonworks. To meet this requirement, Croydon’s engineers submit notifications for works which include bridge works, carriageway resurfacing works, network improvements and regeneration projects.

**B7: What actions does your authority take to ensure road repairs undertaken by other parties (such as utilities companies) meet the standards in the specification?**

Apart from Inspection regimes, Scoring programmes, Performance bench-marking and Meetings, Croydon Council is currently implementing a more robust procedure to monitor service utility works and bring them in line with statutory undertakers as specified in Section 50 – licences of the NRSWA (1991). Moreover, Croydon is currently implementing a coring programme which checks sites to ensure road repairs undertaken by third parties meet the standards specified. The failure of such tests would require the contractor to carry out remedial works at his own expense.
Section C – Asset Management

C1-A: Has your authority got an up to date asset management policy and strategy?

Croydon Council adopted a highway asset management plan (HAMP) in July 2013, which takes into account recommendations from the HMEP’s Highway Infrastructure Asset Management Guidance document.

This year, Croydon Council will be reviewing its HAMP in accordance with the recently developed modular HAMP by the South London Highway Asset Management Consortium, which Croydon is part of. This will enable Croydon to directly compare itself with neighbouring authorities, learn and adopt best practices. Moreover, this will enable Croydon to align its asset management practices with the recently published ISO 55000.


C1-B: Does your authority communicate relevant information associated with asset management through engagement with your relevant stakeholders when you set requirements, make decisions and report performance?

Croydon Council has developed its highway asset management plan (HAMP) in accordance with HMEP’s Highway Infrastructure Asset Management Guidance document. Hence, every section in the HAMP has been discussed with relevant internal and/or external stakeholders to inform the contents, as well as, the strategy and the implementation action plan. An example of this was the performance management section within the HAMP. As the HMEP’s Highway Infrastructure Asset Management Guidance – Section 7: Setting and measuring performance recommends, levels of service were discussed in depth with Croydon’s engineers, insurers, local members and targeted community groups. Together, short and long term target were set to be achieved for all highway assets, outlining the level of risk involved in each.

Furthermore, investment modelling exercises carried out in the past years, which looked at Croydon’s carriageways and footways backlog, as well as, necessary steady-state funding and optimised forward works programmes, also required substantial consultation. Investment modelling strategies and results where discussed and communicated with Croydon’s committee members, Councillors and local members. This enabled the Council to understand the importance of funding highway maintenance, which reflected in the budget increase the authority’s highway maintenance pot had the following year.
Likewise, together with consultant expertise, Croydon has been working on its maintenance strategies. It endeavours to highlight the most suitable treatment options to be used depending on the different categories of road within Croydon’s context. Discussions with Croydon’s engineers and the term maintenance contractor and its supply-chain are currently being held to make sure that longer lasting treatments are adopted and layed to standard.

Figure 24: Extract of the Budget Reduction Impact business case presented to the Council in August 2012.

Figure 25: Extract of the comparison of treatments, unit rates and treatment lives for Croydon’s maintenance strategies.
Figure 26: Extract of the decision trees adopted by Croydon to inform their maintenance strategies.

All such work is being fed back in the HAMP where at the end of every financial year, a Croydon state of the highway report will be produced from this to show key stakeholders, Councillors and the general community the progress that Croydon’s highway authority has made by adopting asset management principles, as well as, outlining areas where more attention will be given in subsequent years.

C1-C: Does your authority have an asset management register?

As HMEP’s Highway Infrastructure Asset Management Guidance – Section 8: Asset data recommends, Croydon Council has asset registers for the different highway assets to support the approach to asset management. This provides the basis for informed decision-making in Croydon, as well as, inform the assessment and management of risk being held.

Croydon’s highway asset management plan (HAMP) includes all primary data such as asset group, asset type, quantity, size, etc. all in one location. Then further details for each asset group are stored in other systems as necessary.
Carriageways & Footways – Detailed asset data can be found in Croydon’s national street gazetteer (http://www.croydon.gov.uk/transportandstreets/rhps/gazetteer), which shows the adopted and un-adopted roads in Croydon together with their lengths and postcode, and Croydon’s own GIS system which is presented into road sections. The latter also houses any condition data that is collected annually such as SCRIM, DVI and accident locations.

![Figure 28: Extract of Croydon’s carriageway data from the GIS system.](image)

Structures – Detailed asset data can be found in BridgeStation, a web-based shared platform developed by LoBEG for all London Boroughs. This houses all inventory data, records inspections and assessment results, as well as, stores all the relevant documents and photographs in one place. Further details: http://www.bridgestation.co.uk/.

Drainage – Detailed asset data can be found in Croydon’s own GIS system and FloodStation. The former stores various flooding maps, gully locations and reservoirs, whilst the latter is a web-based shared platform developed by LoDEG for all London Boroughs. This houses all inventory data, flooding areas and condition / cleansing data available. This also enables Croydon to record where flooding has occurred in the past. Further details: https://www.floodstation.co.uk/lodeg/. Moreover, as part of their gully cleansing programme, Croydon’s cleansing contractor uses Kaarbontech as a gully asset register. Further details: http://kaarbontech.co.uk/.

Street Lighting – Detailed asset data can be found in Croydon’s own GIS system and Skanska’s street lighting asset register. The former stores the asset types point data, whilst the latter shows further details as to what components are used at every location.

![Figure 29: Extract of Croydon’s street lighting data from the GIS system.](image)
C1-D: Does your authority follow lifecycle planning principles which are used to review the level of funding and which will help support investment decisions including long term investment in your assets?

In 2011, Croydon Council carried out a major investment modelling exercise using Viagroup’s dTIMS software and analysed Croydon’s carriageways and footways backlog, as well as, necessary steady-state funding and optimised forward works programmes. The exercise was of great success for Croydon as it supported highway funding business cases for local member, which ended up doubling the authority’s highway maintenance budget.

![Figure 30: Extract of Investment modelling charts using dTIMS software.](image)

Now, in accordance with HMEP’s Highway Infrastructure Asset Management Guidance – Section 9: Lifecycle planning, as well as, the Pothole Review - Recommendation 6: Prevention is better than cure, Croydon Council has commissioned Metis Consultants Ltd. to further develop investment modelling, which adopts HMEP’s Lifecycle Planning Toolkit to support investment decisions, together with, the levels of funding required.

Such an investment was done to help Croydon determine the balance between structural, preventative and reactive maintenance activities in order to improve the resilience of the highway network and minimise the occurrence of potholes in the future. This will also enable Croydon support decision-making, the case for investing in maintenance activities and demonstrate the impact of different funding scenarios, cover more ground with limited budgets (do more with less). This data was captured in Croydon’s highway asset management plan to inform and support future business cases, which will in turn give them access to more highway funding.
Furthermore, in the past 6 months, Croydon Council together with consultant expertise has been working on its maintenance strategies. In accordance with HMEP’s Highway Infrastructure Asset Management Guidance – Section 9: Lifecycle planning, as well as, the Pothole Review - Recommendation 7: Informed choices, and Recommendation 8: Guidance on materials, this work looks at LoTAG’s London-wide Asphalt Specification and its adoption within Croydon. It endeavours to highlight the most suitable treatment options to be used depending on the different categories of road within Croydon’s context. Discussions with the term maintenance contractor are also being held to make sure that longer lasting treatments are adopted and layed to standard. This work is also being carried out to feedback into the investment modelling exercise carried out to identify long term investment for highway infrastructure assets and determine the level of investment required to achieve the required performance.
C2: As part of your last L-Pack return for Whole Government Accounting requirements for the accounting period 2012/13, can you confirm you submitted the following return:

**Figure 33: Extract of the comparison of treatments, unit rates and treatment lives for Croydon’s maintenance strategies.**

**Figure 34: Extract of Croydon’s L-pack return for 2012/13.**
D1: Is your authority actively engaged with securing efficiencies for highways maintenance?

Croydon Council has been for the past years working towards securing efficiencies for highway maintenance within various streams of work. As per HMEP’s Pothole Review – Recommendation 4: Economic benefits of highway maintenance, Croydon has been evaluating and justifying the need for investment in maintenance of the local highway network through the re-procurement of their term maintenance contract, as well as, by establishing an asset management approach towards highway maintenance, and combining up highway inspection work.

Through the re-procurement of their term maintenance contract, which started in October 2011, Croydon have obtained around 1% savings on the overall price compared to the previous contract. This saving will allow the authority to reinvest the saving and undertake more routine maintenance works on the highway which will have a positive impact on road users and residents of the Borough.

As per HMEP’s Highways – Maintaining a vital asset document, Croydon has taken an asset management approach towards maintaining their highways. By undertaking an asset management maturity assessment based on the IAM’s BSi PAS-55, Croydon have been reviewing their progress in asset management and implementing an action plan year-on-year to tackle areas which needed further work to ensure efficiencies are secured.

Following on, Croydon have made around 10% efficiency savings by adopting a highway asset management plan (HAMP), which takes into account recommendations from the HMEP’s Highway Infrastructure Asset Management Guidance document. This enabled Croydon to focus on the right approach, whilst generating such efficiencies. This year, Croydon will be reviewing its HAMP and updating it in accordance with the recently developed modular HAMP by the South London Highway Asset Management Consortium, which Croydon is part of. This will enable Croydon to directly compare itself with neighbouring authorities, learn and adopt best practices. Moreover, this will enable Croydon to align its asset management practices with the recently published ISO 55000 with the aim of seeking more efficiencies within the highways section.

As per HMEP’s Pothole Review – Recommendation 4: Economic benefits of highway maintenance, Croydon has also been evaluating and justifying the need for investment in maintenance of the local highway network through investment modelling exercises using different tools, from complex optimisation software – dTIMS, to the less complex toolkits - HMEP’s Lifecycle Planning Toolkit and Metis’ Regenerate-IM. Such work has helped Croydon to increase their budget by 100% in the last 3 years. Moreover, has this work has determined the balance between structural, preventative and reactive maintenance activities in order to improve the resilience of the highway network and minimise the occurrence of potholes in the future. Going forward, this will enable Croydon securing more highway maintenance efficiencies by covering more ground with limited budgets (do more for less).

Furthermore, Croydon together with consultant expertise has been working on Croydon’s maintenance strategies. In accordance with the Pothole Review - Recommendation 7: Informed choices and Recommendation 8: Guidance on materials, this work looks at LoTAG’s London-wide Asphalt Specification and its adoption within Croydon. It endeavours to highlight the most suitable treatment options to be used depending on the different categories of road within Croydon’s context. Discussions with the term maintenance contractor are also being held to make sure that longer lasting treatments are adopted and layed to standard. This work is also being carried out to
secure further efficiencies within highway maintenance, whilst making Croydon’s highway maintenance budgets go further.

By exploring innovative products in the highways industry as part of establishing Croydon’s maintenance strategies, Croydon has secured around **20% efficiency savings** in adopting cheaper treatments, which help Croydon engineers treat more roads with less money. This was achieved by taking on board HMEP’s Pothole Review - Recommendation 17: Research and innovation and, together with their term maintenance contractor and their supply-chain, has trialling a number of specialised products such as Bardon’s Superflex, Safepave and Supreme to rectify reoccurring problems in the network. This increased Croydon’s palette of materials targeting specific problems in the network and resulted in further efficiencies by eliminating reoccurring defects and adopting a ‘right first time’ approach.

In addition, Croydon has adopted HMEP’s Pothole Review ‘right first time’ approach (Recommendation 10: Permanent repairs policy) in its reactive maintenance strategy, which further helps in securing efficiencies in highway maintenance. This is achieved by adopting an innovative method of repairing potholes permanently. Croydon uses Nu-Phalt as a permanent pothole repair system. A 6-step process is undertaken which involves, heating, scarifying, applying re-juvination spray, laying new material, checking the asphalt temperature, and compacting. Being a thermal road repair system, leaves the patch without joints as it bonds the new patch with the adjacent material, hence, making the system a long term permanent repair. Using specialised equipment, the crew is specifically trained for the job and focusses on just doing patching works. This results in having expert crews repairing Croydon’s potholes to a greater standard, making the network more resilient and pothole free. Further details: [http://nuphalt.com/](http://nuphalt.com/).

Croydon have also made circa **20% efficiency savings** brought by combining their highway safety inspection work with their NRSW inspections under one team of inspectors. This consolidation of work enables the inspectors to focus on generating more revenue for Croydon, whilst monitoring streetworks to a better standard.

Therefore, by the end of 2014/15, Croydon is aiming to have achieved around 1% savings on the overall price of the term maintenance contract, circa 10% savings in adopting an asset management approach, a 100% budget increase since their business case for highway investment, a 20% efficiency savings in innovations, practices and materials delivered by the contractor, as well as, 20% savings by combining highway inspection work.

**D2: Is your authority exploring or has it already joined with neighbouring local highway authorities or a Highways Maintenance Alliance to achieve economies of scale?**

Croydon Council has joined with neighbouring local highway authorities to achieve economies of scale on a number of initiatives. These are presented below.

**The Croydon & Lewisham Street Lighting PFI** – Croydon Council has teamed up with the London Borough of Lewisham to replace their street lighting stock. Together with Skanska, as the contractor, the joint working team aims to replace the aging street lighting elements over a 5-year core investment programme (2011-2016). This collaboration between the two Boroughs enabled them to keep contractual prices low, as well as, better manage the contract.

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The South London Highway Asset Management Consortium – Eight South London Boroughs namely, LB of Bexley, LB of Bromley, LB of Croydon, LB of Greenwich, LB of Kingston, LB of Lewisham, LB of Merton and LB of Sutton collaborate together in improving their asset management processes, as well as sharing best practices within the highway realm. Working in such a group gives them access to asset management expertise from Metis Consultants Ltd., being the facilitators of quarterly workshops. In addition, Metis acts as a link and feeds back to various groups such as the Highway Maintenance Efficiency Programme (HMEP), the Chartered Institute of Public Finance and Accountancy (CIPFA) and the All Party Parliamentary Group (APPG) on Highway Maintenance on behalf of this consortium.

Figure 35: Extract of the South London Highway Asset Management Consortium minutes of meeting.

D3: Is your authority sharing its efficiency experience and/or case studies with other local highway authorities via the Highways Maintenance Efficiency Programme or other good practice networks?

Croydon Council is an active member of a number of forums, groups and committees tackling highway maintenance and asset management, which enables Croydon to support, coordinate, contribute and disseminate research on all aspects of highway maintenance operations, in particular pothole prevention. Such groups also promote innovation from available research and may continue to provide opportunities for improvement of highway management and operations. These are carried out in accordance with the Pothole Review – Recommendation 17: Research and innovation.

Further details of the various groups Croydon contributes in are given below.

The South London Highway Asset Management Consortium – Eight South London Boroughs namely, LB of Bexley, LB of Bromley, LB of Croydon, LB of Greenwich, LB of Kingston, LB of
Lewisham, LB of Merton and LB of Sutton collaborate together in improving their asset management processes, as well as sharing best practices within the highway realm. Working in such a group gives them access to asset management expertise from Metis Consultants Ltd., being the facilitators of quarterly workshops. In addition, Metis acts as a link and feeds back to various groups such as the Highway Maintenance Efficiency Programme (HMEP), the Chartered Institute of Public Finance and Accountancy (CIPFA) and the All Party Parliamentary Group (APPG) on Highway Maintenance on behalf of this consortium.

**London Technical Advisers Group (LoTAG)** – Croydon Council is an active member within LoTAG. Meeting on a quarterly basis, LoTAG maintains a technical network for local government professionals like those at Croydon in the highway and transport fields. It provides a centre for professional advice and assistance for local policy development and service delivery on a London wide basis.


**London Bridges Engineering Group (LoBEG)** – Croydon Council is represented on LoBEG’s executive committee which works on matters of bridge engineering London-wide with the objective of promoting best practice within the profession. Also the exchange of information and experience of bridge engineering matters is encouraged.

Further details: [http://www.lobeg.com/](http://www.lobeg.com/)

**London Drainage Engineering Group (LoDEG)** – Being part of LoDEG, Croydon Council works with other London Boroughs towards highway drainage issues and current matters. This London technical advisors drainage group works toward sharing best practice.

**Drain London Forum** – As one of the Lead Local Flood Authorities for London, Croydon Council has the responsibility for managing flood risk from surface water, groundwater and watercourses. Through this forum, Croydon works together with neighbouring Boroughs towards developing Surface Water Management Plans for London.

Further details: [https://www.london.gov.uk/priorities/environment/looking-after-londons-water/drain-london](https://www.london.gov.uk/priorities/environment/looking-after-londons-water/drain-london)

**South West London Strategic Flood Group** – Croydon Council is part of an alliance with 5 other neighbouring Boroughs working together to deliver flood risk management duties. This is a sub-group from the Drain London Forum and its main function is of having a joint procurement in delivering the Flood and Water Management Act (2010).
**E1: Please provide details on which of the following good practice activities your authority is undertaking for its highways management activities.**

**Invest to Save** – Since 2011 Croydon Council has been carrying out investment modelling which looked at Croydon’s carriageways and footways backlog, as well as, necessary steady-state funding and optimised forward works programmes.

Now, in accordance with the Pothole Review - Recommendation 6: Prevention is better than cure, Croydon has commissioned Metis Consultants Ltd. to further develop investment modelling, which adopts HMEP’s Lifecycle Planning Toolkit to support investment decisions, as well as, the level of funding required. Such an investment was done to help Croydon determine the balance between structural, preventative and reactive maintenance activities in order to improve the resilience of the highway network and minimise the occurrence of potholes in the future. This will also enable Croydon cover more ground with limited budgets.

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**Carriageway Lifecycle Planning Toolkit**

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*Figure 36: Extract of the HMEP lifecycle planning toolkit for Croydon.*

*Figure 37: Extract of Regenerate-IM results.*

Furthermore, in the past 6 months, Croydon together with consultant expertise has been working on its maintenance strategies. In accordance with the HMEP’s Pothole Review - Recommendation 7: Informed choices and Recommendation 8: Guidance on materials, this work looks at LoTAG’s London-wide Asphalt Specification and its adoption within Croydon. It endeavours to highlight the
most suitable treatment options to be used depending on the different categories of road within Croydon’s context. Discussions with the term maintenance contractor are also being held to make sure that longer lasting treatments are adopted and layed to standard. This work is also being carried out as an ‘Invest to Save’ measure to make Croydon’s highway maintenance budgets go further.

Figure 38: Extract of the comparison of treatments, unit rates and treatment lives for Croydon’s maintenance strategies.

Figure 39: Extract of the decision trees adopted by Croydon to inform their maintenance strategies.

Invest to Save & Cross boundary collaboration – The London Boroughs of Croydon and Lewisham have teamed up in a joint street lighting procurement project entitled: ‘The Croydon & Lewisham Street Lighting PFI’. Together with Skanska, as the contractor, the joint working team aims to replace the aging street lighting stock of both London Boroughs over a 5-year core investment programme (2011-2016). This project aims to:

- Improve efficiency, including energy saving and reduce carbon emissions,
- Improve overall safety,
- Provides a better living and working environment,
- Provides value for money,
- Improve street lighting standards,
- Reduce crime and the fear of crime, and
- Support the night-time economy.
Other – Since 2010 a group of eight South London Boroughs, including Croydon, have formed the South London Highway Asset Management (SLHAM) Consortium: LB of Bexley, LB of Bromley, LB of Croydon, LB of Greenwich, LB of Kingston, LB of Lewisham, LB of Merton and LB of Sutton. The consortium, facilitated by Metis Consultants Ltd., works towards and shares asset management best practice in highway maintenance. The consortium explores common asset management themes that are relevant for the group members such as, highway asset valuation, the highway asset management plan, highway maintenance policies and strategies, as well as, keeping abreast with current asset management practices, documents and guidance published by prominent groups (e.g. HMEP, CIPFA, UKRLG). In addition, Metis acts as a link and feeds back to various groups such as the Highway Maintenance Efficiency Programme (HMEP), the Chartered Institute of Public Finance and Accountancy (CIPFA) and the All Party Parliamentary Group (APPG) on Highway Maintenance on behalf of this consortium.

E2: Do you consider your authority to be an exemplar authority in tackling potholes and undertaking highway maintenance?

Croydon Council considers itself to be an exemplar authority in tackling potholes and undertaking highway maintenance. This is evidenced through the way Croydon carries out the various highway activities, engages with key stakeholders and collaborates with the contractors, the supply-chain and neighbouring Boroughs.

Moreover, to further demonstrate how exemplar Croydon is in tackling potholes and undertaking highway maintenance, one has to also consider the successes Croydon achieved when managing its road network accordingly, through their increase in the maintenance budget and the improvement of the principal road network. Brief examples of these are presented below.

Maintenance strategies development work in Croydon – This aims to identify the most suitable treatment options to be adopted within the Borough considering the defects present, traffic volumes through the highway hierarchy, the materials available, and the unit rates set in their term maintenance contract in light of best practice from neighbouring Boroughs.

This work initiated through the South London Highway Asset Management Consortium of which Croydon is a member, together with Metis Consultants Ltd. which has been working on maintenance strategies that could be adopted by the group. This work presented the consortium with a clearer picture of where each authority in the group currently stands in terms of their treatment options, unit rates, etc.

Following-on from such work, Croydon together with Metis Consultants Ltd. has investigated further its maintenance strategies to specify the most suitable treatments and materials to be adopted for the repair of highways within Croydon. In accordance with the HMEP’s Pothole Review - Recommendation 7: Informed choices and Recommendation 8: Guidance on materials, this work looks at LoTAG’s London-wide Asphalt Specification and its adoption within Croydon. It endeavours to highlight the most suitable treatment options to be used depending on the different categories of roads within Croydon’s context. Discussions with the term maintenance contractor and the supply-chain are also being held to make sure that longer lasting treatments are adopted and layed to standard.

Going forward, Croydon is aiming to have a maintenance strategy set-up to inform decision-making to a better degree with respect to investment modelling and the development of the annual works programme.
Permanent pothole repairs - Croydon has adopted HMEP’s Pothole Review ‘right first time’ approach in its reactive maintenance strategy. This is achieved by adopting an innovative method of repairing potholes permanently. Croydon uses Nu-Phalt as a permanent pothole repair system.
A 6-step process is undertaken which involves, heating, scarifying, applying rejuvenation spray, laying new material, checking the asphalt temperature, and compacting. Being a thermal road repair system, leaves the patch without joints as it bonds the new patch with the adjacent material, hence, making the system a long term permanent repair. Using specialised equipment, the crew is specifically trained for the job and focusses on just doing patching works. This results in having expert crews repairing Croydon’s potholes to a greater standard, making the network more resilient and pothole free.


**TONY WHYATT – HIGHWAYS ENGINEER**

“I’m really optimistic about how this will save us time and money. We reuse most of the existing road material on-site and need to add only a small amount of fresh material to each repair.

“There’s no noisy compressors, and the system cuts the number of vehicles and staff involved in each repair. We also minimise disruption to traffic – which is good for drivers – and these repairs can be driven over again almost immediately they’re finished.”

Read our Croydon case study

Figure 43: Extract of Croydon’s testimonial for Nu-Phalt - [http://nuphalt.com/credentials/client-testimonials/](http://nuphalt.com/credentials/client-testimonials/).

**Collaboration with the term maintenance contractor** – Croydon’s maintenance contractor together with Croydon have obtained the BS 11000-2010 certificate to Collaborative Business Relationship. This ensures that both parties collaborate together to maintain Croydon’s road network in a state of good repair, pothole free and safe to road users. This collaboration is important in highway maintenance as it reduces traffic disruptions, highlights project variations through early consultation and keeps public money spend low.

Figure 44: Extract of the Collaborative Business Relationships certificate - BS 1000-2010.
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**Increase in maintenance budgets** – Croydon has managed to secure a good portion of its maintenance budget through investment modelling exercises carried out in the past years. These looked at Croydon’s carriageways and footways backlog, as well as, necessary steady-state funding and optimised forward works programmes. Investment modelling strategies and results where discussed and communicated with Croydon’s committee members, Councillors and local members. This enabled the Council to understand the importance of funding highway maintenance, which reflected in the budget increase the authority’s highway maintenance pot had the following year.

![Figure 45: Extract of the Budget Reduction Impact business case presented to the Council in August 2012.](image)

**Improvement in the principal road network performance indicators** – Through the adoption of good asset management principles in highway maintenance, enabled Croydon to improve their principal road network condition from 12% in 2005 to 9% in 2013. This ranks Croydon 10th when comparing itself with other London Boroughs.

![Figure 46: Extract of Croydon's performance indicators - NI 130-1 for years 2005 to 2013.](image)