



Environment Committee

8 March 2022

Title Highway Material Palette

Report of Chairman of Environment Committee

Wards All

Status Public

Urgent No

Key No

Enclosures None

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Summary

This report seeks the Committees approval for the introduction of an innovative Highway Material Palette for use in the delivery of the Councils reactive and planned maintenance programmes from 1 April 2022.

The Councils Sustainability Strategy Framework notes that the Council's supply chain makes up the largest contribution to the Council's carbon emissions, in particular the construction supply chain is a significant contributor. The Highways service form's part of this supply chain.

In collaboration with Tarmac Kier JV officers have identified that the implementation of a coherent and consistent Highway Material Palette will not only support the Council in its sustainability objectives, in addition through a 'whole life' approach drive efficiency in the operation, providing the Council with ongoing value for money as well as reduction in CO2e carbon emissions and increasing the use of recycled materials.

Subject to Committee approval of the recommendations, officers will implement the Highway Material Palette aligned to the NRP and CIL programme commencing 1 April 2022 with aligned reporting in relation to CO2e reduction and operational efficiency.

In addition, there will be an opportunity to show case the approach taken by the Council, in collaboration with Tarmac Kier JV, given that the London Borough of Barnet will be the first London Council to work with them in the implementation of a holistic Highway Material Palette approach with sustainability objectives at its heart.

Officers Recommendations

- 1. That the Committee considers and agrees to the introduction of a Highway Material Palette as defined in this report for use in the delivery of the Councils Reactive and Planned Maintenance activities including the NRP and CIL programme from 1 April 2022.**

1. WHY THIS REPORT IS NEEDED

- 1.1 The Councils Sustainability Strategy Framework, as approved by the Policy & Resources Committee on 9 December 2021, noted that through the undertaking of a carbon baseline exercise that the Council's supply chain makes up the largest contribution to the Council's carbon emissions. The baseline data assessed that 37% of the Council's supply chain emissions related to construction.
- 1.2 The Highways service form's part of the construction supply chain through the delivery of both reactive and planned maintenance programmes including the Network Recovery Plan (NRP) and Community Infrastructure Levy (CIL) work programme as approved at the Committee on 13 January 2022.
- 1.3 The Councils Highways Service uses on average 15,000 tonnes of asphalt-based products in a typical year, with the approved NRP and CIL work programme likely to increase this to 25,000 tonnes in 2022/23 financial year.
- 1.4 In collaboration with Tarmac, a company specialising in the production of highway materials (forming one part of Tarmac Kier JV) officers have identified the benefits of implementing a Highway Material Palette. The view is that the implementation of a coherent and consistent Highway Material Palette will not only support the Council in its sustainability objectives, in addition through a 'whole life' approach drive efficiency in the operation, providing the Council with ongoing value for money as well as reduction in carbon emissions and increased use of recycled materials.

2. REASONS FOR RECOMMENDATIONS

- 2.1 As the Environment Committee meeting of 18 January 2021, the Committee authorised the award of a contract for the replacement Highways Term Maintenance Contract through the Transport for London (TfL) Highway Maintenance and Projects Framework (HMPF) by way of a Call Off Contract arrangement to the North Area Contractor, Tarmac Kier JV with the contract commencing 1 April 2021.
- 2.2 The Highways Term Maintenance Contract has introduced a new approach to the way that the contract operates with underlying principles of continuous improvement, improved communication, and the promotion of a 'can do' attitude. This approach has already paid dividends through the trial of materials and operational practices that have

resulted in faster operational delivery and reduced carbon impact compared with traditional practices. Critically these approaches have been contained within the approved highways budget envelope.

- 2.3 As a precursor to the proposed development of a Highway Material Palette the Council conducted material trials and introduction of operational practices in the 2021/22 financial year including the introduction of Warm Mixed materials and use of Rubber Modified Asphalt, which uses one recycled tyre per tonne of asphalt, as summarised in the following case study:

Hill Top resurfacing ~ *Trailing of innovative road resurfacing using over 240 recycled tyres, one tyre per tonne of asphalt material, using Rubber Modified Asphalt. The advantages demonstrated include the use of:*

- *Recycled end of life rubber tyre product which prevents irresponsible disposal (one recycled tyre per tonne of asphalt)*
- *A Warm Mix methodology driving down energy usage in production*
- *Secondary aggregate from the steel industry which results in the Rubber Modified Asphalt containing c75% recycled / secondary materials*
- *CO2e saving of 8% against conventional Hot Mix Stone Mastic Asphalt*

To demonstrate the durability the first time that this material was trialled by Tarmac was in 2013 in Coventry in a priority Bus Lane, the carriageway is still operational. Independent research has determined that the use of recycled tyres does not impact on the quality and durability of the carriageway.

- 2.4 Tarmac Kier JV have recently conducted a review of a comparable London Council using circa 16,000 tonnes of asphalt-based products and have identified that they have been able to save that Council circa 60 tonnes of CO2e (circa 10% reduction) per annum with purely through the implementation of new warm mix materials, instead of more traditional hot mix stone mastic asphalt materials.
- 2.5 The implementation of a coherent and consistent Highway Material Palette will not only support the Council in its sustainability objectives, in addition through a 'whole life' approach drive efficiency in the operation, providing the Council with ongoing value for money as well as reduction in carbon emissions.
- 2.6 The underlying objective of the Highway Material Palette is the development and implementation of a 'whole life' approach, this is further expanded to encompass the following key principles:
- Consistency of material according to treatment type
 - Durability of the material selection
 - Operational efficiency of application
 - Value for money and cost certainty aligned to the Councils budget allocation
 - Warranty and guarantees of material selected
 - Carbon impact

2.7 From an operational perspective the Highway Material Palette jointly developed with Tarmac Kier JV has the following key features to drive sustainability and operational efficiency:

- Default use of Warm Mix asphalt over conventional Hot Mix Stone Mastic asphalt. Warm Mix by its name is produced at a lower temperature through the inclusion of a chemical additive thus reducing fuel and CO₂e at the point of production.
- Introduction of single layer treatments, providing comparable pavement strength compared with traditional two course (binder and surface) treatments reducing material quantity, associated CO₂e outputs and duration of the operational programme.
- Introduction of a high-quality polymer modified bitumen on composite (e.g., concrete) road bases which are prevalent across the borough. This approach manages movement in the underlying concrete and offers superior elastic recovery as a result this approach will reduce on cracking and early life degradation of the asphalt courses.
- Use of recycled and secondary material reduces the need to quarry and transport virgin aggregate therefore preserving stocks and reducing the wider environmental impacts of this activity.

2.8 The Highway Material Palette follows logical steps to ensure appropriate material selection and best outcome aligned to the objectives set out in Section 2.6 of this report:

- **Step 1** - of the process is to take the schedule of footways and carriageways, developed through the NRP and CIL programme, and subject these footways and carriageways to a joint inspection and assessment between officers and Tarmac Kier JV construction specialists. This assessment will determine the treatment options in relation to:
 - Type – Footway/Roadway aligned to location, i.e.
 - Residential (subject to light traffic and delivery vehicles)
 - Commercial (subject to HGV and Bus usage as well as domestic traffic)
 - Trunk Road (subject to heavy sustained use by HGV, Bus and continuous domestic / through traffic)
 - Construction – Fully Flexible (asphalt) / Composite (asphalt and concrete)
 - Condition i.e., Good, Average, Poor and Very Poor.
 - Assessment of local factors to determine the “return to service criteria” (i.e., how quickly the footway or carriageway needs to be returned to a fully accessible condition) and thus the final treatment best suited to the location.
- **Step 2** – determination of appropriate treatment for implementation falls out of the highway material palette. Table 1 summarises the treatment against a range of criteria including road type, road construction, road condition.

Table 1 provides an illustration of the approach set out in the proposed Highway Material Palette:

Ref	Type	Construction	Condition	Treatment	Surface Course Material	Description
1	Commercial	Fully Flexible	Poor	Deep Single Layer	UltiLayer 14 @ 80mm. 14 mm stone.	Deep single layer inlay to manage a poor condition pavement and provide a durable solution than conventional projects that can be returned to service quickly.
2	Residential	Composite	Very Poor	Binder & Surface	UltiLayer 10 @ 40mm 10 mm stone.	Two-layer treatment direct to concrete using polymer modified bitumen to manage movement and prevent cracking from the underlying concrete base.
3	Trunk	Fully Flexible	Poor	Base, Binder & Surface	UltiPave-R @ 40mm	Deep treatment to provide a long-lasting durable pavement compliant with Clause 942 (Specified materials allowable on the strategic road network e.g., Motorways / A roads).
4	Commercial	Composite	Very Poor	Full Reconstruct ion	UltiLayer 10 @ 40mm 10 mm stone.	Two-layer treatment direct to concrete using polymer modified bitumen to manage movement and prevent cracking from the underlying concrete base.
5	Footway	Type 3	Very Poor	Deep Single Layer	UltiFastpath 6 @ 60mm	A single pass footway material design for quick return to service.

Table 1 provides an illustration of the approach set out in the proposed Highway Material Palette

- **Step 3** – conduct a value for money assessment aligned to the budget allocation in line with the Term Maintenance Contract conditions.
- **Step 4** - programme and execute the scheme in line with the Committee agreed NRP and CIL programme.

- **Step 5** – conduct an as built inspection resulting in the submission of a Completion Certificate, associated Carbon Assessment and Lessons learnt.

2.9 Aligned to the implementation of the Highway Material Palette, officers have been able to negotiate with Tarmac through Tarmac Kier JV a back to back **five-year material warranty** on the basis that the jointly produced highways material palette is followed. For information the standard warranties of these materials are **two years**.

2.10 In addition, Tarmac Kier JV have committed to provide the Council with a CO2e report detailed progress against the proposed target aligned to the NRP and CIL programme, with the baseline being the range of more traditional hot mix materials the Council has been using to date.

2.11 In conclusion the introduction of the Highway Material Palette will enable the Council to:

- Drive a reduction in CO2e of circa 10% per annum compared with the current approach to highway material selection
- Use of more recycled material in the aggregate
- Enable value for money and cost certainty aligned to the Councils budget allocation
- Increase operational efficiency including incrementally advancing the programme aligned to “return to service criteria”
- Secure the benefit of 5-year material warranty

3. ALTERNATIVE OPTIONS CONSIDERED AND NOT RECOMMENDED

3.1 The alternative option is to continue with the current arrangements where highway materials are selected on a scheme-by-scheme basis using traditional approaches. This approach loses the ability to fully exploit the opportunities in relation to the development and implementation of a “whole life approach” in relation operational efficiency, value for money and reduction in carbon emissions and increased recycling.

4. POST DECISION IMPLEMENTATION

4.1 Once the Committee approves the recommendations, officers will implement the Highway Material Palette aligned to the NRP and CIL programme commencing 1 April 2022 with aligned reporting in relation to CO2e reduction and operational efficiency.

4.2 In addition to Show Case the approach taken by the Council in collaboration with Tarmac Kier JV, given that the London Borough of Barnet will be the first London Council to work with them on the implementation of a holistic Highway Material Palette approach.

4.3 Value for Money will be monitored during the first-year factoring in a range of variables which make up a “whole life approach” including the ground conditions, cost of the product, the amount used, operational duration to deliver a worst case cost neutral scenario compared with traditional approaches currently deployed.

5. IMPLICATIONS OF DECISION

5.1 Corporate Priorities and Performance

5.1.1 The Council’s Corporate Plan – The Barnet Plan 2021-25, states in its strategic

priority “Clean, Safe and Well Run” that it will continue to invest in the Network Recovery Programme to ensure roads and pavements can be used for safe, reliable travel in the long term.

5.1.2 In particular, the Network Recovery Programme and Community Infrastructure Levy fund will improve the highway network, which in turn will contribute to improving the local environment and the quality of life for the residents and help create conditions for a vibrant economy.

5.1.3 The proposed Highway Material Palette application will contribute to the Council’s Health and Wellbeing Strategy by making Barnet a great place to live and enable the residents to keep well and independent.

5.1.4 The Highway network is the Council’s most valuable asset and is vital to the economic, social and environmental wellbeing of the Borough as well as the general image perception. The Highways provide access for business and communities, as well as contribute to the area’s local character and the resident’s quality of life. Highways really do matter to people and often public opinion surveys continually highlight dissatisfaction with the condition of local roads and the way they are managed. Public pressure can often result in short term fixes such as potholes for example, rather than properly planned and implemented longer term solutions. The proposed Highway Material Palette aligned to the 2022/23 Work Programme aims to reduce the carbon footprint of the operation, maintain cost neutrality, and increase the speed of the programme without detrimental impact on the delivered scheme.

5.2 Resources (Finance & Value for Money, Procurement, Staffing, IT, Property, Sustainability)

5.2.1 There are no financial issues as a direct result of this report, the application of the Highway Material Palette will support the delivery of the NRP and CIL programme as approved by this Committee on 13 January 2022.

5.2.2 There are no staffing ICT or property implications.

5.2.3 This report drives a sustainability approach through the application of a holistic Highway Material Palette with a “whole life approach” in relation to driving efficiency in the operation, providing the Council with ongoing value for money as well as reduction in carbon emissions and increased use of recycled materials. It is anticipated that this approach will drive a reduction in CO₂e of circa 10% per annum compared with the current approach to highway material selection.

5.3 Legal and Constitutional References

5.3.1 The Council’s Constitution Article 7 – Committees, Forums, Working Groups and Partnerships (Responsibility for Functions, 7.5) gives the Environment Committee responsibility for all borough-wide or cross-constituency matters related to the street scene.

5.3.2 On 2 March 2021, Full Council approved the Council’s capital programme for the Network Recovery Programme for a further four financial years (2020/21 to 2023/24). The 2022/23 CIL allocation has been included in the coming year’s final capital

programme, to be agreed by full Council at its forthcoming annual budget setting meeting.

5.3.3 Highway Maintenance is a statutory duty under the Highways and Traffic Management Acts.

5.3.4 The Traffic Management Act 2004 places obligations on authorities to ensure the expeditious movement of traffic on their road network. Authorities are required to make arrangements as they consider appropriate for planning and carrying out the action to be taken in performing the duty.

5.4 **Insight**

5.4.1 The approach advocated in this report will provide the Council with insight in relation to the efficiency of the operation, value for money assessments and contribution to sustainability through effective measurable CO2e reductions.

5.5 **Social Value**

5.5.1 The Public Services (Social Value) Act 2012 requires people who commission public services to think about how they can also secure wider social, economic and environmental benefits. This report does not relate to procurement of services contracts.

5.6 **Risk Management**

5.6.1 The main risk of the approach advocated in this report are that the selected materials do not perform as expected, this is mitigated through Tarmac Kier JV willingness to increase material warranty periods to five years from the current two years as well as the individual materials proposed have been developed and tested by Tarmac, independently verified, and used by Tarmac clients for many years, often in challenging operational environments.

5.7 **Equalities and Diversity**

5.7.1 Good roads and pavements have benefits to all sectors of the community in removing barriers and assisting quick, efficient, and safe movement to schools, work and leisure. This is particularly important for older people, people caring for children and pushing buggies, those with mobility difficulties and sight impairments. The state of roads and pavements are amongst the top resident concerns and the Council is listening and responding to those concerns by the proposed planned highways maintenance programme.

5.7.2 The physical appearance and the condition of the roads and pavements have a significant impact on people's quality of life. A poor-quality street environment will give a negative impression of an area, impact on people's perceptions and attitudes as well as increasing feelings of insecurity. The Council's policy is focused on improving the overall street scene across the borough to a higher level and is consistent with creating an outcome where all communities are thriving and harmonious places where people are happy to live.

5.7.3 The Equality Act 2010 outlines the provisions of the Public Sector Equalities Duty which requires Public Bodies to have due regard to the need to:

- a. Eliminate discrimination, harassment and victimisation and other conduct prohibited by the Equality Act 2010.
- b. Advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it.
- c. Foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

5.7.4 The broad purpose of this duty is to integrate considerations of equality into day-to-day business and keep them under review in decision making, the design policies and the delivery of services. There is an on-going process of regularisation and de-clutter of street furniture and an updating of highway features to meet the latest statutory or technical expectations.

5.8 Corporate Parenting

5.8.1 No direct or indirect impacts on looked after children or care leavers identified beyond those applicable to the population as a whole.

5.9 Consultation and Engagement

5.9.1 None as a direct result of this report.

6. ENVIRONMENTAL IMPACT

6.1 Implementing the recommendations in the report will lead to a positive impact on the Council's carbon and ecology impact aligned to the council's emerging Sustainability Strategy in relation to supply chain operations and material selection including use of low carbon and recycled materials. As set out in Section 2.11 of this report, the introduction of the Highway Material Palette will:

- Drive a reduction in CO₂e of circa 10% per annum compared with the current approach to highway material selection
- Use more recycled material in the aggregate
- Enable value for money and cost certainty aligned to the Council's budget allocation
- Increase operational efficiency including incrementally advancing the programme aligned to "return to service criteria"
- Secure the benefit of 5-year material warranty

7. BACKGROUND PAPERS

7.1 Environment Committee approval of the 2022/23 Network Recovery Programme
https://barnet.moderngov.co.uk/documents/s69487/Environment%20Committee%20Report%20NRP%20CIL%20Year%208%20040122%20Final_.pdf