Committee(s)	Dated:
Planning & Transportation Committee	**31 March 2020**
Subject: Highway Materials	**Public**
Report of: Director of the Built Environment	**For Information**
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Summary

A recent article in the national press suggested that tests were being undertaken in Sweden to assess a new product for footways made from recycled rubber tyres that could make them safer for pedestrians who trip and fall.

In response to a question from a Member of your Committee on this article, it was thought appropriate to bring forward a short report covering the decision-making behind the materials we currently use on our streets, the key considerations in making those decisions and the results of our most recent review.

Recommendation(s)

Members are recommended to receive this report.

Main Report

Background

1. Since 2005, all City street designs have been informed by the City's Public Realm Manual. This sets out the City's vision for creating an attractive, uncluttered and accessible street environment for the Square Mile and includes key guidelines on how the public realm should be designed. It also establishes what materials should be used for our streets and spaces in the context of the City's historic identity & corporate strategies as well as the appropriate national guidance and legislation.

2. In addition to aesthetic considerations, the City's streets demand a high degree of robustness given the high volume of pedestrians and vehicles confined to a medieval street pattern that also suffers frequent excavations & reinstatements from utilities.

3. As a result, the Public Realm Manual prescribes a restricted palette of materials in order to promote a simple, effective and high quality public realm, as well as continuity of design and best practice in terms of place making. A limited palette

also helps provide value for money by having fewer types of material to be sourced and held in stock by our contractor for repair purposes.

4. The consistent use of this limited palette of high quality but hard-wearing materials over many years has given the Square Mile a distinctive character, anchoring its identity by the continued use of these historic materials in a coherent manner.

5. The last major review of that palette was in 2010 when Members agreed to continue the long-standing approach of using hot rolled asphalt for our roads, with granite setts used on a limited basis where clear road safety, heritage or conservation reasons apply.

6. On footways, it was agreed that York stone paving would continue to be the primary surface material in conservation areas, along major routes and around key listed buildings, with mastic asphalt used elsewhere. The use of York stone and granite materials in particular aligned the City to the general approach towards conservation areas adopted across London, delivering a consistent look & feel that is also promoted by Historic England and Transport for London.

7. That 2010 review introduced a number of new considerations into the assessment process, including:
    - Economic, social and environmental sustainability, including an assessment of recyclable & renewable materials and the level carbon emission generated from a product's excavation, manufacture & transportation;
    - Whole life costing, including maintenance costs, lifespan and eventual replacement cost;
    - The ability to successfully reinstate the surface after utility excavations without significantly affecting the underlying integrity and lifespan of the highway construction.

8. Since then, further considerations regarding our supply chain were added when the City's highway maintenance term contract with JB Riney was extended in 2016. This included a review of responsible procurement to ensure materials were not being sourced from suppliers using unethical practices, making this contract one of the first City Corporation contracts to be compliant with what was then new national guidance.

9. Also in 2016, highway materials were also reviewed in the context of both the adoption of the Public Realm Supplementary Planning Document and the last refresh of the Public Realm Manual, and more recently, the Transport Strategy made reference to the use of appropriate & effective highway materials to improve the experience of walking and spending time on the Square Mile's streets as part of the provision of more public space and delivering world-class public realm (Proposal 7).

Current Position

10. Highways officers within DBE's Transportation & Public Realm team continue to monitor the market for new products that might be appropriate to consider, working in particular with JB Riney and their owners Tarmac to identify opportunities. However, the commitment to the integrity of the vision set out in the Member-approved Public Realm Manual remains.

11. Given recent issues in our supply chain, including a significant cost increase in York stone paving from one leading supplier, last year officers reviewed the technical design of these key materials to understand whether new or similar materials could be sourced from different suppliers from within the UK or from abroad.

12. To appreciate the extent of such technical assessments, it may be useful to understand that in terms of York stone paving alone, this review took in 16 different types of paving from several UK & international suppliers and assessed those products against a range of different criteria, including:

    Primary considerations

    - British Standards – the baseline for safety & durability (not all products sourced from abroad meet this requirement);
    - Cost – seeking best value, both in terms of large quantities of materials for major schemes and also smaller volumes for maintenance works;
    - Maintenance suitability – whether such materials can easily be repaired after damage or reinstated after utility excavation;
    - Look & feel – maintaining the aesthetic appearance of the City as set out in the Public Realm Manual & Transport Strategy.

    Technical Considerations

    - Material density – the more compact the product, the fewer voids it has, preventing water retention and increasing structural strength;
    - Water absorption – high absorption rates can lead to materials cracking in winter months due to the freezing process;
    - Material elasticity – more elasticity means less brittleness, allowing the material to resist cracking when put under loading;
    - Safety skid resistance – different textured surfaces can help reduce skidding by road users (including pedestrians) in wet conditions;
    - Damage from weather – delamination from exposure is an inevitable process, but the speed at which this happens can vary between products.

Supply Chain Considerations

- Manufacture confidence – the reliability of the manufacturer to deliver the required quality of product on time & with reasonable lead in times;

- Carbon footprint – from the removal of the material out of the ground to the finished product being delivered and installed;

- Supply sustainability – in this context, the expected lifespan of a particular quarry; some will run out in 20 years, likely affecting continuity & cost;

- Brexit risk – materials sourced within the EU might be particularly vulnerable to any negative outcomes from the Brexit process.

13. In terms of Brexit risk, this assessment process led JB Riney to negotiate with their suppliers to acquire and hold a quantity of Portuguese granite setts within the UK for the City's use as / when required.

14. As a result of this overall review, a number of trials are planned for later this year, testing different types of York stone from a small number of new suppliers to see how they perform over time given the City's unique wear & tear demands. The results of these trials will then be used to inform the wider specification for materials included in the retender of the City's highway maintenance term contract which must be in place by September 2022.

15. Away from paving, this most recent review found that granite setts & hot rolled asphalt (for roads) and mastic asphalt (for footways) continued to offer best value across this range of criteria as the City's choice of core materials.

Recent Developments in Highway Materials

16. The market for highway materials continues to see a considerable degree of innovation, particularly around safety and sustainability, but to reiterate, any new product has to first pass our assessment test comparing it to the performance of our existing materials.

17. In that context, a recent article in the national press was kindly flagged to officers by Judith Pleasance regarding tests in Sweden of a new product for footways made from recycled rubber tyres that could make it safer for pedestrians who trip and fall.

18. Having looked into this concept in more detail, we have found that this sort of material is already being used by Open Spaces in some of their playgrounds and pedestrian areas. However, there are several issues in terms of broadening its use for public footways. These include:

    - The durability of rubber-based products is still to be fully assessed but at this point it's thought they don't last as long as our standard materials, particularly under our highly concentrated footfall conditions.

- Compared to playground areas, the materials used for our footways are designed to withstand occasional vehicle loading, and softer materials such as this are more likely to deteriorate at a faster rate when driven over.

- These sorts of rubber products usually shrink and swell far more than the bedding we use below the public highway, which would lead to gaps forming between the two and cracking within the surface.

- Utilities would be unlikely to have the expertise to lay this material to a suitable standard, nor be able to source it for reinstatement purposes.

- Excavations & reinstatements over time would lead to a patchwork quilt effect which is far less of an issue with our existing paving or asphalt surfaces which are simpler to reinstate.

- These products are typically most effective when laid in one go, so it is doubtful an effective bond could be made between different patches of material when re-laid for highway maintenance or after utility works.

- Our analysis of the relative costs of using this type of material would suggest that rubber-based footway surfacing is over three times more expensive than traditional York stone paving, making it uneconomic to use except in narrowly defined circumstances and where additional funding has been secured.

19. Nevertheless, as part of the 2019 review, the potential for trialling recycled materials such as rubber or plastic within the bitumen mix for road asphalt (thereby reducing the amount going to landfill) was thought sufficiently promising to justify the trial of such a material during the coming year. This is being planned with the active involvement of Tarmac who have invested heavily in researching this advancing area of product development.

20. To summarise, any new material we wish to consider has to meet the technical standards of being safe, affordable and maintainable as well as the policy context of ensuring a simple, effective and high-quality public realm. Any fundamental change in that approach would require wider engagement & public consultation, but at the technical level, there is scope for innovation to allow for changes to cost effective best practice.

Corporate & Strategic Implications

21. Delivering & maintaining a high-quality public realm through the use of materials assessed against a range of best value criteria meets a series of key objectives contained within the Corporate Plan. These include:

    - We will ensure people enjoy good health & wellbeing by better service design & delivery
    - We will create & transform streets & public spaces for people to admire & enjoy

- We will champion a distinctive & high-quality residential, worker, student & visitor offer
- We will drive down the negative effects of our own activities
- We will provide environmental stewardship in use of resources
- We will maintain our streets & public spaces to high standards

22. In terms of funding, the costs of some of these materials are rising faster than budgets currently allow, so medium to long term efficiencies will be required to enable the City to maintain a steady state in terms of its highway maintenance quality. Members will be involved in that assessment, particularly as we progress towards the retendering of the highway maintenance term contract over the next two years.

Conclusion

23. Suppliers of highway materials continue to innovate, developing new products for officers to assess in terms of whether they meet the City's stringent requirements. However, the City's approach of using a small palette of high-quality core materials that deliver the vision set out in the Public Realm Manual has undoubtedly contributed towards ensuring a consistent, safe and cost-effective public realm for the City's businesses, residents and visitors to enjoy.

Appendices – None.

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