

<p>Committees: Corporate Projects Board - for decision Projects Sub - for decision (with updates post call over) Service Committee Streets & Walkways Sub Committee – for decision Planning & Transportation Committee- for information Open Spaces and City Gardens Committee – for information</p>	<p>Dates: 31 March 2021 14 April 2021 29 April 2021 12th May 2021 27th April 2021</p>
<p>Subject: Climate Action Strategy - Cool Streets and Greening Programme</p> <p>Unique Project Identifier: PV ID 12267</p>	<p>Gateway 1& 2: Project Proposal Regular</p>
<p>Report of: Director of the Built Environment</p> <p>Report Author: Janet Laban</p>	<p>For Information</p>
<h1>PUBLIC</h1>	

Recommendations

<p>1. Next steps and requested decisions</p>	<p>Project Description: Cool Streets and Greening is a Climate Action Strategy programme to develop climate resilient streets and open spaces in the Square Mile.</p> <p>This project aligns with the City’s Corporate Plan and Responsible Business Strategy and contributes to the City Corporation’s preparation for the UN climate conference COP26. It will assist in implementation of climate measures in the emerging City Plan 2036 and Transport Strategy whilst supporting the City’s aspiration to develop culture and commerce in parallel in the coming decades.</p> <p>Funding Source: Members agreed funding for this work through the Climate Action Strategy in Oct 2021. The specific funding source for this work is the Department of the Built Environment On-Street Parking Revenue (DBE - OSPR)</p> <p>Next Gateway: Gateway 3/4 - Options Appraisal (Regular)</p> <p>Once suitable pilot sites have been identified and prioritised a Gateway 3 / 4 report will seek approval for implementation of resilience measures on specific sites later in year 1.</p> <p>In subsequent years, the implementation of resilience measures will be at sites where other works are planned. Full Gateway approvals will be sought for each site with suitable</p>
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climate resilience measures being incorporated within the normal project approval process.

Next Steps:

Year 1 (2021/22) of the Cool Streets and Greening project will involve:

Set up Climate Resilience Steering Group Terms of Reference

- Programme development & governance
- Opportunity mapping and data gap analysis
- Data collection & analysis protocols
- Develop criteria for funding of resilience measures

Steering Group Review - programme

- Draft technical resilience measures guidance
- Site identification and prioritisation
- Baseline heat, flood and Urban Greening Factor monitoring

Steering Group review – sites, measures & data - subject to Gateway 3/4 approvals for pilot sites

- Plan implementation of heat and flooding resilience measures on 4-7 pilot sites
- Model impacts for 4-7 sites
- Implement climate resilience measures on 4-7 pilot sites
- Monitor impacts

Steering Group review – implementation and impacts

Years 2,3 & 4 2022 to 2025- Further resilience measures will be implemented in a minimum of 20 sites based on the evaluation at the pilot sites.

Requested Decisions:

1. That budget of **£320K** is approved for
 - Programme framework development (4-year programme)
 - Climate resilience measures catalogue
 - Installation of smart sensors and data protocols for monitoring
 - Opportunity mapping and gap analysis for climate resilience solutions
 - Identification and prioritisation of sites.

This is a capitalised resource against the proceeding capital works.

2. Note the total estimated cost of the Cool Streets and Greening project at **£1.7M** for Year 1. The remaining funds will be for installation of resilience measures in priority sites and will be subject to Gateway 3,4 & 5 approvals

3. Note that the likely cost range for the Cool Streets & Greening 4-year programme will be an estimated £1.7M per annum over 4 years – Total £6.8M

2. Resource requirements to reach next Gateway

Item	Reason	Funds/ Source of Funding	Costs £
Framework development	Consultant support in designing programme	Climate Action Strategy (CAS) funding DBE - On Street Parking Reserve (OSPR)	50K
Resilience measures catalogue	Consultant support in development of technical catalogue of resilience measures	CAS funding DBE OSPR	10K
Smart sensors and monitoring	Installation of smart sensors for flood and heat monitoring including ongoing maintenance	CAS funding DBE-OSPR	85K
Data collection & analysis	Consultant support in smart monitoring, analysis and interpretation and reporting of results & KPIs	CAS funding DBE-OSPR	20K
Opportunity mapping & data gap analysis	Consultant support	CAS funding DBE-OSPR	75K

	Site identification and prioritisation	Consultant support	CAS funding DBE-OSPR	30K
	Staff costs Site identification and prioritisation	Public Realm/ Highways/ Open spaces staff	CAS Funding DBE-OSPR	50K
	Staff costs Cool Streets & greening workstream management	Environmental resilience team currently funded until Sept 2021 thereafter to be funded through the Mainstreaming Resilience workstream	Environmen tal Resilience Team	100K funded from existing budgets
	Total cost for this Gateway			320K
	Costed Risk Provision requested for this Gateway: £0(as detailed in the Preliminary Risk Register – Appendix 2)			
3. Governance arrangements	<ul style="list-style-type: none"> • The service committee for this project is the Streets & Walkways Committee • A cross departmental Climate Resilience Steering Group, chaired by the District Surveyor and Environmental Resilience Director, will oversee recommendations on procurement, project prioritisation, budgets, timetable and reporting. This steering group will meet quarterly and will report progress to the Projects Sub Committee. • The Senior Responsible Officer for this project is the District Surveyor and Environmental Resilience Director (Gordon Roy) • The Project Manager for this project will be the Senior Sustainability & Lead Environmental Resilience Officer (Janet Laban) who will be supported by the Environmental Resilience team the City Public Realm team, and the City Transportation team, working with highways, transport and open spaces officers on 			

	<p>individual implementation projects within this workstream.</p> <ul style="list-style-type: none"> • Year 1 will be undertaken by the Environmental Resilience team which is a small team using design thinking and agile work practices to achieve results (see appendix 3). The team will work in partnership with officers from other parts of the Environment Service Area in the new Target Operating Model. • Some activities will require partnership working with organisations such as the British Geological Survey, Thames Water and the Environment Agency. Such activities will be undertaken with the relevant confidentiality agreements and memorandums of understanding in place.
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Project Summary

<p>4. Context</p>	<p>4.1 The City’s Climate Action Strategy identifies the need to adapt to a changing climate where we will experience hotter drier summers, warmer wetter winters, sea level rise and more extreme weather events.</p> <p>4.2 The climate risks that the City faces include overheating, flooding, water scarcity, biodiversity loss, increases in pests and diseases and disruption to food and trade.</p> <p>4.3 The City of London Adaptive Pathways report prepared for the City Corporation by Buro Happold demonstrates the importance of beginning now to incorporate resilience actions into the Square Mile.</p> <p>4.4 The funding for the Climate Action Strategy was agreed in Oct 2020 by Court of Common Council. Individual tranches of funding will be the subject of Resource Allocation Sub Committee approval as appropriate.</p>
<p>5. Brief description of project</p>	<p>5.1 This Gateway 2 project is the first phase of a wider programme of work to improve the resilience of the City’s streets and spaces to climate change.</p> <p>5.2 This phase will identify opportunities, set an evaluation framework, gather baseline information including from smart sensors and identify and prioritise sites for installation of climate resilience measures such as sustainable drainage (SuDS) and heat resilient materials.</p> <p>5.3 The wider project addresses the range of actions agreed through the City’s Climate Action Strategy to address climate risks for the City’s streets including:</p> <ul style="list-style-type: none"> • Flood modelling

	<ul style="list-style-type: none"> • Heat resistant materials testing • Water footprint and leakage management • Natural flood management and sustainable drainage (SuDS) • Greening and climate resilient planting. <p>5.4 Subject to Gateway 3/4/5 approval the wider project will install and evaluate measures and techniques to address the climate challenges that the City faces.</p> <p>5.5 The measures that are found to be effective will then be incorporated into the City’s design guidance providing a roadmap to 2080 for a climate resilient public realm. This aligns with the Climate Action Strategy adapting to climate change diagram – best case by 2080</p> <p>5.6 Ongoing maintenance of the climate resilience measures will be secured through a commuted sum associated with each implementation project to be included at Gateway 3 / 4 /5. The amount of the commuted sum will be included in each project cost and be funded from the Climate Action funding sources.</p>
<p>6 Consequences if project not approved</p>	<p>6.1 The City’s climate is changing. We need to adapt the City’s environment to hotter drier summers, warmer wetter winters, sea level rise and more frequent extreme weather events.</p> <p>6.2 The high cost of reacting to rather than preparing for climate change is well recognised¹.</p> <p>6.3 The Climate Resilience Adaptive Pathways study completed for the City Corporation by Buro Happold in 2020 identified the measures that we need to implement now to ensure that we are ready for the future climate.</p> <p>6.4 If this project is not approved, we will miss the opportunity to prepare for the inevitable change in the climate resulting in increased climate risks, higher insurance costs through lack of preparedness and higher costs of action.</p> <p>6.5 Some actions from the recently adopted statutory Local Flood Risk Management Strategy (LFRMS) could be compromised if we fail to progress this project.</p>
<p>7 SMART project objectives</p>	<p>Vision: The Square Mile and City Corporation assets elsewhere are an exemplar of climate resilience, pre-empting inevitable climate related risks and impacts, providing a model for others to follow.</p> <p>Climate Action Strategy Objectives:</p> <ul style="list-style-type: none"> • The City of London Corporation and its assets are resilient to climate change

¹ [Stern Review Report on the Economics of Climate Change](#)

	<ul style="list-style-type: none"> • The Square Mile’s buildings, public spaces and infrastructure are resilient to climate change • People in the Square Mile and beyond benefit from a clean, green and safe environment and job creation <p>These objectives were agreed by Court of Common Council on 8th Oct as part of the City’s Climate Action Strategy (Committee report appendix 2)</p> <p>The key project objectives for 2021/22 are to</p> <ol style="list-style-type: none"> 1) To develop a catalogue of resilience measures and assessment methodology for consideration in planned public realm, transport, highways and open spaces schemes by Q3 2021/22 2) To map the opportunities and constraints for flood and heat resilience interventions in the Square Mile by Q3 2021/22. 3) To identify and prioritise sites for Climate resilience interventions by Q3 2021/22 4) Develop and implement real time baseline monitoring infrastructure which will be used to evaluate resilience interventions by Q3 2021/22 5) Identify and design interventions for 4-7 sites by Q3 2021/22 subject to Gateway 3-4 approval 6) Implement and monitor resilience measures on 4-7 sites by Q1 2022/23 subject to Gateway 3-4 approval <p>The project level Key Performance Indicators for this project will be:</p> <ul style="list-style-type: none"> • Urban Greening Factor for the Square Mile which provides a quantifiable measure of the overall level and environmental benefit of greening in the City. • Area of the Square Mile with Sustainable Drainage (SuDS) installed. 						
<p>8 Key benefits</p>	<p>This project covers the ten actions agreed by the Court of Common Council on 8th Oct 2020 under the City Climate Action Strategy report – nine actions from Appendix 2b Action Area 2 Resilient Streets and Greening and one action from Action Area 4 Resilience co-ordination and training.</p> <p>The Key benefits are set out below:</p> <table border="1"> <thead> <tr> <th>Action</th> <th>Benefit</th> </tr> </thead> <tbody> <tr> <td>2.1 Flood modelling</td> <td>Provides accurate, up to date information about flood risk in the Square Mile</td> </tr> <tr> <td>2.2 Heat resistant materials</td> <td>Provides pilot results for effective heat resilient materials in the public realm</td> </tr> </tbody> </table>	Action	Benefit	2.1 Flood modelling	Provides accurate, up to date information about flood risk in the Square Mile	2.2 Heat resistant materials	Provides pilot results for effective heat resilient materials in the public realm
Action	Benefit						
2.1 Flood modelling	Provides accurate, up to date information about flood risk in the Square Mile						
2.2 Heat resistant materials	Provides pilot results for effective heat resilient materials in the public realm						

	2.3 Water footprint management plan	Identify opportunities to minimise water use (and associated cost) and make best use of this resource
	2.4 Develop natural flood risk management areas	Reduces surface water flooding and sewer overflows
	2.5 Sustainable rain and surface water management	Reduce surface water flooding and sewer overflows
	2.6 Water leakage management	Minimise water loss through leakage through pro active leak detection and asset management
	2.7 Increase green space	Climate resilient greening reducing flood risk and overheating risk
	2.8 Climate resilient planting	Thriving planting in face of climate change
	2.9 External funding sources review	Potential partner funding from non-City of London sources
	2.10 Engagement plans	Best practice used elsewhere
	4.6 Below ground mapping	Identification of climate resilience opportunities
	<p>The measurable benefits for Gateway 2 will consist of:</p> <ul style="list-style-type: none"> • Framework resilience measures catalogue for flood and heat risk and appraisal methodology • Mapping (above and below ground) showing constraints and opportunities for flood and heat resilience measures • Prioritised list of sites that are suitable for climate resilience interventions in the Square Mile • Network of smart sensors to measure flood and heat risk • Baseline monitoring of climate resilience indicators including Urban Greening Factor for the Square Mile 	
9 Project category	7a. Asset enhancement/improvement (capital)	
10 Project priority	A. Essential	

11 Notable exclusions	1 Implementation of buildings related resilience measures 2 Resilience of privately owned assets and infrastructure
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Options Appraisal

12 Overview of options	<p>Option 1 – Business as usual. Ad hoc inclusion of climate resilience measures in public realm when funds allow.</p> <p>Option 2 – Focused programme to install and evaluate climate resilience measures in the Square Mile informing a roadmap for resilience to 2080. This option could be achieved within the requested budget subject to Gateway approvals as appropriate.</p> <p>Option 3– extend measures to include open spaces elsewhere. This option would provide more comprehensive data on the impacts of the climate resilience measures and is particularly relevant to surface water management and sewer overflow flooding. Additional funding would enable extension of this project beyond the Square Mile to include City Corporation managed open spaces elsewhere.</p> <p>Option 2 is the preferred approach since it will progress the City Corporation’s adopted Climate Action Strategy climate resilience actions. Seeking further funding through Option 3 is dependent on the City Corporation progressing Option 2.</p>
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Project Planning

13 Delivery period and key dates	<p>Overall project: This project will run from Jan 2021 until March 2025 see Gantt chart – Appendix 4. This Gateway 2 report is seeking approval for the initial phase of year 1 activities.</p> <p>Key dates:</p> <table border="1"> <tr> <td>Year 0</td> <td>Q4 2020/21</td> <td> Partner engagement Staff upskilling Project plans </td> </tr> <tr> <td>Year 1</td> <td>Q1- 2021/22 to Q1- 2022/23</td> <td> Project design & governance Resilience measures catalogue Opportunity and constraint mapping Smart monitoring infrastructure Site identification and prioritisation Design and installation for 4-7 no pilot schemes Evaluation and reporting </td> </tr> </table>			Year 0	Q4 2020/21	Partner engagement Staff upskilling Project plans	Year 1	Q1- 2021/22 to Q1- 2022/23	Project design & governance Resilience measures catalogue Opportunity and constraint mapping Smart monitoring infrastructure Site identification and prioritisation Design and installation for 4-7 no pilot schemes Evaluation and reporting
Year 0	Q4 2020/21	Partner engagement Staff upskilling Project plans							
Year 1	Q1- 2021/22 to Q1- 2022/23	Project design & governance Resilience measures catalogue Opportunity and constraint mapping Smart monitoring infrastructure Site identification and prioritisation Design and installation for 4-7 no pilot schemes Evaluation and reporting							

	Years 2 & 3	Q2- 2022/23 To Q1- 2024/25	Implementation of resilience measures <ul style="list-style-type: none"> • Sustainable drainage SuDS • Natural flood management (NFM) • Urban greening factor (UGF) • Resilient planting • Leakage management • Heat resilient surfaces
	Year 4	Q2- 2024/25 To Q4- 2024/25	Review and recommendations Development of guidance Roadmap for a climate resilient Square Mile to 2080
<p>Other works dates to coordinate: The implementation phase of this project will be carried out alongside maintenance cycles and improvement to the public realm, highways and open spaces. Benefits from installation of resilience measures may be realised in adjacent areas e.g. SuDS in open spaces may benefit highway run off. Integration with other projects will minimise cost and disruption but will require careful planning to ensure alignment of dates.</p>			
14 Risk implications	<p>Overall project risk: Low A high level overview of the risks in line with the Projects Procedure Corporate Risks Register is set out in Appendix 2: Risk Register – Costed Risk Provision. Further risk assessment will be carried out at the next Gateway as the workstream progresses.</p> <p>The potential risks at the Gateway 2 stage are as follows:</p> <ul style="list-style-type: none"> • Lack of funding would prevent these actions from progressing however the Climate Action Strategy commits £1.7M per annum to climate resilience. • Contract or partnership problems could delay progress of this stage. City procurement and comptrollers will oversee contracts and partnership governance arrangements. • Skills shortages – Skills currently exist in the Environmental Resilience Team as secondments with consultant support. Measures are underway to secure longer term commitment to skilled staffing for climate resilience. • Smart sensors do not provide suitable data to evaluate resilience measures. To mitigate against this contract specifications will be drawn up to ensure provision of useful data. • Opportunity mapping might show that there are minimal opportunities for resilience measures. An alternative approach would then be needed 		

	The Costed Risk Provision assessment shows that at Gateway 2 any costs associated with minor risks and do not present a threat to the project.
15 Stakeholders and consultees	PESTLE analysis has been used to identify the relevant stakeholders for this project (appendix 5) A stakeholder engagement plan is being developed to ensure co-ordinated messaging across the Climate Action Strategy implementation phase.

Resource Implications

16 Total estimated cost	<p>Likely cost range (excluding risk) for Gateway 2 Cool Streets & Greening: £320K</p> <p>Likely cost range for the Cool Streets & Greening 4 year programme: £1.7M per annum over 4 years – Total £6.8M</p> <p>Likely cost range (including risk): +/- 20% Years 1-4 £5.4M to £7.2M (if additional funding is not available to cover the shortfall then resilience measures will be implemented on fewer sites).</p>																	
17 Funding strategy	Choose 1: All funding fully guaranteed	Choose 1: Internal - Funded wholly by City's own resource																
	<table border="1"> <thead> <tr> <th>Funds/Sources of Funding</th> <th>Cost (£)</th> </tr> </thead> <tbody> <tr> <td>Year 0 Climate Action Strategy CAS</td> <td>-</td> </tr> <tr> <td>Year 1 CAS*</td> <td>2.0M</td> </tr> <tr> <td>Year 2 CAS*</td> <td>1.8M</td> </tr> <tr> <td>Year 3 CAS*</td> <td>1.6M</td> </tr> <tr> <td>Year 4 CAS*</td> <td>1.4M</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">Total</td> <td>6.8M</td> </tr> </tbody> </table> <p>There may be potential for securing additional funding from external sources to extend this programme.</p>		Funds/Sources of Funding	Cost (£)	Year 0 Climate Action Strategy CAS	-	Year 1 CAS*	2.0M	Year 2 CAS*	1.8M	Year 3 CAS*	1.6M	Year 4 CAS*	1.4M			Total	6.8M
Funds/Sources of Funding	Cost (£)																	
Year 0 Climate Action Strategy CAS	-																	
Year 1 CAS*	2.0M																	
Year 2 CAS*	1.8M																	
Year 3 CAS*	1.6M																	
Year 4 CAS*	1.4M																	
Total	6.8M																	
18 Investment appraisal	For the Cool Streets and Greening Gateway 2, an options appraisal is not required. This is preliminary work to assess future options for implementation of climate resilience measures which will be assessed at Gateway 3/4																	
19 Procurement strategy/route to market	Procurement for the Gateway 2 element of this workstream will involve specialist consultants and contractors all of which will be procured in line with the City's procurement policies. Appendix 6 summarises the Procurement Strategy for the																	

	<p>lifecycle of the project and further procurement approaches will be finalised, in response to the findings of consultants appointed at this Gateway.</p> <p>Procurement will be overseen by the Climate Action Strategy Programme Management Team and the Senior Sustainability and Lead Environmental Resilience Officer</p> <p>City Procurement Reference Number: Not required – all appointments are below PCR threshold</p>
20 Legal implications	<p>This project implements actions agreed by the Court of Common Council under the Climate Action Strategy. There are no specific legal implications at this stage and implications (for example on the highway) will be explored at the next stage as more detailed proposals are formulated. The Climate Change Act 2008 sets a framework for mitigating climate change and for adapting to climate change. This Act enshrined into law a target of reducing the UK's carbon account for the year 2050 by at least 100% of the 1990 baseline. The Climate Action Strategy as a whole and this project, which implements actions agreed by the Court of Common Council within it, are compliant with legislation, including the Climate Change Act 2008</p>
21 Corporate property implications	<p>Year 1 - None</p> <p>Year 2-4 Discussions with Corporate Property team will take place during year 1 as sites are identified. Resilience works will be aligned with maintenance schedules wherever possible</p>
22 Traffic implications	<ol style="list-style-type: none"> 1. Resilience interventions in the public realm and highways may have traffic implications through the reduction of carriageway space for vehicles and pedestrians. Implications will be explored at the next stage.
23 Sustainability and energy implications	<ol style="list-style-type: none"> 1. This project will help to prepare the City for the impacts of climate change 2. Sustainable procurement and circular economy principles will be applied to minimise the materials impacts of implementation and reduce embodied carbon. 3. During Year 1 of this programme monitoring and reporting protocols will be put in place to enable robust evaluation of climate impacts including temperature and flood risk and evaluation methodologies will be developed
24 IS implications	<p>None.</p>
25 Equality Impact Assessment	<ul style="list-style-type: none"> • An equality impact assessment test of relevance will be undertaken at each stage of this project and any

	potential issues will be addressed prior to progressing the action.
26 Data Protection Impact Assessment	<ul style="list-style-type: none"> The risk to personal data is less than high or non-applicable and a data protection impact assessment will not be undertaken

Appendices

Appendix 1	Gateway 1 Approval
Appendix 2	Risk Register
Appendix 3	Team structure and support
Appendix 4	Schedule of stages Gantt chart
Appendix 5	Stakeholder engagement plan
Appendix 6	Procurement Strategy

Contact

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Appendix 1 Gateway 1 Approval

In September 2020 Resource Allocation Sub Committee and Policy and Resources Committee approved the scoped and costed Climate Action Strategy for the City Corporation which was subsequently approved by the Court of Common Council on 8th October 2020. See Committee Report below. A capital bid was submitted in August 2020 by the relevant Chief Officer – this was then adopted at RASC in Sept – this constitutes the Gateway 1 approval.



Climate Action
Report for Policy and



App2 Actions by
Committee FOR SUB

Appendix 2 of this Committee report provides a breakdown of the actions proposed to implement the Climate Action Strategy. Appendix 2b provides a detailed profile of each action area for climate resilience and Action Area 2 *Resilient Streets and Greening* includes most of the actions that will be covered through the Cool Streets and Greening programme. In addition, one action from Action Area 4 *Resilience Co-ordination and Training* has been included in the Cool Streets and Greening programme. (see below for relevant action plans)

Action Area 2: Resilient Streets and Greening

Committee: Planning & Transportation Committee

<p>CLIMATE RESILIENCE VISION: The Square Mile and City Corporation assets elsewhere are an exemplar of climate resilience, pre-empting inevitable climate related risks and impacts, providing a model for others to follow.</p>			
<p>STRATEGY GOALS: B) The City of London Corporation and its assets are resilient to climate change E) The Square Mile’s buildings, public spaces and infrastructure are resilient to climate change F) People in the Square Mile and beyond benefit from a clean, green and safe environment and job creation</p>			
<p>High level actions Action 2.1 Flood modelling, which include SUDs and other mitigation strategies, to complement EA flood models Action 2.2 Conduct pilot to test heat resistant materials in planned works for streets and highways during 2021-2025 Action 2.3 Develop City Corporation and Square Mile water footprint management strategy Action 2.4 Develop natural flood risk management areas Action 2.5 Sustainable rain and surface water management policies and implementation Action 2.6 Work with partners to accelerate actions to address water leak management Action 2.7 Increase the quality and provision of green space and coverage in the Square Mile and wider City Corporation spaces Action 2.8 Introduce climate-resistant and adaptive landscaping in planned works Action 2.9 Undertake funding sources review</p>	<p>Gross cost £M / yr.</p> <p>£2.0m</p>	<p>Impact on employment (estimate of total new jobs created in the green economy /yr.)</p> <p>8</p>	<p>What it pays for</p> <ul style="list-style-type: none"> • An investigation into new water infrastructure such as strategic SUDs, roof top greening, catchment greening and afforestation, and more as relevant • A register and upgrade plan for roads that are vulnerable to acute heat which mainstreams heat-resistant road surfacing • A connected system of water recycling, urban drainage and rainwater management measures • Increased greenery in the Square Mile public realm • Climate change adaptable landscapes and planting • A strong partnership with Thames Water to reduce water wastage from leakage
<p>Resilience Risks</p> <ul style="list-style-type: none"> • Flooding • Overheating • Water stress • Natural capital <p>Impact on resilience risks</p> <ul style="list-style-type: none"> • Additional guidance on climate resilience forming part of Planning Policy will reduce all resilience risks • Minimising temperature increases through the public realm, creating cool spots • Interventions such as shading, urban greening, heat-resistant road surfacing, natural flood risk management areas, flood defence asset maintenance and careful material selection will reduce all resilience risks 	<p>Measurement Total no. climate risks managed</p>	<p>Key Benefits</p> <ul style="list-style-type: none"> • Positive reputation amongst suppliers and construction industry • Indirect effect on green jobs and economic multipliers for green tech ecosystem • Increased visibility and standards across projects • Future proof public realm for climate impacts 	<p>Strategic Links Corporate Plan Outcomes – 5,7, Local Plan 2015, The draft City Plan 2036, Transport Strategy 2018-43, Responsible Business Strategy 2018-23, Local Flood Risk Management Strategy 2014-2020</p>

Action Area 4: Resilience Co-ordination and Training

Committee: Primarily Porth Health & Environmental Services Committee and Planning & Transportation Committee

CLIMATE RESILIENCE VISION: A future where the City's communities benefit from a fair and equitable transition to a climate resilient City with open access to data, knowledge and skills resulting in collaborative climate responses.			
STRATEGY GOALS: B) The City of London Corporation and its assets are resilient to climate change			
E) The Square Mile's buildings, public spaces and infrastructure are resilient to climate change			
F) People in the Square Mile and beyond benefit from a clean, green and safe environment and job creation			
High level actions	Gross cost £M / yr.	Impact on employment (estimate of total new jobs created in the green economy /yr.)	What it pays for
<p>Action 4.1 Develop financial package and programme to manage resilience in longer term</p> <p>Action 4.2 Expand use and availability of non-sensitive data to monitor effectiveness of interventions</p> <p>Action 4.3 Embed principles of inclusion and equity throughout all resilience strategies</p> <p>Action 4.4 Design and deliver cross-Corporation training programme to strengthen skills and capabilities on resilience</p> <p>Action 4.5 Mainstream climate resilience into City Corporation governance and decision-making</p> <p>Action 4.6 Review of above and below ground space utilisation in the Square Mile</p> <p>Action 4.7 Strengthen resilience requirements for planning</p> <p>Action 4.8 Undertake external funding sources review</p>	£0.3m	4	<ul style="list-style-type: none"> • A considered plan on funding options for climate resilience work, blending internal and external funding sources • A stronger, data-led approach to understanding climate related risks and mitigations across the Square Mile • A method to ensure that the needs of the most vulnerable to climate change are prioritised in decision making • A workforce with the knowledge and skills required to manage climate resilience across the Square Mile, backed up by a climate resilience lens across all decision making • A review of the supplementary planning guidance and approach for new developments to strengthen climate resilience measures
<p>Resilience Risks</p> <ul style="list-style-type: none"> • Flooding • Overheating • Water stress • Cross-cutting themes <p>Impact on resilience risks</p> <ul style="list-style-type: none"> • Embedding inclusion and equity in strategies and projects will ensure that the needs of the most vulnerable are prioritised • Skills gap analysis, skills sharing, and training will future proof the organisation 	<p>Measurement</p> <p>Total no. climate risks managed</p>	<p>Key Benefits</p> <ul style="list-style-type: none"> • External investment in Corporation assets • Increased visibility and standards across projects • Increased performance from capital spend • Future proof key asset base for the Corporation • Decreased costs due to integration of resilience actions 	
<p>Strategic Links</p> <p>Corporate Plan Outcomes – 5,7</p>			

Appendix 2 Risk Register – Costed Risk Provision (CRP)

See attached spreadsheet

Risk Register - Cool Streets & Greening Gateway 2 - Last Modified: 4m ago

Laban, Janet

File Home Insert Page Layout Formulas Data Review View Help Search

Clipboard Font Alignment Sensitivity Number Styles Cells Editing Ideas

City of London: Projects Procedure Corporate Risks Register

Project Name: Cool Streets & Greening

Unique project identifier: PV12345

PM's overall risk rating: Low

Total estimated cost (exc risk): £ 320,000

CRP requested this gateway: £ -

Total CRP used to date: £ -

Average unmitigated risk: 1.8

Average risk mitigated: 1.0

Open Risks: 5

Closed Risks: 0

General risk classification																	Ownership & Action						
Risk ID	Gateway	Category	Description of the Risk	Risk Impact Description	Likelihood Classification pre-mitigation	Impact Classification pre-mitigation	Risk score	Costed impact pre-mitigation (£)	Costed Risk Provision requested Y/N	Confidence in the estimation	Mitigating actions	Mitigation cost (£)	Likelihood Classification post-mitigation	Impact Classification post-mitigation	Costed impact post-mitigation (£)	Post-Mitigation risk score	CRP used to date	Use of CRP	Date raised	Named Departmental Risk Manager/Coordinator	Risk owner (Named Officer or External Party)	Date Closed CRP Realised & moved	Comment(s)
R1	2	(2) Financial	Funding not available	Project will not progress	Rare	Minor	1	£0.00	N	A - Very Confident	Climate Action Strategy funding identified	£0.00	Rare	Minor	£0.00	1	£0.00						
R2	2	(1) Compliance/Regulatory	Delays due to governance & sign off procedures	Project will be delayed	Possible	Minor	3	£0.00	N	A - Very Confident	Steering Group governance structure	£0.00	Rare	Minor	£0.00	1	£0.00						
R3	2	(4) Contractual/Partnership	Contract or partnership problems	Project will be delayed	Rare	Minor	1	£0.00	N	A - Very Confident	Procurement and controllers will oversee contracts and partnership arrangements	£0.00	Rare	Minor	£0.00	1	£0.00						
R4	2	(4) Contractual/Partnership	Skills shortage	Project quality compromised	Unlikely	Minor	2	£0.00	N	A - Very Confident	Skills available for this phase	£0.00	Rare	Minor	£0.00	1	£0.00						
R5	2	(3) Environmental	Minimal opportunities for resilience measures due to environmental constraints	Future phases of the project will need to be revisited	Unlikely	Minor	2	£0.00	N	A - Very Confident	Carry out this phase as preparation avoiding costly design for individual sites	£0.00	Rare	Minor	£0.00	1	£0.00						
R6								£0.00				£0.00			£0.00		£0.00						
R7								£0.00				£0.00			£0.00		£0.00						
R8								£0.00				£0.00			£0.00		£0.00						
R9								£0.00				£0.00			£0.00		£0.00						
R10								£0.00				£0.00			£0.00		£0.00						
R11								£0.00				£0.00			£0.00		£0.00						
R12								£0.00				£0.00			£0.00		£0.00						
R13								£0.00				£0.00			£0.00		£0.00						
R14								£0.00				£0.00			£0.00		£0.00						
R15								£0.00				£0.00			£0.00		£0.00						
R16								£0.00				£0.00			£0.00		£0.00						
R17								£0.00				£0.00			£0.00		£0.00						
R18								£0.00				£0.00			£0.00		£0.00						
R19								£0.00				£0.00			£0.00		£0.00						
R20								£0.00				£0.00			£0.00		£0.00						
R21								£0.00				£0.00			£0.00		£0.00						
R22								£0.00				£0.00			£0.00		£0.00						
R23								£0.00				£0.00			£0.00		£0.00						
R24								£0.00				£0.00			£0.00		£0.00						
R25								£0.00				£0.00			£0.00		£0.00						
R26								£0.00				£0.00			£0.00		£0.00						
R27								£0.00				£0.00			£0.00		£0.00						
R28								£0.00				£0.00			£0.00		£0.00						
R29								£0.00				£0.00			£0.00		£0.00						
R30								£0.00				£0.00			£0.00		£0.00						
R31								£0.00				£0.00			£0.00		£0.00						
R32								£0.00				£0.00			£0.00		£0.00						
R33								£0.00				£0.00			£0.00		£0.00						
R34								£0.00				£0.00			£0.00		£0.00						
R35								£0.00				£0.00			£0.00		£0.00						
R36								£0.00				£0.00			£0.00		£0.00						
R37								£0.00				£0.00			£0.00		£0.00						
R38								£0.00				£0.00			£0.00		£0.00						

Risk Register Issues Assumptions Dependencies

66%

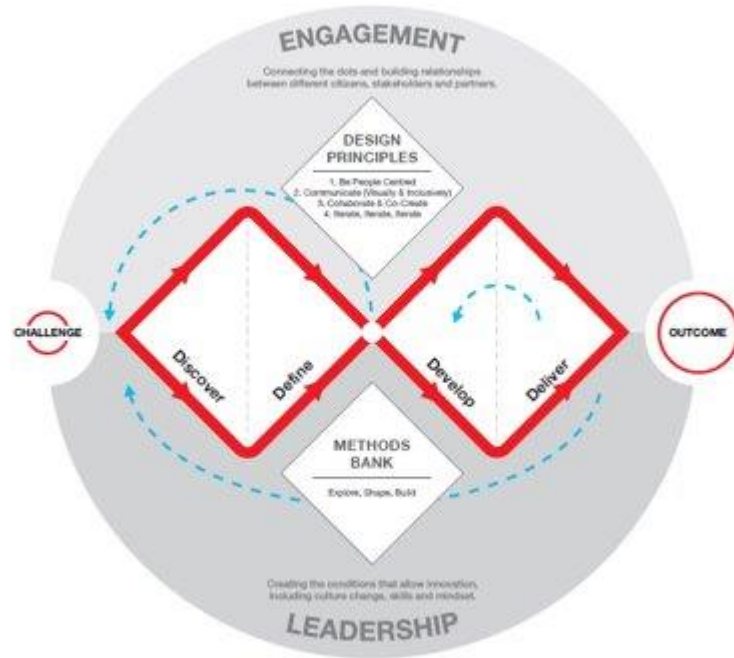
Appendix 3: Team Structure & Support

Proposed Environmental Resilience Team

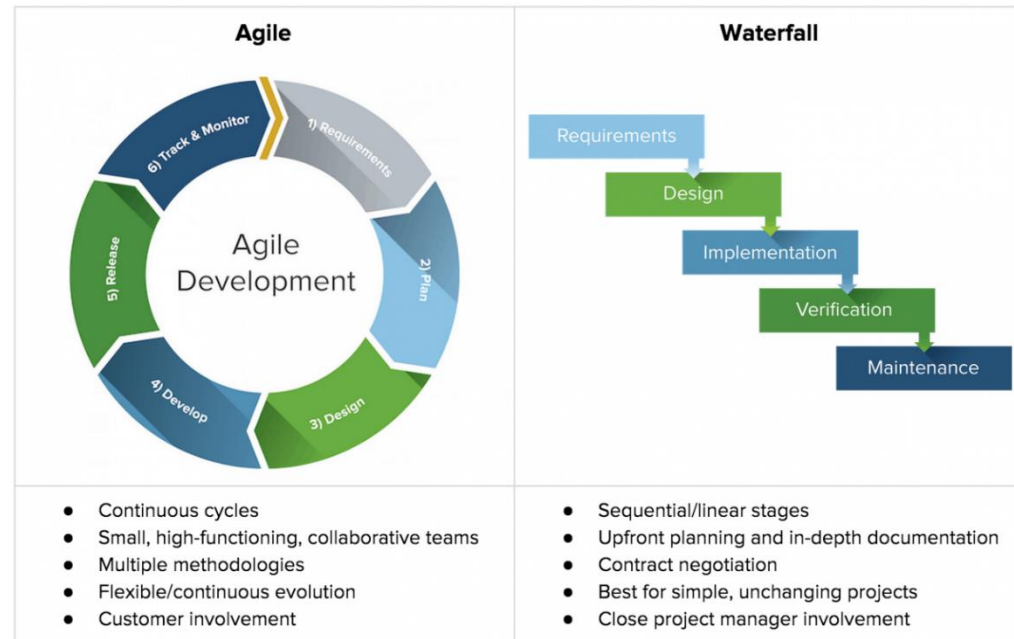
Post	Grade	Skills																
		Climate Change	Sustainability	Climate resilience	Data management	GIS	SuDS	Flooding	Water resources	Overheating	Natural capital	Greening	Pests & Diseases	Food and trade	Communications	Agile working	Funding bids	Budgeting & Finance
The resilience team should remain as a small team with secondment or temporary recruitment to fill posts. Part time secondments will help to spread the skills across the organisation and give interested individuals the opportunity to develop their expertise																		
Programme Lead – Climate Resilience	1 FTE Grade F	x	x	x											x	x	x	x
Data Lead – Climate resilience	1 FTE or 2 x0.5 FTE Grade E	x	x	x	x	x									x	x	x	x
Topic Lead Flooding / SuDS/ water resources	0.5 FTE Grade D/E			x			x	x	x						x	x		x
Topic Lead Overheating / natural capital / greening	0.5 FTE Grade D/E			x						x	x	x			x	x		x
Topic Lead Pest & disease / Food & Trade	0.5 FTE Grade D/E			x									x	x	x	x		x
Apprentice – Climate Resilience	1 FTE Apprentice		x		x										x	x		x
Total		1 FTE Grade F					1 FTE Grade E			1.5 FTE Grade D/E				1 FTE Apprentice				

Contact: janet.laban@cityoflondon.gov.uk

Design thinking



Agile Project Management



Lead officer: Janet Laban
 Line manager: Gordon Roy
 Authority: Carolyn Dwyer

CLIMATE ACTION STRATEGY
 PROJECT PLAN
RESILIENT STREETS AND GREENING

Project ID: CAS-00X
 Date: 30/10/2020
 Version: 1.1

Recipients: Damian Nussbaum, Simi Shah, Stuart Wright

Phases	Responsible	Completion	Year 0	Year 1	Year 2	Year 3	Year 4
			FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
			Oct-Mar	Apr-Sep	Oct-Mar	Apr-Sep	Oct-Mar
2.1 Flood modelling, which include SUDs and other mitigation strategies, to complement EA flood models	JL	0%					
Task 1: Review scope of Strategic Flood Risk Assessment 2017	JL	0%					
Task 2 Strategic Flood Risk Assessment Review	JL/ consultants	0%					
Task 3: Integrate findings into other plans and strategies	KS/ JL	0%					
2.2 Conduct pilot to test heat resistant materials in planned works for streets and highways during 2021-2025		0%					
Task 1: Design programme with Highways, Public Realm & Open Spaces	JL SG HS	0%					
Task 2: Baseline monitoring	SG HS	0%					
Task 3: Engage with partners Utilities highways contractor etc	SG HS	0%					
Task 4 Materials testing	SG HS	0%					
Task 5 Review and conclusions	JL SG HS	0%					
2.3 Develop City Corporation and Square Mile water footprint management strategy		0%					
Task 1: Design Programme	JL HS	0%					
Task 2: Baseline monitoring	JL HS	0%					
Task 3 Engage with Thames Water	JL HS	0%					
Task 4: Implement water reduction measures	JL HS	0%					
Task54: Review and conclusions	JL HS	0%					
2.4 Develop natural flood risk management areas		0%					

Task 1: Identify sites in Public Realm and Open Spaces	JL TM JT	0%	i
Task 2 Baseline monitoring -gulleys and sewers			
Task 3: Implement rain gardens/natural flood management measures	JL TM JT	0%	
Task 4: Review impact	JL TM JT	0%	
Task 5 Develop guidance	JL TM JT		
2.5 Sustainable rain and surface water management policies and implementation		0%	
Task 1: Identify sites in Public Realm and Open Spaces	JL SG TM	0%	
Task 2 Baseline monitoring -gulleys and sewers	JL SG TM		
Task 3: Implement SuDS	JL SG TM	0%	
Task 4: Review impact	JL SG TM	0%	
Task 5 Develop guidance	JL SG TM		
2.6 Work with partners to accelerate actions to address water leak management		0%	
Task 1: Engage with Thames Water	JL HS	0%	
Task 2: Identify vulnerability to burst water mains in the City	JL HS	0%	
Task 3: Leakage monitoring	JL HS	0%	
Task 4 Leakage management	JL HS		
Task 5 Review impacts	JL HS		
2.7 Increase the quality and provision of green space and coverage in the Square Mile and wider City Corporation spaces		0%	
Task 1: Identify sites in Public Realm and Open Spaces	JL SG JT	0%	i
Task 2: Baseline temperature monitoring	JL SG JT		
Task 3: Implement greening	JL SG JT	0%	
Task 4: Review impact	JL SG JT	0%	
Task 5: Develop guidance	JL SG JT		
2.8 Introduce climate-resistant and adaptive landscaping in planned works		0%	
Task 1: Identify sites in Public Realm and Open Spaces	JL SG JT	0%	i
Task 2 Implement resilient planting	JL SG JT	0%	
Task 3: Review impact	JL SG JT	0%	
Task 4: Develop guidance	JL SG JT		

2.9 Undertake external funding sources review			0%
Task 1: Review funding opportunities/ sources government/ utility companies/ businesses/ charities/ partnerships	JL	0%	
Task 2: Set up regular scanning programme for funding	JL	0%	
Task 3: Streamline application process for resilience funding using templates/ standard wording etc	JL	0%	
Task 4: Target 4 funding applications per year	JL		
2.10 Integrate above actions into relevant engagement plans	PROJECT TO BE DEVELOPED		
4.6 Review of above and below ground space utilisation in the Square Mile			0%
Task 1: Engage with British Geological Survey	JL HS	0%	
Task 2: Map below ground utilisation basements, utilities, archaeology, geology	HS	0%	
Task 3: Use mapping to identify opportunities for SuDS, cool routes, water storage etc	HS JL TM	0%	
Task 4: Develop guidance on use of underground spaces	HS JL		
i - overlaps between these projects			
JL - Janet Laban			
SG - Simon Glynn			

HS - Holly Smith

JT - Jake Tibbetts

Appendix 5 Stakeholder Engagement Plan

Who:	What message?	Channels	When
Internal/External. Priority groups.	Inform, engage or consult. Asks/offers.	Tried and tested. New.	Phase around project plan. Media needs 1-month lead-time.
COLC Members <ul style="list-style-type: none"> • Streets & Walkways • Planning & Transport • Open Spaces • PHES 	Engage Asks: Seek approval for projects Offers: CAS implementation projects	Committees	Ongoing as required
London Boroughs of Camden, Islington, Westminster, Kensington & Chelsea and Hammersmith & Fulham	Engage Asks: Project partnerships Offers: Collaborative resilience projects	Collaboration through Officers	Quarterly partnership meetings
Potential Funders External <ul style="list-style-type: none"> • Defra • TRFCC • Environment Agency • BIDs 	Engage Asks: Seek funding Offers: Projects which meet funding priorities	Regular partnership meetings Funding opportunities	Ongoing – quarterly partnership meetings
Businesses & SMEs	Consult Asks: Seek comments Offers: Inform of plans	Consultation surveys Website Social media	Q1-2 2021/22
Public realm users City Residents Disability groups City of London Access Group	Consult Asks: Seek feedback on plans Offers: Inform of plans	Consultation surveys Website Social media	Q1-2 2021/22
COLC Officers <ul style="list-style-type: none"> • Highways • Open Spaces • Public Realm • Housing • Cleansing 	Engage Asks: Project management for implementation of resilience measures Offers: Part funding	Climate Chats Interviews 1:1 meetings	Q1-2 2021/22
Green Finance Institute Contractors Academic partner Thames Water UKPN BT Openreach Transport for London British Geological Survey	Engage Asks: Technical / expert input into Climate Resilience plans Offers: Involvement with Local Authority Leader in Climate Resilience	Interviews 1:1 meetings	Q2-3 2021/22
CoLC Comptrollers & City Solicitors Emergency services	Consult Asks Seek feedback on plans Offers: Inform of plans	Consultation	Q2-3 2021/22
Environment Agency	Engage Asks: Expert input into plans Offers: Involvement with Local Authority Leader in Climate Resilience	Partnership meetings 1:1 meetings	Ongoing
London Climate Change Partnership London Councils Green & Resilient Group London Drainage Engineers Network London Environmental Coordinators Forum	Inform Asks: Comment on plans Offer: Knowledge sharing	Presentations at regular meetings	Ongoing Quarterly meetings

Appendix 6 Cool Streets & Greening Procurement Plan

Package	Contract type	Requirements	Contract value	Timescale	Selection process	Responsible procurement
Framework development	Consultant	Develop a framework for the 4 year Cool Streets & Greening Programme to ensure delivery of: Outputs: a minimum of 17 climate resilient test sites Outcomes: monitoring and evaluation of direct impacts, co benefits and value for money. Benefits: A climate resilient Square Mile and roadmap for future resilience	40-70K	Q1 2021/22	Request for quote (RFQ) process via the Procurement Operations team	Include responsible business in tender evaluation
Resilience Measures Catalogue	Consultant	Develop a technical catalogue of resilience measures, methodology for recording effectiveness of resilience measures and recommendations for inclusion in City Corporation design guides	Phase 1 10K-20K + Phase 2 30K-40K	Q4 2020-21 Q2 2021/22	Continuation of previous work with Buro Happold + competitive tender for phase 2	Review sustainability credentials of current provider
Smart sensors for flood risk monitoring	Contractor	Provide and install smart sensors to monitor water levels in gullies in high flood risk parts of the City along with control sensors elsewhere in the City. Integration of the data with MET office weather data, the City's gully emptying schedule and SuDS implementation and reporting real time monitoring results through Power BI	40-50K	Q1-2 2021/22	Procurement Authorisation Report (PAR)	Include responsible business in tender evaluation
Smart sensors for heat risk monitoring	Contractor	Provide and install smart sensors to monitor temperature across the Square Mile. Integration of the temperature data with MET office weather data, air quality monitoring and urban greening reporting real time monitoring results through Power BI	40-50K	Q1-2 2021/22	Procurement Authorisation Report (PAR)	
Data collection & analysis	Contractor	Ongoing assistance in smart monitoring, analysis and interpretation of results	20-30K	Q2 2021/22- to Q4 2024/25	Procurement Authorisation Report (PAR)	Include responsible business in tender evaluation

Opportunity mapping	Specialist consultant	Development of comprehensive below ground mapping for the Square Mile. Integrated 3D spatial assessment, drawing on existing, but disparate, data and models (e.g. 3D geology, soil properties, land use, basements, buried utilities, archaeology) to i) map underground structures and linkages to surface features, ii) model surface-subsurface environmental conditions, iii) model potential interactions between groundwater systems and underground structures and surface water features. The below ground assessment will be used to identify suitable locations for integrated water management options including natural flood management e.g. SuDS and options for dual-use of underground assets for flood alleviation.	Phase 1 75K Phase 2 75K – 125K	Q1 to Q4 2021-/22 Q1 2022/23 to Q3 2023/24	Formal Invitation to Tender (ITT)	Include responsible business in tender evaluation
Site identification & prioritisation	In House or specialist consultant	Using evidence from below ground mapping, City Corporation GIS, vulnerability data and development potential, develop a comprehensive map of suitable sites for implementation of resilience measures, with priorities and timing estimates	80-100K	Q2 2021/22- Q3 2024/25	Request for Quote (RFQ) process via the Procurement Operations team	Include responsible business in tender evaluation
Design and model resilience measures for 4 - 7 pilot sites	In house with advice from specialist consultant	Develop comprehensive designs for resilience measures for 4 - 7 no pilot sites	40K-60K	Q 1-2 2021 /22	Request for Quote (RFQ) process via the Procurement Operations team	Include responsible business in tender evaluation
Installation of resilience measures for 4-7 pilot sites	Highways term contractor	Install resilience measures on 2 -4 pilot sites	0.9M-1.08M	Q2-4 2021/22	Highways term contractor	Include responsible business in tender evaluation
		TOTAL 2021-22	£1.35-£1.7M			
Design, install and monitor resilience measures in suitable sites in the Square Mile	In house design and monitoring with consultancy support plus Highways	Implement a programme of design, installation and evaluation of resilience measures with ongoing maintenance on sites across the Square Mile	1.7M pa	Q1-4 2022/23 Q1-4 2023/24 Q1-4 2024/25	Competitive tender/ Framework contract	Include responsible business in specification and tender evaluation

	term contractor for installation					
Scientific verification of programme findings	Academic partner	Sponsor PhD Researcher to develop robust evidence of Resilience measure effectiveness	35K per annum (total 140K)	Q3 2021/22 to Q2 2024/25	Request for Quote (RFQ) process via the Procurement Operations team	Use academic institution with exemplar responsible business reputation
		TOTAL 2022-24	£5.24M			
		Cool Streets & Greening TOTAL 2021-24	£6.59M - 6.94M			