

Committees: Service Committee – Streets & Walkways Sub – for decision Projects Sub – for decision Open Spaces Committee – for information	Dates: 15 February 2022 17 February 2022 15 February 2022
Subject: Climate Action Strategy – YEAR 2 Cool Streets and Greening Programme Unique Project Identifier: PV ID 12267	Gateway 3/4: Options Appraisal Regular
Report of: Director of the Built Environment Report Author: Janet Laban	For Decision
<h1>PUBLIC</h1>	

1. Status update	<p>Project Description: Cool Streets and Greening is a Climate Action Strategy programme to pilot climate resilient streets and open spaces in the Square Mile. Year 1 of this programme is underway. This Gateway 3-4 report is seeking approval to progress Year 2 of the programme.</p> <p>RAG Status: Gateway 2 Green, Gateway 3-4 Year 1 Green, Gateway 3-4 Years 2 Green</p> <p>Risk Status: Gateway 2 Low, Gateway 3-4 Year 1 Low, Gateway 3-4 Years 2 Low</p> <p>Total Estimated Cost of Project (excluding risk): £6.8M 1.7M per year for 4 years from Climate Action Strategy budget</p> <p>Change in Total Estimated Cost of Project (excluding risk): Increase/Decrease of £0 since last report to Committee</p> <p>Spend to Date: £123K (See appendix 3 & 4)</p> <p>Costed Risk Provision Utilised: £0</p> <p>Funding Source: Climate Action Strategy - On Street Parking Reserve (CAS – OSPR)</p> <p>Slippage: None</p>
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<p>2. Next steps and requested decisions</p>	<p>Next Gateway: Gateway 5: Authority to Start Work on individual projects</p> <p>Next Steps: Detailed designs will be drawn up for incorporation of the resilience measures into the Year 2 sites and new sites will be identified for additional projects. This will include proposals for implementation, maintenance and evaluation. Monitoring which will be carried out over a four-year period to assess the effectiveness of the range of climate resilience measures that are implemented. Individual Gateway 5 reports will be submitted for each of the proposed projects making it clear where the Cool Streets and Greening funding supplements other funding sources to improve climate resilience at each site.</p> <p>Requested Decisions:</p> <ol style="list-style-type: none"> Year 1 projects – Note the progress on Cool Streets and Greening Year 1 projects (see appendix 4): <ul style="list-style-type: none"> Cheapside sunken garden Bevis Marks Jubilee Gardens City of London School – riverside site Vine Street tree planting – monitoring only Climate resilient planting (4 sites) – monitoring only Year 2 projects -That a budget of £750K is approved in principle for design and installation of climate resilience measures on six Year 2 sites to enable redesigns of existing sites to be progressed. Final designs and costs will be confirmed through Gateway 5 reports for each individual site. <ul style="list-style-type: none"> Little Trinity Lane Crescent Bank Moor Lane Barbican – monitoring only Finsbury Circus – monitoring only Note that revenue costs of £120K associated with maintenance and monitoring for Year 2 sites will be funded from the Climate Action Strategy revenue budget Additional Year 2 projects – That a budget of £550-850K (depending on the number of sites identified) is approved for the identification, design and implementation (in principle) of additional sites through the following workstreams in Year 2: <ul style="list-style-type: none"> Cubic Mile project in conjunction with British Geological Survey (BGS) Heat Resilient Highways – risk appraisal Citywide Greening and Biodiversity, <p>Final designs and implementation costs for the additional sites identified in Year 2 will be subject to Gateway 5 approval.</p>
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	<p>5. Note the revised budgets set out in table 1</p> <table><tr><td></td><td>Budget</td><td>Spend 2021/22 (To Jan 2022)</td><td>Proposed spend to March '23</td></tr><tr><td>Gateway 1-2</td><td>£320K</td><td>£123K</td><td>£197K</td></tr><tr><td>Gateway 3-4 Year 1</td><td>£660K</td><td>£nil</td><td>£660*</td></tr><tr><td>Gateway 3-4 Year 2</td><td>£750K existing sites £550-850K new sites</td><td>N/A</td><td>A budget uplift of 120K is required to get to Gateway 5 Total proposed spend (in principle) £1.3M to 1.6M*</td></tr><tr><td>Revenue budgets</td><td>£120K Year 2</td><td></td><td></td></tr></table> <p>*Subject to Gateway 5 approval for implementation</p> <p>6. Note that of the Year 1 funding approved at Gateway 1-2 for evaluation and programme development and Gateway 3-4 for site design and implementation £857K will be carried forward to Year 2 to complete this work.</p> <p>7. In addition, revenue budgets of 120K over a period of five years for maintenance and monitoring of Year 2 projects are required.</p> <p>8. Note the progress that has been made on the Cool Streets & Greening project since Gateway 2 approval in April 2021. See appendix 3</p> <p>9. Note the total estimated cost of the project at £6.8M = 1.7M per year for 4 years CAS budget (excluding risk)</p>		Budget	Spend 2021/22 (To Jan 2022)	Proposed spend to March '23	Gateway 1-2	£320K	£123K	£197K	Gateway 3-4 Year 1	£660K	£nil	£660*	Gateway 3-4 Year 2	£750K existing sites £550-850K new sites	N/A	A budget uplift of 120K is required to get to Gateway 5 Total proposed spend (in principle) £1.3M to 1.6M*	Revenue budgets	£120K Year 2		
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<p>3. Resource requirements to reach next Gateway</p>	<p>3.1 The next Gateway for this work will be integrated into individual Gateway 5 reports for each project. A budget uplift of £120k is required at this stage for site design and monitoring infrastructure.</p> <p>3.2 Members are requested to note the overall envelope of £750K which will be required at Gateway 5 for Year 2 projects as itemised in the table below:</p> <table><tr><td>Item</td><td>Reason</td><td>Funds – source of funding</td><td>Indicative cost (£)</td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Item	Reason	Funds – source of funding	Indicative cost (£)																
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	Little Trinity Lane	SuDS including raingardens, channels and re-profiling footway, trees, Climate resilient planting. Trial of pollution mitigation green screen/ climbing plants	Climate Action Strategy (CAS) funding On Street Parking Reserve (OSPR)	165K	
	Crescent	SuDS, Climate resilient planting, trees, permeable paving	CAS OSPR	220K / 270K to be confirmed in Feb	
	Bank	Rain gardens, climate resilient planting & trees	CAS OSPR	165K	
	Moor Lane	Rain gardens, channels and re-profiling footway, trees, pergolas, cool paving climate resilient planting	CAS OSPR	110K	
	Finsbury Circus	Monitoring only	CAS OSPR	20K	
	Barbican podium	Monitoring only	CAS OSPR	20K	
	Total Capital costs			750K	
	Maintenance and monitoring of all sites	To evaluate the effectiveness of the	To be met by Climate Action Strategy	£120K funded from CAS revenue	

		measures for combating climate risks and identify any additional operational costs	revenue funds	– not included in total																
	Total	Capital and revenue costs		870K																
<p>3.3 In addition to the existing sites programme during Year 2 work will progress to find new sites where climate resilience measures can be incorporated. The next gateway for these sites will be individual Gateway 5 approvals for each site</p> <p>NEW SITE IDENTIFICATION SCOPING, DESIGN AND IMPLEMENTATION</p> <table><tr><th>Item</th><th>Reason</th><th>Funds/ Source of Funding</th><th>Indicative Cost (£) <small>subject to identification of suitable sites</small></th></tr><tr><td>Cubic Mile project</td><td>Below ground sites identified through cubic mile project Target 3- 5 sites</td><td>CAS OSPR</td><td>£250K - 400K</td></tr><tr><td>Heat Resilient Highways</td><td>Climate risk assessment and materials review of existing highways materials and identification of measures to reduce heat absorption</td><td>CAS OSPR</td><td>£50K</td></tr><tr><td>Citywide Greening and Biodiversity</td><td>To improve the Square Mile's Urban Greening Factor, improve opportunities and corridors for biodiversity and contribute</td><td>CAS OSPR</td><td>£250K - 450K</td></tr></table>					Item	Reason	Funds/ Source of Funding	Indicative Cost (£) <small>subject to identification of suitable sites</small>	Cubic Mile project	Below ground sites identified through cubic mile project Target 3- 5 sites	CAS OSPR	£250K - 400K	Heat Resilient Highways	Climate risk assessment and materials review of existing highways materials and identification of measures to reduce heat absorption	CAS OSPR	£50K	Citywide Greening and Biodiversity	To improve the Square Mile's Urban Greening Factor, improve opportunities and corridors for biodiversity and contribute	CAS OSPR	£250K - 450K
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		to the Queen's Green Canopy		
	TOTAL	Year 2 new sites		£550 – £850K
	<p>3.4 Policy and Resources Committee has approved funding for the Cool Streets and Greening project under the Climate Action Strategy (CAS) programme with draw-down of funding subject to further approval of the Resource Allocation Sub Committee.</p> <p>3.5 All staff costs for project management, are included in the above figures against each project site. Costs for maintenance and monitoring of the resilience measures will be met from CAS revenue funding under the Cool Streets and Greening Programme.</p> <p>3.6 The Cool Streets and Greening project activities already approved are progressing in line with the update set out in Appendices 3 & 4. These activities will continue in parallel with the development of Year 2 sites.</p>			
4. Overview of project options	<p>Option 1 – Redesign of existing projects to include climate resilience measures – Preferred Option</p> <p>4.1 A total of 18 sites were initially identified as suitable for incorporation of climate resilience measures.</p> <p>4.2 These sites were prioritised using the following hierarchy:</p> <ul style="list-style-type: none"> • Priority 1: Existing sites. Priority has been given to sites where projects are already planned which are due for construction by 2023. The designs will be enhanced to incorporate climate resilience measures. • Priority 2 – Climate resilience benefits. Assessment of the potential climate resilience benefits is taken from the Climate Resilience Measures Catalogue which was prepared for the City Corporation by Buro Happold. • Priority 3 – Cost per benefit. This ensures that the projects chosen, represent a cost-effective approach to climate resilience. • Priority 4– Benefits per square metre. The most effective measures will have multiple benefits in the same space and will score higher. <p>4.3 Progress on the Year 1 projects is outlined in Appendix 4 and completion dates for each site are summarised below</p> <ul style="list-style-type: none"> • Greening Cheapside June 2022 • Bevis Marks/ Dukes Place June 2022 • Jubilee Gardens Oct 2022 			

	<ul style="list-style-type: none"> • City of London School: June 2022 • 35 Vine Street June 2022 • Resilient Planting 4 sites Monitoring only <p>4.4 Ongoing monitoring of each site will establish the most suitable climate resilience measures for the Square Mile.</p> <p>4.5 Appendix 2 shows the prioritisation of sites for Year 2 This report seeks approval to include climate resilience measures at the following sites:</p> <ul style="list-style-type: none"> • Little Trinity Lane • Crescent • Bank • Moor Lane • Barbican Podium Phase 2 MONITORING ONLY • Finsbury Circus MONITORING ONLY <p>4.6 The Climate Action Strategy funding will fund the design, installation, maintenance and monitoring of climate resilience measures for four sites and monitoring only for two sites.</p> <p>4.7 Maintenance and monitoring are an integral part of this programme which aims to assess whole life costs of each measure and evaluate its effectiveness through monitoring over a five-year period. These costs will be covered by the wider Climate Action Strategy funding and we will work with Chamberlains to confirm the details and include this information at Gateway 4a which will be reported to the Resource Allocation Sub-Committee.</p> <p>4.8 The majority of the Year 2 projects are also funded from other sources which have been approved separately. The Cool Streets and Greening fund is in addition to these other sources and will enable climate resilience measures to be implemented, maintained and evaluated. The most effective measures will then be included in design guidance for public realm, open spaces and highways projects.</p> <p>Option 2 – Identify new sites for climate resilience</p> <p>4.9 To date the Cool Streets and Greening projects have opportunistically targeted interventions in existing projects to speed implementation. For new schemes climate resilience measures should be incorporated as business as usual from now onwards. However, it is beneficial to pilot further measures and interventions and to do this it will be necessary to first identify the areas and sites where these measures can have the most impact.</p> <p>4.10 The City Corporation is working in partnership with the British Geological Survey to map below ground opportunities for climate resilience measures. This “Cubic Mile” project, which is part funded by the</p>
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	<p>Natural Environment research Council (NERC) should identify new sites where designs can combat climate change impacts.</p> <p>4.11 The City's highways will be subjected to increased temperatures, drought and potential flooding later this century. Risk assessment of the materials that are currently used will demonstrate whether resilience measures will be needed to avoid disruption to traffic and movement in the Square Mile. Heat Resilient Highways test sites may be identified for trials of measures to reduce heat absorption.</p> <p>4.12 Citywide greening and biodiversity– evidence shows that greening can effectively reduce temperatures in urban environments and that a high density of greening is more effective than individual pockets. Citywide greening will contribute directly to an increase in Urban Greening factor for the Square Mile and will provide additional benefits to managing flooding, combatting biodiversity loss and the prevalence of new pests and diseases (subject to the type of planting).</p> <p>4.13 Biodiversity resilience relies on corridors and routes for the movement of insects, birds, and other species. Linking up existing green spaces both within the Square Mile and to the Green Grid beyond the City's boundaries will assist in protecting and enhancing biodiversity. Suitable linking sites will be identified to focus biodiversity enhancement in the most effective places and contribute to the implementation of the Biodiversity Action Plan.</p> <p>4.14 Possible new sites may include numerous tree planting locations (identified through the Cubic Mile project) which could contribute to the Queen's Green Canopy platinum jubilee project. The Finsbury Circus western arm, Moorgate London Wall junction and the north south lanes leading to the river are amongst the sites that could provide green corridors and cool routes through the City.</p> <p>Option 3 Do Nothing</p> <p>4.15 This option would make no preparations for changed weather patterns as a result of climate change.</p> <p>4.16 This would mean continuing with a reactive approach responding to disruption from adverse weather and other climatic impacts as it affects the Square Mile.</p> <p>4.17 This option risks higher costs for clean-up, reputational damage and misses opportunities to prepare for changes in the climate as works are carried out during this decade.</p>
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<p>5. Recommended option</p>	<p>5.1 Options 1 and 2 are recommended.</p> <p>5.2 The Option 1 sites that have been chosen are all due for construction by 2023 and will pilot a range of different climate resilience measures. It is important to begin evaluation of these measures quickly to identify which are the most successful and cost effective in combatting the risks that the City faces from climate change: flooding, heat stress, biodiversity loss, water shortages, disruption to food and trade and emerging pests & diseases.</p> <p>5.3 Additional opportunities for climate resilience, including innovative measures, will be identified through Option 2. Prioritisation, design and implementation of these sites will be carried out during Q3 &Q4 2022/23.</p>
<p>6. Risk</p>	<p>6.1 There is a risk that detailed design and surveys identify constraints to the implementation of some measures. In this case the design would need to revert to traditional drainage, planting or paving. This might incur additional design cost but would be offset by a reduction the cost of the resilience elements.</p> <p>6.2 The design and implementation of these projects relies on in-house and consultancy expertise. There is a risk that skills shortages in the climate action field lead to a lack of expertise to progress these projects.</p> <p>6.3 There is a risk that the City is unable to fulfil the commitments made in the Climate Action Strategy resulting in a lack of preparedness for climate change.</p> <p>6.4 It is anticipated that no Costed Risk Provision (CRP) will be required since there are no high-risk elements to these projects.</p> <p>6.5 Further information available in the Risk Register (Appendix 2) and Options Appraisal.</p>
<p>7. Procurement approach</p>	<p>7.1 Design and installation of the resilience measures will be included in the project plans for each site alongside the existing works.</p> <p>7.2 Approval of final designs and authority to start work will be through the Gateway 5 reports for each individual project using CAS funding to cover installation, maintenance and monitoring of the resilience measures.</p> <p>7.3 All Civil works will be carried out by the Highways term contractor and all planting works will be carried out by the Open Spaces in-house team.</p> <p>7.4 Any further design, maintenance or monitoring work will be procured in accordance with the City Procurement procedures</p>

Appendices

Appendix 1	Project Coversheet
Appendix 2	Risk Register (for recommended option)
Appendix 3	Progress against Gateway 2 approval
Appendix 4	Progress on Year 1 sites
Appendix 5	CS&G Site Prioritisation Spreadsheet Year 2
Appendix 6	Visuals for Year 2 priority sites

Contact

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Options Appraisal Matrix

<i>Option Summary</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
1. Brief description of option	Redesign of existing projects to include climate resilience measures and monitoring programme to evaluate their effectiveness. This will cover years 1 and 2 of the Cool Streets & Greening programme	Identification of new sites for design, installation and monitoring of climate resilience measures for Year 2 of the Cool Streets & Greening programme	Do nothing to prepare for climate change impacts
2. Scope and exclusions	A call for sites produced 18 potential sites where work is already planned but could be redesigned to include climate resilience measures. These have been prioritised with 6 projects (including 9 sites) proposed for implementation in year 1 and 6 projects proposed for Year 2.	Opportunity mapping for suitable new sites, which was approved at Gateway 2, is underway. This work will be completed by Sept 2022 when suitable sites can be prioritised, measures proposed and designs progressed	This option would take a reactive approach to climate related emergencies such as flooding, heat stress, water shortages etc, responding when they happen.
<i>Project Planning</i>			
3. Programme and key dates	All the proposed sites are due for completion by end 2023	Estimated key dates: Climate resilience opportunity mapping Q4 2021/22 Site identification Q1-Q2 2022/23	React to climate related emergencies when they occur

Option Summary	Option 1	Option 2	Option 3
		Design Q3-Q4 2022/23 Implementation 2023/24	
4. Risk implications	<p>Overall project option risk: Low</p> <p>There is a risk that detailed surveys show constraints that make installation of SuDS and other climate resilience measures impractical.</p> <p>Further information available within the Risk Register (Appendix 2).</p>	<ul style="list-style-type: none"> • Medium risk that no suitable sites will be identified 	This option risks the City being unprepared for climate impacts leading to emergency incidents and associated reputational damage
5. Stakeholders and consultees	<ul style="list-style-type: none"> • Residents and businesses adjacent to proposed sites • City Corporation officers: Highways, Transport, Historic Environment, Access City Public Realm 	<ul style="list-style-type: none"> • Residents and businesses adjacent to proposed sites • City Corporation officers: Highways, Transport, Historic Environment, Access City Public Realm 	None
6. Benefits of option	<ul style="list-style-type: none"> • Resilience implemented by end 2023 • Uses sites where work is already planned minimising disruption and cost 	<ul style="list-style-type: none"> • Identifies sites based on opportunity mapping • Sites suitable for a wide range of resilience measures 	Immediate costs avoided

Option Summary	Option 1	Option 2	Option 3
	<ul style="list-style-type: none"> Provides monitoring data to inform site selection later in the 5 year programme 	are more likely to be identified	
7. Disbenefits of option	Potential limitation on the types of resilience measures possible on sites where other work is already planned	Higher cost per site than option 1. CAS funding will need to pay for all works since these are not sites where other work is already planned.	Risk of emergency leading to high repair costs, disruption to the city and reputational damage
Resource Implications			
8. Total estimated cost	<p>Estimated capital cost for Year 1 = £660K Year 2 = £750K</p> <p>There is a high level of confidence in this figure based on estimates from the Public Realm team who have experience in implementing similar schemes elsewhere.</p>	<p>Estimated capital costs: Year 2 £500K - £850K</p> <p>Costs will depend on the types of resilience measures that are feasible on each site. Other sources of funding will be sought but some measures will need to be fully funded through the CS&G programme</p>	<p>No immediate investment costs.</p> <p>Future emergency costs unknown</p>

Option Summary	Option 1	Option 2	Option 3
9. Funding strategy	Climate Action Strategy – On Street Parking Reserve	Climate Action Strategy – On Street Parking Reserve	N/A
10. Investment appraisal	None – scheme is fully funded through Climate Action Strategy	None – scheme is fully funded through Climate Action Strategy	N/A
11. Estimated capital value/return	N/A.	N/A	N/A
12. Ongoing revenue implications	Ongoing revenue will be needed for maintenance and evaluation of the resilience measures over the 5-year period of the Cool Streets and Greening programme. An initial estimate of 10% of capital costs has been added (70K) however evaluation of maintenance costs will be part of the evaluation of each project. Some measures may result in reduced maintenance costs in the longer term.	Ongoing revenue will be needed for maintenance and evaluation of the resilience measures over the 5-year period of the Cool Streets and Greening programme. An initial estimate of 10% of capital costs has been added (£50K) however evaluation of maintenance costs will be part of the evaluation of each project. Some measures may result in reduced maintenance costs in the longer	N/A
13. Affordability	The scheme is fully funded through the Climate Action Strategy	The scheme is fully funded through the Climate Action Strategy	N/A

Option Summary	Option 1	Option 2	Option 3
14. Legal implications	Planning permissions will be sought where necessary	Planning permissions and Highways orders will be sought where necessary	N/A
15. Corporate property implications	None	None	N/A
16. Traffic implications	None	To be advised based on the sites identified	N/A
17. Sustainability and energy implications	The Cool Streets & Greening programme is a Climate Action Strategy project which aims to ensure that the City remains resilient to the impacts of climate change (hotter drier summers, warmer wetter winters, more frequent weather extremes and sea level rise) All materials used in the projects will be sustainably sourced applying circular economy principles wherever possible	This project would align with the Climate Action Strategy aim that the City is resilient to the impacts of climate change	This option would conflict with the City's Climate Action Strategy goal of a climate resilient City
18. IS implications	Monitoring data will be made available through the Azure IOT hub	Monitoring data will be made available through the Azure IOT hub	N/A

<i>Option Summary</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
19. Equality Impact Assessment	Equality Impact Assessment – Test of Relevance will be carried out for all proposed project designs	Equality Impact Assessment – Test of Relevance will be carried out for all proposed project designs	This option could lead to greater danger for vulnerable groups
20. Data Protection Impact Assessment	N/A	N/A	N/A
21. Recommendation	Recommended	Recommended	Not recommended

Appendix 1 Project Cover Sheet – attached

Appendix 2 Risk register – attached

Appendix 3 Progress on Gateway 2 programme

Item	Progress summary	Outputs to date	Indicative Cost (£)	Spend to date (committed end Jan 2022)
Framework Development	Project plans have been developed for year 1 and years 2/3	Project Plan Cool Streets & Greening – Year 1 Project Plan Cool Streets & Greening – Year 2/3	£50K	7K
Resilience measures catalogue	Beta version of the resilience measures catalogue in use for site prioritisation Resilient planting catalogue scoping and evaluation of existing sites underway	Beta version of resilience measures catalogue listing 34 measures with indicative costs and benefits	£10K	10K
Smart sensors & monitoring	Collaboration with Kings College London and COL Boys' School - sensors installed, data gathering underway	Temperature, humidity, soil moisture and air quality sensors installed and gathering data. Weather station installed on roof of Boys' School and gathering data	£85K	£12K
Smart sensors & monitoring	Urban Controls Mesh connected sensors – order to be placed by end Feb 2022 installation due by summer 2022	Specification and quotes for Mesh network connected sensors		£33K
Smart sensors & monitoring	10 Gully sensors – order to be placed by end Feb 2022 installation due by summer 2022	Specification and quotes for gully sensors		£29K

Data collection & analysis	<p>Climate Action Strategy dashboard has been developed to provide an overview of the progress on all CAS projects.</p> <p>Data collection and analysis from sensor network will be through an Azure IOT hub allowing outputs in Power BI or via the Free-station public access website</p>	<p>Climate Action Strategy dashboard</p> <p>Specification for sensor outputs to be analysed via Azure IOT hub</p> <p>Free-station outputs for Cheapside sunken garden and Boys' School weather station</p>	£20K	
Opportunity mapping & data gap analysis	Cubic Mile partnership project underway with British Geological Survey (BGS) funded by NERC. Project completion Nov 2022	Data sources spreadsheet and collation of existing mapping	£75K	£20K
Site identification & prioritisation	<p>Year 1 Complete</p> <p>Year 2 Complete</p> <p>Year 3 Projects underway to identify further sites</p>	<p>Year 1 – six projects identified - 9 sites</p> <p>4 sites implementation & monitoring 5 sites – monitoring only</p> <p>Year 2 – six projects identified – 6 sites</p> <p>4 sites implementation & monitoring 2 sites – monitoring only</p> <p>New sites – Areas of search defined</p>	£30K	5K
Staff costs site identification & prioritisation	Public Realm Team and Open Spaces team staff costs for sites designs		£50K	7K
Staff costs CS&G workstream management	Environmental Resilience team staff costs	Environmental Resilience Officers	£100K	tba
			£320K	£123K

Appendix 4 Progress on Year 1 Projects

Site	Proposed measures	Progress summary	Outputs	Indicative Cost (£)	Spend to date
Bevis Marks	Installation of rain garden permeable paving trees and climate resilient planting	In design Gateway 5 approval early 2022 delegated Construction Start date April 2022 Completion June 2022	Measures included in the design for Bevis Marks <ul style="list-style-type: none"> • SuDS – raingardens with channels and reprofiled footways • Permeable paving • Trees • Climate resilient planting Monitoring planned <ul style="list-style-type: none"> • Temperature, humidity, and soil moisture – Urban controls – connected to mesh network • Gully sensors - supplier tba 	250K	Subject to Gateway 5 approval
Jubilee Gardens	Installation of Sustainable Drainage System (SuDS) green wall trees and climate resilient planting	In design Gateway 5 approval April 2022 delegated to chief officer Construction Start date summer 2022 Completion Autumn 2022	Measures included in the design for Jubilee Gardens <ul style="list-style-type: none"> • SuDS soakaways • Green wall • Trees • Climate resilient planting Monitoring planned <ul style="list-style-type: none"> • Temperature, humidity, and soil moisture Urban Controls – connected to mesh network • Gully sensors - supplier tba 	150K	Subject to Gateway 5 approval
Greening Cheapside	Installation of SuDS, permeable	In design	Measures included in the design for Greening Cheapside site: <ul style="list-style-type: none"> • SuDS soakaways – reprofiling footways to drain to landscaping around trees 	180K	Subject to Gateway 5 approval

	paving and climate resilient planting	Gateway 5 approval Jan 2022 Construction Start date April 2022 Completion June 2022	<ul style="list-style-type: none"> • permeable paving – bound gravel for all paved surfaces • Climate resilient planting Monitoring In collaboration with Kings College London and Ambiotek the following sensors are in place: <ul style="list-style-type: none"> • Temperature & humidity • Soil moisture • Air quality • Weather station (on Boys' School Roof) 		
Riverside Planters City of London School	Climate resilient planting in water retentive soils, removal of artificial irrigation, retention of existing trees	In design Planting date spring/ autumn 2022 Completion November 2022	Measures included in the design for the Riverside Planters <ul style="list-style-type: none"> • Alternative planting mediums – water retention • Retention of existing trees • Climate resilient planting Monitoring planned in conjunction with Kings College London & Ambiotek <ul style="list-style-type: none"> • Temperature & humidity • Soil moisture • Chlorophyll leaf monitoring sensors Plus comparison with commercial sensors	55K	Subject to Gateway 5 approval
Climate Resilient Planting	Climate resilient planting at four pedestrian priority sites	Planting complete monitoring programme in design	Measures <ul style="list-style-type: none"> • Planting for these sites was completed in 2021 Monitoring planned <ul style="list-style-type: none"> • Temperature, humidity and soil moisture – Urban Controls connected to the mesh network • Chlorophyll leaf monitoring sensors 	20K	See Gateway 2 update

35 Vine Street	Tree planting (6 trees- 3 species)	Planting date Spring/ Autumn 2022 Completion Nov 2022	Measures <ul style="list-style-type: none"> Eight trees of 2 different species Monitoring <ul style="list-style-type: none"> Temperature, humidity and soil moisture Urban Controls connected to mesh network Chlorophyll leaf monitoring sensors 	5K	See Gateway 2 update
Total	Capital costs			660K	Nil
Maintenance and monitoring of all sites	To evaluate the effectiveness of the measures for combating climate risks and identify any additional operational costs	To be met by Climate Action Strategy revenue funds		114K funded from CAS revenue – not to be included in total	
Total	Capital and revenue costs			774K	Nil

Appendix 5 Site prioritisation spreadsheet - attached

Appendix 6 visuals for year 2 projects - attached