

# London Geodiversity Action Plan 2019-2024



A framework for understanding, conserving and using the unique wealth of geodiversity resources found within our capital, so that social, economic and environmental benefits are provided to London's urban communities and many visitors.



St Paul's Cathedral and the City of London from Hungerford Bridge 2019

<http://londongeopartnership.org.uk/>



# London Geodiversity Action Plan 2019-2024

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# London Geodiversity Action Plan 2019-2024

## What is geodiversity and why is it important?

The diversity of geological and geomorphological heritage across London provides an invaluable natural resource that underpins many aspects not only of London's natural environment, but also of society, economy and where and how people live. 'Geodiversity' is found beneath our feet and within the built environment, shapes the landscape around us, contributed to our industrial past, underpins biodiversity and influences art, architecture and design.

**Geodiversity has been defined as:** "*The natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landform and processes), soil and hydrological features. It includes their assemblages, structures, systems and contributions to landscapes*"<sup>1</sup>.

Amongst the wider services that geodiversity provides are: training, education and lifelong learning; a contribution to 'sense of place'; recreation and geo-tourism; aesthetic qualities and well-being.

Developing a good understanding of London's geodiversity and the services it provides also contributes to the sustainable management of natural resources (such as groundwater, brick clay, chalk for cement and gravel for aggregates) and the earth's changing natural systems (such as mitigating against natural subsidence, unstable ground and responding to climate change).

It is for all these reasons that the geodiversity of London should be understood, managed and used for the benefit of the present generation and conserved for future generations.

## What is special about London's geodiversity?

London has a large population, receives many visitors and is linked together by a dense transport network. In this way it is very unlike a rural area. The 'rocks' may be less evident, but there is nevertheless a unique wealth of geodiversity resources. These resources are also available and accessible to a large number of people, including local communities, tourists and those travelling on business.

The continual evolution of the city means that there are ongoing opportunities to view and understand the geology beneath our feet and identify the influence of natural processes on where we live. Where appropriate a geodiversity focus may also be included within the final design of a new development.

### London's geodiversity:

- Is available and accessible to a large number of people;
- Comprises a unique wealth of resources; and,
- Has shaped the development of a major world city.

Museum and art collections in London are vast and internationally outstanding, containing artefacts and images of relevance to geodiversity that can be promoted and used for life-long learning.

Greenspace is exceedingly important within an urban area and the underlying geology has shaped many of the open places of London's landscapes<sup>2</sup> (such as the Hampstead Ridge). In addition, Geodiversity activities (such as geo-walks, building stone trails and 'hands-on' experiences for children) provide ways of experiencing the 'outdoors' and contributing to health and well-being.

Just some of the many other contributions geodiversity has made to London are described below.

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<sup>1</sup> Gray, M. (2013) *Geodiversity: Valuing and conserving abiotic nature*, 2<sup>nd</sup> edition, Wiley Blackwell, Chichester

<sup>2</sup> *London's Natural Signatures: The London Landscape Framework*, January 2011 prepared for Natural England can be found at <http://publications.naturalengland.org.uk/publication/6540238365130752>

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## How has geodiversity influenced the development of London?

The geodiversity of London has greatly contributed to its development, providing both opportunities and constraints that need to be understood and managed. The list below identifies just some of these. More detailed descriptions of London's geodiversity heritage is found within the *London's Foundations Supplementary planning guidance*<sup>3</sup> and the BGS Special Memoir '*Geology of London*'<sup>4</sup>.

- The River Thames and its tributaries and the associated gravels provided the initial focus for Palaeolithic and later habitation including the developing City of London, supplying water and forming a major route-way;
- The Chalk aquifer at depth beneath London, controlled by the structural geology of the region, now provides much of the population's water supply and has allowed for the greater expansion of the city;
- Mineral springs formerly existed in London, derived in gravels but absorbing salts when passing through the underlying London Clay. Similar springs outside London at Epsom gave rise to the term 'Epsom Salts';
- The structure and wide presence at depth of the London Clay Formation allowed the extensive development of the London Underground tube network, particularly in north London;
- The presence of the River Thames and the low-lying basin of London, again controlled by the structural geology contributes to the need to protect London from sea level rise;
- Characteristic landscapes are shaped by the underlying geology and subsequent geomorphological processes. These include dry valleys within chalk downlands (particularly in south London) and river terraces, forming long flat areas, separated by steeper slopes (particularly in north London);
- Chalk for cement, clay for bricks, glass sand and flint for building have all been extracted in London and evidence of past and current industry remains today;
- Most aggregate and building stone resources have been supplied from elsewhere, meaning London now contains a wider geodiversity than that simply found *in situ*. The building stone resource in London is vast – Kentish Ragstone and Reigate Stone have been used since Roman times and London as redesigned by Wren after the Great Fire of 1666 who shipped in Portland Stone from Dorset. The Victorians used granite from Scotland and south-west England. Today cladding techniques have greatly increased the range of rock types utilised with sources now from across the world. Leicestershire and the Mendips provide two major sources of aggregates, which have greatly contributed to the development of London.

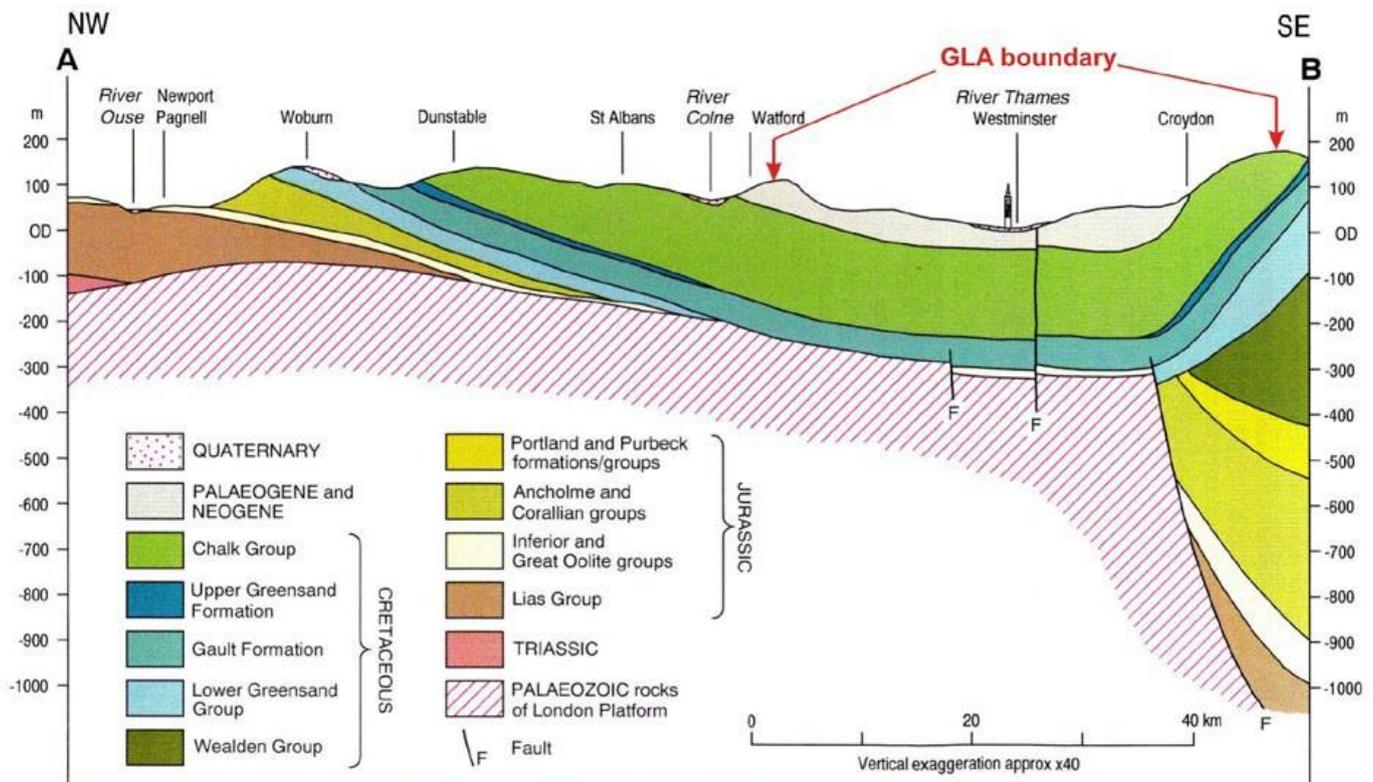
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<sup>3</sup> Greater London Authority (March 2012) *Green infrastructure and open environments: London's foundations: protecting the geodiversity of the capital*, Supplementary planning guidance London Plan 2011 implementation framework, Greater London Authority, ISBN: 978 1 84781 503 3.

<sup>4</sup> Ellison, R. A. *etc. al.* (2004) *Geology of London*, Special Memoir for 1:50 000 Geological sheets 256 (North London), 257 (Romford), 270 (South London) and 271 (Dartford) (England and Wales), British Geological Survey, ISBN: 0 85272 478 0.

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## Geological section showing the London Basin syncline



After Sumbler, M.G. (1996) *British regional geology: London and the Thames Valley, 4th Edition, British Geological Survey (Reproduced as Figure 8 in the 'London's Foundations' Report)*

## What recognition is given to geodiversity?

Geodiversity is recognised as an important aspect of nature conservation in its own right and it is a material consideration within planning decisions. This is reflected in national planning policy (*National planning policy framework*<sup>5</sup> - NPPF) and related legislation (*Wildlife & Countryside Act 1981, Countryside & Rights of Way Act 2000*). In particular, the planning system should protect and enhance valued landscapes, geological conservation interests and soils;

### Recognition for sites of importance for geodiversity

In Great Britain, key sites of national geological importance were identified through the Geological Conservation Review (GCR), an audit mainly completed between 1977 and 1990 to provide a representation of the great diversity of British geology. GCR sites were selected on the basis of their scientific value and the majority of these sites have since been designated SSSIs by the relevant country statutory nature conservation agency and receive legal protection. The *Countryside & Rights of Way Act (2000)* strengthened existing protection for SSSIs with a stronger emphasis on management as well as conservation and with third party damage to such sites now being a prosecutable offence. Natural England is responsible for the network of SSSIs in England. The 'best' SSSIs for public enjoyment may also be designated National Natures Reserves (NNRs). Seven geological SSSIs are found within London. They are:

<sup>5</sup> CLG, 2019: *National planning policy framework*, online at <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

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|        |                   |           |        |               |            |
|--------|-------------------|-----------|--------|---------------|------------|
| GLA 01 | Abbey Wood        | Bexley    | GLA 33 | Elmstead Pit  | Bromley    |
| GLA 14 | Gilbert's Pit     | Greenwich | GLA 34 | Harefield Pit | Hillingdon |
| GLA 18 | Harrow Weald      | Harrow    | GLA 35 | Wansunt Pit   | Bexley     |
| GLA 19 | Hornchuch Cutting | Havering  |        |               |            |

Non-statutory designations currently include Local geological sites, formerly known as Regionally Important Geological or Geomorphological Sites (RIGS). This term has been generally adopted to follow the recommendations within Defra guidance<sup>6</sup>. Significantly, the guidance produced by Defra on local sites gives the same weighting to geological and geomorphological sites as it does to wildlife (species and habitats) sites. In contrast to GCR sites, a wider range of criteria is taken into consideration in selecting local sites, including the value of the site for education, life-long learning, history and aesthetics; with consideration also given to access and safety issues. Defra guidance indicates that: '*local site systems should select all areas of substantive value including both the most important and the most distinctive*'. Local sites with a high degree of natural interest and/or of a high value for education may also be declared and managed as Local Nature Reserves (LNRs) by local authorities and are then afforded legal protection (as amended by the *Natural Environment and Rural Communities Act 2006*).

In London, a unique two tier system distinguishes wildlife sites of importance for the London Region from wildlife sites of local borough importance. The designation of geological sites in London mirrors this approach. RIGS have importance at the London region level and Locally Important Geological and Geomorphological Sites (LIGS) have importance at the borough level.

Local site systems are managed by local partnerships and the London Geodiversity Partnership has responsibility for the identification, designation and promotion of management of London's RIGS and LIGS.

An initial geodiversity audit for London was reported in the first *London's foundations*<sup>7</sup>, with fourteen candidate RIGS and fifteen candidate LIGS identified. Further potential sites were also identified. This was updated in 2012 with a revised *London's foundations* (see footnote 3 above) as supplementary planning guidance by the GLA with the assistance of the London Geodiversity Partnership and fourteen further RIGS were proposed, with nine LIGS being deleted after re-evaluation and a further nine being proposed. The full list of RIGS and LIGS is contained in Annex 1.

National Indicators and planning guidance for local authorities were abolished by the coalition government in 2014. This was replaced by the National Planning Policy Framework (NPPF) in 2012 and revised in February 2019 (see footnote 5 above). It includes reference to further guidance being provided in Circular 06/2005: *Biodiversity and Geological conservation – Statutory obligations and their impact within the planning system*, which has not been withdrawn<sup>8</sup>.

The NPPF indicates that planning policies should aim to prevent harm to geological conservation interests; recognising the hierarchy of international, national and locally designated sites. Paragraph 170 states that *Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*

<sup>6</sup> Defra (2006) *Local Sites Guidance on their Identification, Selection and Management*:

<https://webarchive.nationalarchives.gov.uk/20130402204735/http://archive.defra.gov.uk/rural/documents/protected/localsites.pdf>

<sup>7</sup> Greater London Authority (March 2009) *London's Foundations: Protecting the Geodiversity of the Capital*, The London Plan (Spatial Development Strategy for Greater London) London Plan Implementation Report, Greater London Authority, ISBN: 978 1 84781 250 6.

<sup>8</sup> <https://www.gov.uk/government/publications/biodiversity-and-geological-conservation-circular-06-2005>

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NPPF continues in paragraph 174 that *to protect and enhance biodiversity and geodiversity, plans should:*

*a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*

*b) Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*

## Recognition for geodiversity within London

This London GAP suggests a process for designating these sites, enabling them to be formally recognised by the local boroughs and become a material consideration in planning decisions. Therefore, once RIGS and LIGS are designated in London, the management of these sites can be monitored.

The *London Plan* began its Examination in Public (EIA) in January and the new geodiversity policy is proposed to be:

### **Policy G9 Geodiversity**

A In Development Plans, boroughs should:

- 1) establish clear goals for the management of identified sites to promote public access, appreciation and interpretation of geodiversity
- 2) ensure geological sites of European, national or regional conservation importance are clearly identified.

B Where relevant, development proposals should

- 1) make a positive contribution to the protection and enhancement of geodiversity
- 2) protect Regionally Important Geological Sites (RIGS)
- 3) give Locally Important Geological Sites (LIGS) the level of protection commensurate with their importance.

Policy G9 states that borough development plans should manage sites identified for geodiversity. Also, development proposals should make a positive contribution to conservation of geological features and a positive contribution to protecting and enhancing geodiversity.

The Mayor published *London's foundations* as implementation guidance in 2009 and updated it as SPG (supplementary planning guidance) in 2012. It is likely that this will be updated after the new London Plan is adopted (expected in late autumn).

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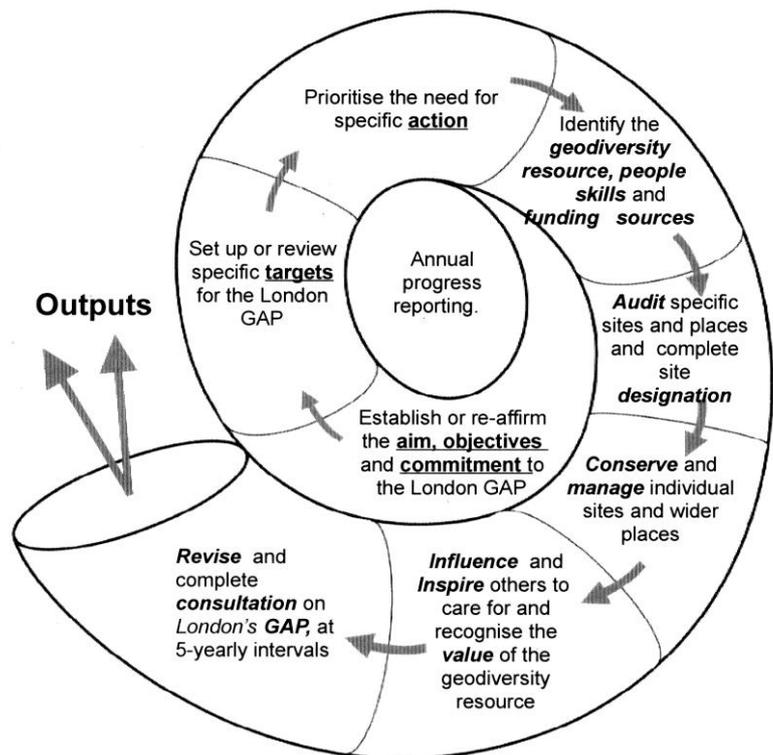
## What is a Local Geodiversity Action Plan (LGAP)?

An action plan breaks down large complex initiatives into an aim, objectives, targets and achievable actions. It assists in focussing on tasks that matter; in the case of an LGAP, on activities that are going to assist with understanding, conserving and sustainably using the geodiversity resource. Partnership working, including a lead organisation, is critical to the success of an LGAP. An English Nature research report<sup>9</sup> provides the rationale for LGAPs, drawing on the experience of Local Biodiversity Action Plans and suggesting models for LGAPs. A guidance note was published based on this work and a seminar held in 2004<sup>10</sup>

Whilst it is important to set targets and actions within a timeframe, many actions are part of ongoing activities such as:

- auditing geodiversity sites and places;
- designating sites;
- contributing to management plans;
- undertaking management and conservation activity; and
- influencing and inspiring others to value, care for and make use of the geodiversity resource.

The diagram opposite illustrates this cyclical nature of an LGAP and the need to monitor progress, report on activity and revise the LGAP at suitable intervals. An annual report on progress is suggested with a complete review of the London GAP taking place at 5-yearly intervals.



## Why develop a London GAP?

The two London GAPs 2009-2013 and 2014-18 were developed by the London Geodiversity Partnership to raise the value placed on the geodiversity resource in London and ensure its sustainable use in keeping with policy. This Partnership has reported annually on progress with its implementation and this revision takes the London Gap forward over the years 2019-2024. A summary of the progress achieved during 2014-2018 is contained in Annex 2. In addition, a national 'driver' has been developed – the UK Geodiversity Action Plan (the UKGAP)<sup>11</sup>, which provides a shared context and direction for geodiversity action and a means of celebrating success. The London GAP contributes towards the aims and objectives of the UKGAP.

## What is the role of the London Geodiversity Partnership?

The London Geodiversity Partnership has taken the lead in developing and co-ordinating the London GAP. However, delivering the London GAP across a broad spatial scale cannot be achieved without the collaborative work of stakeholder organisations. Geodiversity partnerships seek to share good

<sup>9</sup> Burek, C. & Potter, J. 2006. Local Geodiversity Action Plans - Setting the context for geological conservation. *English Nature Research Reports*, No 560, ISSN 0967-876X. (<http://publications.naturalengland.org.uk/file/127017>)

<sup>10</sup> *LGAPs: Sharing Good Practice*, ISSN 1 85716 839 9

<sup>11</sup> The current UKGAP can be viewed at: <http://www.ukgap.org.uk/media/8544/ukgap.pdf>

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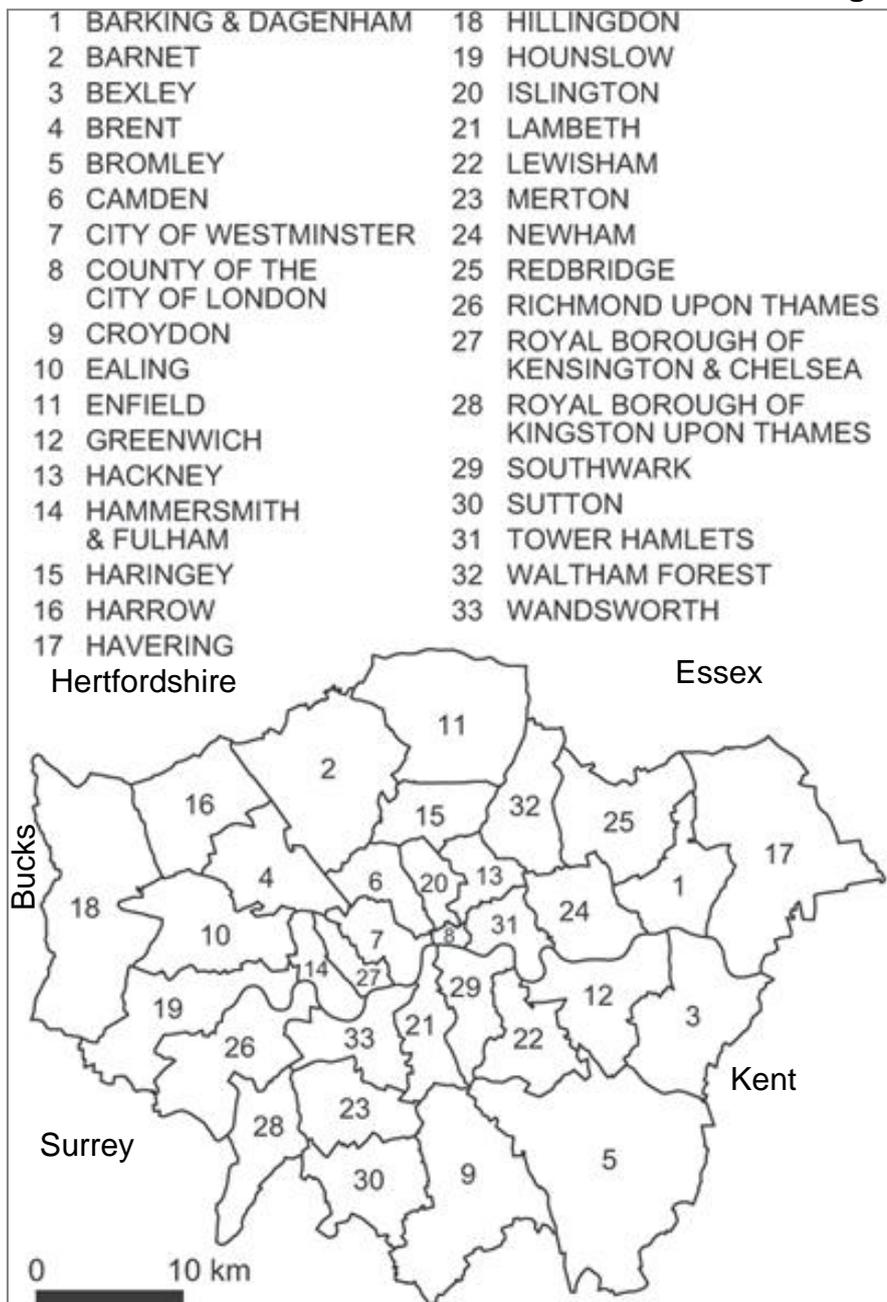
geodiversity practice, influence regional policy and establish cross-regional working for geodiversity. Whilst the geodiversity partnerships are all developing their own ways of working, they do have a number of common functions which are:

- To provide a regional network for organisations, groups and individuals involved in geodiversity;
- To provide a regional voice and profile for geodiversity;
- To influence regional planning, policy development and practice;
- To share good practice; and,
- To work to find opportunities for cross-regional activities.

## Who can we contact to find out more?

For further information, please contact: [info@londongeopartnership.org.uk](mailto:info@londongeopartnership.org.uk).

### The boundary of the London GAP (the City of London and the London Boroughs) within the context of the surrounding areas.



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## The aim of the London GAP

To provide a framework for understanding, conserving and using the unique wealth of geodiversity resources found within our capital, so that social, economic and environmental benefits are provided to London's urban communities and many visitors.

The UKGAP provides six themes, which between them set the focus for all the actions generally undertaken as part of an LGAP. These UKGAP themes have been tailored to the requirements of the London Region. In this way, the contribution the London GAP makes to national understanding and sustainable use of geodiversity can be directly measured and successes easily identified. Targets and actions within this third edition of the London GAP (shown on pages 11 to 15) are grouped under the six objectives.

## The objectives of the London GAP

### **Objective 1: Increase understanding of the geodiversity of London**

Encourage a better understanding of geodiversity and the wider role that geodiversity plays in our environment, through research, audit and review.

### **Objective 2: Manage and conserve the geodiversity of London**

Support the identification and designation of geodiversity places and support the management and conservation of geodiversity within the context of the wider environment.

### **Objective 3: Deliver sustainable social, economic and environmental benefits for London**

Encourage better utilisation and understanding of geodiversity benefits, widening the value and relevance people place on geodiversity. Encourage the better use of geodiversity in understanding natural processes and helping make decisions on future environmental management.

### **Objective 4: Promote and care for London's geodiversity**

Support the wider involvement of people in geodiversity through accessible life-long learning, geo-tourism and conservation activities.

### **Objective 5: Sustain geodiversity activities in London**

Increase resources available to support geodiversity-related activities and encourage the development of the London GAP.

### **Objective 6: Influence London-wide and Borough planning and environmental policies**

Encourage the development, implementation and sharing of geodiversity policies at all levels and to achieve much greater integration of geodiversity into existing policies.

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## How to read this action plan

The plan is presented as tables showing the targets that have been set under each of the six objectives and the corresponding actions. Also note that there is no priority order implied by the order of the six objectives but there are priorities within each objective.

| OBJECTIVE  | TARGETS   | ACTIONS   |
|--|---|---|
| The objectives of the London GAP are generic and would generally remain consistent from one revision of the plan to the next, providing the means to realising the London GAP aim. They provide the framework for the rest of the plan; the core principles behind the work that is proposed | Targets relate directly to the objectives under which they are placed (although there are often links to other objectives). They describe the end result; what is wanted to be achieved. They provide a means of monitoring progress. | <p>Actions identify the work that needs to be completed to meet each target.</p> <p>An action may contribute to more than one target and where that is the case, cross references are provided.</p> <p>Some actions may need to be completed before others can commence. Again, where that is the case, cross references are provided.</p> <p>Actions are colour coded according to priority, those of highest priority (largely ongoing actions) are in <b>red</b> type, those of medium priority are in <b>brown</b> type and those of lowest priority are in <b>green</b> type</p> |

### OBJECTIVE 1

#### Increase understanding of the geodiversity of London

| TARGETS  | ACTIONS   |
|--|---|
| 1.1. Extend the audit of London's geodiversity places to identify sites of local, national and international importance in addition to those identified in <i>London's foundations</i> .   | <p>1.1a. Continue desk study research and fieldwork to extend the selection of geodiversity sites in London, particularly in those parts currently lacking in them (e.g. Central and South-west London).</p> <p>1.1b. Update and disseminate the report on the audit of London's geodiversity (<i>London's foundations</i>).</p>  |
| 1.2. Complete an audit of geodiversity archives and resources, including:<br>Government institutions, national and borough collections In museums, libraries, archive centres, galleries and educational institutions; bibliography; ongoing projects; and a network of people with key skills | <p>1.2a. Continue contacting relevant departments and organisations to establish national and local borough geodiversity archives and resources.</p> <p>1.2b. Include historical and geological publications, websites, photographic imagery, paintings and artefacts, specimens, bibliography, ongoing projects and their available use; and people with key skills.</p> <p>1.2c. Establish and maintain a register of 'geodiversity archives and resources'</p> |
| 1.3. Complete research to understand better the building stones resource within London's buildings.  | 1.3a. Update and disseminate the report <i>Building London</i> on the Partnership's website as the need arises.   |
| 1.4. Complete research that explores the links between geodiversity, archaeology and other aspects of the natural and built environment.   | 1.4a. Publish as a Natural England research report and disseminate the scoping study on the links between park and garden design and geodiversity.  |

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## OBJECTIVE 2

### Manage and conserve the geodiversity of London

| TARGETS   | ACTIONS   |
|---|---|
| 2.1. Formally designate the sites recommended in <i>London's foundations</i> (2012) along with any further sites identified and assist in increasing their protection from the adverse effects of development | <p>2.1a. Publish any necessary updates to proposed sites through the Partnership website.</p> <p>2.1b. Attend forums in London for parks, biodiversity and local nature partnerships as required, promoting designation of RIGS and LIGS and giving advice on sites. (See also objective 6 on planning and environmental policies.)</p> <p>2.1c. Update the information on geodiversity sites to Greenspace Information for Greater London (GiGL), the capital's environmental records centre.</p>  |
| 2.2. Establish a set of accessible and suitable geodiversity places for use by local communities and visitors for leisure, education and research; and that are integrated with other places of interest.     | <p>2.2a. Inspect and report on all recommended sites at least once during the period of the action plan to identify any cause for concern with regard to the accessibility or visibility of the features of geodiversity interest.</p> <p>2.2b. Promote the undertaking by appropriate bodies of site condition improvement at two of London's SSSIs currently in unfavourable condition (Wansunt Pit and Harefield Pit).</p> <p>2.2c. In partnership with the owners and boroughs concerned assist in producing a management plan for each of the geodiversity places where action is needed (e.g. the HLF project at Lesnes Abbey Wood). This should include a risk assessment, appropriate information boards and displays and a code of conduct for visitors.</p> <p>2.2d. Promote and contribute to necessary conservation activities (shrub clearance, access arrangements and provision of information) at geodiversity sites found to be in poor condition.</p> <p>2.2e. Involve local groups in conservation and educational activities</p> <p>2.2f. Identify suitable views from or of geodiversity sites across London, including those from iconic buildings.</p> <p>2.2g. Identify suitable links between geodiversity sites such as bus and tube routes and the River Thames.</p> |

## OBJECTIVE 3

### Deliver sustainable social, economic and environmental benefits for London

| TARGETS   | ACTIONS  |
|---|--|
| 3.1. Utilise and promote the social health and well-being benefits of geodiversity through developing geotrails in partnership with other organisations | <p>3.1a. Identify other organisations, together with specific key staff willing to be involved in developing geotrails, e.g. the U3A "Bus-pass geology" project.</p> <p>3.1b. Develop further walks, making use of geodiversity sites, the available building stone resource and links to history, geomorphology, landscape and archaeology.</p> |

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| TARGETS   | ACTIONS   |
|---|---|
|   | 3.1c. Identify the potential of adding geodiversity to the attractions of existing walking routes, such as the Capital Ring, the London LOOP, the Thames Path and the Green Chain Walks, the Hillingdon Trail, Dollis Valley Greenway, Lea Valley Walk..  |
| 3.2. Encourage 'geotourism' by promoting London's geodiversity, including its national collections, art galleries and building stone architecture, as a visitor attraction.   | 3.2a. Using the <i>Building London</i> report and the report on park and garden design, promote and develop greater awareness of building stone trails, geotrails and geological exhibitions.<br>3.2b. Lead geotrails and building stone walks and in conjunction with other bodies, e.g. London Natural History Society, Friends of parks, City of London, Geologists' Association and U3A groups.<br>3.2c. Advertise geological events via the LGP website.   |
| 3.3. Encourage the consideration of 'geodiversity gain' within the development planning process, particularly for large-scale projects. 'Geodiversity gain' could include recording of temporary exposures and/or geodiversity end-uses within the completed development or quarry restoration. | 3.3a. Identify opportunities to work with local communities, major developers and mineral operators to promote the consideration of geodiversity (e.g. continue contacts with developers of the Olympic Park, Crossrail, the Thames Tideway Tunnel and London Underground Ltd).<br>3.3b. Review opportunities within Business improvement districts (BIDs) and the All-London Green Grid (ALGG) projects.<br>3.3c. Ensure the London Geodiversity Partnership provides a consultation response to proposed major development projects and mineral extraction sites in London. |

## OBJECTIVE 4

### Promote and care for London's geodiversity

| TARGETS  | ACTIONS  |
|--|--|
| 4.1. Promote London's geodiversity and its importance to London boroughs and ALGG local nature partnerships by making geodiversity data available; and, by explaining how key geodiversity assets might be utilised. | 4.1a. For each London Borough/ALGG Area, identify an appropriate geodiversity focus and key geodiversity assets.<br>4.1b. Make use of the register of geodiversity archives and resources to update the gazetteer including site-specific information on the SSSIs, RIGS, LIGS and Sites of geological interest (SGIs). Make it available on the LGP website.  |
| 4.2. Manage the London Geodiversity Partnership website  | 4.2a. Update the website as additional resources and information become available. In particular, update the gazetteer of geodiversity sites in London and the overview of London geology.<br>4.2b. Promote the information on LGP website with local organisations.<br>4.2c. Identify other websites where links could be made to promote the site, including tourist pages. Link to other geoconservation websites and members of the partnership. |

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| TARGETS  | ACTIONS  |
|--|--|
| 4.3. Encourage the sharing of good practice and engage a wide audience in the conservation of geodiversity features in London. | <p>4.3a. Contribute to the London Wildlife Site Board, London Friends of Greenspaces Network and the All-London Green Grid to share and promote geoconservation good practice with those involved in biodiversity and parks management.</p> <p>4.3b. Contribute to the London National Park City to ensure that geodiversity becomes an integral part.</p>   |
| 4.4. Encourage greater use of existing geodiversity places for life-long learning.   | <p>4.4a. Identify key people within education including London's outdoor learning contacts, Earth Science Teachers' Association and Rockwatch. Using assets already identified, make use of these people and materials to create and promote events for all ages.</p> <p>4.4b. Identify key geomorphological sites, such as river restoration projects where the local community (including schools) can observe and monitor change in their local environment.</p> <p>4.4c. Maintain contact with the Geological Society of America's "earth-cache" outreach programme to develop further sites in London</p> |
| 4.5. Develop and utilise links between geodiversity, landscape, history, art, architecture and archaeology.                    | <p>4.5a. Include geodiversity-themed photos, paintings or exhibits within trails and link these to other places of interest.</p> <p>4.5b. Identify supportive local artists and photographers, and art galleries to engage in developing geodiversity aspects to exhibitions and activities.</p> <p>4.5c. Using the Parks and garden design report promote and make use of the examples of good practice of design linked to geodiversity.</p>   |

## OBJECTIVE 5 Sustain geodiversity activities in London

| TARGETS   | ACTIONS   |
|---|---|
| 5.1. Maintain and continue to grow the London Geodiversity Partnership to ensure links to the building stone resource and geodiversity recording activities are represented | 5.1a. Identify appropriate organisations that could contribute usefully and invite them to join the Partnership   |
| 5.2. Continue to develop links with other partners  | 5.2a. Identify organisations with which the Partnership can work and establish appropriate working relationships.   |
| 5.3. Gain funding so that other actions in this GAP can be progressed.  | <p>5.3a. Maintain contacts with Natural England and the Heritage Lottery Fund to identify funding opportunities.</p> <p>5.3b. Maintain a list of funders and potential resources for geodiversity activities and prepare applications for funding.</p> <p>5.3c. Approach the corporate sector to fund specific events and activities.</p> |

# London Geodiversity Action Plan 2019-2024

|   |   |
|---|---|
| 5.4. Monitor and report on progress, sustainability and success of the London GAP | 5.4a. Continue to develop the annual reporting procedure and the mechanism for a 5-yearly review of the London GAP. |
|---|---|

## OBJECTIVE 6

### Influence London-wide and Borough planning and environmental policies

| TARGETS   | ACTIONS   |
|---|---|
| 6.1. Support and influence the geodiversity policy within the London Plan             | 6.1a. Continue to engage with planning consultations on the London Plan and associated supplementary planning guidance, such as <i>London's Foundations</i> . Work on investigating new sites and submitting them to revisions of SPG.  |
| 6.2. Influence national planning and environmental policies                           | 6.2a. Respond to national consultations on planning and environmental policies.   |
| 6.3. Influence geodiversity policy within London borough development plans.           | <p>6.3a. Maintain contact with London boroughs to recommend and conserve statutory sites.</p> <p>6.3b. Scrutinise London borough planning documents to identify the existence or lack of geodiversity policies and designated local geological sites.</p> <p>6.3c. Provide a consultation response to relevant regional and local plans and policies and planning applications.</p> |
| 6.4 Influence geodiversity policy within other plans and strategies affecting London. | <p>6.4a. Contribute to consultation on the Mayor's other policy documents, such as the <i>London Environment Strategy</i>.</p> <p>6.4b. Identify other plan-making organisations such as the regional health and economic bodies as well as Nature Partnerships and Nature Improvement Areas.</p>   |

# London Geodiversity Action Plan 2019-2024

## ANNEX 1:

### Regionally and locally important geological and geomorphological sites

The first two tables below list RIGS and LIGS set out in *London's foundations*, (2012).

Table 3 gives the Candidate RIGS and LIGS agreed by LGP in May 2015 and March 2019. It is proposed that they are incorporated in the next version of *London's foundations*.

Table 4 lists the Sites of Geological Interest that have been identified.

| <b>No.</b> | <b>Name</b>                                | <b>Status</b> | <b>Borough</b>     |
|------------|--|---------------|--------------------|
| GLA 03     | Beckenham Place Park                       | Recommended   | Lewisham           |
| GLA 04     | Chelsfield Gravel                          | Recommended   | Bromley            |
| GLA 06     | Croham Hurst                               | Recommended   | Croydon            |
| GLA 07     | Crystal Palace Geological Illustrations    | Recommended   | Bromley            |
| GLA 08     | Dog Rocks                                  | Adopted       | Greenwich          |
| GLA 17     | Happy Valley                               | Recommended   | Croydon            |
| GLA 20     | Horsenden Hill                             | Recommended   | Ealing             |
| GLA 22     | Keston Common                              | Recommended   | Bromley            |
| GLA 26     | Riddlesdown Quarry                         | Recommended   | Croydon            |
| GLA 29     | The Gravel Pits, Northwood                 | Recommended   | Hillingdon         |
| GLA 30     | Cray Valley Golf Course Sand Pit           | Recommended   | Bromley            |
| GLA 31     | North End Pit (in Erith Park development.) | Recommended   | Bexley             |
| GLA 32     | High Elms Dene Hole                        | Recommended   | Bromley            |
| GLA 36     | Pinner Chalk Mines                         | Recommended   | Harrow             |
| GLA 37     | Marks Warren Farm, Romford                 | Recommended   | Barking & Dagenham |
| GLA 38     | Chalky Dell, Lesnes Abbey Woods            | Recommended   | Bexley             |
| GLA 39     | Erith Submerged Forest and Saltings        | Recommended   | Bexley             |
| GLA 40     | Chislehurst Caves                          | Recommended   | Bromley            |
| GLA 41     | Klinger Pit, Foots Cray                    | Recommended   | Bromley            |
| GLA 42     | Kenwood House Quarry                       | Recommended   | Camden             |
| GLA 43     | Springfield Park                           | Recommended   | Hackney            |
| GLA 44     | Highgate Wood & Queens Wood                | Recommended   | Haringey           |
| GLA 45     | Bedfords Park, Havering Ridge              | Recommended   | Havering           |
| GLA 46     | Rainham Submerged Forest                   | Recommended   | Havering           |
| GLA 47     | South Hall Farm/Spring Farm Complex        | Recommended   | Havering           |
| GLA 48     | Thames Foreshore, Isleworth                | Recommended   | Hounslow           |
| GLA 49     | Fairlop Quarry Complex (Hainault Quarry)   | Recommended   | Redbridge          |
| GLA 50     | Knighton Wood                              | Recommended   | Redbridge          |

RIGS as shown in *London's foundations* (2012) Figures 25, 26 & 26b

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| No.     | Name   | Status      | Borough        |
|---------|--|-------------|----------------|
| GLA 02  | Avenue House                                       | Recommended | Barnet         |
| GLA 05  | Chingford Hatch                                    | Recommended | Waltham Forest |
| GLA 09* | Dry Valley natural landform                        | Adopted     | Sutton         |
| GLA 12  | Finsbury Gravel                                    | Recommended | Islington      |
| GLA 15  | Hainault Forest Country Park                       | Recommended | Redbridge      |
| GLA 24  | Old Gravel Pit, Blackheath (Eliot Pit)             | Recommended | Lewisham       |
| GLA 25  | Putney Heath                                       | Recommended | Wandsworth     |
| GLA 51  | Parish's Pit, Erith                                | Recommended | Bexley         |
| GLA 52  | Bromley Palace Park, Pulhamite & St. Blaise's Well | Recommended | Bromley        |
| GLA 53  | Charmwood Farm Chalk Mine                          | Recommended | Bromley        |
| GLA 54  | Sundridge Park Manor Pulhamite grotto              | Recommended | Bromley        |
| GLA 55  | Trent Park   | Recommended | Enfield        |
| GLA 56  | Bleak Hill Sandpit                                 | Adopted     | Greenwich      |
| GLA 57  | Wickham Lane Brick works Complex                   | Adopted     | Greenwich      |
| GLA 58  | Coldfall Wood                                      | Recommended | Haringey       |
| GLA 59  | Pole Hill  | Recommended | Waltham Forest |

LIGS as shown in *London's foundations* (2012) Figures 27 & 28

\* deleted from *London's foundations* although adopted by the borough

| No  | Name   | Borough             | Type |
|---|--|---------------------|------|
| GLA 60  | Bourne Wood Thanet Sand Quarry                 | Bromley             | RIGS |
| GLA 61  | Spring Park, Threehalfpenny Wood, Sparrows Den | Bromley and Croydon | RIGS |
| GLA 62  | Sipson Lane complex                            | Hillingdon          | RIGS |
| GLA 63  | Barn Hill, Wembley                             | Brent               | LIGS |
| GLA 64  | Waterlow Park                                  | Camden              | LIGS |
| GLA 65  | Blackheath Pits (Vanbrugh Pit)                 | Greenwich           | LIGS |
| GLA 66  | Tripcock Ness                                  | Greenwich           | LIGS |
| GLA 67  | Summerhouse Lane Chalk Pit                     | Hillingdon          | LIGS |
| GLA 68  | Bedfont Lakes                                  | Hounslow            | LIGS |
| GLA 69  | Wanstead Flats                                 | Redbridge           | LIGS |
| GLA 70  | Richmond Park                                  | Richmond            | LIGS |
| GLA 71  | Hollow Ponds, Leyton Flats (Snaresbrook Park)  | Waltham Forest      | LIGS |
| GLA 72  | Monken Hadley Common                           | Barnet              | LIGS |
| GLA 73  | Greenwich Park                                 | Greenwich           | LIGS |
| <b>Candidate LIGS agreed by LGP in March 2019</b> |  |                     |      |
| GLA 74  | Springwell Farm                                | Hillingdon          | LIGS |
| GLA 75  | Watt's Common                                  | Hillingdon          | LIGS |
| GLA 76  | Rockingham Anomaly                             | Southwark           | LIGS |
| GLA 77  | Park Hill Chalk Pit                            | Sutton              | LIGS |

# London Geodiversity Action Plan 2019-2024

**Table 3: Sites of Geological Interest agreed by LGP in January 2018**

| <b>N°</b> | <b>Site</b>                                     | <b>Borough</b>              |
|-----------|---|-----------------------------|
| SGI 1     | Whalebone Lane ice wedge polygons               | Barking & Dagenham          |
| SGI 2     | Barnet Physic Well                              | Barnet                      |
| SGI 3     | Lesnes Abbey                                    | Bexley                      |
| SGI 4     | Grange Brick & Tile Works, Willesden Green      | Brent                       |
| SGI 5     | Gordon Square sarsen                            | Camden                      |
| SGI 6     | University College Hospital Monolith & Shadows  | Camden                      |
| SGI 7     | Memorial to Siege of Malta                      | City of London              |
| SGI 8     | Hanger Hill Park                                | Ealing                      |
| SGI 9     | Hanwell Sarsen                                  | Ealing                      |
| SGI 10    | Shooters Hill                                   | Greenwich                   |
| SGI 11    | Thames Barrier                                  | Greenwich                   |
| SGI 12    | Blackwall Drift Filled Hollow                   | Greenwich and Tower Hamlets |
| SGI 13    | Pinner Hill Golf Course                         | Harrow                      |
| SGI 14    | Caledonian Park                                 | Islington                   |
| SGI 15    | Brick and tile kiln, Walmer Road, Notting Hill  | Kensington & Chelsea        |
| SGI 16    | Ladywell  | Lewisham                    |
| SGI 17    | New Cross Gate Cutting Nature Reserve           | Lewisham                    |
| SGI 18    | Bow Creek Meanders                              | Newham and Tower Hamlets    |
| SGI 19    | City of London Cemetery, Wanstead               | Newham                      |
| SGI 20    | Fairlop Waters Country Park                     | Redbridge                   |
| SGI 21    | The Ilford Mammoth                              | Redbridge                   |
| SGI 22    | Burgess Park lime kiln                          | Southwark                   |
| SGI 23    | Rockingham Anomaly*                             | Southwark                   |
| SGI 24    | <i>Walking the Dog</i> sculpted glacial erratic | Southwark                   |
| SGI 25    | Carshalton Park: Water features                 | Sutton                      |
| SGI 26    | Tooting artesian parish pump                    | Wandsworth                  |
| SGI 27    | Tooting Bec Common fossilised tree              | Wandsworth                  |
| SGI 28    | Fossils of Trafalgar Square                     | Westminster                 |
| SGI 29    | York Watergate                                  | Westminster                 |
| SGI 30    | William Smith's House, 15 Buckingham Street     | Westminster                 |

\* Now a Candidate LIGS (see GLA 76 in Table 3)

# London Geodiversity Action Plan 2019-2024

## ANNEX 2:

### Progress in implementing the London GAP 2014-2018

*London's foundations*, the London Plan Implementation Report, was published in March 2009 and officially launched in October 2009 by the London Geodiversity Partnership at an event at Charlton House and Gilbert's Pit. Following this, London's Geodiversity Action Plan was developed during 2009/10 by Capita Symonds on behalf of the Partnership. Consultation on a draft was undertaken in early 2010 and the Action Plan for 2009-13 was launched by the Partnership at Kenwood House in October 2010. The Action Plan was reviewed by the Partnership and revised versions produced in 2011 and 2012.

A successful workshop "*Overground – Underground: London's geodiversity for London's people*" was held in February 2013 at the Horniman Museum, a second. This led to the Action Plan for 2014-18. A second workshop was held in September 2018 at University College London, when people from a large variety of groups discussed the achievements and how to advance Geodiversity in London. This appendix summarises what has been achieved by the Partnership to meet the objectives on the Action Plan since 2014 to 2018<sup>12</sup>.

#### Objective 1: Increase our understanding of the geodiversity of London

- Identified and visited three RIGS and fifteen LIGS (table 3 of Appendix 1) to become Candidate sites for the next version of *London's foundations*.
- Identified and visited thirty Sites of Geological Interest to be written-up for the Guide to London's Geological Sites.
- List of Partners placed on the website and updated as they have been added or deleted.
- Updating Building London with display at Highgate Woods
- Link established in Building London and on website to 39 London building stone walks to the Urban Geology and London Pavement Geology websites
- The Partnership's website updated to include all geological sites identified in London.
- Partnership asking Natural England to publish scoping study on the links between park and garden design and geodiversity.

#### Objective 2: Manage and conserve the geodiversity of London

- Information on geodiversity updated on the GiGL website; to include candidate RIGS and LIGS. Information is included in reports to enquiries from developers, consultants and planning authorities.
- London Wildlife Sites Board and GiGL Advisory Panel attended.
- Undertaken conservation days at Gilbert's Pit SSSI (GLA 14), Chalky Dell (GLA 38) and at Riddlesdown (GLA 26), with the involvement of local groups.
- Liaised with Friends of Crystal Palace throughout their conservation work on the dinosaurs.
- Inspected 35 of existing RIGS or LIGS to ascertain necessity for improvements required.
- Working with Natural England and Greenwich Council to conserve and create improved access to exposure at Gilbert's Pit with the construction of steps (funded by NE).
- Interpretation boards designed and installed at Gilbert's Pit (GLA 14) and North End Pit (GLA 31). The latter involved local residents and the Natural History Museum.
- Continued liaison with Bexley on Abbey Wood project, particularly for geodiversity aspects at Lesnes Shell Bed SSSI (GLA 01) and Chalky Dell (GLA 38)
- Established and continued liaison with London Natural History Society, the Geologists' association, the City of London Corporation, the Royal Parks, the London Wildlife Trust and other organisations.
- Several views from the Green Chain Walk identified for inclusion in a document on London's views.

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<sup>12</sup> Appendix 2 of the 2014-2018 Action Plan summarised the achievements from 2009 to 2013.

# London Geodiversity Action Plan 2019-2024

- Bus Pass geology researched with two new trails developed: Kenwood to Queens Wood, and Chelsea to Harrow and Hillingdon.
- Working with artists and their exhibitions to (1) obtain peat at Rockingham Anomaly, near Elephant & Castle and on (2) Hampstead Heath

## **Objective 3: Deliver sustainable social, economic and environmental benefits for London**

- Twelve geological points of interest on Green Chain Walk identified to develop a leaflet: *A trail through time* and an audio trail: [www.greenchain.com/timetrails](http://www.greenchain.com/timetrails).
- Developed geotrails in Richmond Park, Greenwich Park, Spas & Springs in South London, Spring Park and part of Thames Path. Various involved the Royal Parks, City of London, local Friends groups and LNHS.
- Identified geological points of interest on Green Chain Walk, Capital Ring and London Loop.
- Promoted the Partnership at the GA Festival of Geology with a stall and led walks organised for the Festival.
- Led walks in Earth Science (October) week and GeoWeek (May)
- Led walks for Heath Hands, Friends of Queens Wood, Coldfall Wood.

## **Objective 4: Promote and care for London's Geodiversity**

- SSSI's, RIGS and LIGS separately identified on Partnership website's map of sites. The 30 SGI's also posted on the website.
- Exhibited at the annual Geologists' Association Festival of Geology at University College London.
- SGI information sent to relevant bodies identified for each site.
- Website updated when appropriate and accounts set up on Flickr and Twitter.
- Articles published in Earth Heritage on conservation at Gilbert's Pit and Riddlesdown; in the GA magazine on the centenary geowalk in Richmond Park to Wimbledon Common.
- Assisted on the Earthcache walks around St Pauls Cathedral, British Library and Embankment.

## **Objective 5: Sustain geodiversity activities in London**

- New organisations joined the Partnership: Royal Parks, Tertiary Research Group, Amateur Geological Society, Croydon Natural History and Scientific Society.
- Developed a gazetteer of sites of geodiversity importance, which will be accessed via an interactive map on Partnership website.
- Active with GeoconservationUK and contributed a number of articles to its quarterly Newsletter.
- Contributed to English Geodiversity Forum and its charter.
- Worked with Natural England on funding for Gilbert's Pit steps.

## **Objective 6: Influence London-wide and London borough planning and environmental policies**

- Continued to liaise with GLA on preparing the fourteen candidate sites
- Commented on the replacement London Plan section on geodiversity, which will begin Public Examination early 2019.
- Representations made on various planning applications that affect geological sites
- Commented on London Environment Strategy.
- Responded to consultation by the Communities and Local Government Committee inquiry into public parks.
- Attended meetings of London Wildlife Sites Board and GiGL Advisory Panel.

# London Geodiversity Action Plan 2019-2024



## Consultation on the London Geodiversity Action Plan

A workshop was held on 4<sup>th</sup> September 2018 at University College London. There followed consultation on a draft of the action plan between December 2018 and end of February 2019. Both have influenced this final London Geodiversity Action Plan.

## The London Geodiversity Partners

Amateur Geological Society, Birkbeck College alumni, British Geological Survey, Core Sample Project, Croydon Natural History and Scientific Society, Earth Science Education Form, Environment Agency, Essex Rock and Mineral Society, GCG Consultants, GeoEssex, Geologists' Association, Greater London Authority, Greenspace Information for Greater London, Harrow and Hillingdon Geological Society, Historic England, Horniman Museum, London Boroughs of Ealing, Hillingdon and Lambeth, London Wildlife Trust, Natural England, Open University Geological Society (London Branch), Quaternary Research Association, Queen Mary College London, Royal Parks, Tertiary Research Group, University College London

## Images used in the plan

The iconic image of London on the Front Cover and range of images within the Banner have been used to illustrate the wealth of London's geodiversity (including the range of underlying rocks and deposits, recent 'finds' *in situ* and within museum collections, London-based geological resources, together with imported aggregates and building stones, geomorphological features, significant publications and engagement with people). Descriptions of these images and credits are given below.

**Front Cover Image:** City of London Skyline, including St Pauls, the newer buildings of London's City and the River Thames, the focus for London's initial development (Laurie Baker)

**Banner Images:** Cemented pebbles at Dog Rocks (Diana Clements); Front cover of the 'London's Foundations' Report, a geodiversity audit of London (British Geological Survey); Erith Fossil Forest (Diana Clements); Aggregates Wharf alongside the River Thames (Alan Thompson); Big Ben (Alan Thompson); Ilford Mammoth (Natural History Museum); Pupils of Thorntree Primary School enjoying 'hands-on' activities at Gilbert's Pit (Sheppy Shepherd); Aerial view of the River Thames (Alan Thompson); Riddlesdown Chalk Quarry (Barry Gutteridge); Front Cover of the Geological Memoir for London (British Geological Survey); London Stock brick and a road sign indicating the presence of a former spring (Diana Clements)

