Annex 4 - Detailed Specification.

Background to Natural England.

Our remit

Natural England is the government’s advisor on the natural environment. We provide practical advice, grounded in science, on how best to safeguard England’s natural wealth for the benefit of everyone.

Our remit is to ensure sustainable stewardship of the land and sea so that people and nature can thrive. It is our responsibility to see that England’s rich natural environment can adapt and survive intact for future generations to enjoy.

NERC Act

Natural England was formally established on 01 October 2006 following the successful passage of the [Natural Environment and Rural Communities (NERC) Act 2006](http://www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1) through Parliament. We are an independent statutory Non-Departmental Public Body.

The NERC Act sets out Natural England's purpose: to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.

The Act states that this purpose includes:
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* promoting nature conservation and protecting biodiversity
* conserving and enhancing the landscape
* securing the provision and improvement of facilities for the study, understanding and enjoyment of the natural environment
* promoting access to the countryside, open spaces and encouraging open air recreation
* contributing in other ways to social and economic wellbeing through management of the natural environment.

You can [read more about what we do](https://www.gov.uk/government/organisations/natural-england/about) on GOV.UK.

England Green Infrastructure Mapping Database - Urban Habitat and Naturalness Mapping Rollout Phase 2.

Project reference - UHM R P2.

Background to the specific work area relevant to this purchase

The England Green Infrastructure Mapping database is a part of the England Green Infrastructure Standards Framework and is being delivered as part of the Natural Capital and Ecosystems Assessment Programme

The current version of the England Green Infrastructure Mapping can be viewed via the link below. Please note that this does not include any of the existing (Phase 1) Urban Habitat and Naturalness mapping.

[Home (naturalengland.org.uk)](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fclicks.eventbrite.com%2Ff%2Fa%2FB_lhmLe6lSzEykzJa0id7g~~%2FAAQxAQA~%2FRgRjk2ROP0RLaHR0cHM6Ly9kZXNpZ25hdGVkc2l0ZXMubmF0dXJhbGVuZ2xhbmQub3JnLnVrL0dyZWVuSW5mcmFzdHJ1Y3R1cmUvSG9tZS5hc3B4VwNzcGNCCmGyzjCyYSIWXadSIW1hcnRpbi5tb3NzQG5hdHVyYWxlbmdsYW5kLm9yZy51a1gEAAAAAA~~&data=05%7C01%7CMartin.Moss%40naturalengland.org.uk%7C160138e94e8e43b0c07408dad38ce2d7%7C770a245002274c6290c74e38537f1102%7C0%7C0%7C638054899321484718%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=aN0BFX6dI2E03vTyi3So%2Boj9CgIWmLrVQTUphCSn0E4%3D&reserved=0)

Information about the Natural Capital and Ecosystems Assessment Programme can be found via the link below.

[Natural Capital and Ecosystem Assessment Programme - GOV.UK (www.gov.uk)](https://www.gov.uk/government/publications/natural-capital-and-ecosystem-assessment-programme/natural-capital-and-ecosystem-assessment-programme)



The overall purpose of the England Green Infrastructure Mapping Database is to provide England level data to support a range of planning, strategy and resource targeting processes to help and designed to help deliver the England Green Infrastructure Standards framework.

Project scope and overview.

An Earth Observation based approach to developing Urban Habitat and Naturalness Maps was developed during 2021/22 and further refined during 2022/23 which included the upscaling of application of the method to a small selection of major urban conurbations in England (Tyneside, Greater Manchester, Greater Birmingham).

In upscaling (known as the Phase 1 roll out), the Urban Habitat and Naturalness method was refined to a point where it is intended that no further refinements will be made (see exceptions below) so as to ensure that a suite of maps for all the major urban conurbations in England can be developed with a consistent method underpinning their development. Subsequent methodological modifications may then be made to create an updated method for use in developing any second iteration Urban Habitat and Naturalness Maps in the future.

The focus of this contract will be on applying the established method to a second phase suite of areas in order to expand the England coverage of Urban Habitat and Naturalness maps.

Previous experience delivering the precise methodology detailed in Annex 5 is not a pre-requisite requirement for this contract. However, as this project is mainly focussed on expanding the coverage of Urban Habitat and Naturalness mapping to an extended area of urban England, methodological change should be restricted to the conditions of exception set out below.

An overview of Urban Habitat and Naturalness Mapping and the essential process steps is set out in annex 6 - Urban Habitat and Naturalness Mapping - Briefing.

In addition, a detailed "Step by step" guide to creating Urban Habitat and Naturalness Maps is set out in Annex 5. In delivering this project the method will applied as set out in the User Guide without modification unless either;

1. Errors in the existing method are found and require rectification.

or

2. New circumstances are encountered during Phase 2 that require modification of the method to be able to deal with.

However, the User Guide (Annex 5) provides a number of detailed recommendations that have been developed in previous work. These detailed procedures may be varied should it prove convenient to do so. It is the main steps of the approach and output structures that will need to replicate those developed for Phase 1.

Submitted quotes will need to confirm that they will follow the overall prescribed method (subject to exceptions) and that they are able in terms of technical skills and capacity to deliver Urban Habitat and Natural Maps for the listed target locations (Annex 3).

Timetable.

The project is anticipated to begin in early September 2023 with a target outputs delivery date of 15th March 2024. A detailed timeline is set out in the Request for Quote.

Requirement

The target areas for Phase 2 of the Urban Habitat and Naturalness mapping are;

1. Greater London - The area of the Greater London Authority.

2. West Yorkshire - The Unitary Authority areas of Leeds, Bradford, Calderdale, Kirklees and Wakefield.

3. Liverpool City Region and Warrington - The Unitary Authority areas of Liverpool, Sefton, Knowsley, Wirral, Liverpool City, Halton, St Helens and Warrington.

The mapping will cover the area within the combined administrative boundaries of the local authorities within the target areas.

However, it is known that the overall accuracy of the Urban Habitat maps can be significantly affected by the date of data capture, particularly for the aerial data. Dates of tiles before late May and after early September are less suitable for use than those between these times. If Aerial data capture dates are found to be outside of the optimum date range, alternative target locations may be agreed with the Project Steering Group prior to the initiation of mapping.

Commercial software usage.

Please note that the method requires the use of some commercial software. Costs/licenses associated with the use of these software should be included in the prices as eligible project costs. Please see section 2 of the User Guide (Annex 5) for notes on software requirements.

Costs associated with licenses should be included as part of the project costs and identified clearly in the quote.

The two commercial software requirements are;

1. LASTools [commercial]

Download: <https://rapidlasso.com/lastools/>

 LASTools is used to merge the EA LiDAR tiles into single files. A free version of the software exists for smaller areas, but artefacts are voluntarily introduced at larger scales when used without a commercial license. Any software that allows LAZ tile merging could be used as an alternative.

2. Trimble eCognition 10.3 [commercial]

Download: <https://geospatial.trimble.com/ecognition-download>

This is the main software used for the urban habitat and Naturalness mapping workflow and we are not aware of any alternative that is currently available. Licenses need to be purchased, although a free trial version is available for initial testing and training. The official UK provider for Trimble eCognition software licenses is Korec: https://www.korecgroup.com/.

There are two types of eCognition license: Developer and Server. Developer licenses allow ruleset modifications and at least one is required for initial threshold setting. The Server licenses allow tiling of larger areas for more efficient parallel batch processing. It is advised to purchase as many Server licenses as can be supported by the user’s computing power and budget.

eCognition licenses can be renewed monthly and offer flexibility. Users should consider preparing their datasets and performing initial tests before purchasing Server license for efficient use of the license during the rental period.

Tasks.

Task 1.

Following the overall approach set out in Annexes 5 and 6, develop Broad and Detailed Urban Habitat Maps for the agreed Phase 2 roll out target areas.

Task 2.

Following the overall approach set out in Annexes 5 and 6, develop Naturalness Maps and Combined Factor Naturalness Maps for the agreed Phase 2 roll out target areas.

Task 3.

Provide a technical report on experience of applying the Urban Habitat and Naturalness Mapping methodology detailing any variance or new aspects applied and making recommendations for refinement for consideration in developing the next generation iteration of Urban Habitat and Naturalness Mapping.

Task 4.

The project should deliver outputs that replicate those set out in section 8 of the User Guide (Annex 5) for the specified target areas.

Deliver the spatial data outputs in GIS format compatible with ArcGIS Pro for the following outputs;

1. Urban Habitat Broad Classification Maps for the listed target areas in tiles aligned with the Ordnance Survey National grid and in 5 x 5 Square kilometres tile sizes.

2. Urban Habitat Detailed Classification Maps for the listed target areas in tiles aligned with the Ordnance Survey National Grid and of 5 x 5 square kilometres (same tile area as for Broad Classification).

3. Naturalness Maps covering the entire "target areas" as one map for each.

4. GI Parcels (Combined Naturalness Factor Maps) covering the entire "target areas" as one map for each.

Data requirements.

Required data inputs are listed in Section 3 of Annex 5. Please note that data that is not Open Government License will be provided to the successful contractor under PSGA Contractor License terms and conditions once the contract is live.

Sustainability

Natural England protects and improves the environment and is committed to reducing the sustainability impacts of its activities directly and through its supply chains. We expect the Contractor to share this commitment and adopt a sound, proactive sustainable approach in keeping with the 25 yr environmental plan/our commitments compliant with all applicable legislation. This includes understanding and reducing direct and indirect sustainability impacts and realising opportunities, including but not restricted to; resilience to climate change, reducing greenhouse gas emissions, water use and quality, biosecurity, resource efficiency and waste, reducing the risk of pollution, biodiversity, modern slavery and equality, diversity & inclusion, negative community impacts.

As a delivery partner, the successful contractor is expected to pursue sustainability in their operations, thereby ensuring the Contracting Authority is not contracting with a supplier whose operational outputs run contrary to the Contracting Authority’s objectives. The successful contractor will need to approach the project with a focus on the entire life cycle of the project.

Contract Management

Martin Moss will be the Natural England Contract Manager for this project.

A Project Steering Group of Natural England and successful contractor representatives will be established at start of contract to oversee project delivery. It is anticipated project progress meetings will be held monthly (by Teams) from the initial project inception meeting.

All meetings will be online via Teams.