

## ANNEX I – TENDER SPECIFICATIONS

**NB: Changes highlighted on pages 1, 23, 24 and 25**

**Title:** Service contract for Copernicus Hotspot Monitoring Services – Urban Atlas:  
Production of Digital Building Block Height Models

**Reference:** Call for tenders EEA/DIS/R0/20/008

**Closing date:** **19.5.2020**

### **Tender specifications purpose:**

1. specify what the EEA is to buy under the contract resulting from this tender procedure (*technical specifications*)
2. announce the criteria which the EEA will apply to determine the successful contractor among the offers received (*evaluation of the tenders*)
3. provide information on how to submit an offer and the expected timeline

These tender specifications will form Annex I of the contract resulting from this tender procedure and will be binding during the contract implementation.

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# 1 TECHNICAL SPECIFICATIONS

## 1.1 Introduction to the EEA

The European Environment Agency (EEA) is a European Union public body governed by Regulation (EC) No 401/2009 of the European Parliament and of the Council of 23 April 2009<sup>1</sup>. The EEA role is to support the European Union in the development and implementation of environmental policy by providing relevant, reliable, targeted and timely information on the state of the environment and future prospects. The EEA also provides the necessary independent scientific knowledge and technical support to enable the Union and the member countries to take appropriate measures to protect and improve the environment as laid down in the Treaty and by successive Community action programmes on the environment and sustainable development. Currently, the EEA has 32 member countries<sup>2</sup> and 6 cooperating countries<sup>3</sup> in the Western Balkans.

The EEA is the hub of the European Environment Information and Observation Network (Eionet), a partnership network consisting of the EEA itself, seven European Topic Centres (ETCs) and a network of around 1000 experts from 38 countries in over 350 national environment agencies and other bodies dealing with environmental information. The EEA and Eionet contribute to the European Shared Environmental Information System (SEIS), a distributed, integrated, web-enabled information system based on a network of public information providers sharing environmental data and information. It builds on existing e-infrastructure, systems and services in the Member States and EU institutions.

Copernicus is the European Programme for the establishment of a European capacity for Earth Observation. The EEA has been delegated the implementation of the pan-European and local components of the Copernicus Land Monitoring Service (CLMS). The objective of CLMS is to provide users in the field of environment and other terrestrial applications with information based on space data combined with other sources. It addresses a wide range of policies such as environment, agriculture, regional development, transport and energy at EU level, and European commitments to International Conventions.

EEA is also responsible for the cross-cutting coordination of the Copernicus In Situ Component and in cooperation with the Joint Research Centre (JRC) the implementation of the CLMS. Use of the Copernicus services is an integrated part of EEA's strategy to improve environmental information. Copernicus also plays an important role in the implementation of the principles of SEIS, and has the potential to make effective use of existing infrastructures in accordance with the INSPIRE Directive. In the global context, Copernicus is an integral part of the Global Earth Observation System of Systems (GEOSS).

The **thematic hotspot monitoring** of CLMS aims, complementary to a more generic wall-to-wall mapping, to provide specific and detailed LC/LU (Land Cover and Land Use) information

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<sup>1</sup> OJEU L 126 of 21.5.2009, p. 13.

<sup>2</sup> The Member States of the European Union, Iceland, Liechtenstein, Norway, Switzerland and Turkey.

<sup>3</sup> Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, as well as Kosovo under the UN-Security Council Resolution 1244/99.

by addressing specific types of hotspots. As mentioned and approved in the European Commission Copernicus work programmes from 2014 to 2019, some of the operational activities for the thematic hotspot monitoring will focus on the continuation of the production of a series of existing services, namely: Urban Atlas (UA), Riparian zones (RZ) and the Natura 2000 (N2K) family of products as well as the start of implementation of new services such as Coastal Zones (CZ).

Further information about the work of EEA can be obtained on its website: <http://www.eea.europa.eu>.

Further information on Eionet can be found at <http://www.eionet.europa.eu/about>.

Further information on the Copernicus programme can be found at <http://www.copernicus.eu>.

## **1.2 Subject of the contract**

This call for tenders aims at the establishment of a service contract with an economic operator for the *Production of Digital Building Block Height Models in selected cities and urban centres, for the reference year 2012*.

## **1.3 Task description and product specifications**

### **1.3.1 Background**

The Urban Atlas<sup>4</sup> (UA) was the first in a series of land monitoring services on so called “hot spots”. It was the first service to create harmonised land cover and land use maps over several hundreds of cities and their surroundings (the Functional Urban Area<sup>5</sup>). The Urban Atlas goes hand in hand with the Urban Audit, in which the European Commission's Directorate-General Eurostat collects a wide range of social and economic indicators. The Urban Atlas adds a spatial component to the statistical data, which enables comparison of urban spatial patterns across Europe.

In its first exercise, based on Very High Resolution imagery from the reference year 2006, it covered 319 Functional Urban Areas (FUA), typically including cities in Europe with more than 100.000 inhabitants covering 27 EU countries<sup>6</sup>. For the reference year 2012<sup>7</sup>, it was decided to extend the exercise to 785 cities (those with more than 50.000 inhabitants) covering the EEA member and cooperating countries<sup>8</sup>, thereby applying the commonly agreed definition of

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<sup>4</sup> <https://land.copernicus.eu/local/urban-atlas>

<sup>5</sup> As defined in <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-18-008>

<sup>6</sup> <https://land.copernicus.eu/local/urban-atlas/urban-atlas-2006>

<sup>7</sup> <https://land.copernicus.eu/local/urban-atlas/urban-atlas-2012>

<sup>8</sup> <https://www.eea.europa.eu/about-us/countries-and-eionet>

cities and commuting areas, between the EC and the OECD, for the delineation of the areas of interest (the Functional Urban Area<sup>9</sup>).

The Urban Atlas is mainly based on the combination of (statistical) image classification and visual interpretation of Very High Resolution satellite imagery with a 2 to 2.5m spatial resolution. The built-up classes<sup>10</sup> are combined with density information on the level of sealed soil derived from the High Resolution Layer imperviousness to provide more detail in the density of the urban fabric. Finally, the Urban Atlas product is complemented and enriched with functional information (road network, services, utilities etc...) using ancillary data sources such as local city maps or online map services.

With 17 classes, the UA2006 focused mainly on urban areas. As the rural fringe was considered less important, it was represented by just four classes. Feedback from the user community and better insight into the role of the urban fringe in the urban growth processes have led to an extension of the nomenclature for UA2012 to a total of 10 agricultural and semi-natural classes. From 2012 onwards, it also became possible to include a change layer<sup>11</sup>, at least for those FUAs already included in 2006 and population estimates are now integrated into every polygon within the Urban Atlas 2012 dataset<sup>12</sup>.

Furthermore, UA2012 has been enriched with a so-called street tree layer<sup>13</sup>, i.e. an automated classification of trees along the roads, in parks and gardens as well as new product containing building height information<sup>14</sup>, currently only available for 39 European capitals (core cities and urban centres).

Most cities have more and more detailed information at local level. However, the added value of the Urban Atlas is that it provides harmonised information across all the mapped FUAs. Local authorities and policymakers can compare their own city with others across Europe. Having a harmonised information source on spatial patterns in urban areas helps in monitoring urban policies across Europe. It can serve as a tool for comparative benchmarking between European cities. For European policies, the Urban Atlas provides a better insight into cities and their structure, thus facilitating evidence based policy-making. This is critical for identifying and underpinning the most appropriate European policy initiatives in the urban domain, in areas ranging from public transport infrastructure development over flood risk assessments to understanding the urban ecosystem and many more.

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<sup>9</sup> As defined in <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-18-008>

<sup>10</sup> <https://land.copernicus.eu/user-corner/technical-library/urban-atlas-2012-mapping-guide-new/>

<sup>11</sup> <https://land.copernicus.eu/local/urban-atlas/change-2006-2009>

<sup>12</sup> <https://land.copernicus.eu/local/urban-atlas/population-estimates-by-urban-atlas-polygon>

<sup>13</sup> <https://land.copernicus.eu/local/urban-atlas/street-tree-layer-stl>

<sup>14</sup> <https://land.copernicus.eu/local/urban-atlas/building-height-2012>

This tender addresses a specific topic of the Urban Atlas - the digital height model e.g. to support measuring of urban density. For that purpose, building block height information is essential. It will address cities and urban areas with population up to 50.000 inhabitants.

### 1.3.1.1 Tasks description and product specifications

The objective is to continue the build of the digital building height models for selected cities and urban centers in order to obtain a better insight and toolset into measuring urban density.

The task:

- To generate Digital Building Height Models for selected cities and urban centres for the reference year 2012, covering an area ranging between 190,000 km<sup>2</sup> and 210,000 km<sup>2</sup> (extending the existing dataset that currently covers 25,656 km<sup>2</sup>) which will entail, for each Aol (Area of Interest) the production of:
  - The actual raster data (10x10m) in GeoTIFF format (ETRS89-LAEA)
  - An XML-file with metadata
  - Document with product description and results of accuracy assessment (see 1.3.10)
  - Pixel based information layer containing the information of the year of origin of the underlying input data (VHR Stereo data or other suitable sources)

For an example of the previous work please refer to:

<https://land.copernicus.eu/local/urban-atlas/building-height-2012?tab=download>  
(registration required).

It contains building height information for all EU-27, Iceland, Norway, Switzerland, Western Balkans, Turkey and UK capital cities, for a total of 38 files for the reference year 2012.

Tenderers are encouraged to seek the most cost and production efficient processes and datasets for achieving the objectives and fulfilling the requirements.

For information, and to support the tendering process, the existing dataset with building height information covering European capitals was based on IRS-P5 stereo images acquired as close as possible to the defined reference year. Based on these stereo images a digital surface model (DSM) was generated. Afterwards a digital terrain model (DTM) was derived from the DSM with different filter algorithms and the assistance of Urban Atlas 2012 datasets. The calculation of the normalized DSM was done by a simple subtraction of the DTM from the DSM. The final product was then clipped based on the Aol and quality controlled.

**Table 1 Product description: Digital Building Height Model**

Title	Digital Building Block Height Model
Abstract	Very High Resolution layer (grid) containing building height information
INSPIRE themes	Buildings
Geographic description	Selected cities and urban centers (the Aol)

Temporal description	Reference year 2012
Purpose	Provide very high resolution (VHR) information containing building block height in order to obtain a better insight into measurement of urban density
Minimum Mapping Unit	10 m x 10 m
Projection	ETRS89 Lambert Azimuthal Equal Area (LAEA) (EPSG 3035)
Delivery formats	Raster (e.g. GeoTiff)
Metadata	INSPIRE compliant (metadata example found in the Tender specific files folder)
Horizontal accuracy	half of a pixel
Vertical accuracy	3 m

### 1.3.2 Tender specific files

All auxiliary files required for this tender are accessible via:

**URL:** <https://shareit.eea.europa.eu/s/KBxCNYDPJBgQxoG>

**Password:** Ey6ncbERqq

These are:

1. DHM\_AoI\_2012; shapefile
2. UA\_DHM\_Metadata example

### 1.3.3 Geographic coverage

The spatial coverage of the products to be delivered is defined by the Area of Interest (AoI) available with the tender specific files. It comprises 199.219 Km<sup>2</sup>.

The requirement put forward by the European Commission Directorate-General for regional and urban policy (DG REGIO) for the production of height data was that the dataset should cover the area of the city and the urban centre. For that purpose a specific polygon layer (AoI) where the cities and the urban centres were merged was created to determine which area should be covered by height data: it contains the areas that are part of the city or of the urban centre by combining the cities from <https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/urban-audit#ua18> and urban centres from <https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/population-distribution-demography/clusters> (high-density clusters 2011).

As well, the High Density Clusters of Turkey and West Balkans are also added to the AoI.

This particular extent for the height data production was chosen to allow exploitation of results at city level and at urban centre (high-density cluster) level.

Tenderers should be aware that within the Aol described above there may be some areas that do not contain any buildings. Before production starts, an assessment of the Aol shall be undertaken in order to refine it. Tenderers shall explain in their technical offer how they intend to refine the Aol (see section 2.2.3.1 below).

As a suggestion to overcome the issue highlighted above (areas within the Aol with no buildings), the production of building block height shall be focused in the underlying Urban Atlas classes where buildings are expected:

- Continuous urban fabric (S.L. > 80%)
- Discontinuous dense urban fabric (S.L. 50% - 80%)
- Discontinuous medium density urban fabric (S.L. 30% - 50%)
- Discontinuous low-density urban fabric (S.L. 10% - 30%)
- Discontinuous very low-density urban fabric (S.L. < 10%)
- Isolated structures
- Industrial, commercial, public, military and private units
- Port areas
- Airports
- Green urban areas
- Sports and leisure facilities

Building heights outside these classes shall be set to no data value. Tenderers may propose additional procedures to refine the Aol (see section 2.2.3.1 below).

#### **1.3.4 Reference year**

The reference year is 2012. Input data (imagery or any other source) shall be acquired as close as possible to the defined reference year.

#### **1.3.5 Coordinate Reference System**

All geographic data must be referenced in the ETRS89 – Lambert Azimuthal Equal Area (LAEA), EPSG code 3035<sup>15</sup>.

#### **1.3.6 In-situ ancillary data**

In-situ data as defined by the Copernicus Regulation means observation data from ground-, sea- or air-borne sensors as well as reference and ancillary data licensed or provided for use in Copernicus.

Three legal acts may, to some extent, facilitate the access to existing in-situ data, namely:

- Article 23 of the Copernicus Regulation<sup>16</sup>

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<sup>15</sup> <http://spatialreference.org/ref/epsg/3035/>

<sup>16</sup> See footnote 5

- Article 3 of the Commission Delegated regulation (EU) No 1159/2013<sup>17</sup>
- Article 17 of the INSPIRE Directive<sup>18</sup>

The future contractor is fully responsible for getting access to (and procuring when appropriate) the necessary in-situ data. However, the EEA strongly encourages tenderers to investigate with the covered countries in order to explore to which extent access to national and regional in-situ data can be provided for this open call for tenders. Either through services the countries are establishing in the framework of the implementation of the INSPIRE Directive, and/or through services the countries will set up as part of their contribution to CLMS.

Below some examples (mainly indicative and non-exhaustive) that can be used as reference datasets for accuracy assessment, or to replace satellite technology whenever feasible:

- 0.5 m DSM of Vienna based on Airborne Laser Scanner (ALS) and 1 m DTM of Vienna based on maps and ALS:  
<https://www.wien.gv.at/ma41datenviwer/public/>
- 0,4m DSM/DTM of Copenhagen  
(<http://download.kortforsyningen.dk/content/dhmterr%C3%A6n-04-m-grid>)
- 0,5m DSM of Amsterdam  
[http://geodata.nationaalgeoregister.nl/ahn2/atom/ahn2\\_05m\\_ruw.xml](http://geodata.nationaalgeoregister.nl/ahn2/atom/ahn2_05m_ruw.xml)
- 2m DSM of Helsinki: ([http://kartat.kapsi.fi/files/korkeusmalli\\_2m/kaikki/etrs89/](http://kartat.kapsi.fi/files/korkeusmalli_2m/kaikki/etrs89/))
- 1m DTM of Ljubljana  
[http://gis.arso.gov.si/evode/profile.aspx?id=atlas\\_voda\\_Lidar@Arso](http://gis.arso.gov.si/evode/profile.aspx?id=atlas_voda_Lidar@Arso)
- Aerolaser scanning of Latvia territory:  
[http://map.lgia.gov.lv/index.php?lang=2&cPath=4\\_5&txt\\_id=126](http://map.lgia.gov.lv/index.php?lang=2&cPath=4_5&txt_id=126)

The EEA will make the Copernicus reference data access portal (CORDA) available to the future contractor. CORDA gives access to a large number<sup>19</sup> of relevant national and regional spatial reference data sets, i.e. ortho-imagery, administrative units, transport networks, elevation, buildings, land cover, and land use. Contractors are expected to use CORDA to the greatest extent possible.

A time-limited access to CORDA can be granted until the deadline for submission of the tender. Please request membership via <https://corda.eea.europa.eu/> and make a reference to this call for tenders.

### 1.3.7 Consistency of deliverables

Spatial consistency shall be guaranteed for all deliverables. This means that deliverables shall be fully harmonised if produced by different consortium members or sub-contractors (in case of joint tenders). To minimize problems of streamlining and harmonizing deliverables across

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<sup>17</sup> OJEU L309 of 19.11.2013; <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R1159>

<sup>18</sup> OJEU L108 of 25.4.2007; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:108:0001:0014:en:PDF>

<sup>19</sup> At the end of Q3 of 2019, 2174 datasets from 268 national and regional data providers are available via CORDA.

the AoI, the future contractor shall ensure that all consortium members and sub-contractors, as applicable, use the same production workflows, tools, documentation and software. Tenderers shall explain in their technical offer which specific measures will be taken to ensure a fully harmonised workflow and results (see section 2.2.3.1 below).

### 1.3.8 Technical requirements of data deliverables and data submission system

File format, naming and structure shall follow consistent logic. The proposed solutions will be discussed and agreed at the kick-off meeting (see section 1.4.3).

Data deliverables will be checked for their technical conformity and assessed through the EEA online submission system, the OSS QC tool. This system will perform the verification of the compliance of data deliverables with the technical specifications listed and described in detail in the wiki<sup>20</sup> section of the tool.

This free and open tool can be accessed and installed from GitHub<sup>21</sup>. Tenderers are free to access and install the tool.

### 1.3.9 Other tasks

Tenderers shall be aware that unexpected corrective work, which proves to be necessary for production progress, may arise. Such tasks are, as a general rule, considered an integral part of production, and should therefore become part of the basis upon which the financial offer is calculated (see section 2.2.3.2).

The following (non-exhaustive) list of types of tasks are explicitly considered an integral part of production:

- Investigations around in-situ data usability, and internal technical and workflow related modifications of existing in-situ data (e.g. regarding change of format, selection, extraction, etc.);
- Solving technical issues with input satellite imagery, related to various levels of technical challenges (e.g. geometric/format/metadata, to mention a few).
- Work on and documentation of internal validation concepts;
- Drafting and/or updating product specifications and definitions for end-users; the Agency will provide the future contractor with a template for a “*product user manual*” which includes, among others, a product description, the production methodology, internal accuracy assessment and the intended uses and limitations;

Should, unexpectedly, additional tasks arise during production, which are wholly unforeseeable and therefore cannot be considered an integral part of production, but which nevertheless are necessary for production progress, the EEA may launch a negotiated procedure without prior publication of a contract notice for new services with the future contractor (see section 1.5 for further details). However, the triggering of such procedure will be considered as **highly exceptional**, and therefore will require an in-depth justification.

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<sup>20</sup> [https://github.com/eea/copernicus\\_quality\\_tools/wiki](https://github.com/eea/copernicus_quality_tools/wiki)

<sup>21</sup> [https://github.com/eea/copernicus\\_quality\\_tools](https://github.com/eea/copernicus_quality_tools)

### **1.3.10 Delivery reports**

Delivery reports are meant to give a concise overview of relevant information about the product specifications and quality.

The delivery report shall contain at least the following key information:

- Overview of mapped area (map, legend);
- Key notes about the production process and product specifications;
- Overview of source data used (in-situ data, satellite data, other data);
- Delivered files (short description of files contained in the delivery package);
- Accuracy assessment from internal validation activities including the validation dataset<sup>22</sup> (section 1.3.11).

### **1.3.11 Internal validation (Tenderers)**

An internal quantitative validation shall be performed for each delivery unit to prove that the required accuracy has been reached.

Tenderers shall describe in detail in their technical offer which, scientifically accepted, validation approach will be applied in terms of:

- Sampling schema (size, spatial distribution, stratification, regional spread, special rule, etc.);
- Reference data against which the accuracy will be measured;
- Formula applied to measure accuracy (accuracies<sup>23</sup> and confidence intervals).

For reference, the EEA will perform an independent external validation of the final product.

All deliveries come with a one-year guarantee, starting from the day of submission of the delivery. The contractor shall repair and/or replace/amend, free of charge, any part of a result that is proven to be defective according to the specifications listed in section 1.3.8 and in this section.

## **1.4 Implementation of the contract**

### **1.4.1 Project management**

The contractor shall be responsible for all project management activities pertinent to the tasks listed in section 1.3.

During the contract implementation period the contractor shall:

- Prepare the kick-off meeting together with the EEA;
- Maintain the Project Work Plan (PWP) (structure provided in section 2.2.3.1) as appropriate;
- Prepare and deliver monthly progress reports (annex 7);

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<sup>22</sup> file with all interpreted spatial points/polygons

<sup>23</sup> Overall, user and producer accuracy.

- Participate in progress meetings (face to face/teleconference) when requested by the Agency or the contractor;
- Ensure the quality of the work and deliverables produced under this contract;
- Ensure proper coordination and cooperation between the members of the project team and members of the consortium (if applicable).

#### 1.4.2 Deliverables and milestones

The detailed timing of delivery of the individual products (data and reports) will be discussed and decided at the kick-off meeting. However, for the data deliveries we aim at:

- Test sites covering approximately 10% of the Aol at  $t_{KOM}+3$  months;
- Additional 40% of the Aol at  $t_{KOM}+7$  months
- Remaining 50% of the Aol at  $t_{KOM}+12$  months

The maximum time allowed for production of data deliverables shall be  $t_{KOM}+12$  months.

The first version of the PWP (which is equal to the technical offer of the successful tenderer) shall be updated to *Final* after the kick-off meeting in order to reflect decisions taken at that time and to allow for monitoring of activities during project implementation. It shall be updated and amended as necessary during the contract period.

The complete list of deliverables with expected deadlines are described in Table 2.

**Table 2 – Deliverables and deadlines**

Ident.	Deliverables	Expected Deadline ( $t_{KOM}$ =kick-off meeting)
PWP	Project Work Plan (PWP)	First version (based on the successful tenderer's technical offer structured as a PWP, see section 1.4.1): $t_{KOM}^{24}$  Final version: $t_{KOM}+2$ weeks  To be updated thereafter as required
MR1-X	Monthly Progress Reports shall be delivered to the EEA within five working days after the end of each month. The contractor shall use the Project Progress Report template (annex 7),	Monthly, starting $t_{KOM}+1$ month
IR	Interim project report	$t_{KOM}+8$ months

<sup>24</sup> Date of the kick-off meeting, approximately 10 days after contract signature.

DD1-X	Task 1: Data deliverables (GIS data) + metadata + Pixel based information layer containing the information of the year of origin of the underlying input data + delivery report including internal validation of the products	Target areas of delivery units to be decided at $t_{KOM}$  Maximum time allowed for production $t_{KOM}+12$ months
TS	Test sites covering approximately 10% of the AoI shall be verified, documented and validated for conformity and quality.  The production process shall also be verified.	at $t_{KOM}+2$
UM	User Manual (according to the template to be provided by the EEA)	Draft version: $t_{KOM}+6$ months  Final version: $t_{KOM}+13$ months
FR	Final project report	$t_{KOM}+14$ months

### 1.4.3 Meetings

*Table 3 List of foreseen meetings and the expected timing*

No	Major milestones	Expected Deadlines
M1	Kick-off meeting (KOM). The KOM will take place at the EEA's premises or by teleconference. Expected duration: one day.	$t_{KOM}$
M2-X	Progress meetings (teleconference, 1-2 hours as required)	On request of EEA or contractor (max 2 expected)
M5	Close-out meeting (teleconference, 2-3 hours as required)	$t_{KOM}+14$ months

### 1.4.4 Place of performance

All services shall mainly be performed at the future contractor's own premises, with only the kick-off meeting which might be taking place at the EEA's premises in Copenhagen.

The future contractor shall have videoconferencing tools such as skype to organize virtual meetings requested on short notice or of a short duration.

#### 1.4.5 Payment schedule

Table 4 Payment types

Payment	Value (%)	Comments
1 <sup>st</sup> interim payment	20	After the final version of PWP
2 <sup>nd</sup> interim payment	40	After the interim project report
Balance payment	40	After the final project report

#### 1.5 Type and volume of contract

The successful tenderer will be awarded a service contract for a period of 14 (fourteen) months which will enter into force upon signature by both parties.

The estimated maximum budget for the service contract is EUR 1 200 000 (one million two hundred thousand euros), covering all services, tasks and deliverables.

During 2 years following the entry into force of the contract, the EEA reserves the right to exercise the option of conducting a negotiated procedure without prior publication of a contract notice for new services with the future contractor in accordance with point (e) of the second subparagraph of point 11.1 and point 11.4 of Annex I to the Financial Regulation.

#### 1.6 Price

Tenderers are required to quote prices for the services to be provided according to the requirements specified in section 2.2.3.2 below and the following:

- Prices quoted must be **all-inclusive**, i.e. inclusive of all costs involved in the performance of the contract (e.g. of management, administrative and travel costs) and **expressed in euros**, including for tenderers established in countries that are not part of the Eurozone. For tenderers in countries that do not belong to the Eurozone, the price quoted may not be revised in line with exchange rate movements. It is for the tenderer to select an exchange rate and assume the risks or the benefits deriving from any variation. Tenderers shall give details of the price according to the requirements specified in section 2.2.3.2 and in the financial offer form attached as annex 4 to these tender specifications.
- No additional expenses incurred in the performance of the services will be reimbursed separately by the EEA.
- The price quoted must be fixed and not subject to revision for the duration of the contract.

Under Articles 3 and 4 of the Protocol on the Privileges and Immunities of the European Communities and the Headquarters Agreement between the Agency and the Government of Denmark of 17 August 1995, the EEA is exempt from all charges, taxes and dues, including value added tax (VAT). Such charges may not therefore be included in the calculation of the price quoted — the VAT amount shall be indicated separately.

The costs incurred in preparing and submitting tenders are borne by the tenderers and will not be reimbursed.

#### 1.7 Contractual terms

In drawing up bids, tenderers should bear in mind the provisions of the draft service contract attached as annex 5, particularly those on payments, performance of the contract,

confidentiality, checks and audits and processing of personal data. Any limitation, amendment or denial of the terms of the contract will lead to the automatic exclusion from the procurement procedure.

Payments shall be made in instalments upon delivery and approval of the services requested, within 30 (thirty) calendar days upon receipt by the EEA of an invoice and any supporting document relating to the services carried out (see section 1.4.5).

No financial guarantee is required.

## **2 EVALUATION OF THE TENDERS**

### **2.1 *Participation in the tendering procedure***

#### **2.1.1 Eligibility**

This call for tenders is open on equal terms to all natural and legal persons from one of the 27 Member States of the European Union and to all natural and legal persons established in an EEA member country, which has signed an agreement with the European Commission for participation in the Copernicus Programme<sup>25</sup>.

As proof of eligibility, tenderers must indicate in which country they have their headquarters, registered office or residence, and provide the necessary supporting documents in accordance with their national law. If the tenderer is a natural person, he/she must provide a copy of identity card/passport or driving license and proof that he/she is covered by a social security scheme as a self-employed person.

#### **2.1.2 Application**

All eligible natural and legal persons (as per above) or groupings of such persons (consortia) may apply.

A consortium may be a permanent, legally established grouping or a grouping, which has been constituted informally for a specific tender procedure. If awarded the contract, the members of the consortium (i.e. the leader and all other partners) will have an equal standing towards the EEA in executing the service contract and they will be jointly and severally liable to the EEA.

The participation of an ineligible natural or legal person will result in the automatic exclusion of that person. In particular, if that ineligible person belongs to a consortium, the whole consortium will be excluded.

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<sup>25</sup>Economic operators established in Iceland and Norway are eligible.

For tenderers established in the United Kingdom: Please be aware that after the entry into force of the EU-UK Withdrawal Agreement on 1 February 2020 and in particular Articles 127(6), 137 and 138, the references to natural and legal persons residing or established in a Member State of the European Union are to be understood as including natural and legal persons residing or established in the United Kingdom. UK residents and entities are therefore eligible to participate under this tendering procedure

The EEA will not request consortia to have a given legal form in order to be allowed to submit a tender, but reserves the right to require a consortium to adopt a given legal form before the contract is signed if this change is necessary for the proper performance of the contract. This can take the form of an entity with or without legal personality but offering sufficient protection to the EEA contractual interests (depending on the country concerned, this may be for instance, incorporation or partnership or a temporary association). Consortia must identify one of their members a leader who will interface with the EEA.

Each member of a consortium must fulfil the conditions for participation mentioned in this section and section 2.1.1 above and provide the required documents listed in these tender specifications under sections 2.2.1 and 2.2.2 below. Therefore, each member of a consortium shall specify his role, qualifications and experience.

Each tenderer can only submit one offer. No tenderer may participate in more than one consortium aiming at the service contract. Disregard of this rule will lead to the exclusion of all consortia involved in this practice.

### **2.1.3 Subcontracting**

Subcontracting is the situation where the contractor enters into legal commitments with other economic operators, which will perform part of the contract on its behalf. The contractor retains full liability towards the Agency for performance of the contract as a whole.

Tenderers must state in annex 1 (Administrative data) what part of the work, if any, they intend to subcontract, and to what extent (i.e. what percentage of the total contract value as specified in section 1.5 above).

Multi-level subcontracting is not allowed. Only one level of subcontracting is allowed. Additional level of subcontracting (e.g. subcontracting of subcontractors) are not allowed during the execution of the contract.

If awarded the contract, the contractor may not choose subcontractors other than those mentioned in the tender unless he obtains the prior written authorisation of the EEA. The overall responsibility of the work remains with the contractor.

The EEA reserves the right to request tenderers to provide documentation in relation to exclusion and selection criteria for any proposed subcontractors at a later stage (see sections 2.2.1 and 2.2.2 below).

If awarded the contract, the contractor must ensure that Article II.19 of the draft service contract (see annex 5) can be applied to subcontractors. Once signed, Article II.9 of the above-mentioned draft service contract shall govern subcontracting.

## **2.2 Criteria**

### **2.2.1 Exclusion criteria**

#### **2.2.1.1 Exclusion from participation and award in the procurement procedure**

To be eligible to participate in this contract award procedure, tenderers must not be in any of the exclusion situations referred to in Articles 136 to 141 of the financial rules applicable to the general budget of the European Union (Financial Regulation)<sup>26</sup>.

#### **2.2.1.2 Evidence to be provided by the tenderers**

When submitting their bids, each tenderer (including any member of a consortium or any subcontractor) must provide a declaration on their honour in accordance with the form attached as annex 2, duly signed and dated, stating that they are not in any of the situations mentioned under section 2.2.1.1 above.

The initial verification of non-exclusion of tenderers will be done on the basis of the submitted declarations and consultation of the [European Union's Early Detection and Exclusion System](#). The tenderer (including each member of the consortium and sub-contractors) to whom the contract is to be awarded will be required, prior to the signature of the contract, to provide the evidence specified in the declaration of honour mentioned above (see paragraph VI of annex 2).

The EEA may waive the obligation of the tenderer to whom the contract is to be awarded to submit the documentary evidence referred to above if such evidence has already been submitted to the EEA for the purpose of another procurement procedure and provided that the issuing date of the documents does not exceed one year and that they are still valid. In such a case, the successful tenderer shall declare on its honour that the documentary evidence has already been provided in a previous procurement procedure and confirm that no changes to its situation have occurred. The EEA will also waive the obligation of the tenderer to submit the documentary evidence if it can access it on a national database free of charge.

It shall be indicated for each tenderer (and each member of a consortium) in the relevant field in annex 1 (Administrative data) whether it is a Small or Medium Size Enterprise in accordance with Commission Recommendation 2003/361/EC<sup>27</sup>.

### **2.2.2 Selection criteria**

Tenderers should show their degree of economic and financial capacity, and technical and professional capacity to provide the requested services by providing information on the criteria described below. In case of a joint tender submitted by a consortium, or in the case of a tender involving subcontracting, the economic and financial capacity, and the technical and

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<sup>26</sup> Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012, OJEU L 193/1 of 30.07.2018.

<sup>27</sup> Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF>

professional capacity will be assessed in relation to the combined capacities of the members of the consortium and subcontractors, as a whole, to the extent that they put their resources at the disposal of the tenderer for performance of the contract.

In accordance with Article 20(6) of Annex I to the Financial Regulation, the EEA reserves the right to reject a tenderer where it is established that he/she has conflicting professional interests, which may negatively affect the performance of the contract.

#### **2.2.2.1 Legal and regulatory capacity**

➤ Requirement

Any tenderer is required to prove that they are authorised to perform the contract under national law.

➤ Evidence to be provided by the tenderers:

Each tenderer (including any sub-contractor whose involvement represents 20% or more of the contract's total estimated value specified in section 5 above or any member of a consortium) is required to submit a legal entity form (see annex 1 for link to the document) duly filled out and signed, accompanied by a copy of inscription in a trade register and/or a copy of inscription in a VAT register, or a sworn declaration or certificate, evidence of membership of a specific organisation, or express authorisation, where applicable.

#### **2.2.2.2 Economic and financial capacity**

➤ Requirement:

Tenderers must be in a stable financial position and have the economic and financial capacity to perform the contract.

The tenderer must have for each of the past two financial years for which accounts have been closed, an average annual turnover of at least EUR 500 000.

➤ Evidence to be provided by the tenderers:

- A duly completed and signed simplified Financial Statement, in accordance with the template provided as annex 3<sup>28</sup>;
- Balance sheets or extracts from balance sheets for at least the last 2 (two) years for which accounts have been closed, where publication of the balance sheet is required under the company law of the country in which the tenderer is established;
- Failing provision of balance sheets, tenderers should submit appropriate statements from banks or evidence of professional risk indemnity insurance. The most recent year must have been closed within the last 18 months.

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<sup>28</sup> In case of a joint offer submitted by a consortium, the leader and all partners of the consortium must submit this statement; however, the threshold for the turnover will be verified at the consortium level.

If, for some exceptional reason, which the EEA considers justified, a tenderer is unable to provide the references requested above, he may prove his economic and financial capacity by any other means which the EEA considers appropriate.

Tenderers (in case of a consortium only the leader) shall also submit a financial identification form (see annex 1 for link to the document and instructions) duly filled out and signed.

### 2.2.2.3 Technical and professional capacity

Tenderers should show their degree of technical and professional capacity to carry out the requested tasks by providing information on the criteria described below.

- **Human resources:**

Tenderers shall provide the following documents:

CVs detailing the educational and professional qualifications of the tenderer's managerial staff as well as those of the staff designated to provide the services, indicating language skills (minimum level B2 English skills<sup>29</sup>) and the required experience as follows:

- Managerial staff: Minimum 1 (one) CV documenting a minimum of 5 (five) years' relevant experience;
- Staff responsible for providing the services:
  - Minimum 2 (two) CVs for senior experts, each documenting at least 5 (five) years' relevant experience;
  - Minimum 3 (three) CVs for junior experts, each documenting at least 2 (two) years' of relevant experience.

The managerial staff and senior expert staff may be identical.

By "*relevant experience*" it is meant experience in the following areas:

Managerial staff: documented experience in project management and leadership for large-scale projects; good knowledge of project management principles and models.

Staff responsible for providing the services:

1. Satellite imagery data processing (optical stereoscopic, SAR, etc.) or other non-satellite sources (aerial surveys, etc.)
2. Geographic Information Systems (GIS) and DEM/DTM/DSM;
3. Integration of satellite and non-satellite sources of elevation data (hybrid methods);
4. Automated building information extraction;
5. Management of large scale datasets;
6. QA/QC of spatial data and accuracy assessment methods;

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<sup>29</sup> Common European Framework of Reference for Languages (<https://tracktest.eu/english-levels-cefr/>).

Tenderers shall document that the proposed senior experts each meet at least two of the above listed six requirements regarding “relevant experience” and that they collectively meet all six listed requirements.

Tenderers shall document that the proposed junior experts each meet at least requirements 1 and 2.

- **Past contracts:**

Tenderers shall provide details of contracts awarded in the past three years to them and/or the consultants whose CVs are provided relevant to the services required by the EEA, indicating the value, dates, brief description of the services provided and recipients of the services (public or private).

- **Environmental policy:**

Tenderers shall provide a description of their environmental policy specifying the status of implementation. In the event of a joint tender submitted by a consortium, each member of the consortium shall provide the requested description.

### **2.2.3 Award criteria**

The assessment method that will be used to determine the choice of the tender will be based on the most economically advantageous tender in terms of

- the quality of the tender (Technical merit – TM), and
- the financial value of the tender (Price – P)

#### **2.2.3.1 Technical merit (TM) (max. 50 points, min. 35 points)**

Tenders will be evaluated following the award criteria and weightings outlined below, producing a potential total score of maximum 50 points.

Tenderers shall elaborate on all criteria referred to below in order to score as many points as possible. The mere repetition of mandatory requirements set out in these tender specifications and its technical annexes, without going into details or without giving any added value will only result in a low score. If essential elements of these tender specifications are not expressly addressed in the tender, the EEA may decide to give a zero mark for the relevant quality criterion. It is important that the technical offer is presented in a simple and clear structure, following the structure of the Project Work Plan (PWP) outlined below. The technical offer of the successful tenderer will become the first version of the PWP for the implementation of the contract (see table 2 in section 1.4.2). **Tenderers are requested to limit their technical offer to a maximum of 50 DIN A4 pages** (excluding annexes).

The PWP shall include, but not be limited to, the following elements (when presented as the technical offer of all tenderers and when finalised and updated by the future contractor):

- Introduction to the project;
- Methodology, to be applied;
- QA/QC measures, including an internal validation of the data products (see section 1.3.11 for more details);

- Production plan, including its optimisation aspects with a view of completing the technical work in 12 months;
- Project organisation and composition of the project team (roles and responsibilities);
- Facilities and resources;
- Key risks and mitigating actions.

No	Award criteria	Maximum Points (50)	Minimum Points (35)
1	<p><b>Quality of the proposed strategy documented by:</b></p> <ul style="list-style-type: none"> <li>- Proposed input and ancillary data sources;</li> <li>- Workflow to derive building block height information;</li> <li>- Proposed algorithms and how to deal with hilly terrain or flat urban areas;</li> <li>- Procedures for elimination of erroneous height values (outlier removal) and refinement of the model;</li> <li>- Specific measures to ensure fully harmonised results;</li> <li>- QA/QC procedures and internal validation approach.</li> </ul>	30	21
2	<p><b>Project organisation and resources including:</b></p> <ul style="list-style-type: none"> <li>- Production plan, including its optimisation aspects with a view of completing production in 12 months;</li> <li>- Composition of the project team (roles and responsibilities);</li> <li>- Facilities and resources;</li> <li>- Key risks and mitigating actions.</li> </ul>	10	7
3	<p><b>Test data:</b></p> <p>Tenderers shall provide an example of the final products (digital building height model) for a test area (details on location and size of test areas are provided in annex 6 to these tender specifications).</p> <p>The test data shall comprise:</p> <p>The requested product (GeoTiff) for the test area in the European LAEA projection accompanied by INSPIRE compliant metadata;</p> <p>The test area will be evaluated based on:</p> <ul style="list-style-type: none"> <li>• Compliance to formal requirements as specified in section 1.3.1.1</li> </ul>	10	7

	<ul style="list-style-type: none"> <li>• Correctness of building block height assignment (will be evaluated by means of 'look and feel')</li> </ul>		
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Only tenders which obtain the indicated minimum number of points for each award criterion will be considered for the next stage, which involves determining the financial value of the tender and for the final assessment.

### 2.2.3.2 Price (P) (max. 50 points)

Tenderers are requested to submit a financial offer, thereby taking all tasks and deliverables as outlined under sections 1.2, 1.3, and 1.4 above, giving the **all-inclusive** (i.e. include all relevant costs and all expenditure (e.g. management, administrative and travel costs)) for the services outlined below.

Task	Unit Price (€)	Total Price (€)
Generate Digital Building Height Models for selected cities and urban centres for the reference year 2012, covering an area ranging between 190,000 km <sup>2</sup> and 210,000 km <sup>2</sup>	Price/km <sup>2</sup>	

For the calculation of the total price, the smallest area of the range shall be used, i.e. 190,000 km<sup>2</sup>.

For that purpose, tenderers shall fill out the Financial offer sheet using the template in annex 4 to these tender specifications. Tenderers shall bear in mind that all fields are compulsory, and non-compliance will lead to exclusion of the tender from the award process. Furthermore, tenderer's attention is drawn to point 23 of Annex I to the Financial Regulation concerning abnormally low tenders.

Tenders meeting all mandatory requirements, including the minima for technical merit, will score points in function of the following formula:

$$PS = ((P_{\min}/P_0)) \times 50$$

where:

$P_{\min}$  = the lowest price quoted among the tenders received

$P_0$  = the price quoted of the tender being considered

50 = the maximum number of points that can be awarded under this award criterion

### 2.2.3.3 Final assessment

A service contract will be awarded to the tenderer whose tender achieves the highest total score for technical merit and price (TM + P). Should tenders obtain the same final score and tie for first place, the winning tender will be decided based on the highest score achieved for price.

### 2.3 Performance

Competence in both selection and award criteria must be maintained throughout the service contract. Should the contractor fail to do this during the validity of the service contract, the EEA reserves the right to refuse any person if performance is not satisfactory.

## 3 SUBMISSION OF OFFER AND TIMETABLE

### 3.1 Presentation of the tender

Tenders must be submitted through the electronic submission system (see point 1 in the Invitation to tender for further information).

**Make sure you submit your tender on time:** you are advised to start completing your tender early. To avoid any complications with regard to late receipt/non-receipt of tenders within the deadline, please ensure that you submit your tender several hours before the deadline. A tender received after the deadline indicated in the procurement documents will be rejected.

For detailed instructions on how to submit a tender, please consult the e-Submission Quick Guide available at: <https://www.eea.europa.eu/about-us/tenders/e-submission-a-quick-guide/view>.

In case of technical problems, please contact the e-Submission Helpdesk (contact details are available in the Guide).

### 3.2 Environmental Considerations

The EEA runs a certified environmental management system (EMAS) and aims to minimise the environmental impact of all its activities, including those carried out under contract. The future contractor will, therefore, be requested to consider the EEA environmental management guidelines in the implementation of the contract, in particular those relating to business travel, electronic means of communication, paper and energy consumption. Further information on the EMAS system can be found on the EEA website: <https://www.eea.europa.eu/about-us/emas>

### 3.3 Timetable

	Date	Comments
Call for tenders launch date	3.4.2020	Dispatch of the contract notice to the Office of Publication
Last date for submission of clarifications to which EEA is bound to reply	11.5.2020	
Time limit for submission of tenders	19.5.2020	At 14:00
Opening session	20.5.2020	At 10:00 local time in the EEA premises

Evaluation of tenders	From 20.5.2020 to 15.6.2020	Estimated
Award decision and notification of evaluation results	22.6.2020	Estimated
Contract signature	30.6.2020	Estimated

### **3.4 Annexes**

Annex 1: Administrative data

Annex 2: Declaration on exclusion criteria

Annex 3: Simplified financial statement

Annex 4: Financial offer template

Annex 5: Draft service contract

Annex 6: Specifications for the final product samples in the test area

Annex 7: Progress report template

Annex 8: Checklist of documents to be submitted in the e-Submission Application