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OS MASTERMAP TOPOGRAPHY LAYER – BUILDING HEIGHT ATTRIBUTE – TECHNICAL SPECIFICATION

Version history

| Version | Date | Description |
|---------|---------|------------------|
| 1.0 | 03/2016 | Initial version. |
| 1.2 | 10/2018 | Minor updates. |
| 1.3 | 10/2020 | Minor updates. |
| 1.4 | 11/2021 | Minor updates. |

Purpose of this document

This document provides information about and insight into the OS MasterMap Topography Layer – Building Height Attribute product and its potential applications. For information on the contents and structure of OS MasterMap Topography Layer – Building Height Attribute, please refer to the Overview and the Getting Started Guide.

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1. Introduction to the product

OS MasterMap Topography Layer – Building Height Attribute is a dataset containing absolute and relative height values for buildings and selected structures contained within OS MasterMap Topography Layer. It is an enhancement to, and forms part of, OS MasterMap Topography Layer.

Building Height Attribute contains height values for buildings, tanks, chimneys (industrial) and glasshouses, specifically for Topographic Area features with the theme of 'Buildings' within OS MasterMap Topography Layer. It is necessary to join the Building Height Attribute data to the corresponding OS MasterMap Topography Layer feature to which it belongs, identified by the building topographic identifier (TOID). As such, an OS MasterMap Topography Layer licence is required to use the Building Height Attribute data. The Building Height Attribute data provides full national coverage.

1.1 Product supply format

Building Height Attribute data is supplied in comma-separated values (CSV) file format. Files will not be compressed.

1.2 Product supply mechanism

OS MasterMap Topography Layer – Building Height Attribute is supplied as an online download. You can download data in CSV format from the [OS Data Hub \(https://osdatahub.os.uk/\)](https://osdatahub.os.uk/).

The product is currently still available for customers to request through [OS Orders \(https://orders.ordnancesurvey.co.uk/sso/login.shtml\)](https://orders.ordnancesurvey.co.uk/sso/login.shtml).

Building Height Attribute is supplied in 5km² geographic chunks. Each 5km² chunk will contain Building Height Attribute values for any building polygon that intersects that area. As such, any Building Height Attribute values that fall across tile boundaries in contiguous tiles will be duplicated.

Tiles are supplied with all available data contained within them. Not all 5km² tiles will have complete coverage.

1.3 File naming in the product

The CSV files are named as the 5km² chunks they correspond to, for example:

- **TQ2060** for TQ26SW
- **TQ2065** for TQ26NW
- **TQ2560** for TQ26SE
- **TQ2565** for TQ26NE

2. Product structure

OS MasterMap Topography Layer – Building Height Attribute consists of three absolute height values and two relative height values for each building polygon. The included structures – tanks, chimneys (industrial) and glasshouses – are not distinguished from the buildings in this dataset. As such, they are subject to the same attribution and parameters. The unit of measurement used for absolute and relative building heights is metres.

2.1 Absolute heights

The absolute building heights describe the height of the buildings and selected structures at three distinct points. They are measured against Ordnance Datum Newlyn (ODN) and require the use of other height products (for example, OS Terrain 5) to give meaningful heights to the building features. If we have been unable to calculate a valid value or have insufficient confidence in a value for any of these attributes, the fields will be populated as NULL.

2.2 Relative heights

Relative building heights have been generated from the absolute height values. These provide height values that can be utilised without the use of other height products. If we have been unable to calculate a valid value or have insufficient confidence in a value for any of these attributes, the field will be populated as NULL.

2.3 Model overview for CSV

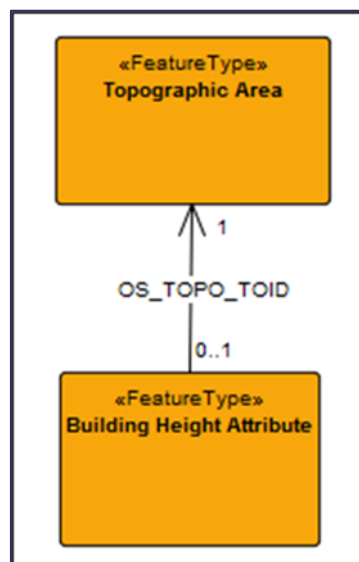


Figure 1: High-level overview data model showing the relationship between the Topographic Area feature type in OS MasterMap Topography Layer and the Building Height Attribute feature type.

2.4 UML model of Building Height Attribute data in CSV format

The Unified Modeling Language (UML) model of OS MasterMap Topography Layer – Building Height Attribute in CSV format can be seen in Figure 2:

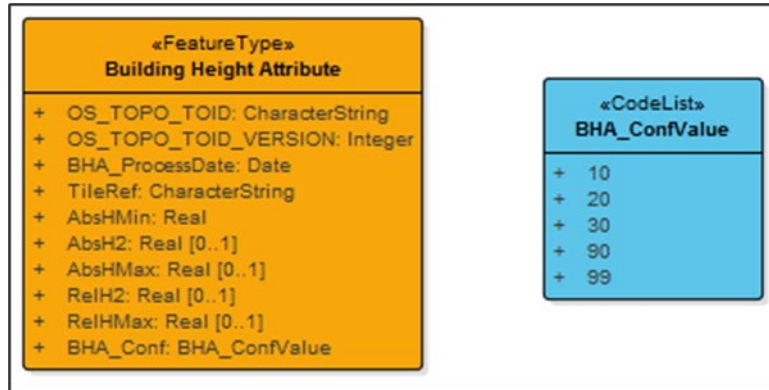


Figure 2: UML model showing the OS MasterMap Topography Layer – Building Height Attribute feature type and code list for the CSV supply.

2.5 Building Height Attribute feature type

This section describes the single feature type that makes up the OS MasterMap Topography Layer – Building Height Attribute product. The Building Height Attribute feature type has 10 attributes. The following information is given about each attribute:

Attribute Name and Definition: The name of the attribute and what it is describing.

Attribute Type: The nature of the attribute. The following values may occur:

| Type | Description |
|-----------------|---|
| Date | Specifies a day within the Gregorian calendar in the format YYYY-MM-DD. |
| Integer | Any positive or negative whole number or zero. |
| Real | A floating point number. |
| CharacterString | An ordered set of characters. |

Multiplicity: Describes how many times this element is expected to be populated in the data. An attribute may be optional or mandatory within the product as denoted by the following:

- [1] indicates that the attribute is mandatory and can only occur once.
- [0..1] indicates that the attribute is optional; if present, it only occurs once.

| Building Height Attribute | | |
|--|-------------|--------------------|
| OS_TOPO_TOID | | |
| Description: Unique feature identifier of the topographicArea building polygon taken from OS MasterMap Topography Layer. | | |
| Type: CharacterString | Length: 20 | Multiplicity: 1 |
| OS_TOPO_TOID_VERSION | | |
| Description: The version number of the TOID for which the height values have been calculated. | | |
| Type: Integer | Length: 3 | Multiplicity: 1 |
| BHA_ProcessDate | | |
| Description: The date that the Building Height Attribute values were calculated for the given OS_TOPO_TOID. Dates will follow the structure YY-MM-DD. | | |
| Type: Date | Length: 10 | Multiplicity: 1 |
| TileRef | | |
| Description: The 5km ² tile reference within which the Building Height Attribute is located. | | |
| Type: CharacterString | Length: 6 | Multiplicity: 1 |
| AbsHMin | | |
| Description: AbsHMin is the absolute minimum height of the intersection of the external building walls and the underlying ground surface. | | |
| Type: Real | Length: 4.1 | Multiplicity: 1 |
| AbsH2 | | |
| Description: AbsH2 is the absolute height of the base of the roof, that is, where the roof intersects the principal part of the building. The principal part of the building is defined as the main structure. | | |
| Type: Real | Length: 4.1 | Multiplicity: 0..1 |
| AbsHMax | | |
| Description: AbsHMax is the absolute height of the highest point on the building and can include any structure, such as chimneys, plant housings and machinery. | | |
| Type: Real | Length: 4.1 | Multiplicity: 0..1 |
| RelH2 | | |
| Description: $RelH2 = AbsH2 - AbsHMin$. RelH2 is the relative building height from the base of the building (AbsHMin) to the height of the base of the roof (AbsH2). | | |
| Type: Real | Length: 4.1 | Multiplicity: 0..1 |
| RelHMax | | |
| Description: $RelHMax = AbsHMax - AbsHMin$. | | |

| Building Height Attribute | | |
|---|-------------|--------------------|
| RelHMax is the relative building height from the base of the building (AbsHMin) to the height of the highest point on the building (AbsHMax). | | |
| Type: Real | Length: 4.1 | Multiplicity: 0..1 |
| BHA_Conf | | |
| Description: A qualitative assessment of the confidence of the height statistics for each topographicArea building polygon. | | |
| Type: BHA_ConfValue | Length: 2 | Multiplicity: 1 |

2.6 Code list

| Code list: BHA_ConfValue | | |
|--|--------------|--|
| List of values describing the confidence we have in the accuracy of the Building Height Attribute values per building. | | |
| Value | Confidence | Description |
| 10 | High | Buildings that are represented well by the Building Height Attribute values and for which we have high confidence in the geometric accuracy of the values. |
| 20 | Moderate | Buildings that are represented well by the Building Height Attribute values but where we do not have a high confidence in the geometric accuracy of the height values. |
| 30 | Low | Buildings that have a complex geometry which cannot be accurately represented using the Building Height Attribute values. |
| 90 | Incomplete | Buildings for which we have not been able to calculate some or all of the Building Height Attribute values. |
| 99 | Not Assessed | Buildings for which the confidence level of the Building Height Attribute values has not been assessed. |

2.7 Example record

Data will be supplied as a comma-separated values (CSV) file and will appear in the following format:

osgb1000000347730836,3,2017-5-14,HP6510,26.2,32,34.1,5.8,7.9,99

where:

osgb1000000347730836 (TOID)

3 (version)

2017-5-14 (process date)

HP6510 (tile reference)

26.2 (AbsHmin)

32 (AbsH2)

34.1 (AbsHMax)

5.8 (RelH2)

7.9 (RelHmax)

99 (confidence level)