



**wavesight**<sup>TM</sup>

**Specification for  
Buildings Data**

<1.1>

**REF: RP/WAVECALL/05-2001N01/RSC**

**Abstract**

This document describes the requirements for buildings data to be used by WaveSight.

## Company Information

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## Document History

Version	Revision	Date
1.0	Robert Schweikert	2001-05-11
1.1	Karim Rizk	2001-05-14

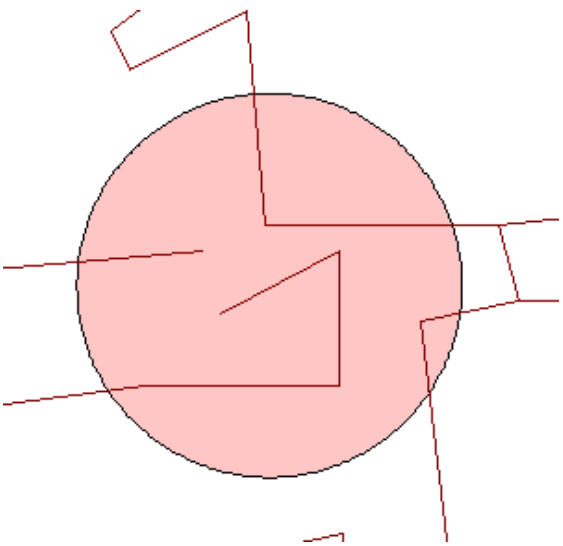
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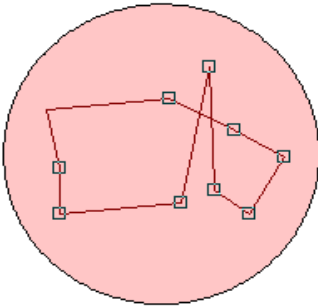
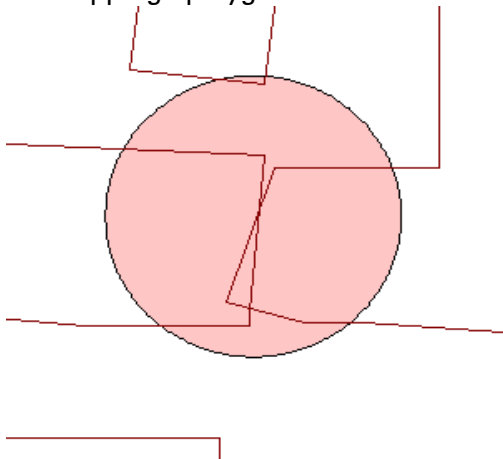
# 1. Specification For Buildings data

## 1.1 Consistency criteria

The buildings data used by WaveSight models the buildings footprint and the buildings height. The buildings data should comply with the following requirements:

Requirement	Explanation
<b>Identical polygons are not accepted</b>	The dataset should not repeat the same building.
<b>Polygons must be closed. The first and the last point in each polygon must be identical.</b>	Open "polygons" are not accepted: 
<b>At least 3 vertices per polygon</b>	The dataset should not contain one or two coordinate "buildings".



<p><b>Each two walls can only intersect if they are successive walls belonging to the same polygons. In such a case the intersection forms the vertex.</b></p>	<p>This means that Self-intersecting polygons are not allowed.</p>  <p>Overlapping polygons are not allowed:</p> 
<p><b>All heights must be above local ground.</b></p>	<p>It is not permitted to model "dumps" as buildings below the terrain height level.</p>
<p><b>An accuracy 1 m in building corner position is required</b></p>	<p>The paper K. Rizk, J.F. Wagen, F. Gardiol: Influence of database accuracy on two-dimensional ray-tracing-based prediction in urban microcells , IEEE Trans. Veh. Technol., vol. 49, no. 2, March 2000, pp. 631-642. contains a discussion of the influence of the database accuracy on prediction results. It is available on Wavecall's web site, <a href="http://www.wavecall.com">http://www.wavecall.com</a>.</p>
<p><b>There should not be repeated vertices.</b></p>	<p>This restriction applies to the versions before 2.2.19 of the WaveSight algorithm.</p>
<p><b>The heights should be given with respect to local ground not to sea level.</b></p>	<p>Heights in the attributes file must be with respect to ground. Note: This is not a limitation of WaveSight, but</p>

<b>ODYSSEY-SPECIFIC</b>	rather of the Odyssey-WaveSight interface, which currently does not allow buildings heights to be with respect to sea level.
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## 1.2 Building vector format

The buildings data should be in Odyssey's Genamap19 format, which is described in Odyssey's Technical Reference Guide. The file should have the extension ".vec".

### Vector file

```
Header Record
Easting      Northing
Easting      Northing
Easting      Northing
Easting      Northing
Easting      Northing
Easting      Northing
Header Record
Easting      Northing
Easting      Northing
Easting      Northing
```

The format of the header record is as follows:

Field	Position	Description
1	1-5	Record Identifier (used to identify building segment in attributes file)
2	6-15	Blanks
3	16-47	32 Character description (not used, same as feature name field in index file entry)
4	48-50	Blanks
5	51-55	Record Count

```
00001    buildings          00005
725777.00 5031472.00
725775.00 5031468.00
725778.00 5031467.00
725780.00 5031471.00
725777.00 5031472.00
00002    buildings          00005
725783.00 5031472.00
725781.00 5031468.00
.....
```

### Vector Attributes File

The attributes file contains the id of the building, a descriptive string in quotes and the height of the building, separated by white space. The descriptive string is not used and should be set to " ".

```
00001 " " 2.6900
00002 " " 2.6700
00003 " " 4.1300
00004 " " 4.3100
00005 " " 3.2100
00006 " " 3.6500
00007 " " 2.8300
00008 " " 2.7600
00009 " " 2.2900
00010 " " 0.8300
....
```

## **1.3 Terrain data**

The recommended terrain resolution for WaveSight is 5-10 m.