



Starterskit: Ortho Image Quality References

This document contains imagery references that can be used as examples of the ICC quality requirements in the tender document. These images are examples of the received **ortho** product with a **4cm resolution**. Thus, these images are to be used as examples for **Parcel 1,2 and 4**. For parcel 3 (8,5cm resolution) the same examples are used with the comment that sharpness and details are of a slightly lower level. The scope of these 4-cm examples naturally also applies to the 8.5 cm images.

The requirements as given in the tender document are:

- During the production of the ortho-photo products (tiles and continuous mosaic per individual Client), **no visible loss** in image quality between the stereo images and the ortho-photos may occur at a comparable zoom level.
- The visual image quality of the orthophoto products should meet at least the following requirements:
 - *Sharpness*: In the orthophoto products the type of pavement (e.g. brick pavement) must be clearly recognizable and distinguishable (to a lesser extent for the case in parcel 3).
 - *Visibility in shadow areas and light areas*: topographic details in shadow areas and light areas (for example, in new areas where sand is present or in coastal areas) must be clearly visible. An important check is if the footprints of buildings are clearly visible.
 - *Building lean*: must comply with the minimum requirement;
 - *Radiometry*: No noticeable colour differences between the fly strips and / or on both sides of the seam lines may be visible. For each individual Client, the entire area must exhibit a natural and homogeneous colour balance, maintaining contrast and good visibility of dark shadows and the light areas to be stressed. The orthophoto products do not contain any visible over or underexposure. Blooming effects should be eliminated as good as possible.
 - *Seam lines*. The visual unit of topographic objects in the overlap of the stereo images must be assured. This applies, inter alia, to buildings, blocks of houses, quay walls in urban areas, streets and fire lanes. No topographic objects, such as buildings or streets, may (partly) overlap or disappear as a result of the building lean due to an incorrect selection of the seam lines. Seam lines need to be invisible or, if this cannot be resolved otherwise, not to be disruptive.
 - *Remaining building lean effects at ground level*: Topographical objects must be corrected manually if unnatural breaks are visible due to incomplete height information in optical units. This includes continuous lines on roads that pass under a viaduct or at entrances to tunnels, quay walls in inner cities, bridgeheads and viaducts.

The samples included below are examples of images with feedback from the ICC on the following issues:

- Accepted sunlit image;
- Accepted overcast image;
- Very low visibility in dark shadows;
- Rejected image due to seamline issues;
- Rejected image due to quality loss during processing;
- Rejected ortho mosaic due to colour heterogeneity/differences across flightlines;
- Rejected image due to processing issue e.g. speckled edges.

The images have a scale of 1:170 unless otherwise stated, in the coordinate projection RD New. They are visualised in QGIS.

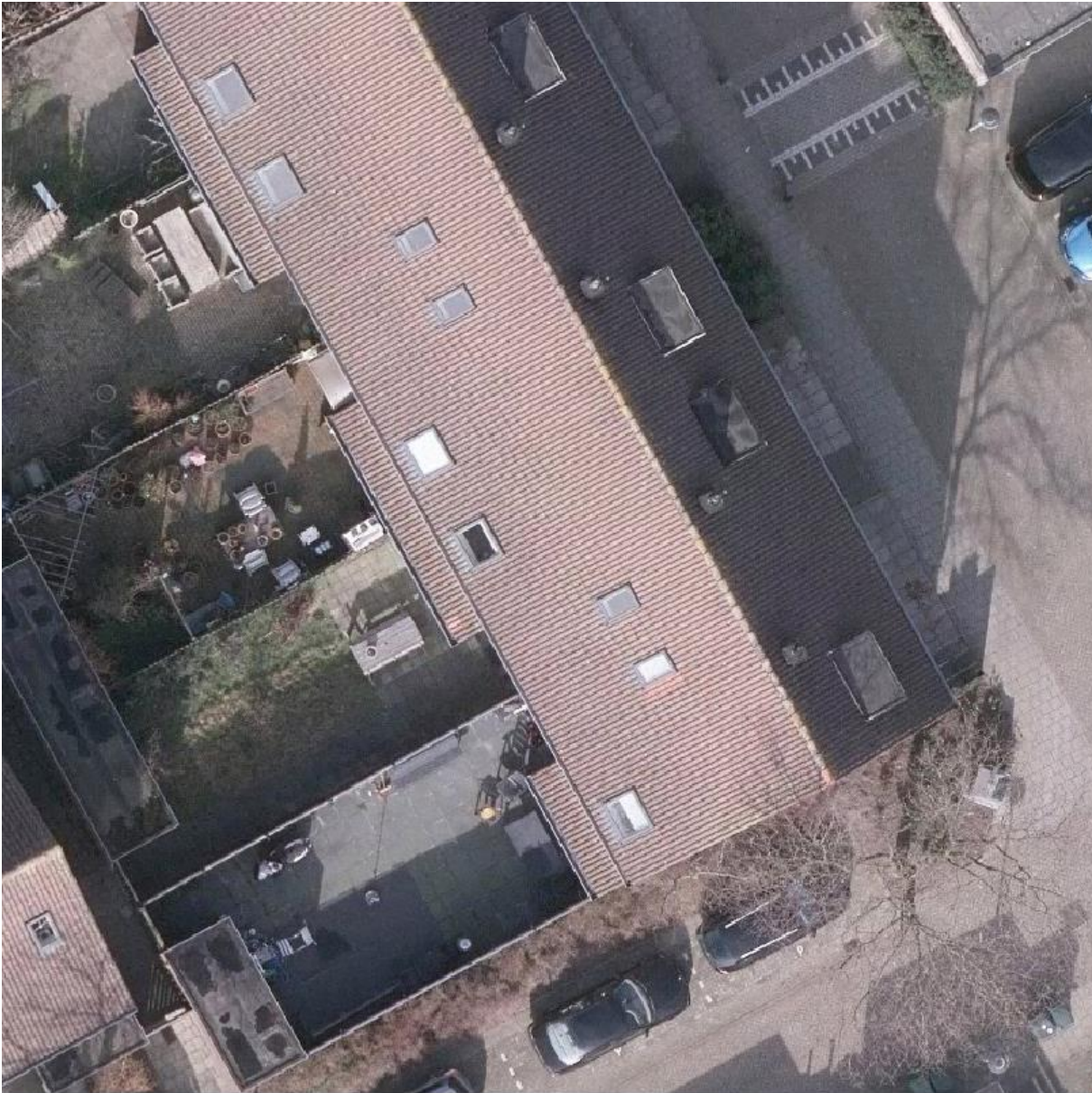


Image Reference 1

Accepted sunlit image

Note:

- Minimal effect of shadows
- Visibility of small tiles (to a lesser extent for the case in parcel 3)
- No bright/blooming effect of white objects
- Quality is comparable to stereo imagery



Image Reference 2

Accepted overcast image

Note:

- Clarity in the shadows
- Visibility of small tiles (to a lesser extent for the case in parcel 3)
- No pixilation due to darker conditions
- Homogenous colouration
- Quality is comparable to stereo imagery

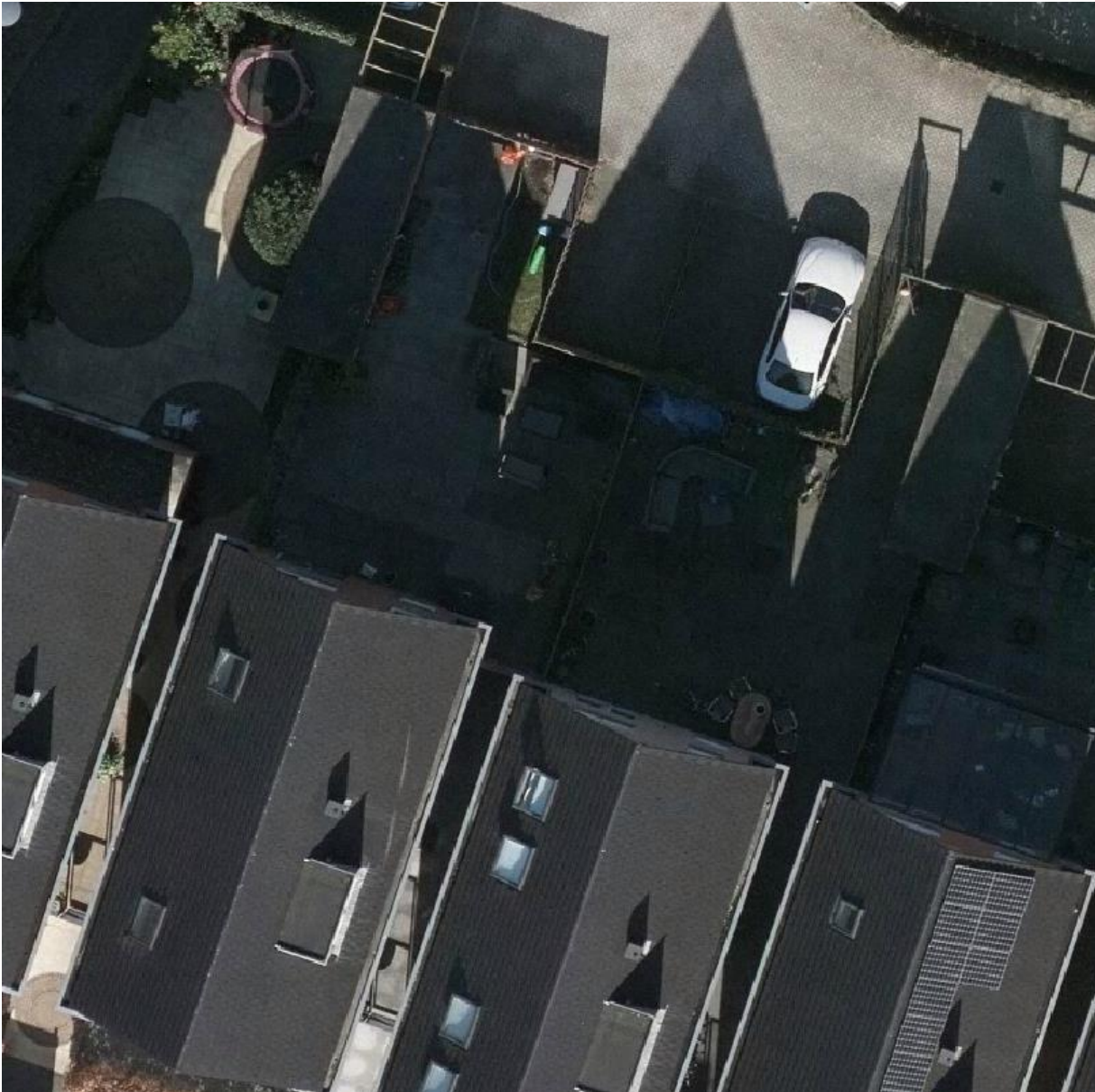


Image Reference 3

Sample of image was discussed regarding the very low visibility in dark shadows.

Note:

- Difficult to see the objects in the shadows;
- Cannot determine boundaries of garden;
- Sharpness is good.



Image Reference 4

Rejected image due to seamline issues.

Note:

- Buildings are overlapping the street and other buildings;
- Cannot accurately identify building footprints;
- Cannot accurately identify street location.



Image Reference 5a

Rejected part of an ortho photo mosaic due to quality loss during processing (see also sample 5b).

Note:

- Zoom level adjusted to 1:95;
- Road tiles are not visible;
- Quality has been lost during ortho processing, see reference stereo below.



Image Reference 5b

Reference stereo image for Image 5a

Note:

- Road tiles are visible;
- Very sharp image has been acquired in stereo phase, this is not reflected in the ortho.

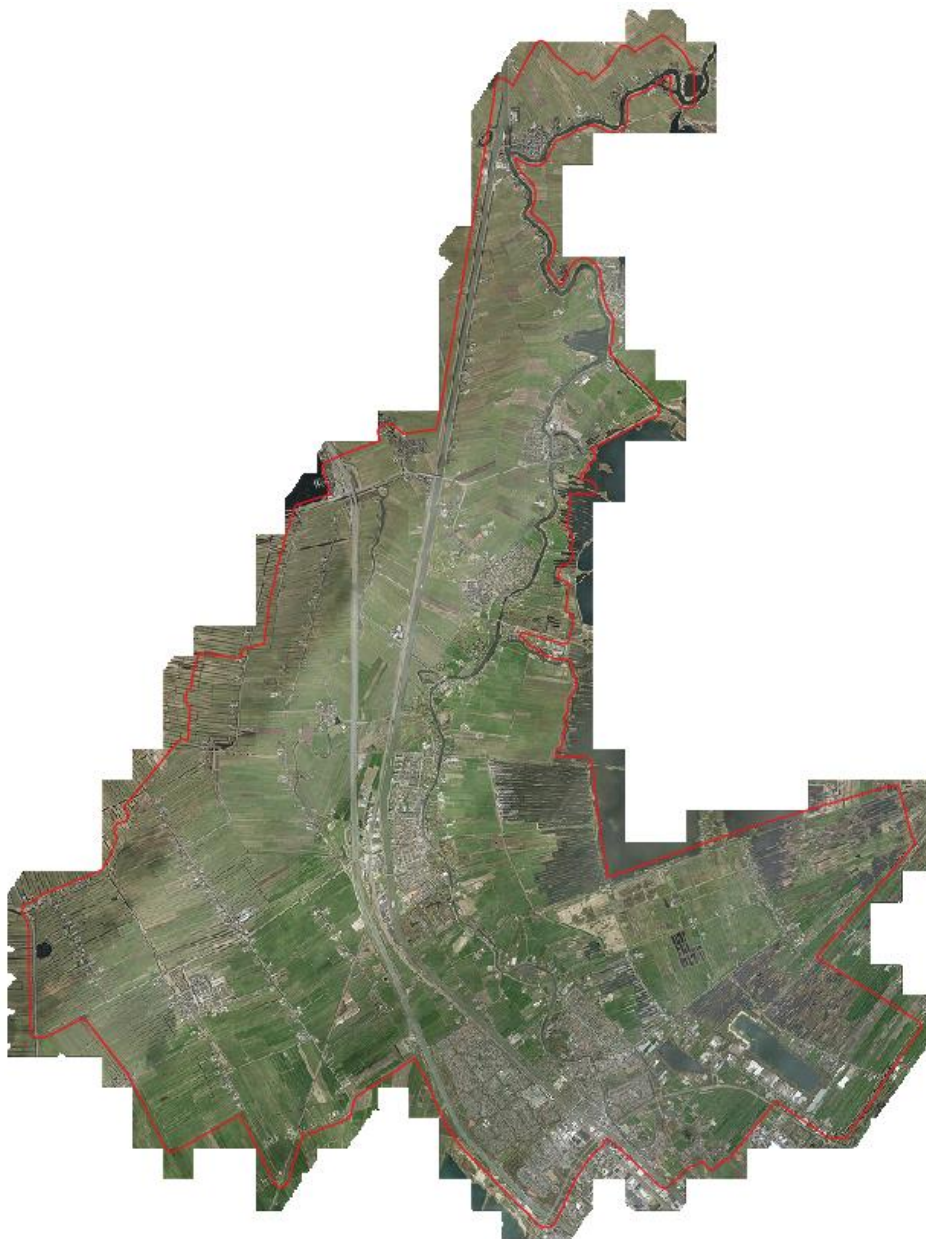


Image Reference 6

Rejected ortho mosaic due to colour heterogeneity/differences across flightlines.

Note:

- Zoom level adjusted to show whole municipality;
- Sharp colour heterogeneity visible across municipality.



Image Reference 7

Rejected ortho mosaic due to processing issue regarding transparency e.g. speckled borders.

Note:

- The product from the processing resulted in only partially transparent borders.