

More about ha-has on Ordnance Survey maps

David Andrews, retired OS Chief Surveyor writes:

I beg forgiveness from the learned authors of the ha-has article¹ for picking up on one pedantic point, but the traits acquired as an OS large-scale mapping surveyor for over forty years tend to stick with me in retirement!

The caption to figure 4 of the article describes the ha-ha on the map extract as being depicted by a 'continuous line marking the wall along the vertical side of the ha-ha and *pecked lines marking the slope*'.

I think on close inspection that the 'slope' is, in fact, depicted by slope hachures, not pecked lines. As far as I am aware there has never been an accepted OS mapping symbol for a ha-ha, (though I am happy to be corrected on this point).

Ha-has are, and always have been, depicted on large scale mapping following the specifications for the depiction of walls/hedges/fences and slopes. The wall/fence element of a ha-ha is easily identifiable on the ground and is depicted by a continuous solid line, as are normal walls, hedges and fences which are higher than the land on both sides. However, the 'slope' element of a ha-ha is liable to more subjective interpretation on the ground.

The OS surveyor has never had clear guidance on how steep a slope has to be on the ground for it to be depicted by a slope symbol on the map.

The working 'rule of thumb' followed by most OS surveyors is that if a slope is too steep to walk down easily, (ie without slipping or falling), then it should be depicted as a slope on the map. To the above has to be added the written specification for the depiction of a slope that it must be over two metres wide between top and bottom measured horizontally for depiction at 1:2500 scale, or over five metres wide horizontally at 1:10,560 or 1:10,000 scale. (On County Series mapping these dimensions were six feet and 15 feet respectively). Note that the vertical depth of the drop from normal ground level to the base of the slope has no relevance in the specifications for the depiction of slopes on the maps.

As is noted in the text of the article, the map at figure 4 is a first edition six-inch map produced by photo reduction of the 1:2500 scale map.

The depiction of the ha-ha is therefore commensurate with the specification for 1:2500 scale mapping and presumably the slope was over two metres (six feet), wide.

The second edition six-inch maps were produced by redrawing the 1:2500 surveys to the specification for the depiction of slopes on six-inch maps; to be shown on the six-inch map they had to be over five metres, (15 feet), wide measured horizontally from the top of the slope to the bottom of the slope. Hence a slope wider than two metres, (six feet), but narrower than five metres, (15 feet), would be shown on the first editions of the six-inch map, but not on the second editions.

¹ *Paul Bishop and Richard Oliver*, 'Representation of ha-has on OS six-inch mapping', *Sheetlines* 94, 6-15

On page 12 the article refers to a 'sunk dyke'. Having looked at the photograph of this feature at figure 11, I think any OS surveyor would be somewhat undecided about how to map it. The wall at the bottom of the dyke obviously has to be shown, but whether the slopes are steep or wide enough to qualify to be shown appears to be a borderline decision. Perhaps the 1896 surveyor erred on the 'show' side whereas the surveyor of the first edition erred on the 'omit' side.

Being pedantic once again, the map extract at figure 13 is of a 1:2500 scale map, not strictly fitting in with the title of the article. The article (page 14), discusses the depiction or non-depiction of various ha-has. The criterion quoted in the text seems to rely upon the vertical depth of the ha-has, but as stated earlier, this has never been part of the specification for mapping slopes. It is the horizontal extent of a slope, coupled with its gradient, which determines whether it will be mapped. Perhaps all the slopes in the ha-has listed here were not wide enough to be shown even though they were all four feet deep?

On page 15 the description 'old fence' is mentioned. I think that this term was what would now be 'broken fence' on modern large scale mapping. A 'broken fence (hedge/wall)' is the remains of what used to be a continuous feature, but is now a feature with many gaps, and only short sections of the old feature extant. It is shown as a pecked line with a textual description on modern maps. The annotation 'old fence' on the first edition maps is simply describing the discontinuous remains of a former intact fence.

Response by Paul Bishop and Richard Oliver²

We thank David Andrews for his thoughts and comments concerning the mapping of ha-has; comment from a retired OS Chief Surveyor is precisely the type of input we were hoping for. And David is correct, of course, to point out that the mapping symbol for the ha-ha slope, when it is mapped, is slope hachures and not pecked lines. Likewise, we acknowledge the inconsistency between the 'six-inch' in the title of our original piece and our use of an extract of a 1:2500 scale map in figure 13. However, matters are not quite so straightforward, for the ha-ha shown in figure 13 in our original paper, together with another a mile or so away in Nonsuch Park, are both shown on the 1:10,560 first edition, but not on subsequent editions.

On the more substantive point: we also thank David for pointing out the 'rule of thumb' followed by most OS surveyors ('map a slope that is too steep to walk down') and the written specification that a slope must be over two metres wide between top and bottom measured horizontally for depiction at 1:2500 scale, and over five metres wide horizontally at 1:10,560 or 1:10,000 scale. Several examples

² PB thanks the Earl of Hopetoun and the Hopetoun House Preservation Trust for permission to examine and photograph the Hopetoun House ha-ha during the house's closed season, and Messrs Piers de Salis (Hopetoun House General Manager) and Peter Burman (Hopetoun House Trust trustee, and Archivist) for helpful discussions. RO is grateful to Richard Porter for drawing his attention to the Nonsuch Park ha-ha, and for suggesting that both this and the Cheam ha-ha were infilled in the 1950s.

indicate, nonetheless, that the OS practice was far from uniform, notwithstanding David's clearly made point that a slope wider than two metres (six feet), but narrower than five metres (15 feet), would be shown on the first editions of the six-inch map, but not on the second editions.



Figure 1. Hopetoun House on the OS 1st edition six-inch map of Linlithgowshire (left). There are several ha-has in front of the house, the most prominent being that shown at right, which is represented on the map only by the D-shaped continuous thick line bordering the lawn in front (east) of the house. A second, outer curved ha-ha, again marked here only by a continuous thick line and no slope hachures, parallels the 'D ha-ha' to its east, itself passing eastwards into straight ha-has either side of the straight drive (and again marked here only by a continuous thick line)

*Map extract reproduced by permission of the Trustees of the National Library of Scotland
Photo: Paul Bishop*

Our first example is the splendid ha-ha at Hopetoun House near South Queensferry, north of Edinburgh (*figure 1*). The main ha-ha, marking the edge of the D-shaped lawn on the east front of the house, is a very substantial topographic feature (*figure 1, right*). We measured the horizontal width of its slope (to the foot of the slope, not to the foot of the ha-ha wall) at ten positions approximately equally spaced around the length of this D ha-ha, obtaining measured horizontal slope widths ranging from 5.3m (~17½ feet) to 8.5m (nearly 28 feet), with an average horizontal slope width of 6.3m (~20½ feet) (standard deviation of 1.0m). This ha-ha clearly satisfies the conditions to be represented on both the first *and* second editions six-inch mapping. Interestingly, this ha-ha is carefully and elegantly built, and well-finished, because only the monarch approaches Hopetoun House along the straight-line drive to the east front entry. All others must approach that entry around the curve of the D-drive. Hence the monarch is the only person to experience the effect intended by the ha-ha (ie acting as an invisible fence). All others, passing via the D-drive, see the ha-ha wall, which explains its careful and elegant construction. This unusual arrangement does not alter the fact, however, that the unmapped ha-ha satisfies the criterion for its slope to be represented on first and second editions six-inch



Figure 2: The ha-ha at Wollaton, Nottinghamshire; photographs taken by Richard Oliver in September 1997. The normal-sized bricks give an indication of scale

maps. Perhaps, as David has suggested, OS surveyors were somewhat undecided about how to map ha-has and exercised discretion, very much erring in this case on the ‘omit’ side rather than on the ‘show’ side.

The photographs of the ha-ha at Wollaton in Nottinghamshire (*figure 2*) suggest that it is ‘qualified’ for the 1:2500, as the slope appears to be more than six feet wide horizontally, but not for the 1:10,560, as it seems to fall short of 15 feet.

A third example is provided by the Dougalston Estate ha-has that were the stimulus for our original piece. Horizontal widths of ha-ha slopes have been determined for 28 ha-ha cross-profiles on more than 1500 lineal metres of the Dougalston ha-has, surveyed by Geomatics MSc students at the University of Glasgow.³ The horizontal widths of the Dougalston ha-ha slopes range from 1.2m to 5.5m, with all of the horizontal slope widths greater than 5m being associated with the doocot ha-ha (figures 7 and 10 in our original paper). The minimum ha-ha slope width we surveyed on this doocot ha-ha is 2.83m, and – consistent with the OS ‘rule of thumb’ reported by David – this ha-ha is the only one at Dougalston to be mapped as a ha-ha on the first edition six-inch mapping. The frequency distribution of slope widths we surveyed in all Dougalston ha-has is given in the table, showing that horizontal slope widths >2m represent nearly 80% of surveyed slope widths. One might therefore expect that essentially all Dougalston ha-has would have been mapped on the six-inch first edition. Two of the seven widths surveyed on the doocot ha-ha are greater than five metres.

³ The data here are from Cicek, S.K. 2012. ‘Mapping an 18th Century designed landscape’, Unpublished MSc dissertation in Geospatial and Mapping Sciences, School of Geographical & Earth Sciences, University of Glasgow. PB sincerely thanks Sule Cicek and Geomatics staff for undertaking the mapping (in summer 2012, we note, prior to any of the current discussion of ha-ha slope widths).

HORIZONTAL SLOPE WIDTHS IN SURVEYED DOUGALSTON HA-HAS

<i>Ha-ha widths (m)</i>	<i>Frequency</i>	<i>Percentage</i>
<1	0	
1 - <2	6	21
2 - <3	11	39
3 - <4	6	21
4 - <5	3	11
5 - <6	2	7
≥6	0	

In summary, and notwithstanding David's very helpful commentary and explanation of OS procedure, it seems inescapable that many ha-has with horizontal slope widths greater than two metres have not been represented on the first edition six-inch mapping. Indeed, a check of the 436 photographs of ha-has on Geograph (<http://www.geograph.org.uk/search.php?i=38567801>; accessed 29 January 2013) against the relevant first and second edition maps would be an interesting exercise. We might speculate that surveyors for the first edition six-inch mapping were already employing an informal rule that a ha-ha had to be wider than, say, three metres (six of our seven surveyed widths on the doocot ha-ha) to qualify to be mapped as a ha-ha. This informal rule was then formalised at >5m for the second edition six-inch mapping. As David has pointed out, the second edition width rule excluded mapping the doocot ha-ha as such, with only two of its seven surveyed widths being ≥5m. In any event, it seems likely that the surveyors' discretion as to whether to 'show' or 'omit' erred more on the 'omit' side in relation to ha-has, a conclusion that is clearly consistent with the lack of mapping of the Hopetoun House ha-ha. Of course, the foregoing discussion is predicated on the assumption that the procedures described by David operated at the relevant times in the nineteenth century when the first and second editions maps were being prepared.

Finally, David comments on the use of the term 'old fence'. We suspect that this is one of a number of terms that appear on early 1:10,560 mapping in Britain ('foot stick' is another), but which were replaced later by other descriptions.