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“The internal divisions and size of  
buildings”

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The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.



## *The internal divisions and size of buildings*

*Paul Bishop*

### **Background and approach**

Rob Wheeler's recent cautionary note on the reliability of the mapping of internal divisions on large scale plans is important for those who use OS mapping to interpret building history.<sup>1</sup> As Rob noted, the mapped divisions are "between contiguous houses ... and between parts of a building of different character."<sup>2</sup> This note examines two buildings in Baldernock Parish near Glasgow – The Mill House (my own house) and South Craigend (a ruined farmhouse) – to assess the 'accuracy' of the mapping of the overall dimensions of these buildings and of their internal lay-outs. I compare on-the-ground measurements of the buildings and their internal divisions with measurements of the same features on the First and Second Editions of the County Series 1:2500 (25-inch) sheets on which these buildings are mapped.

The dates of surveying and printing of these various map sheets are given in the Table of results. The University of Glasgow's printed copies of the two First Edition map sheets that I consulted are later printings than the First Edition digital versions on the National Library of Scotland (NLS) website.<sup>3</sup> It is apparent that both of these later 'First Edition' hard-copy sheets were re-drawn prior to printing: the symbols (ornamentation) for various features, especially for moorland and for trees (both deciduous and conifer), have been changed; many labels have changed slightly in position and font; the sizes in acres of the land parcels have been added; some buildings have obviously been redrawn (eg, the footprint of the Parish Church has been modified slightly); and buildings on the re-drawn sheets do not have wall shading. I plan to document these changes in a future *Sheetlines* piece. In terms of the present piece, it appears from careful inspection of the two buildings used here that they have been little altered in the re-drawing, except for the omitting of wall shading on the re-drawn maps. Indeed, and despite the differences between the two versions of the First Edition mapping, both versions depict the South Craigend building in the same slightly skewed, slightly 'parallelogram' form, prompting confidence that the detail of the buildings has not been altered between these two versions.

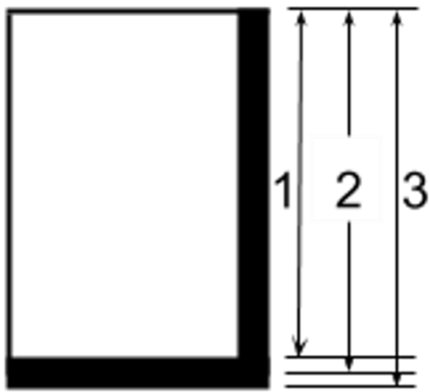
I used a vernier caliper to measure on the First Edition 25-inch printed map sheets, converting that measurement to on-the-ground size (i) via the notional 1:2500 scale of the maps, and (ii) to account for distortion of the map sheet paper, using the printed bar scale on the map's bottom margin (again with a vernier caliper). I also made the measurements on the scanned map sheets on the NLS website, in two ways. (i) On the digital version of the First Edition sheets, I used the maps 'As individual sheets using a zoomable map of Scotland' and zoomed in on each of the two buildings in turn, to quite high magnification (see

<sup>1</sup> Rob Wheeler, 'Internal divisions in buildings', *Sheetlines* 103, 54-55.

<sup>2</sup> Richard Oliver, *Ordnance Survey Maps: a concise guide for historians*, Charles Close Society, 2005, 78.

<sup>3</sup> <http://maps.nls.uk/>

Table on page 32). A vernier caliper was then used to measure the buildings' dimensions on the computer screen (a desktop with a large flat-screen display), and these were converted to on-the-ground measurements using the bar scale at the bottom of the map sheet (by scrolling down to the sheet's bottom margin, ensuring that I did not zoom in or out on the sheet). If the building outline was shaded (to indicate an upstanding structure), I took three measurements as shown in figure 1, following Richard Oliver's comment that "unfortunately for those concerned with precise measurements, the shading was sometimes drawn along the centre line, and sometimes to one side or the other of the 'true' position of the line".<sup>4</sup> (ii) On the digital version of the Second Edition of the 25-inch mapping I used the NLS website's built-in map measurer that is included in the option to work with the map 'As a seamless zoomable overlay layer on modern Google and OS maps'. The latter option is not available on the First Edition 25-inch mapping on the NLS website and although the two tests here are based on different editions of the 25-inch mapping they provide guidance as to the consistency and reliability of the mapping. The two tests using the First Edition 25-inch mapping – namely, on printed and scanned map sheets – permit assessment of the two approaches vis à vis on-the-ground measurements.



*Figure 1.*  
*Diagram explaining the measuring of lengths 1, 2 and 3 on a building with shading (see Table on page 32)*

### ***The Mill House (NS 575749)***

This traditional stone-built building, probably built in the late 18th century, is mapped on both the First and Second Editions 25-inch sheets as having an internal wall that divided the building into two "parts ... that were accessed of necessity by different entrances"<sup>5</sup> (*figure 2*). The 1841 and 1851 censuses indicate that the building encompassed two separate dwellings and pre-renovation photographs of the building confirm two entrances (*figure 2A*). The building currently has two internal walls that divide it into three rooms. One of these, a 60 cm-thick rubble-built stone wall, has a low doorway with a simple lintel of obviously old re-used timber, indicating that it has always provided internal communication between two rooms. Hence, that wall would not be expected to

<sup>4</sup> Richard Oliver, *Ordnance Survey Maps: a concise guide for historians*, Charles Close Society, 2013, 39. Rob Wheeler has kindly pointed out that the same point is made on p 65 of the 2005 edition of Oliver's *Concise guide*.

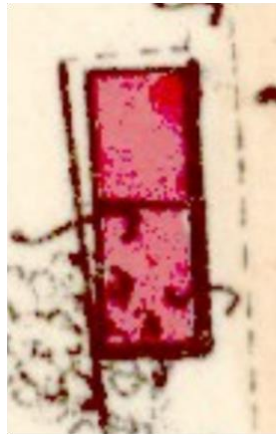
<sup>5</sup> Wheeler, op. cit. 54.

have been mapped. The second internal wall is brick-constructed and has a 'normal' height doorway and it seems that that wall might have been replaced when the house was renovated in the 1950s and 1960s. I interpret that wall to be the one that is mapped on the 19th century 25-inch mapping.



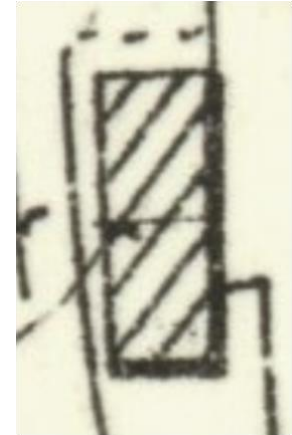
*Fig 2A.*

*The Mill House, Baldernock, in the late 1950s or early 60s, prior to renovation. Note the two entrances (doorways)*



*Fig 2B.*

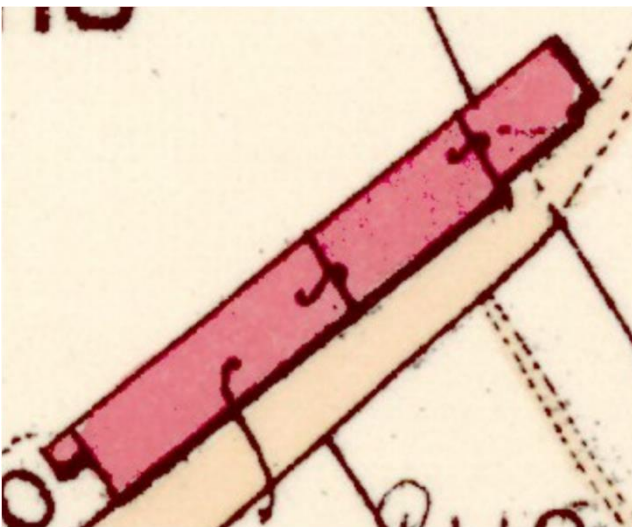
*The Mill House on mid-19th century First Edition 25-inch mapping (1864), showing the internal division*



*Fig 2C.*

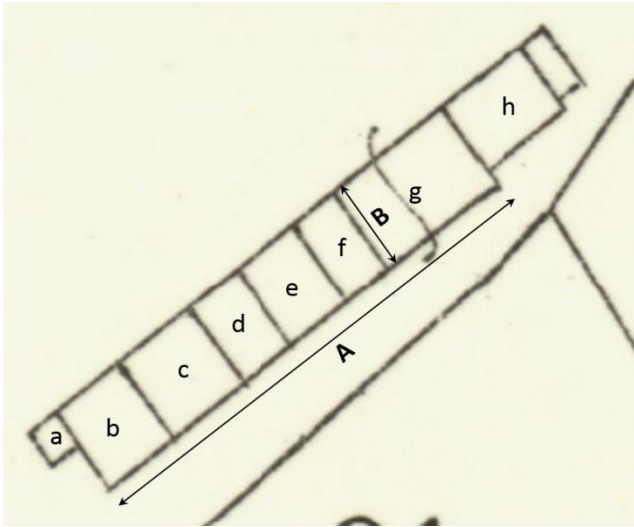
*The Mill House on the Second Edition 25-inch mapping (1897)*

### ***South Craigend ruined farmhouse (NS599759)***



*Fig 3A.*

*South Craigend farmhouse on the First Edition 25-inch mapping (1865) when it was still occupied, and indicating three main parts of the building (plus a small fourth room at far bottom left). The three main parts presumably each had separate outside doors.*



*Fig 3B.*

*South Craigend farmhouse on the Second Edition 25-inch mapping (1898) by which time it was unroofed. Cells a to h as mapped here were identified in Niall Logan's field survey (see footnote 6). The A and B annotations are the dimensions that were measured for this assessment. In all cases, dimensions were measured from the outside edges of the walls.*

South Craigend (*figure 3*) was a long, stone-built farm building comprising a single dwelling and associated conjoined farm buildings, representing an example of the second rationale for mapping internal divisions (“parts of a building of a different character”). Logan has documented the building’s structure and occupation, showing that it was occupied at the 1871 census but did not figure in the 1881 census.<sup>6</sup> It was thus unroofed between the 1871 census and the 1896 survey for the Second Edition 25-inch map,<sup>7</sup> which is consistent with it being shown as “now demolished” on a mine abandonment plan that must post-date 1868.<sup>8</sup> The 1896 survey shows that it consisted of six cells in the widest part of the house (cells b to g in *figure 3B*), two narrower cells on the north-eastern end, and a small cell at the south-western end. Two dimensions of the building were measured on the ground and the maps (A and B on *figure 2B*).

### ***Reliability of the buildings’ mapped dimensions***

All building dimensions measured on the First and Second Edition 25-inch sheets (see *Table*) are within 7% of their on-the-ground measured lengths, except for two: the length of the northern ‘half’ of The Mill House, and the width (dimension B) of South Craigend farm. The on-the-ground length of The Mill House’s northern ‘half’ is 8-15% greater than the mapped lengths (see below), and the width of South Craigend is 19-48% less than the mapped widths. The latter seems to have been a mistake in the original mapping of South Craigend that has been carried through in subsequent editions.<sup>9</sup>

<sup>6</sup> Niall A. Logan, ‘South Craigend and Cornhill: Reading the Ruins’, *Vernacular Building* 38 (2015), 55-72.

<sup>7</sup> *Ibid.*

<sup>8</sup> Mine abandonment plan “Tracing of Woodhead BBI workings (S Craigend)” NS67NW/13, lodged at the British Geological Survey, Edinburgh.

<sup>9</sup> Both Niall Logan and I have independently measured South Craigend farmhouse’s width (dimension B) and the mapping does not match that width. The farmhouse walls are rubble-built stone about 60 cm thick and it is certain that they would not have been moved to increase the width of the building after its initial mapping.

### ***Reliability of the mapping of internal divisions***

The map and measured lengths of The Mill House's northern part mean that the building's internal division has apparently been either incorrectly mapped or moved from its mapped 19th century position. The wall's brick construction (the other walls in the house, including the second internal wall, are all of stone about 60 cm thick), its high doorway opening, and, as already noted, the low height and obviously 'old' construction of the house's other internal doorway, all suggest that the brick wall that marks the internal division might be more modern than the house, and that it has been moved (perhaps when the house was renovated in the 1950s and 60s). It is also possible that it was mapped incorrectly. Is it possible that the surveyors were denied access to the house and the internal wall was simply placed so as to divide the house into two equal parts? There is no chimney or change of roof line corresponding to the mapped internal wall.

Recent field survey and measurement of the ruinous South Craighend farm confirm that the Second Edition mapping of its internal divisions is correct (*figure 2B*).<sup>10</sup> It might be unexpected that the internal divisions of a ruined building are mapped because, as Richard Oliver has noted, "ruins are shown by their outer walls only."<sup>11</sup> Perhaps that mapping protocol post-dates the 1898 survey of South Craighend. This farm always included only a single house and so the mapped divisions on the First Edition must be between parts of a building of a different character (e.g., between home and farm building). Logan's survey demonstrates that cell g in *figure 2B* was the dwelling with a large, elaborate fireplace and hearth in an 80 cm-thick wall between cells f and g, which do not have a connecting doorway. However, the mapped division on the First Edition corresponding to the dwelling encompasses cells f and g (*figure 2*), and so either that division is incorrectly mapped or cell f was part of the dwelling but was reached by its own doorway (either from the outside or from cell e, both of which doorways have been identified by Logan as possible). In that case, part of the dwelling (cell f) has a separate doorway and no communication with the main part of the dwelling (cell g) but it is mapped on the First Edition as part of the dwelling.

### ***Concluding comment***

Rob Wheeler's discussion of internal divisions sounded a warning against too strong a reliance on the mapping of these divisions when interpreting the history of a building. This warning is reinforced by the material presented here, and the measurements also signal some caution. Taking the latter point first: by-and-large, the mapped dimensions of the two buildings are 'correct', given the potential distortions associated with engraving and printing the maps and the subsequent shrinkage and expansion of the map sheets themselves. Printed and measured dimensions are within  $\pm 6\%$  of each other, with the mapped dimensions being

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<sup>10</sup> Logan, op, cit..

<sup>11</sup> Richard Oliver, *Ordnance Survey Maps: a concise guide for historians*, Charles Close Society, 2005, 39.

both larger and smaller than the measured dimensions, and there being a slight bias towards the mapped being smaller than the measured.

For South Craigend, the various mapped lengths are all less than the measured length, up to a maximum of 7%, but all mapped widths are substantially greater than the measured width, signalling a probable error in mapping. Where map measurements have been on walls with shading, the measurement to the middle of the shading appears to be closest to the on-the-ground measurement, confirming in this case that, as Oliver has noted, shading was usually applied “equally on either side of the line being emphasized”.<sup>12</sup>

The mapped internal divisions in both buildings present one issue or another. The Mill House’s internal division appears to have moved since mapping, and those of South Craigend farm are broadly ‘sensible’ but have issues attached to them in detail. The key conclusion appears to be to treat mapped internal divisions with caution.

### ***Acknowledgments***

I thank Niall Logan for helpful discussions about South Craigend and Rob Wheeler for essential guidance on checking on different printings of the maps. The University of Glasgow’s Sonny Maley and Elaine Anderson (Maps, Official Publications and Statistics Unit) and John Moore (Map Librarian) kindly provided access to the relevant map sheets. The National Library of Scotland’s on-line maps continue to be a superb and invaluable resource.

### ***Table of measured lengths of The Mill House and South Craigend farm, Baldernock, on 25-inch map sheets and ‘on-the-ground’***

#### **The Mill House**

Stirling Sheet XXXII.2	<i>Measuring technique</i>	<i>Wall shading</i>	<i>On-the-ground length (m)</i>	<i>On-the-ground length (m) North room</i>
Measured length	30 m tape		14.85	8.21
1st ed 25" hard copy (OS annotation: <i>Zinco-graphed &amp; Published 1893. Surveyed in 1860. Railway inserted in 1868</i> )	Vernier caliper	No wall shading	Ratio scale 15.63	7.38
			Map bar scale 15.74	7.31
1st ed 25" NLS on desktop computer ( <i>Survey date: 1860 Publication date: 1864</i> ) Size of symbol 110mm	Vernier caliper	1	14.32	7.00
		2	14.78	
		3	15.12	

<sup>12</sup> Oliver, op.cit., 2005, 65.

2nd ed 25" NLS on desktop computer (OS annotation: <i>Surveyed in 1860, Revised in 1896. Zincographed and Published 1898</i> ) Size of symbol 110mm	Digital measurer	1	14.59	7.53
		2	14.92	
		3	15.22	

### South Craigend

Stirling Sheet XXVII.15	Measuring technique	Wall shading	Length A (m)	Length B (m)
Measured length	30 m tape		42.65	5.85
1st ed 25" hard copy ( <i>Zincographed &amp; Published 1893, Surveyed in 1859 &amp; 1860</i> )	Vernier caliper	No wall shading	Ratio scale 41.00	8.63
			Map bar scale 40.81	8.58
1st ed 25" NLS on desktop computer ( <i>Survey date: 1860 Publication date: 1865</i> ) Size of symbol 100mm	Vernier caliper	1	39.80	6.96
		2		7.45
		3		7.61
2nd ed 25" NLS on desktop computer ( <i>Surveyed in 1859-60, Revised in 1896. Zincographed and Published 1898</i> ) Size of symbol 100mm	Digital measurer	No wall shading	41.60	7.98

**Rob Wheeler adds:** While there is little evidence of distortion of the paper copy – I believe that shrinkage is predominantly an issue with engraved maps printed on dampened paper – the digital image has shrunk in a north-south direction by as much as 7% (Mill House). This I believe is an issue with such digital measurements: the scale may be reliable for the direction in which it is printed, but is not reliable for the direction perpendicular to that.