

Network Rail Infrastructure Limited

Network Rail (Suffolk Level Crossing Reduction) Order Inquiry

Note regarding Order plans dated 21 May 2018

Introduction

- 1 Paragraphs 31 to 33 of the Proof of Evidence of Stephen Kerr, Definitive Map Manager, Suffolk County Council (OBJ/29/W1), raised that some of the alignments depicted on the Order plans (S02 Brantham High Bridge, S11 Leggetts, S12 Gooderhams, S13 Fords Green, S27 Barrells, S31 Mutton Hall) do not strictly accord with the legal record shown on the Council's Definitive Map and sought modification to reflect the true legal record. At S07 Broomfield the Order plan did not identify a known anomaly regarding FP11 Barham. (S07 is not addressed in this note and will be addressed separately). These issues were illustrated in Appendices 2 and 3 to Mr Kerr's proof (OBJ29/W1/AP2 and OBJ29/W1/AP3).
- 2 As a result, Network Rail, is submitting a revised full set of plans with a schedule identifying any amendments made since the plans were originally submitted as part of the Order application. The plan changes are described in more detail in paragraph 19 below.

The issues

- 3 Since the Proof of Evidence was received in January 2016, Network Rail and its consultants, Mott MacDonald, have liaised with the Council to understand and then resolve the issues identified, and Network Rail is particularly grateful for the Council's assistance and hard work during inquiry in identifying the nature of the issues and confirming that the revised plans align with the Council's Definitive Map.
- 4 The issue identified by the Council and illustrated in Appendix 2 to Mr Kerr's proof arose primarily due to a likely error in use of the conversion tool from late 2015, which required the projection associated with the Council's MapInfo file to be defined prior to converting it to Mott MacDonald's ESRI shapefile for use in the scheme design development, consultation drawings and TWAO plans.
- 5 A projection is a defined specification for the display of information from a three-dimensional curved surface (the globe) on to a two-dimensional surface (a paper map). There are different forms of projection based on the location on the Earth and often defined by the national mapping agencies as a national standard. These include accepted distortions to properties of the three-dimensional world to represent the world on a two-dimensional surface.
- 6 In the UK this is the British National Grid as defined by the Ordnance Survey, which has limitations in its suitability for the extreme eastern or western extents for Great Britain. The projection is conformal, meaning small shapes are maintained accurately; with directions also maintained.
- 7 The scale is accurate along the two secant lines 180km from the central meridian, but away from these lines, the scale is compressed between them and expanded beyond them, with a scale factor approximating to 0.9996 included in the definition of the

projection. Most CAD or GIS software include the use of projections natively and the projection is not calculated by the user.

- 8 In the case of the ESRI shapefile conversion in late 2015, it appears that the conversion software used applies an approximate projection for the file when first loaded, but requires manual definition of the correct projection to load the Definitive Map in the correct location. The tool undertook the conversion assuming the approximate projection to the MapInfo file from the initial load, which was carried forward to the shapefile rather than the correct British National Grid projection which ought to have been defined.
- 9 These parameters for the projection specification would mean that the shape and size of the data would not change substantially and may not have been noticeable on the small-scale plans and drawings without conducting a verification against known 'good' data unaffected by exchange of raw information, e.g. PDFs of the Definitive Map.
- 10 This version of the converted Definitive Map was then used as the base data for the TWAO drawings, with the addition of Non-Definitive routes and the scheme proposals as part of a combined layer of information used in the drawings.
- 11 As an exercise to verify that the problem had been correctly identified, the error has been recreated using the 2018 SCC MapInfo file using conversion software: defining no projection for the MapInfo file prior to conversion generates the same incorrect placement and distortion of the Definitive Map shown on the scheme drawings.

What has been the effect

- 12 The effect of the issue with projection as described above has meant that the distortion on the TWAO plans has shown a number of the public rights of way slightly out of position as against the Definitive Map. A number of the corresponding reference points ("P" and "R" points which, for the purposes of the Order and plans identify the route and extent of extinguishments/creation of new highway (prow) by reference to the existing highway position) were correspondingly out of position on the Order plans as originally submitted.
- 13 Network Rail, following confirmation of the amended plans from SCC is submitting revised plans, which correct the distortion of P points due to the projection error (and address any other changes since the Order application was made, as set out in the attached schedule).
- 14 However, the intention of the Order is to extinguish or create extents of new highway (prow) from an identifiable point or connection with the existing highway (prow) by reference to these "P" (and in 2 cases "R") points. The projection issue has resulted in the changes to the Order, as set out in paragraph 2(a)(i) and (ii) of the 'Note on filled-up Order dated 21 May 2018'. Network Rail is not changing its proposals or altering its powers as set out in the draft Order; it is simply updating the plans to properly reflect the position of the prow as shown on the Definitive Map, and therefore the position of the "P" points, when correctly overlaid on the Order plans including adjustment for projection.
- 15 Given that the distortion is related to projection (curvature), displacement is not uniform across all plans and in some cases there are therefore some very minor adjustments to the plans which, at the scale required under the Transport and Works (Applications and Objections Procedure)(England and Wales) Rules 2006, result in a change which is not perceptible to the eye. These have nevertheless been amended on the plans.

What has been done

16 As a result, Network Rail has revised the plans to make adjustment for projection. The affected sheets and P points are as follows:

Sheet No.	P/R Points Changed
1.	N/A
2	P003, P004, P005, P006
3	N/A
4	P010A, P009, P010, P011, P015
5	P164, P163
6	P165
7	N/A
8	N/A
9	N/A
10	P018, P018A P019
11	P023, P024, P026, P027
12	P036, P033, P032, P030, P030A, P029, P028A
13	P042, P040, P039, P041
14	P045, P046, P043, P044
15	P051, P049, P048
16	P052, P053, P054, P054C
17	P055
18	P059, P058, P057, P057A, P056, P056A
19	P065, P060B P060A, P060, P061A, P061
20	P063, P066, P067

Sheet No. P/R Points Changed

21	P073
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22	P075, P074, P077
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23	P078, P079, P080, P081, P082, P084
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24	P086
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25	R001 and R002
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26	N/A
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27	P092, P091, P090, P089
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Sheets 29, 30
and 31 not
used

32	P128, P128A, P130
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33	P136, P137, P143
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34	P138A, P139
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35	P147, P155, P155A, P146, P145, P153
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36	N/A
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37	P158, P160, P162
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17 Network Rail has also written to all affected landowners within Order limits to explain the corrections to the plans and to provide a copy of both the original application plan and revised plan. The letter explains that their land will not be affected any differently: existing prow will be stopped up between the relevant P points, or new prow will be dedicated and any works necessary works carried by reference to the P points on the plans, if Network Rail exercises the Order powers.

18 A copy of the template letters sent to those with an extinguishment of or a creation of prow on their land is attached.

Other changes to plans

19 The plans also include other changes which have been agreed with landowners:

S69 Bacton

Realignment of Plot 20 - as shown on Replacement Sheet 20

1. The draft Order includes powers, inter alia, to temporarily use plot 20 in the District of Mid Suffolk (Parish of Bacton) ("the plot") for the purpose of access as shown on Sheet 20 of the Order plans.
2. The plot is located on the property of Bacton United'89 Football Club (Bacton United).
3. Network Rail discussed and agreed with Bacton United to realign the plot, subject to receiving written confirmation from all owners/occupiers of their agreement to the proposed realignment.
4. The written confirmation from the owners/occupiers is attached.
5. There will be no changes to the draft Order as the powers sought and purpose stated in Schedule 5 to the Order remain the same.

S29 Hawk End Lane – as shown on Replacement Sheet 13

1. Removal of plots 11, 12 (Schedule 5 to the Order) and plot 13 (Schedule 4 to the Order), in the Parish of Elmswell. Amendments made pursuant to an agreement with the owner (Taylor Wimpey) and Network Rail dated 8 May 2018.

S01 Sea Wall – as shown on Replacement Sheets 37 and 38

1. Retain footpath 13 between P points P160 and P159 (Parish of Brantham)

Conclusion

- 20 Network Rail thanks the Council for its support and co-operation in identifying the issue on the plans and confirming that it is now content with the revised plans as submitted to the inquiry. The projection issue has not led to any change to the Order itself Network Rail is updating the plans to properly reflect the position of the prow as shown on the Definitive Map, and therefore the position of the "P" points, when correctly overlaid on the Order plans including adjustment for projection.

Winckworth Sherwood LLP

22 May 2018