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NORTH LINCOLNSHIRE COUNCIL

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Sent by Email

Dear Mr Kemp

Technical Note on Highways Infrastructure, Sandtoft Business Park - SANE-1

I would be most grateful if you could forward this letter and the attached Technical Note to the Inspector.

North Lincolnshire Council continues to fully support the information contained within and findings of the Technical Note which has been prepared by SCP in conjunction with Savills on behalf of T.A. White & Sons to provide further evidence to demonstrate the deliverability of Sandtoft Business Park (Policy SANE-1) in terms of highways infrastructure. This significant supplementary work further underpins the existing and comprehensive evidence-base. This longstanding well-documented evidence-base has been provided by highly reputable professionals commissioned by T A White & Sons and represents considerable financial investment.

The Technical Note responds to the Inspector's specific request during the Matter 4 Employment Land Allocations sitting day for further information to be presented to demonstrate the suitability of the proposed site access and to provide evidence to demonstrate what off-site highways works are proposed to enable the allocation to be deliverable. For in excess of 5 years North Lincolnshire Council has been working with T A White & Sons with regards the Sandtoft site. During that time North Lincolnshire Council has never doubted the deliverability of the Sandtoft site which it has always deemed to be an "ideal location" as reflected on the website www.investinnorthlincolnshire.co.uk

North Lincolnshire Council remains steadfast in its promotion of the Sandtoft site for allocation thereby bringing high intensity employment through a generative effect. North Lincolnshire Council therefore remains fully committed to working with T.A. White & Sons to ensure the delivery of highways infrastructure for the Sandtoft Business Park site.

Yours Sincerely

Chris Barwell
Spatial Planning Manager

SANDTOFT Technical Note on Highways Infrastructure:

Part 1 of 2

SCP

Transportation Planning : Infrastructure Design

Technical Note on Highways Infrastructure

North Lincolnshire Council Housing and Employment Land Allocations DPD

Matter 4 – Employment Land Allocations (SANE-1 Sandtoft Business Park)

On Behalf of T.A. White & Sons

February 2015

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CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 This Technical Note has been prepared by SCP on behalf of T.A. White & Sons to provide further evidence to demonstrate the deliverability of Sandtoft Business Park (Policy SANE-1) in terms of highways infrastructure.

1.2 Specifically, this note responds to the Inspector's request for further information to be presented to demonstrate the suitability of the proposed site access and to provide evidence to demonstrate what highways works are proposed to enable the allocation to be deliverable.

1.3 The approach which is adopted in this Technical Note accords with 'Transport Evidence Bases in Plan Making' set out in the Department for Communities and Local Government's Planning Practice Guidance.

1.4 This Technical Note is set out as follows:-

- Section 2 outlines the highway aspects of the planning process in relation to the Sandtoft site;
- Section 3 provides an explanation of the existing and proposed site access including the anticipated on-site highway infrastructure;
- Section 4 explains the assessment of works required to the off-site highway network identified to be delivered as part of this allocation;
- Section 5 deals with the phasing of the access and infrastructure works;
- Section 6 responds to those comments made by objectors at the Examination Hearing in relation to existing traffic movements along Idle Bank Road and highway safety;
- Section 7 summarises the specific off-site highway work to be included as part of the updated Infrastructure Delivery Schedule and details the proposed revision to the wording to Policy SANE-1 in relation to highways and access; and
- Section 8 concludes and summarises this Note.

Existing Highway Evidence Base Documents

1.5 The following documents have previously been prepared on behalf of T.A. White & Sons to demonstrate the deliverability of the allocation from an access and highway infrastructure perspective:-

- Transport Evidence Base prepared by WYG Transport Planning (December 2010).
- Framework Travel Plan prepared by WYG Transport Planning (December 2010).

1.6 This information was prepared and submitted as evidence to support the identification of a strategic employment allocation at Sandtoft Airfield in the adopted NLC Core Strategy DPD and as part of earlier submissions to the Housing & Employment Land Allocations DPD.

1.7 A 'Technical Note 1 Off-Site Highway Works Rev A' was also prepared by WYG and presented to NLC officers in April 2012. This evidence has not been submitted as part of any previous submissions to the Housing & Employment Land Allocations DPD and is included at **Appendix 1.**

1.8 In addition to the evidence prepared by T.A. White & Sons, NLC commissioned Pell Frischmann to prepare a Transport Study and Economic Viability Study (published July 2009) covering the proposed allocation of 58ha of land at Sandtoft. The document concludes that a major employment park at Sandtoft Airfield could be developed with satisfactory access arrangements and that there is demand amongst operators in this location. In terms of access, the report concludes that improved access to the existing A18 providing access to J1 and J2 of the M180 is the preferred option. A very broad cost appraisal was also undertaken by Pell Frischmann as part of this study, assessing the costs of the potential transport infrastructure improvements against the resultant economic benefits in terms of job creation. It was concluded in the report the development "*clearly has the potential to deliver the access options considered.*"

1.9 Whilst the Pell Frischmann report was originally prepared confidentially for NLC, its findings reflect those set out in the WYG Highway Evidence Base. It therefore provides independent evidence to support the allocation of the site.

1.10 This Note contains further information regarding delivery issues, junction design, road safety, land ownership and the like.

Statutory Consultee Position

1.11 NLC fully support the information contained within this Note and have rigorously sought evidence from T.A. White & Sons to support the allocation of the site. As the Local Highway Authority, and statutory consultee to the DPD process, NLC support the proposed allocation.

1.12 The Highways Agency (HA) have also confirmed that they have no objection to the proposed allocation of Sandtoft Business Park in terms of access and impact on the Strategic Highway Network. Also a 'Statement of Common Ground' was agreed with NLC and signed by HA prior to the Examination Hearing.

2.0 HIGHWAYS ASPECTS OF THE PLANNING PROCESS

2.1 A detailed and robust Transport Assessment will form part of any planning application(s) on the site at Sandtoft. The scope of the Transport Assessment will be agreed in advance with NLC and the Highway Agency at pre-application stage.

2.2 The Transport Assessment will quantify the traffic generated by the scheme, distribute it to the network, model the operation of the site access junctions and also model the impact of the development on the wider highway network so that the mitigation measures can be assessed by NLC.

2.3 This process has already been started through the DPD process to provide evidence to support the strategic allocation at Sandtoft which has included estimating trip generations, assigning development traffic to the network and carrying out junction assessments.

2.4 The assessment of generated traffic flows considered in the Transport Evidence Base prepared by WYG was based on 165,000 sqm of Gross Floor Area (GFA) floorspace. The scheme layout on the Illustrative Masterplan and Phasing plan provides for 125,834 sqm which 31% less than that which was assessed in the Transport Evidence Base. Therefore, the assessment presented in the Transport Evidence Base is very robust.

2.5 The scope of the Travel Plan will also be agreed with NLC and the Highways Agency in advance of the submission of any planning application. This document will build on the existing Framework Travel Plan which has already been prepared in support of the allocation of the site. This identifies measures for accessing the site other than by single occupancy private car. The key proposals identified in this document include a shuttle bus to/from Crowle train station to the site and a review of the delivery of local bus services to Sandtoft.

3.0 ON SITE HIGHWAY INFRASTRUCTURE AND ACCESS

Site Access

3.1 Access to the site will be provided by a roundabout constructed on Belton Road, a roundabout constructed on High Levels Bank (C202) and Link Road through the site.

3.2 The proposed routing is shown on the Illustrative Masterplan and Phasing Plan which are included at **Appendix 2.** This provides two purpose built roundabouts to access the scheme, as shown at **Appendix 3**, and a Link Road through the site which can be constructed on land entirely within the site allocation (which is in the ownership of T.A. White & Sons) or the public highway.

3.3 On-site road infrastructure will be constructed to current standards as set out in the Design Manual for Road and Bridges (DMRB) and NLC guidance. The works will be subsequently offered for adoption by NLC. As the adopting authority, NLC will have the opportunity to review the design, seek amendments, approve the design, inspect the works and carry out all the usual approvals and certification under Section 38 of the Highways Act 1980.

High Levels Bank Roundabout

3.4 The plan at **Appendix 4** shows a more detailed layout of the roundabout on High Levels Bank on an Ordnance Survey mapbase at 1:1250 using AutoCAD. It provides more detail on the roundabout layout and demonstrates that a layout which complies with DMRB can be delivered by this scheme. For example, it shows road widths, entry deflections, inscribed circle diameter etc. It also has the advantage of removing the width restriction on High Levels Bank (where two way traffic flow is not possible at present) with a 7.3m wide carriageway which will enable two HGV's to pass safely.

3.5 The roundabout can be delivered on land within the public highway and the site.

3.6 It is acknowledged that High Levels Bank is classified as a 'C' class road. The classification as a 'C' class road is generally considered to be arbitrary and for reference purposes only. This road is generally some 7.0 – 7.3m in width, with highway verges to both sides and a satisfactory vertical and horizontal alignment i.e. it is straight and flat. It drains to the adjacent verges and along some of its length is kerbed and has a positive drainage system. It is therefore capable of accommodating the traffic likely to be generated by the scheme and the classification of High Levels Bank as a 'C' class road is not an issue from a traffic impact assessment perspective.

Belton Road Roundabout

3.7 Similarly, the drawing at **Appendix 5** shows the layout of the new roundabout on Belton Road in more detail. This will provide another access to the site and again, this roundabout layout accords with design standards in DMRB and can be delivered on land within the public highway and the site.

The Link Road

3.8 The two roundabouts will be joined by a Link Road running through the site which will be designed to NLC Industrial Estate Road guidance and will therefore generally be 7.3m wide although it may be widened out to provide ghost island junctions in to individual plots on the site or possibly a smaller roundabout within the site. The typical road cross section for the Link Road will be determined as part of detailed design process but will include for footways and cycleways.

Sandtoft Five Road Ends Junction

3.9 The Sandtoft Five Road Ends junction where High Levels Road, Thorne Road, Belton Road, Idle Bank all meet is a roundabout type junction, the layout of which does not comply with current guidance.

3.10 The accident record for the junction is included at **Appendix 6** and is summarised in Table 4.1. NLC's comments on the junction state that it '*does not pick up a high number of crashes and as such other than poor geometry we have no major concerns*'.

3.11 It is clear the junction has a non-standard layout but the accident record is much better than would be expected with only 1 serious and 1 slight accident in the past 5 years, with no accidents in the last 3 years for which records are available.

Tab 4.1 Accidents at Sandtoft Five Ways Junction

Nr	Location	Severity	2009	2010	2011	2012	2013	2014 (part)	Total
1	Five Ways Sandtoft Junction	Fatal	0	0	0	0	0	0	0
		Serious	1	0	0	0	0	0	1
		Slight	0	1	0	0	0	0	1

3.12 The Link Road through the site and the access junction will accommodate the newly generated development traffic.

3.13 All the development traffic with origins or destinations to the north of M180 or on M180 itself will not pass through the Sandtoft Five ways junction. In addition, this will enable existing traffic using Belton Road and High Levels Bank to use the Link Road taking HGV traffic away from the Sandtoft Five Road Ends junction.

4.0 OFF SITE HIGHWAY INFRASTRUCTURE

4.1 Based on the assessment undertaken in the Highways Evidence Base and the Off-Site Highways Note prepared by WYG and through discussion with NLC highways, it is expected that off-site highway works will be required at the following locations to mitigate the traffic impact of the scheme:-

- High Levels Bank Road
    - M180/High Level Bank Bridge
    - Brook Corner
- A18/ High Levels Bank Junction
- Crowle Gyratory (A18/A161 Double Rivers Junction)
- Westgate Road Traffic Calming

4.2 The works identified above have been costed based on conservative assumptions about the need for the mitigation and the extent of the works required. The costs of the works are viable in the context of the size of the proposed allocation and the works are deliverable.

4.3 A plan from the Off-Site Highway Works Note is included at **Appendix 7** to show the junction locations.

4.4 Details of the off-site highway mitigation measures are described in turn below.

M180/High Levels Bank Bridge

4.5 The ability of the M180/High Levels Bank bridge to accommodate the traffic generated by the scheme has been considered.

4.6 The bridge is maintained by the Highways Agency and there is no restriction to the load carrying capacity of the bridge.

4.7 The carriageway over the bridge is some 7.0m in width. This is some 300mm less than guidance for industrial roads or a Type S2 road in TD9/81 of DMRB. This not a constraint as there is good forward visibility over the bridge, the shortfall in carriageway width only occurs over a short length and is negligible in any case. However, it is proposed to widen the carriageway over the bridge deck by 300mm to 7.3m. As there is no footway over the bridge or on its approaches, this is a practical and deliverable measure.

4.8 A full structural assessment of the bridge will be undertaken as part of any future application in order to assess the increased highway loading resulting from the widening to the carriageway.

4.9 In the unlikely event that strengthening or deck replacement works are required, they will be funded by the developer and an allowance has been made in the scheme budget for such works. Whilst the strengthening or deck replacement works are an absolute worst case, they are nevertheless common practice and are therefore both technically and financially deliverable.

Brook Corner

4.10 Brook Corner is located near Dirtness Bridge Farm to the north of M180 where High Levels Bank bends to the west to meet A18. Whilst this junction is not considered to be a constraint on development, there is scope for some improvement at this location to assist HGV movements. The extent of the highway is shown at **Appendix 8.**

4.11 There is sufficient highway land available to achieve widening to the carriageway which will provide increased clearance between oncoming HGV's as they pass at this point on the highway. The possibility of widening the existing bridge may also be considered at the planning application stage.

A18/High Levels Bank Junction

4.12 The capacity of the A18/High Levels Bank junction has been tested to demonstrate that the junction is capable of accommodating the traffic from the allocation. However, in practice, it is accepted that the existing junction arrangement does not meet current standards and needs to be improved to provide junction capacity for the additional HGV movements and to provide an acceptable level of road safety.

4.13 The accident record for the junction is included at **Appendix 9** and summarised in Table 5.1 which show that the accident record for the junction is good with only one slight accident in the last 5 years.

Tab 5.1 Accidents at A18 / High Levels Bank

Nr	Location	Severity	2009	2010	2011	2012	2013	2014 (part)	Total
2	A18/High Levels Bank	Fatal	0	0	0	0	0	0	0
		Serious	0	0	0	0	0	0	0
		Slight	0	0	1	0	0	0	1

4.14 NLC highways have provided the following commentary on the junction:

> '*it is well below desirable standard. Right turns out from High Levels and left turns in are particularly difficult manoeuvres. The Council have had a number of complaints regarding these turning movements. The crash rates here are low, however, any improvement to road geometry here would be beneficial.'*

4.15 T.A. White & Sons recognise that the junction needs to be improved to accommodate development traffic. A roundabout junction is proposed to mitigate the impact of the scheme and to ensure that the junction operates safely.

4.16 An illustrative junction layout showing the swept paths of HGV's passing through the junction is presented at **Appendix 10**. The junction layout shown can be provided entirely within the adopted highway.

Crowle Gyratory (A18/A161 Double Rivers Junction)

4.17 The Crowle Gyratory junction is a non-standard junction which consists of a number of priority junctions around a central gyratory.

4.18 The accident record for the junction is included at **Appendix 11** and summarised in Table 5.2.

Tab 5.2 Accidents at A18 / Double Rivers Junction

Nr	Location	Severity	2009	2010	2011	2012	2013	2014 (part)	Total
3	A161 Junction with Access Road to Canal	Fatal	0	0	0	0	0	0	0
		Serious	0	0	0	0	0	0	0
		Slight	2	3	2	1	3	0	11
4	A161 Junction with A18	Fatal	0	0	0	0	0	0	0
		Serious	1	0	0	0	0	0	1
		Slight	1	1	2	2	1	0	7

4.19 There are a number of accidents on two of the approaches and there does seem to be a common cause to some of the accidents. However, NLC are in the process of implementing a package of improvements at the junction at a budgeted cost of £25,000, the details of which are included at **Appendix 12.** NLC have advised that the white lining has been completed, the signing is imminent and the change of junction priority will form the basis of a future scheme. These works are of a significant scale for road safety works and are clearly intended to improve the level of road safety. The junction has also been identified as requiring mitigation as a result of the scheme. The most likely option is to signalise the north bound approach as shown at **Appendix 13** which will provide additional capacity and address one of the accident issues. However, there is scope for a subsequent detailed discussion with NLC regarding the optimum improvement solution at this location.

Westgate Road Traffic Calming

4.20 A traffic calming scheme is proposed to enhance the existing HGV restriction on Belton Road.

4.21 The details of the scheme are proposed to reduce speeds, prevent HGV's from passing along Westgate Road and improve road safety for local residents.

4.22 A plan of the proposed scheme is included at **Appendix 14.**

4.23 The proposed scheme can be constructed on land wholly within the adopted highway.

Other Junctions

4.24 In addition to the above junctions, the M18 between Junction 2 and Junction 3; Junction 1 of M180 (Junction 5 of M18); A18/A614 Tudworth roundabout and Junction 2 of the M180 have been assessed as part of the Highways Evidence Base. The assessment has demonstrated that no mitigation is required at these junctions to accommodate the traffic which will be generated by the proposed development.

5.0 PHASING OF THE ACCESS AND INFRASTRUCTURE WORKS

5.1 A scheme of this magnitude will take several years to build out, bring into operation and deliver in full. It is therefore entirely appropriate to deliver the scheme on a phased basis. An Illustrative Masterplan and Phasing Plan has been prepared (**Appendix 2**), which shows that a phased approach will be taken to the site delivery, to ensure that the costs of new infrastructure can be linked to the actual impact of the development. It is envisaged that that site will come forward in four phases (as shown on the Illustrative Masterplan and Phasing Plan **Appendix 2**)

5.2 In terms of the on-site highway works, the scheme will be accessed in Phase 1 by the new roundabout on High Levels Bank Road which, along with the western end of the access road, will open up the site. Phase 2 will then extend the site into the north east part of the site. The roundabout on Belton Road will then be delivered in Phase 3 which will include for the completion of the Link Road through the site. The delivery of off-site highway improvements will also be delivered on a phased manner as the scheme is built out, the details of which will be agreed with NLC as part of planning application process.

5.3 It has been agreed with NLC that the proposed 'triggers' which dictate when a particular item of infrastructure is required should be related to the number of trips that the development generates at that time. These triggers can be calculated after the Transport Assessment for the whole development has been completed and agreed. NLC can then include such triggers in a planning condition or a clause contained within a Section 106 Agreement. Therefore the timescales for infrastructure delivery are clearly within their control.

5.4 The method of phasing the delivery of highway infrastructure is common practice for a development of the scale such as this, which will take a number of years to build out and bring into operation.

6.0 RESPONSE TO MATTERS RAISED BY OBJECTORS

6.1 At the Examination Hearing, objectors presented anecdotal evidence regarding the number of accidents along High Levels Bank and the number of HGV's passing along High Levels Bank.

6.2 Our response to these points which has been informed by evidence provided by NLC is set out below.

Personal Injury Accidents along High Levels Bank

6.3 A plan prepared by NLC at **Appendix 15** shows the accident information over a five year period in the vicinity of High Levels Bank Road. This can be summarised as follows:-

- 1 No at Brook Corner - slight
- 1 No at the M180 over bridge involving HGV- slight
- 1 No near Sandtoft Grange Farm – slight
- 2 No at Sandtoft Five Ends – a slight involving an HGV and a serious

6.4 Along the length of the site frontage along Belton Road there was one slight accident.

6.5 There was no common cause or pattern to the accidents. The majority of the accidents are slight in severity and they are spread over a length of road of approximately 1 mile. This frequency of accidents is no more than would be expected for such a length of road over a 5 year period.

6.6 There is no record of a fatal accident in the vicinity of the site in the past five years as was alleged by one of the objectors.

HGV Movements along High Levels Bank

6.7 NLC have provided ATC count data from a site on High Levels Bank, extracts of which are presented at **Appendix 16.**

6.8 This shows that for the week 7th -13th September 2012, the average daily 2-way flow was 2447 vehicles of which 683 were HGV's. In the morning peak hour, the 2–way flow was 200 vehicles, of which 29 (14.5%) were HGV's and in the evening peak hour there was a 2-way flow of 205 vehicles of which 29 were HGV's (14.1%). The HGV percentages are slightly higher than average but this is to be expected as the site lies adjacent to an existing industrial area with a relatively small population.

6.9 This evidence demonstrates that the anecdotal evidence presented by one of the objectors that 280 HGVs passed along High Levels Bank in one hour is completely unfounded.

6.10 Furthermore, the evidence demonstrates that, aside from any of the issues which have been resolved with regards to junctions, High Levels Bank has spare capacity for additional development traffic. The 2-way capacity of the road is of the order of 2,500 veh/hour whereas the existing flow is of the order of 200 vehicles/hour, leaving considerable spare capacity to accommodate traffic anticipated to be generated by development from Sandtoft Business Park.

7.0 INFRASTRUCTURE DELIVERY AND AMENDMENTS TO POLICY SANE-1

7.1 The updated Infrastructure Delivery Schedule includes information on transport infrastructure delivery for Sandtoft Business Park. This text has been agreed with officers from NLC and is presented at **Appendix 17.**

7.2 In addition, the following revised wording to Policy SANE-1 has been agreed with NLC to provide clarity as to how the allocation will be accessed and where off-site highway infrastructure will be delivered in a phased manner:

> *Site access is proposed from both Belton Road and High Levels Bank Road. Access to the wider highway network will be achieved from High Levels Bank Road, via the A18 and then to Junction 1 and 2 of the M180. A Transport Assessment will need to be submitted as part of any planning application(s) for the site. This will identify any detrimental impact which the development may have on the highway network, which would include, but would not be limited to, High Levels Bank (including the bridge over the M180 and Brook Corner); the A18/High Levels Bank junction; the Double Rivers Junction (Crowle Gyratory); and Junction 1 and 2 of the M180. Any mitigation measures which are deemed to be necessary will be delivered in a phased manner in accordance with a masterplan accompanying any planning application(s) which will also provide a link road through the site. Off-site highway works will be paid for by financial contributions from developer(s).*

8.0 SUMMARY

8.1 This Technical Note provides further evidence regarding the delivery of highway infrastructure for Sandtoft Business Park (Policy SANE-1) to demonstrate the site is deliverable from a highways and accessibility perspective.

8.2 The proposed allocation is supported by a detailed evidence base which has considered traffic generation; traffic distribution; junction assessment; mitigation measures and proposed junction and access layout.

8.3 It has demonstrated that access to the site can be achieved by the proposed roundabout junctions onto High Levels Bank and Belton Road and a Link Road through the site. It has also confirmed that the highways impacts of the scheme can be mitigated by the delivery of off-site improvements.

8.4 Highway infrastructure is deliverable on land entirely within the proposed allocation site (in the ownership of T.A White & Sons) or the adopted highway and does not require any land acquisition in order to be implemented.

8.5 The access and mitigation works are of an appropriate scale to that of the scheme and are deliverable.

8.6 Significant improvements to the A18/High Levels Bank junction, the Crowle Gyratory (A18/A161 Double Rivers Junction) and the M180 bridge are proposed to ensure that they are capable of accommodating the impact of the scheme without detriment to road safety or junction capacity.

8.7 NLC are already working to address road safety issues and to progress the traffic calming works along Westgate. In addition, new proposals to improve the highway alignment at Brook Corner and to remove the carriageway narrowing on High Levels Bank Road have been put forward.

8.8 The delivery of on-site and off-site infrastructure will be triggered by the traffic flows generated by the scheme as it is built out. This is a well understood method of securing the delivery of highways infrastructure which has proved successful on similar schemes elsewhere.

8.9 This submission also responds to anecdotal evidence presented by objectors presented at the Examination Hearing and demonstrates that this evidence was inaccurate.

8.10 NLC fully support the information contained within this Note and have rigorously sought evidence from T.A. White & Sons to support the allocation of the site.

8.11 The Highways Agency have also confirmed that they have no objection to the proposed allocation of Sandtoft Business Park in terms of access and impact on the Strategic Highway Network.

S|C|P

APPENDIX 1

SANDTOFT INDUSTRIAL ESTATE

TECHNICAL NOTE 1: OFF-SITE HIGHWAY WORKS – Rev A

1 INTRODUCTION

1.1 Off-site highway works associated with the development of the Sandtoft Industrial Estate have been estimated previously by WYG in a Site Access Study undertaken on behalf of T A White and Sons and by Pell Frischmann in their Sandtoft Evidence Base on behalf of the North Lincolnshire Highway Alliance.

1.2 Although the two reports were undertaken to significantly different scopes, the options for accessing the site identified in both cases, were broadly similar, as follows:

- Option 1: A new link road to the A161;
- Option 2: A new junction on the M180;
- Option 3: Idle Bank to the A 18; and
- Option 4: Improvements to Junction 2 of the M180.

1.3 Both reports also agreed that Option 3, which utilises the existing highway along Idle Bank and connecting to the A18 at High Levels Bank, provided the most appropriate solution for accessing the site with an estimated cost of between £1.5M (Pell Frischmann) and £2.5M (WYG, which included replacing the bridge over the M180).

1.4 The purpose of this Technical Note is to further consider the off-site highway works associated with Option 3 and includes a comprehensive traffic calming scheme through the village of Belton to deter HGV movements along Westgate Road/Belton Road.

1.5 The extent of off-site highway works has been determined through discussions with North Lincolnshire Council and comments from the Highways Agency and Doncaster Metropolitan Borough Council in response to the North Lincolnshire Core Strategy Revised Preferred Options Consultation.

1.6 The highway network considered as part of this review is shown on the plans included at Appendix A and includes:

- M18 between Junctions 2 and 3;
- Junction 1 of the M180 (M18 Junction 5);
- A18/A614 Tudworth Roundabout;
- Junction 2 of the M180;
- A18/A161 Double Rivers Junction;
- A18/High Levels Bank;
- Idle Bank Bridge over M18; and
- Traffic Calming along Westgate Road/Belton Road.

2 OFF-SITE HIGHWAY WORKS ASSOCIATED WITH OPTION3

2.1 The highway network described at Paragraph 1.6 and shown on the plans included at Appendix A has been considered in detail in the Highways Evidence Base prepared by WYG, with capacity analyses undertaken in support of the sites allocation for employment use.

2.2 The results of the capacity analyses, and consequently the need for off-site improvements, are described below:

M18 Between Junctions 2 and 3

2.3 Merge/Diverge assessments were undertaken at Junctions 2 and 3 of the M18, along with a weaving assessment between the two junctions for the forecast year 2020 with the addition of development generated traffic flows. This was in response to concerns raised by DMBC and the HA.

2.4 At Junction 2, the merge/diverge assessment showed that the existing junction layout operates satisfactorily on three out of the four arms. The Northbound merge assessment shows that the existing Type A Merge would need to be upgraded to a Type B Parallel Merge to accommodate the existing traffic flows. However, the development generated traffic flows at this location represent only 1.3% of the total traffic flows in this location. Therefore, the increase in traffic associated with the development does not justify any upgrade to the northbound merge at junction 2.

2.5 At Junction 3, the merge/diverge assessment also shows that three out of the four arms operate satisfactorily. In this instance, the Northbound merge also requires an upgrade from Type A Merge to Type E Lane Gain to accommodate the existing flows. As with Junction 2, the increase in traffic flows associated with the development (1.3%) do not justify the upgrade.

2.6 The weaving assessment for the link between Junctions 2 and 3 shows that the distance between the two junctions, at 800m, is not sufficient to accommodate the existing flows (the desirable minimum distance is 2000m). However, the increase in development generated traffic flows (1.3%) does not justify the increase.

2.7 Therefore, no improvements to the M18 between Junctions 2 and 3 are proposed. The operational issues at the junction are associated with the existing traffic flows which are not exacerbated by the low volumes of traffic associated with the development.

Junction 1 of the M180 (M18 Junction 5)

2.8 This junction operates satisfactorily on all arms except the M180 Westbound approach, which has a Degree of Saturation of 107% in 2020 even without the addition of the generated traffic flows. The development increases traffic on this approach by 1.9% in the AM peak period and 2.3% in the PM peak period, which is too low to justify any improvement to the junction.

2.9 However, there are further improvements to the junction associated with the second phase of the Hatfield Colliery development. This will increase capacity on all approach arms and will mitigate the impact of both developments.

2.10 Therefore, there are no improvements proposed at the junction on account of the Sandtoft development.

Arndale Court, Otley Road, Headingley, Leeds, LS6 2UJ

A18/A614 Tudworth Roundabout

2.11 This junction is predicted to operate satisfactorily in 2020, even with the addition of the generated traffic flows. With a maximum RFC of only 0.506 (in the PM peak), no improvements to the junction are proposed.

Junction 2 of the M180

2.12 Junction 2 of the M180 operates as two priority junctions for the eastbound and westbound traffic movements, respectively.

2.13 The northern junction allows westbound traffic to leave the motorway at Junction 2 and join the A161. The analysis of this junction shows that it will operate satisfactorily in 2020 even with the addition of the generated traffic flows with a maximum RFC of 0.605 (AM peak).

2.14 The southern junction allows eastbound traffic to leave the motorway at Junction 2 and join the A161. The analysis of this junction shows that it will also operate satisfactorily in 2020 with the addition of the generated traffic flows (maximum RFC = 0.631 – PM peak).

2.15 The results of these analyses show that no upgrade to the junction is required to accommodate the generated traffic flows.

2.16 That the Pell Frischmann report showed that this junction would operate over capacity in the future year scenario with development. This assessment was based on generated flows associated with a different development mix which included a higher proportion of B1/B2 use than is currently proposed.

2.17 Therefore, no improvements are proposed in association with the Sandtoft development.

A18/A161 Double Rivers Junction

2.18 The Double Rivers junction has an unconventional layout where a series of priority junctions operate on a gyratory system.

2.19 The junction consists of four priority intersections, three of which operate satisfactorily in 2020, even with the addition of the generated traffic flows.

2.20 The A161 South/A18 junction is predicted to operate with a maximum RFC of 0.989 in 2020 for the existing traffic flows only, which increases to 1.001 when the generated traffic is added.

2.21 These results agree with those set out by Pell Frischmann, who recommended an upgrade to the junction which included partial signalisation at an estimated cost of £500,000.

A18/High Levels Bank

2.22 This junction is predicted to operate satisfactorily in 2020 even with the addition of the generated traffic flows (maximum RFC = 0.353 – AM). However, the junction sits on a poor alignment with a skewed approach to the A18 from High Levels Bank.

2.23 Therefore, a significant increase in HGV traffic at this location may require an upgrade to the junction.

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2.24 Pell Frischmann recommended that this junction should be up-graded to a signalised junction at a cost of £270,000.

2.25 However, it should be noted that traffic signals on high speed roads may not be acceptable to the highway authority.

Idle Bank Bridge over M18

2.26 The existing bridge over the M18 at Idle Bank has a carriageway that is approximately 7m wide, with 2m wide hardened verges along both sides.

2.27 The kerbs along both sides of the carriageway are currently damaged which suggests that the carriageway is not wide enough to accommodate two way HGV traffic, but this may also be due to wider agricultural vehicles over-running the kerbline.

2.28 Subject to the approval of the highway authority, it may be appropriate to widen the existing carriageway over the bridge to 7.3m by reducing the width of the hardened verges. This may also require an assessment of the bridge by a structural engineer. Such minor works to widen the carriageway are estimated to cost in the region of £15,000.

2.29 If the bridge does not have the capacity to accommodate a widened carriageway, a replacement bridge is estimated to cost in the region of £945,000 and this was included in the WYG Highways Evidence Base assessment of route options.

Traffic Calming along Westgate Road/Belton Road

2.30 A major benefit of the scheme and its utilisation of route Option 3 is the ability to implement a two way weight restriction through Belton. This would improve the environment for the residents along Westgate Road/Belton Road by removing all HGV traffic in the village.

2.31 A potential traffic calming scheme, incorporating Gateways, Carriageway Narrowing's, Speed Cushions and Raised Tables, is shown on drawing number SK 001 P1 which is included at Appendix B.

2.32 The estimated cost of providing the scheme shown on SK 001 P1 is £50,000.

2.33 This should be supplemented by a comprehensive signing scheme to warn HGV drivers of the weight restriction and direct them to the appropriate route. The estimated budget cost of providing such a scheme is £20,000.

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3 OFF-SITE HIGHWAY WORKS SUMMARY

3.1 Table 1 summarises the results of this review and shows were off-site highway works are required to accommodate the development of Sandtoft Industrial Estate.

Off-Site Works	Required? Y/N
M18 between Junctions 2 and 3;	N
Junction 1 of the M180 (M18 Junction 5);	N
A18/A614 Tudworth Roundabout;	N
Junction 2 of the M180;	N
A18/A161 Double Rivers Junction;	Y
A18/High Levels Bank;	Y
Idle Bank Bridge over M18; and	Y
Traffic Calming along Westgate Road/Belton Road.	Y
Supplementary Signing Scheme	Y

Table 1: Off-Site Highway Works

Appendix A

Arndale Court, Otley Road, Headingley, Leeds, LS6 2UJ

M180 Junction 1:

Operates satisfactorily on all arms except the M180 Westbound Approach which has a DoS of 107% in 2020 without the development traffic. However, the impact of the generated flows is only 1.9% and 2.3% in the AM and PM peaks respectively. Further, improvements associated with Hatfield Colliery will mitigate the impact of both developments. Therefore, no improvements are proposed.

Tudworth Roundabout:

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.506 (PM)

M18 Merge/Diverge Assessments:

Junction 2: Three out of four arms operate satisfactorily in 2020 with development traffic. The Northbound merge requires an upgrade to a Type B Parallel Merge.

Junction 3: Three out of Four arms operate satisfactorily in 2020 with development traffic. The Northbound merge requires an upgrade to a Type E Lane Gain merge to accommodate the existing flows.

However, the development generated flows represent only 1.3% of the total traffic flows in this location. Therefore, no improvements are proposed.

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Client: T A WHITE AND SONS

Project: SANDTOFT INDUSTRIAL ESTATE

Drawing Title: OFF-SITE HIGHWAY WORKS

REV	DESCRIPTION	BY	CHK	APP	DATE

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
1:25,000	JAB	MAR 12				

Project No.	Office	Type	Drawing No.	Revision
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A18/High Levels Bank:

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.353 (AM)

However, the existing alignment of the junction is poor and may require an improvement to accommodate a significant increase in HGV traffic.

A18/A161 Double Rivers Junction:

Operates satisfactorily on three out of four arms with the generated traffic flows (see SK 002c for details).

The junction may require improvement in order to accommodate increased traffic flows which could include partial signalisation.

M180 Junction 2 (North):

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.605 (AM)

M180 Bridge:

Minor carriageway widening from 7.0m to 7.3m. Subject to Highway Authority approval, this may be achievable within the existing hardened verge.

A replacement bridge has been included in the off-site works review

M180 Junction 2 (South):

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.631 (PM)

Sandtoft Road/Belton Road Traffic Calming:

Proposed Traffic Calming Scheme, detailed on SK 001 P1, including 7.5t weight restriction in both directions.

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Client: T A WHITE AND SONS

Project: SANDTOFT INDUSTRIAL ESTATE

Drawing Title: OFF-SITE HIGHWAY WORKS

REV	DESCRIPTION	BY	CHK	APP	DATE

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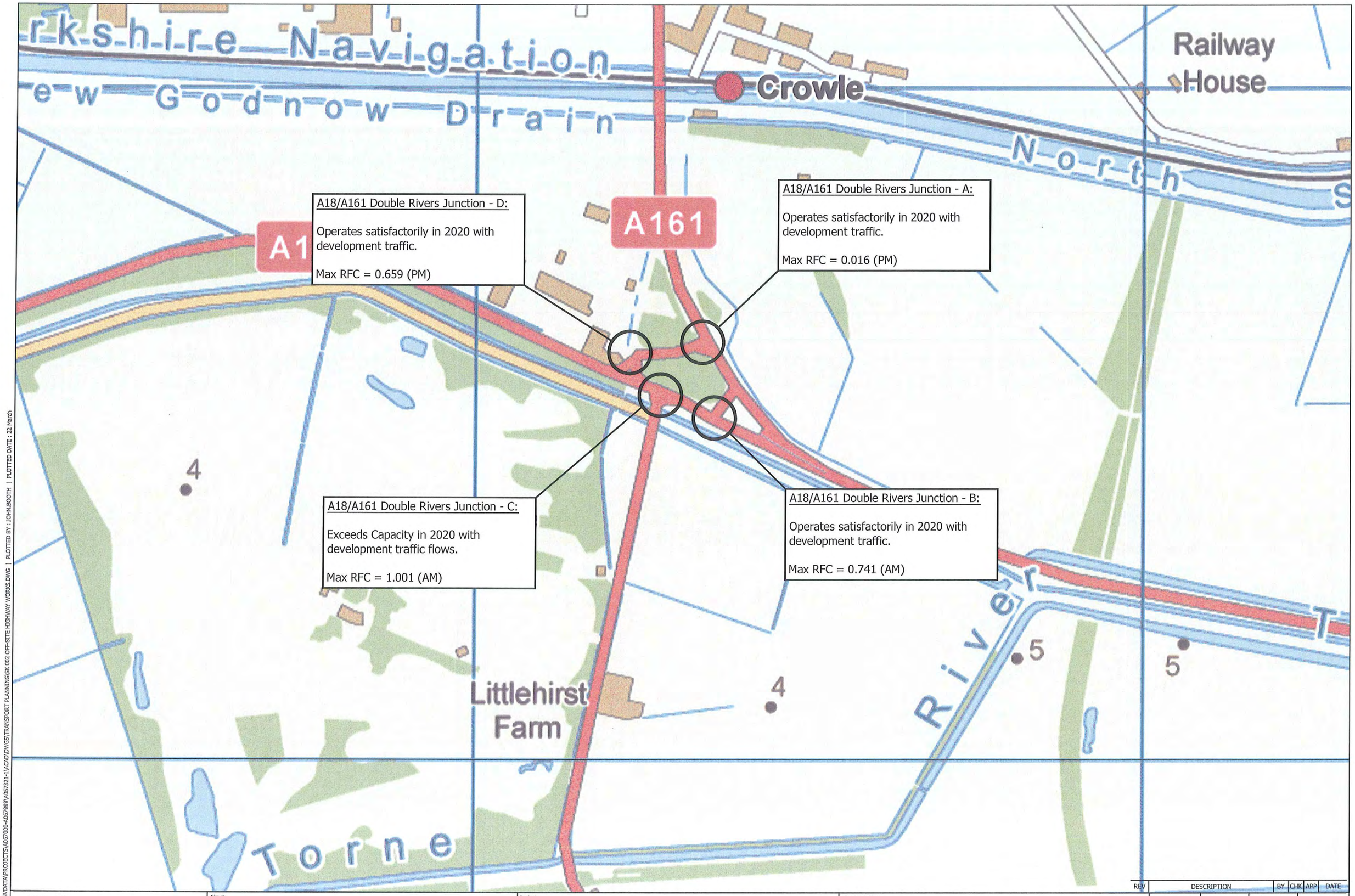

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Client: T A WHITE AND SONS

Project: SANDTOFT INDUSTRIAL ESTATE

Drawing Title: OFF-SITE HIGHWAY WORKS

REV	DESCRIPTION	BY	CHK	APP	DATE

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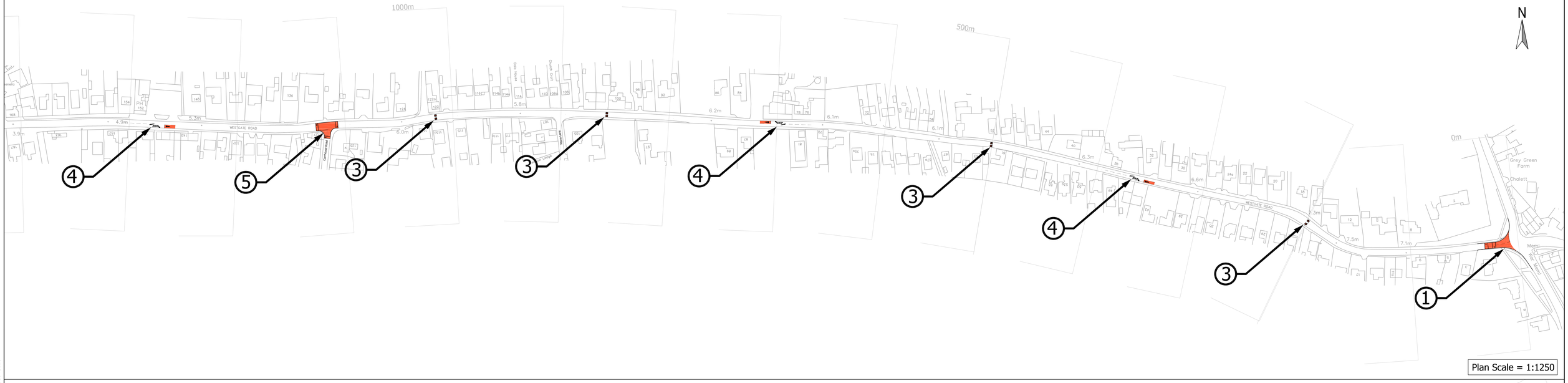
Appendix B

Arndale Court, Otley Road, Headingley, Leeds, LS6 2UJ

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



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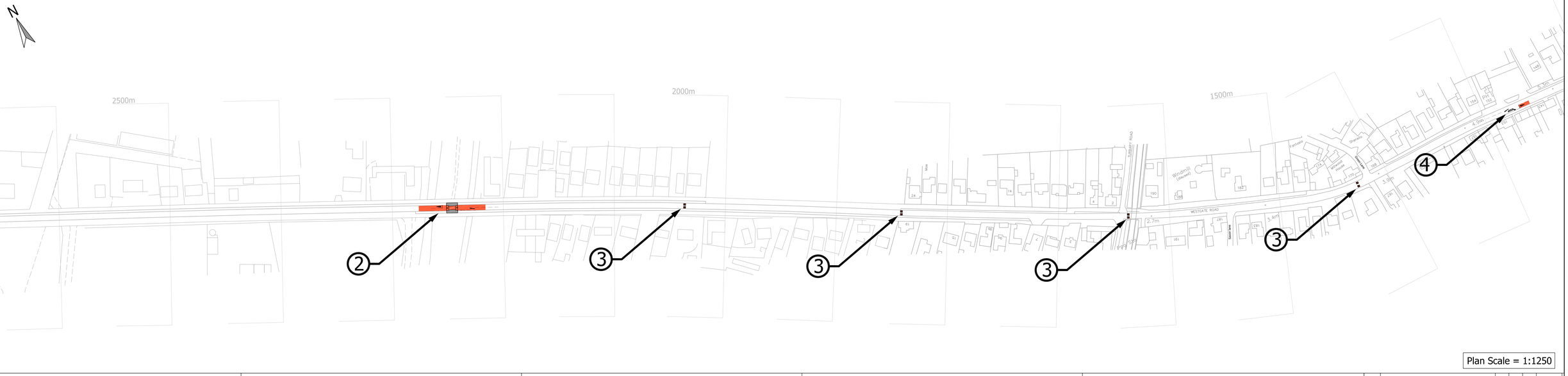

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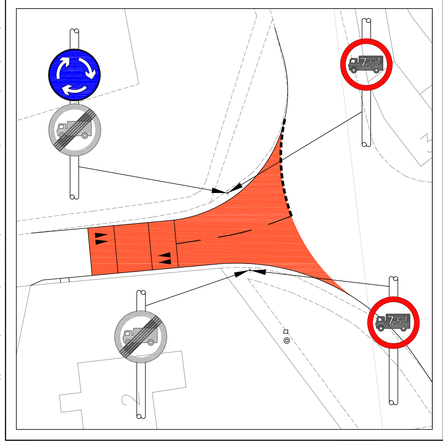
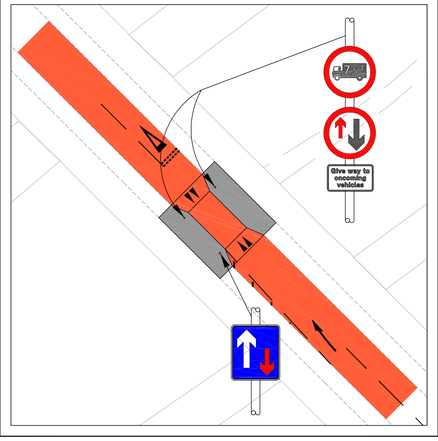
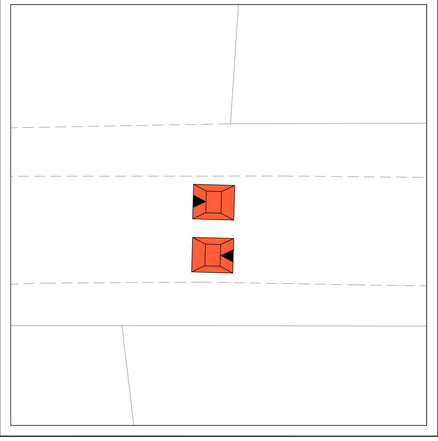
1 Eastern Gateway (Scale 1:250)



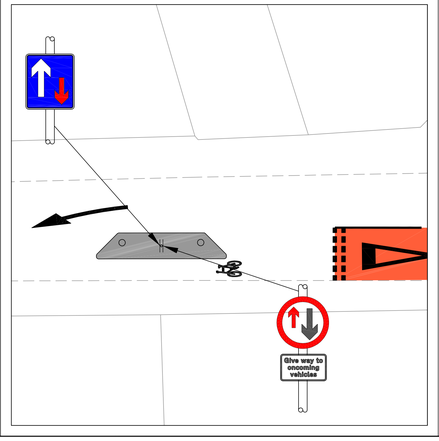
2 Western Gateway (Scale 1:250)



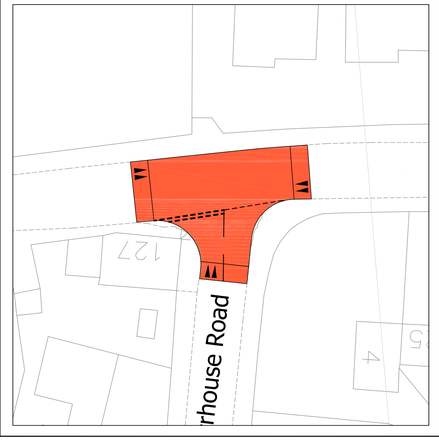
3 Speed Cushions (Scale 1:100)



4 Carriageway Narrowing (Scale 1:100)



5 Junction Plateau (Scale 1:250)



REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:

SANDTOFT INDUSTRIAL ESTATE

Drawing Title:

WESTGATE ROAD/BELTON ROAD
PROPOSED TRAFFIC CALMING
PUBLIC CONSULTATION PLAN

Scale @ A0	Drawn Date	Checked Date	Approved Date
AS SHOWN	JAB MAR 2012		

Project No.	Office	Type	Drawing No.	Revision
A067321-1	21	TS	SK 001	P1

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S|C|P

APPENDIX 2

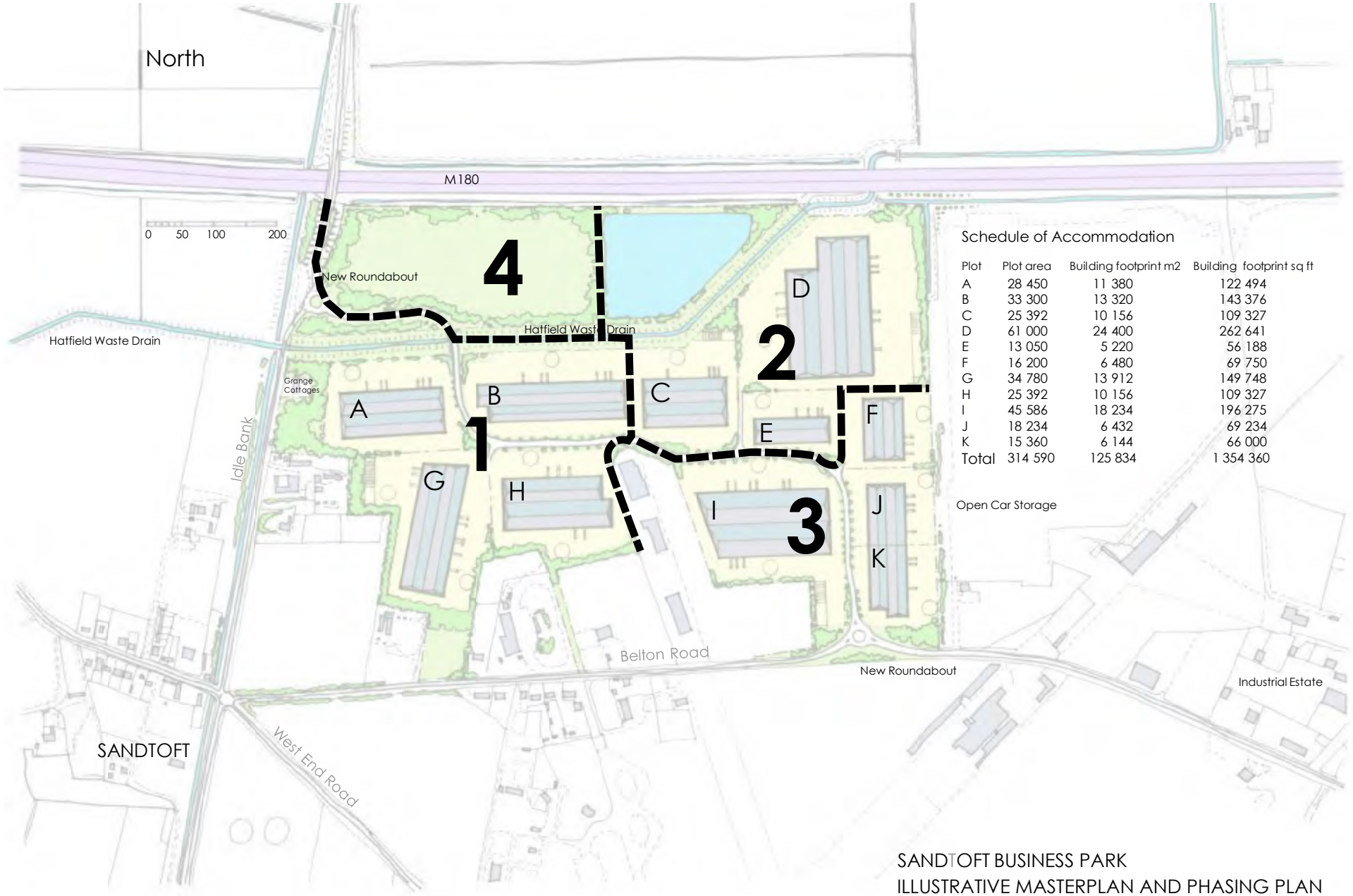
Schedule of Accommodation

Plot	Plot area	Building footprint m2	Building footprint sq ft
A	15 360	6 144	66 000
B	16 080	6 432	69 234
C	16 200	6 480	69 750
D	61 000	24 400	262 641
E	13 050	5 220	56 188
F	45 586	18 234	196 275
G	25 392	10 156	109 275
H	34 780	13 912	149 748
I	28 450	11 380	122 494
J	33 300	13 320	143 376
TOTAL	**314 590**	**125 834**	**1 354 360**

Proposed Distribution/ Warehouse Development
SANDTOFT
for
White Property Group
Proposed Site Layout
November 2010 scale 1:5000 at A3 Drawn SHS
10 009 SK 001 think architecture+design

SANDTOFT Technical Note on Highways Infrastructure:

Part 2 of 2



Schedule of Accommodation

Plot	Plot area	Building footprint m2	Building footprint sq ft
A	28 450	11 380	122 494
B	33 300	13 320	143 376
C	25 392	10 156	109 327
D	61 000	24 400	262 641
E	13 050	5 220	56 188
F	16 200	6 480	69 750
G	34 780	13 912	149 748
H	25 392	10 156	109 327
I	45 586	18 234	196 275
J	18 234	6 432	69 234
K	15 360	6 144	66 000
Total	314 590	125 834	1 354 360

Open Car Storage

SANDTOFT BUSINESS PARK
ILLUSTRATIVE MASTERPLAN AND PHASING PLAN
December 2014
scale 1:5000 at A3

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APPENDIX 3

NOTES

REVISIONS

REV	DESCRIPTION	DATE	BY
-	-	-	-

S|C|P
Transportation Planning : Infrastructure Design
Riverside Studio, 32 The Calls, Leeds, LS2 7EW, Tel 0113 887 3323
www.scptransport.co.uk, Email info@scptransport.co.uk

Client Name:
T A WHITE & SONS

Project Title:
SANDTOFT BUSINESS PARK, SANDTOFT

Drawing Title:
PROPOSED DEVELOPMENT ACCESSES

Drawn By:	Date:
TH	09.02.15
Checked: GWB-	Scale: 1:5000 @ A3
Status: PLANNING	Approved/Unapproved: -

Drawing No. SCP/14941/P01 Rev. A

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APPENDIX 4

NOTES

REVISIONS

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Transportation Planning : Infrastructure Design
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Client Name:
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Project Title:
SANDTOFT BUSINESS PARK, SANDTOFT

Drawing Title:
PROPOSED ACCESS ROUNDABOUT HIGH LEVELS BANK ROAD

Drawn By:	Date:
TH	09.02.15
Checked:	Scale:
GWB	1:1000 @ A3
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PLANNING	-

Drawing No.	Rev.
SCP/14941/P02	A

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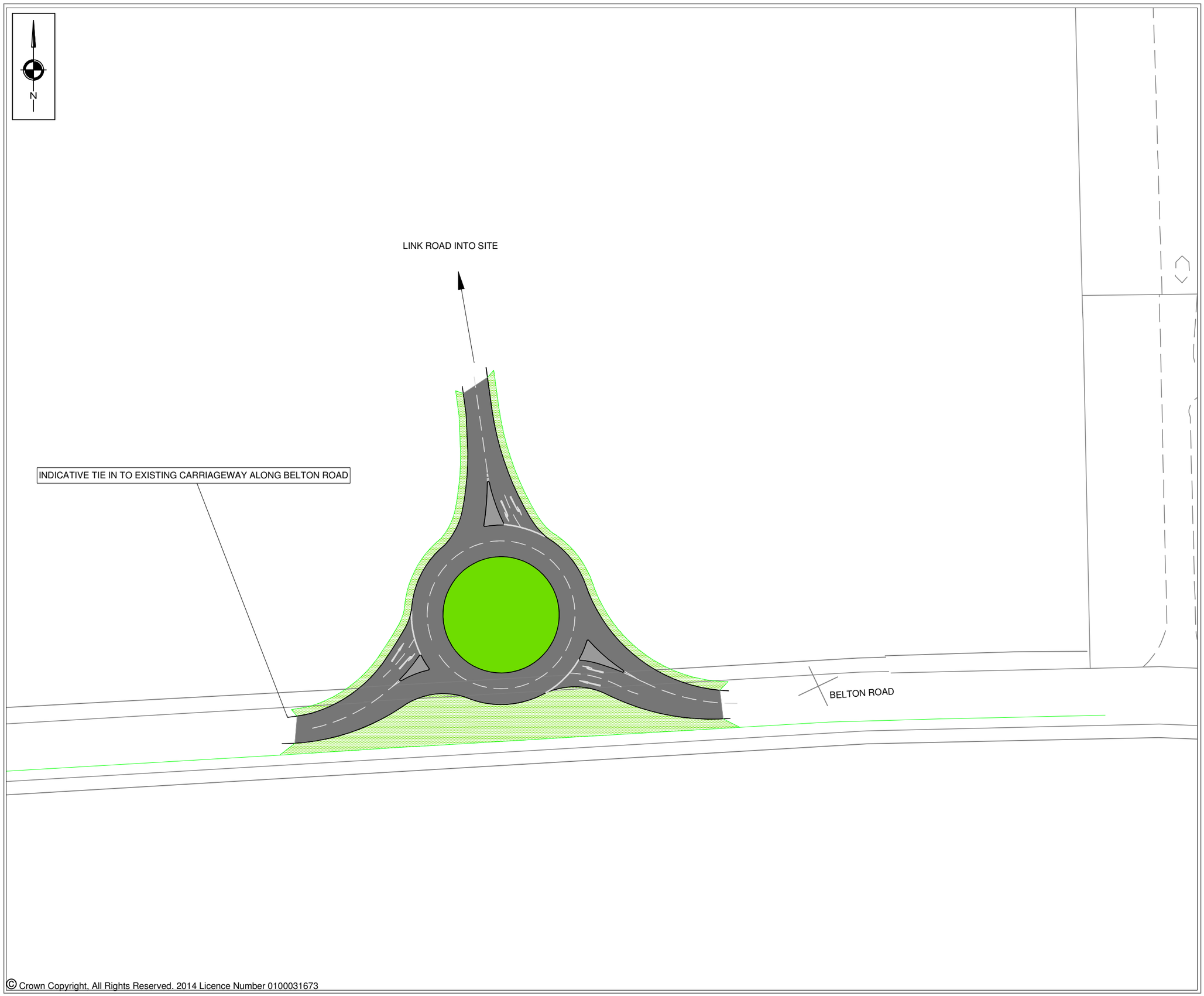
APPENDIX 5



NOTES

REVISIONS

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S C P
Transportation Planning : Infrastructure Design
Riverside Studio, 32 The Calls, Leeds, LS2 7EW, Tel 0113 887 3323
www.scptransport.co.uk, Email info@scptransport.co.uk

Client Name:
T A WHITE & SONS

Project Title:
SANDTOFT BUSINESS PARK, SANDTOFT

Drawing Title:
PROPOSED ACCESS ROUNDABOUT BELTON ROAD

Drawn By:	Date:
TH	09.02.15
Checked:	Scale:
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PLANNING	-

Drawing No.	Rev.
SCP/14941/P03	-

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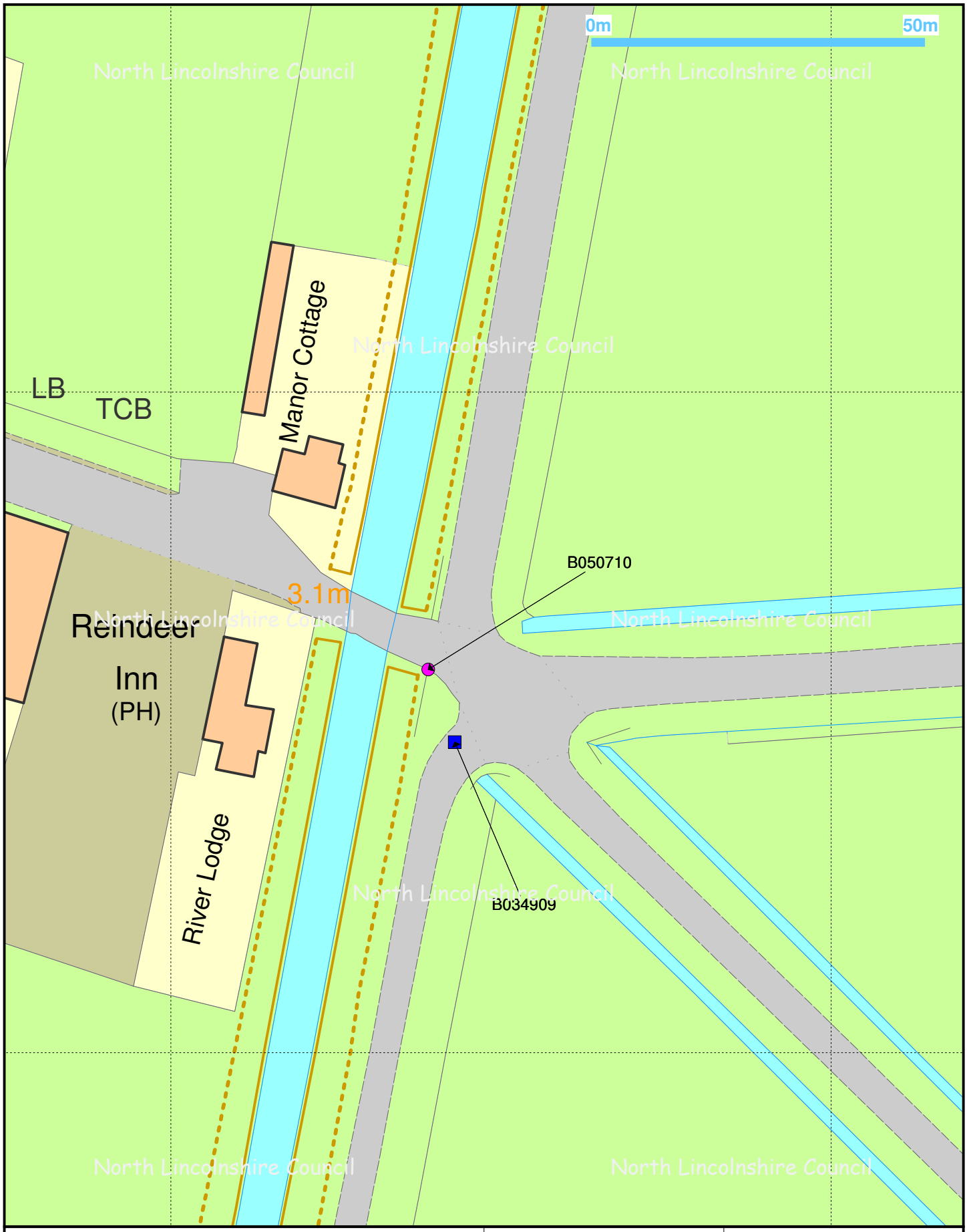
APPENDIX 6



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Drawn by: Steve Harrison	Date: 30/01/2015	Scale @A4 1:765	

N

Director of Places
Peter Williams
BSc,DMS,CEng,MEI,MCMI,AMIMechE

Plan Legend	Severity			Year by colour	
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	Serious	=	Square	2010	2014
	Slight	=	Circle	2011	
				2012	

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APPENDIX 7

A18/High Levels Bank:

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.353 (AM)

However, the existing alignment of the junction is poor and may require an improvement to accommodate a significant increase in HGV traffic.

A18/A161 Double Rivers Junction:

Operates satisfactorily on three out of four arms with the generated traffic flows (see SK 002c for details).

The junction may require improvement in order to accommodate increased traffic flows which could include partial signalisation.

M180 Junction 2 (North):

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.605 (AM)

M180 Bridge:

Minor carriageway widening from 7.0m to 7.3m. Subject to Highway Authority approval, this may be achievable within the existing hardened verge.

A replacement bridge has been included in the off-site works review

M180 Junction 2 (South):

Operates satisfactorily in 2020 with the development traffic.

Max RFC = 0.631 (PM)

Sandtoft Road/Belton Road Traffic Calming:

Proposed Traffic Calming Scheme, detailed on SK 001 P1, including 7.5t weight restriction in both directions.

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Client: T A WHITE AND SONS

Project: SANDTOFT INDUSTRIAL ESTATE

Drawing Title: OFF-SITE HIGHWAY WORKS

REV	DESCRIPTION	BY	CHK	APP	DATE

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
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Project No.	Office	Type	Drawing No.	Revision
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APPENDIX 8

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Drawing No:	Version: 1	Drawn by: Darren Cowling
Date: 23/01/2015	Scale @A3 1:500	

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Director of Places
Peter Williams
BSc,DMS,CEng,MEI,MCMI,AMIMechE

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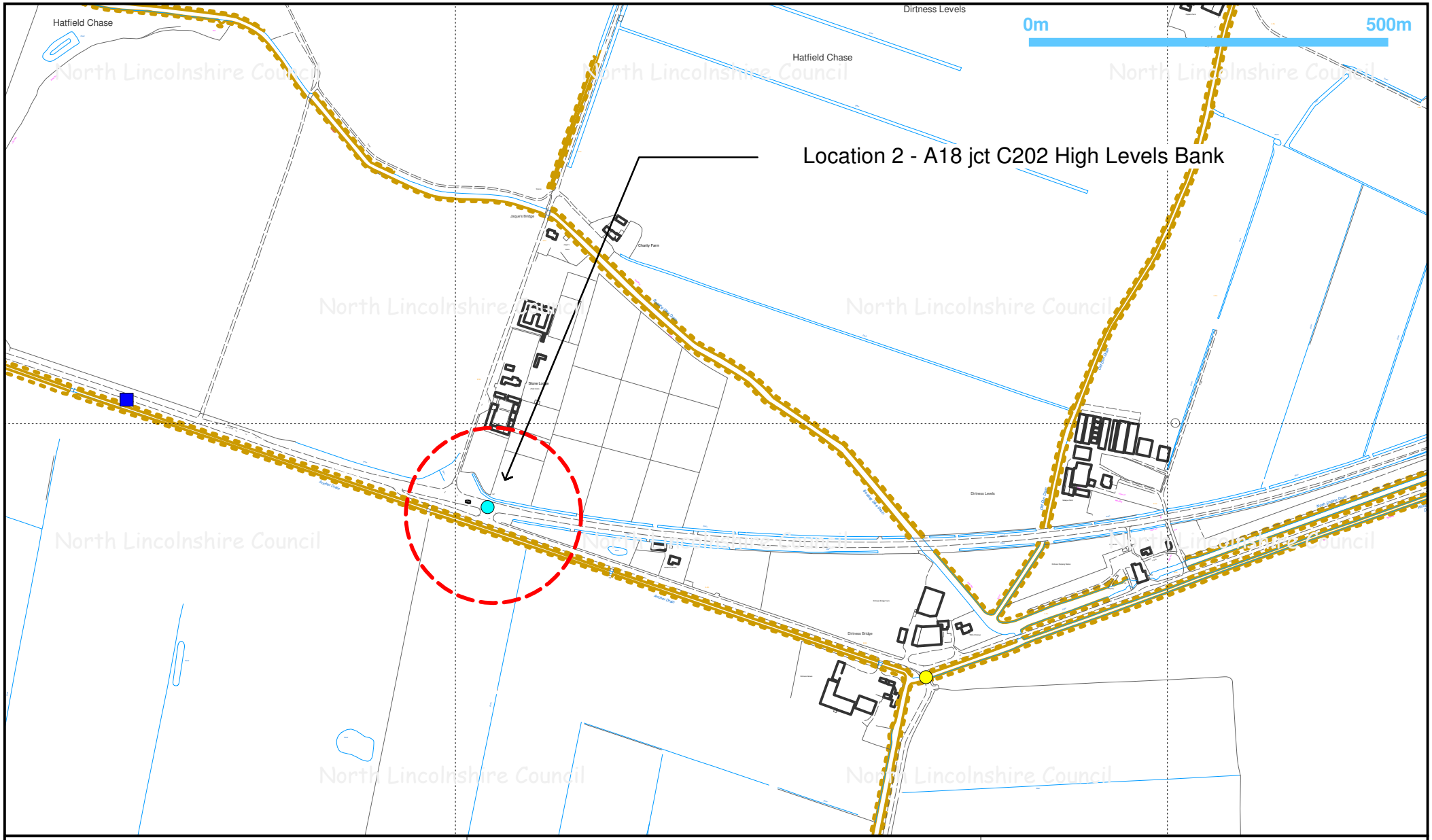
APPENDIX 9



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Drawing No: Two	Version: 1
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Plan Legend	Severity			Year by colour	
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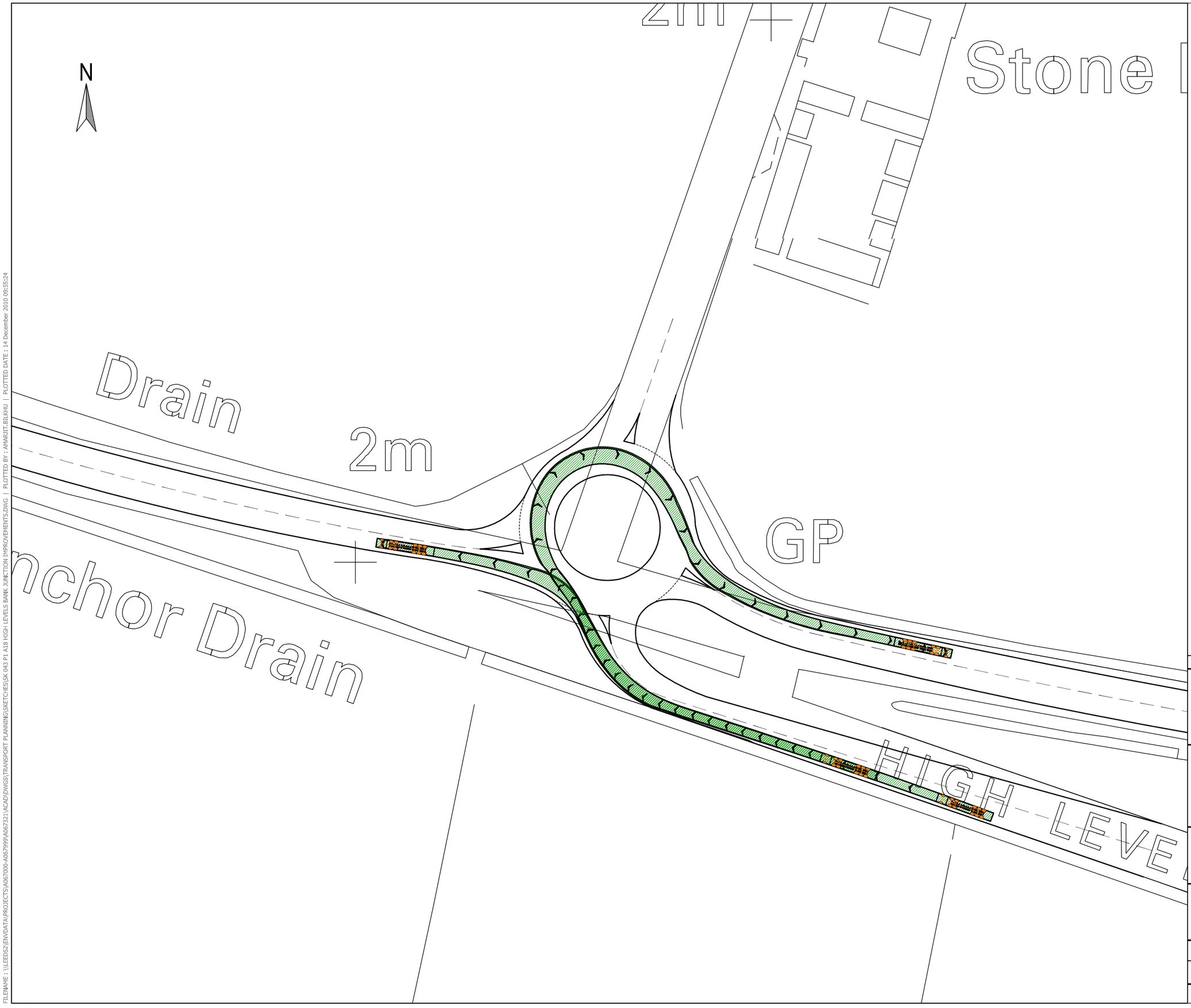
APPENDIX 10



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Client:

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e-mail: leeds@wyg.com

Project:

SANDTOFT

Drawing Title:

PROPOSED A18 / HIGH LEVELS BANK
JUNCTION IMPROVEMENTS
DEPARTING HGV SWEPT PATH ANALYSIS

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
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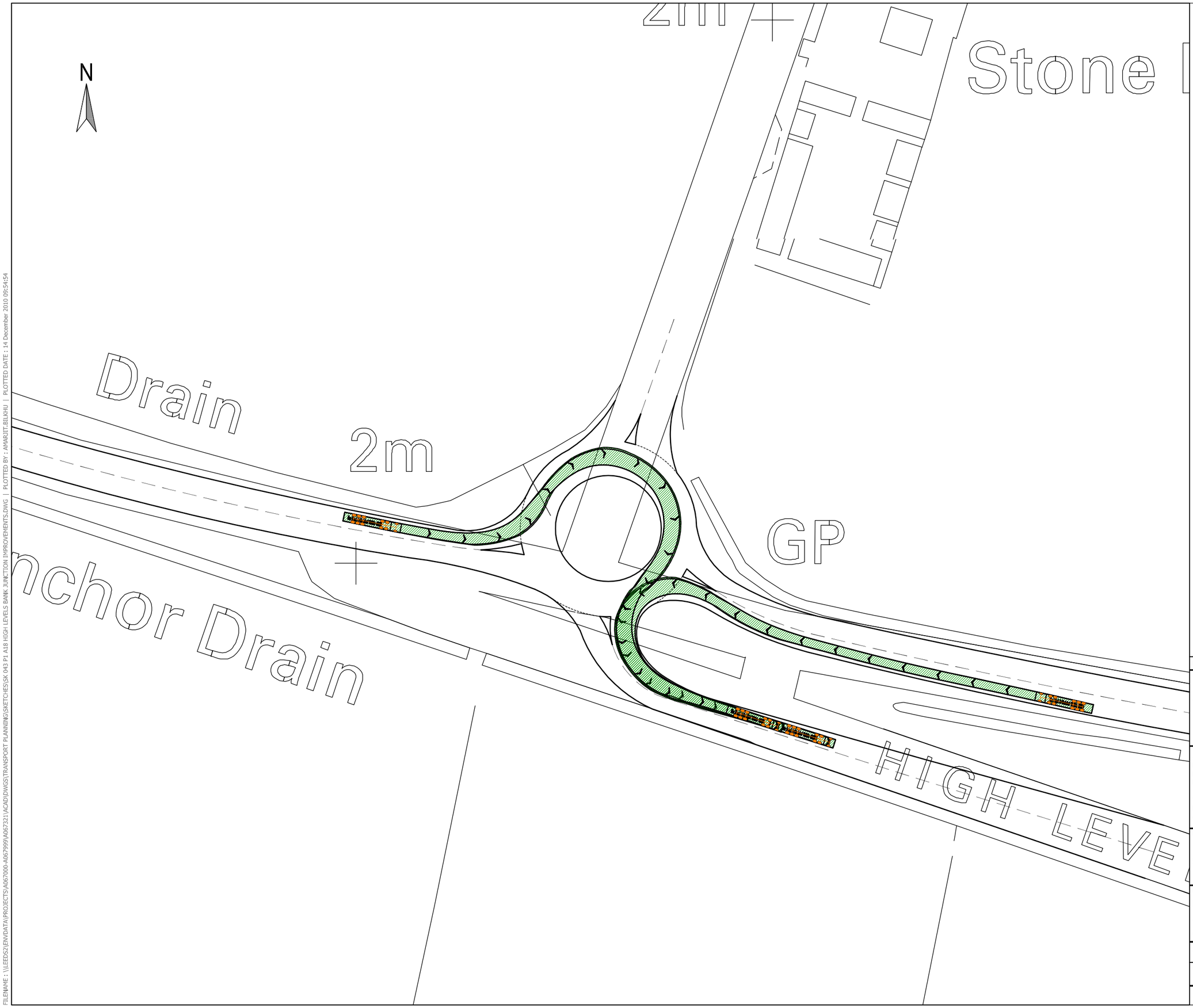

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

T A WHITE & SONS

ARNDALE COURT
HEADINGLEY
LEEDS
LS6 2UJ

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FAX: +44 (0)113 278 3487
e-mail: leeds@wyg.com

Project:

SANDTOFT

Drawing Title:

PROPOSED A18 / HIGH LEVELS BANK
JUNCTION IMPROVEMENTS
ARRIVING HGV SWEPT PATH ANALYSIS

Scale @ A3	Drawn Date	Checked Date	Approved Date
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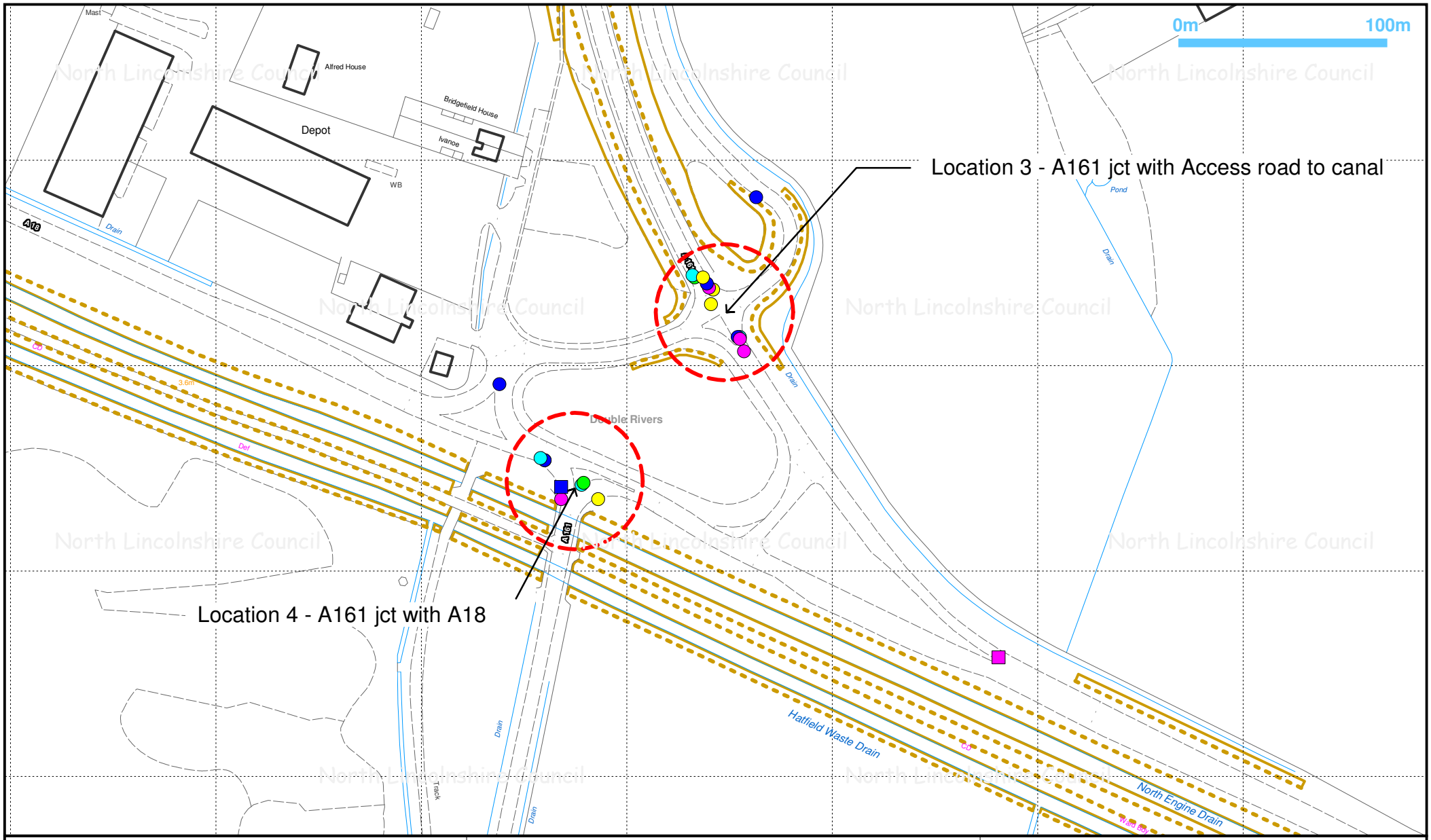
APPENDIX 11



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Director of Places
Peter Williams
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Plan Legend	Severity			Year by colour	
	Fatal	=	Triangle	2009	2013
	Serious	=	Square	2010	2014
	Slight	=	Circle	2011	
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NORTH LINCOLNSHIRE COUNCIL

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APPENDIX 12

SCHEME TITLE : A18 jct A161 Crowle Gyratory

INITIAL BUDGET ALLOCATION: *£ 25000*

SCHEME REQUIREMENTS:

An inspection of the crash data for this junction has identified loss of control and rear shunting as dominant causation factors. A site inspection has revealed that the ADS map type signs on the approaches do not reflect the actual layout of the junction as follows. The misleading information maybe drivers increasing the risk of collisions occurring.

- The westbound approach on the A18 (from Althorpe) shows the A18 having priority through the junction and advises that the nearside lane is the ahead lane. This is leading to late lane changing and vehicles losing control and colliding with signs on the splitter island at the A161 junction. There is evidence to indicate that vehicles are striking the nib and or crossing the extended Additionally vehicles have to turn in the entrance of the un-named road leading to Idle Bank to continue along the A18 westbound.

- The map type sign on the A161 approach from Crowle shows the A161 having priority ahead with the side road to the right having to yield. This approach actually gives way to the right. The crash problem here is rear shunting at the yield line.

- The ADS on the approach from the direction of Belton, (northbound) appears to indicate that a driver has to give way to traffic on the A18. This is not the case as the A161 has priority over the A18. The crash problem here is crossover crashes.

- The ADS on the A18 approach from the direction of Doncaster (Eastbound) appears to show a T junction with ahead traffic on the A18 having to make a left turn then giving way to the A161 adjacent to the Lane leading to the canal. Having entered the circulatory section this route has priority through the junction. There is no identified existing crash problem, however, changes have been made to the number of chevrons following concerns from relatives of a cyclist who was hit by a driver who failed to give way at the yield line.

The designer should give consideration to reducing the crash risks by making changes that better reflect the actual layout shown on the map type ADS signs detailed plans showing proposed options should be produced. Additionally plans should be of a standard to allow consultations with local ward members and parish councils.

Design works should be split into four stages as follows:

1. Adjustment to chevrons already completed

2. Measures to the approach from Scunthorpe that should include the

reduction in length of the nib at the splitter island between the A18 and A161 south arm grid ref SE7830010541. The nib should be shortened sufficiently to provide a suitable reflective no aspect bollard. Chevron markings to dia 1042 should be provided to reduce the risk of traffic striking the nib or losing control on the change in level between the A161 and A18. Traffic on this approach should be controlled into one lane and allowed to bifurcate at a suitable distance from the junction. Additional signing regarding lane discipline should be provided in accordance with TSRGD. A detailed survey of existing signs shall be undertaken to ensure compliance with TSRGD. A plan showing the existing sign locations and proposed changes shall be prepared. A detailed plan showing the option to change the priority at the junction of the A161 from Belton with the A18 towards Doncaster. The design should remove or relocate signage on the splitter island to prevent the interruption or blocking of visibility to traffic yielding on the A161.

3. Provision of passive safety improvements to existing signage and a lower speed limit of 40mph (under consideration with ward members)
4. A detailed plan showing the option to change the priority on the northern A161 arm to allow traffic from Crowle priority. The design should remove the risk of traffic merging crashes occurring between vehicles travelling south from Crowle and east from Doncaster. The design shall accommodate HGV traffic swept paths and shall comply with DMRB, any departures must be documented and discussed with the client.

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PROPOSED TIMESCALE : Scheme design Completion date phase 2 to be 30th June 2014

DATE : 3rd June 2014

DESIGN BRIEF AGREED BY :	**POSITION**	**DATE**
S.Harrison	Traffic Officer	3rd June 2014
	PROJECT OFFICER	
	TEAM LEADER	

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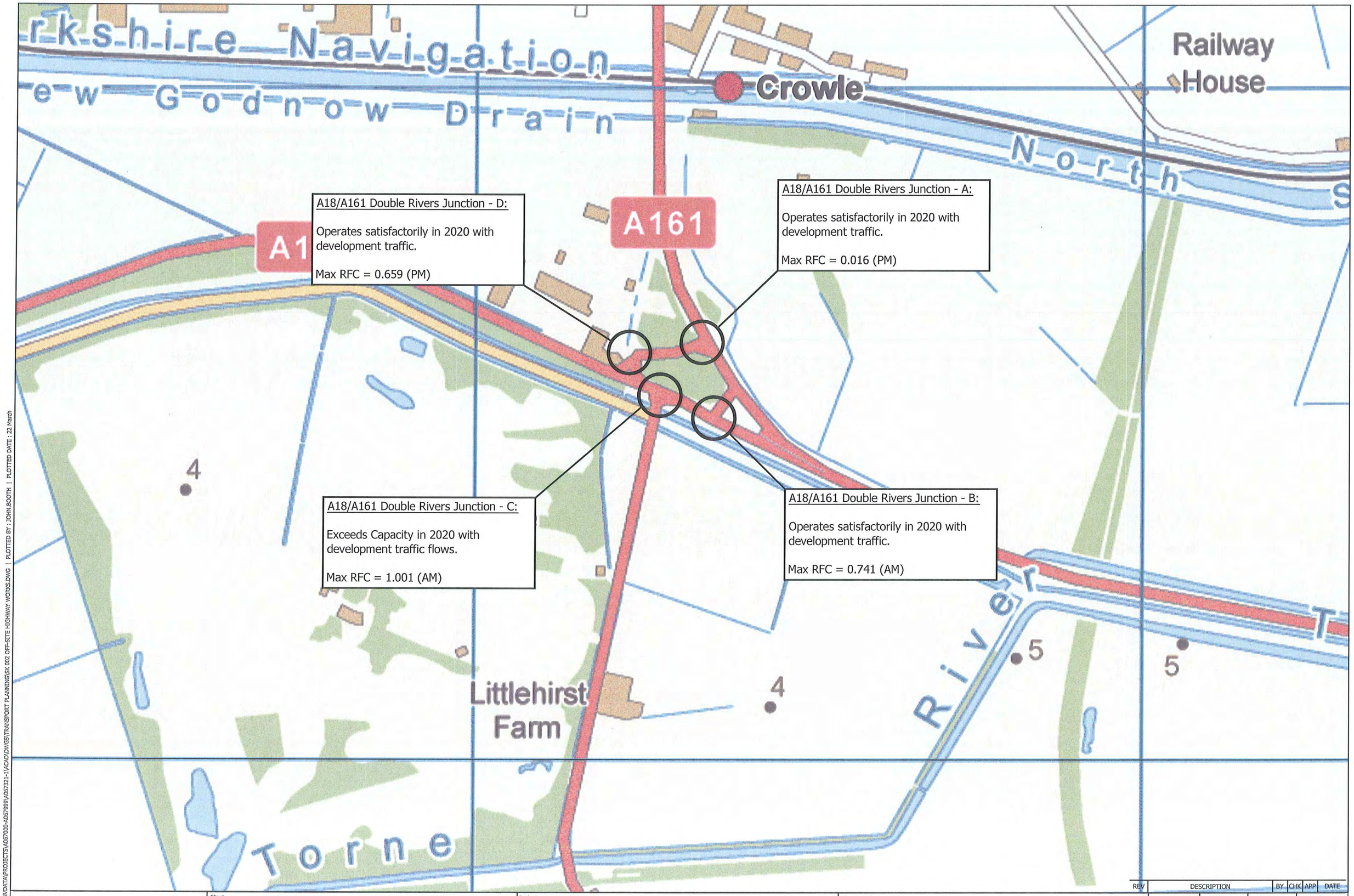
APPENDIX 13



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Client: T A WHITE AND SONS

Project: SANDTOFT INDUSTRIAL ESTATE

Drawing Title: OFF-SITE HIGHWAY WORKS

REV	DESCRIPTION	BY	CHK	APP	DATE

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
1:5,000	JAB	MAR 12				

Project No.	Office	Type	Drawing No.	Revision
A067321-1	21	TS	SK 002c	P1

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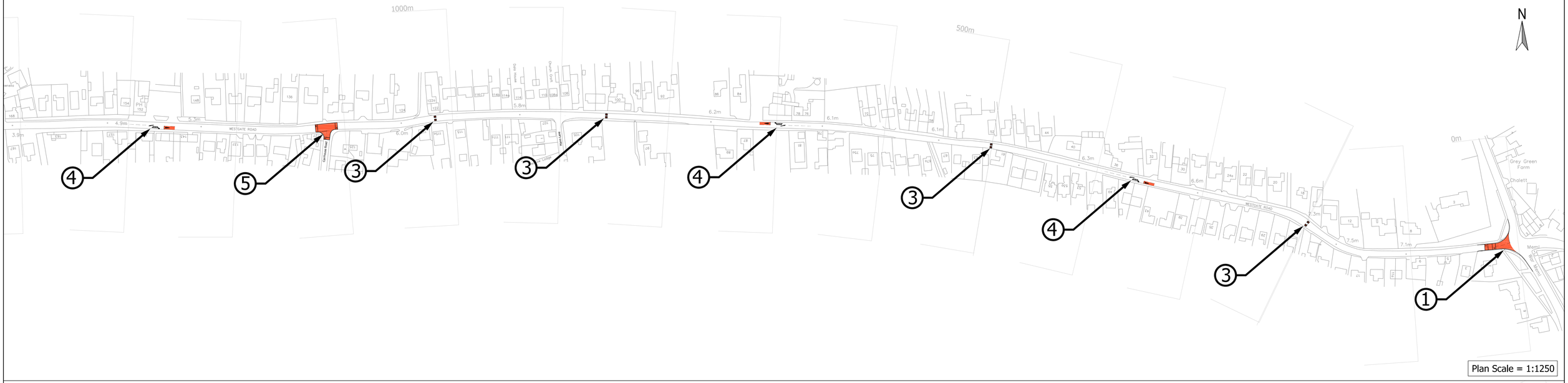
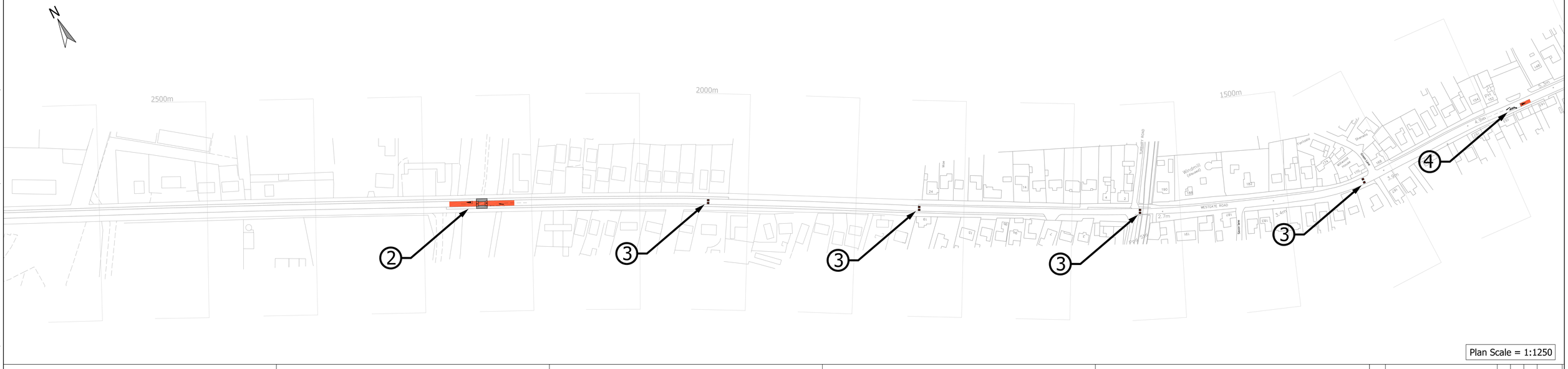
APPENDIX 14

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

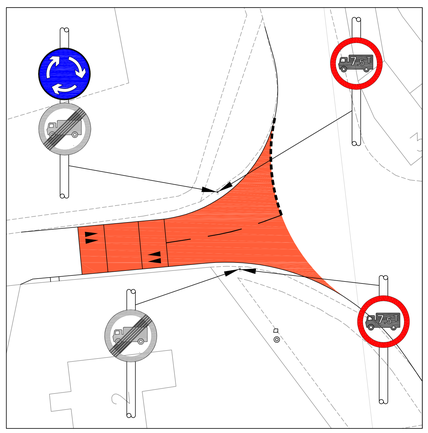


Plan Scale = 1:1250

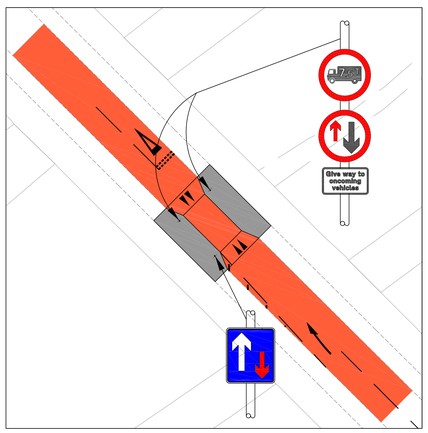


Plan Scale = 1:1250

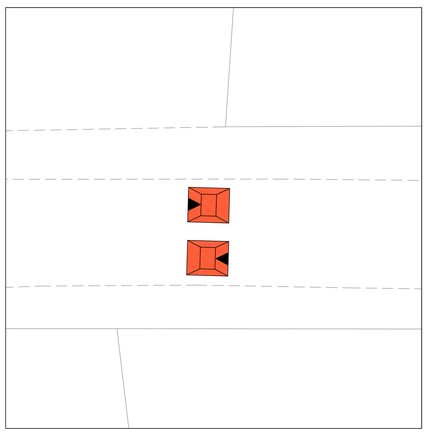
① Eastern Gateway (Scale 1:250)



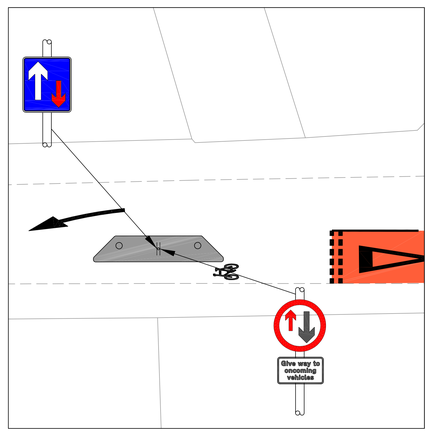
② Western Gateway (Scale 1:250)



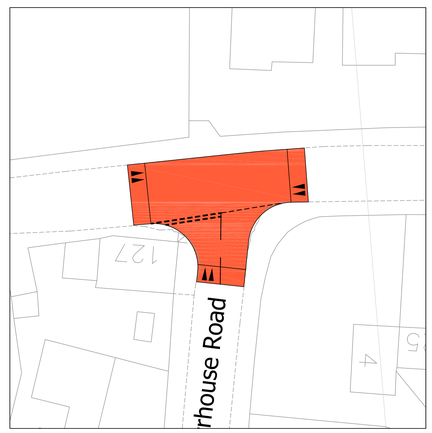
③ Speed Cushions (Scale 1:100)



④ Carriageway Narrowing (Scale 1:100)



⑤ Junction Plateau (Scale 1:250)



REV	DESCRIPTION	BY	CHK	APP	DATE

Client:
T A WHITE AND SONS

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TEL: +44 (0)113 278 7111
FAX: +44 (0)113 278 3487
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Project:
SANDTOFT INDUSTRIAL ESTATE

Drawing Title:
WESTGATE ROAD/BELTON ROAD
PROPOSED TRAFFIC CALMING
PUBLIC CONSULTATION PLAN

Scale @ A0	Drawn Date	Checked Date	Approved Date
AS SHOWN	JAB MAR 2012		

Project No.	Office	Type	Drawing No.	Revision
A067321-1	21	TS	SK 001	P1

FILENAME : \\LEEDS2\ENVDATA\PROJECTS\A067000-A067999\A067321-1\ACAD\DWGS\TRANSPORT PLANNING\SK001 P1 WESTGATE ROAD TRAFFIC CALMING.DWG | PLOTTED BY : JOHN.BOOTH | PLOTTED DATE : 21 March 2012 08:48:15

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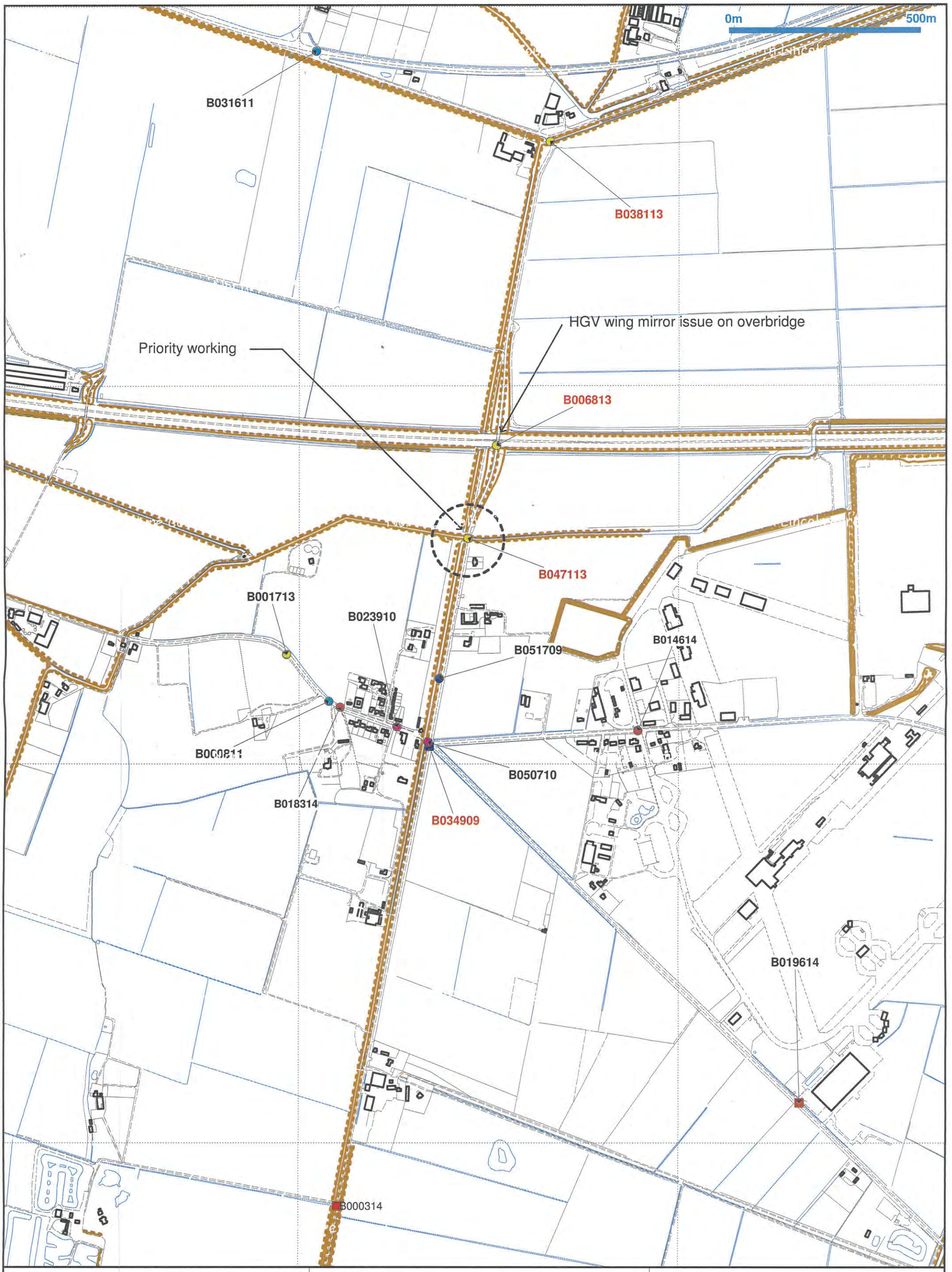
APPENDIX 15



N

Title: Sandtoft Five Ways junction to the A18	
Drawing No: One	Version: 1
Drawn by: Steve Harrison	Date: 22/01/2015
Scale @A3 1:8960	

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www.northlincs.gov.uk

Director of Places
Peter Williams
BSc,DMS,CEng,MEI,MCMI,AMIMechE

Plan Legend	Severity			Year by colour	
	Fatal	=	Triangle	2009	2013
	Serious	=	Square	2010	2014
	Slight	=	Circle	2011	
				2012	

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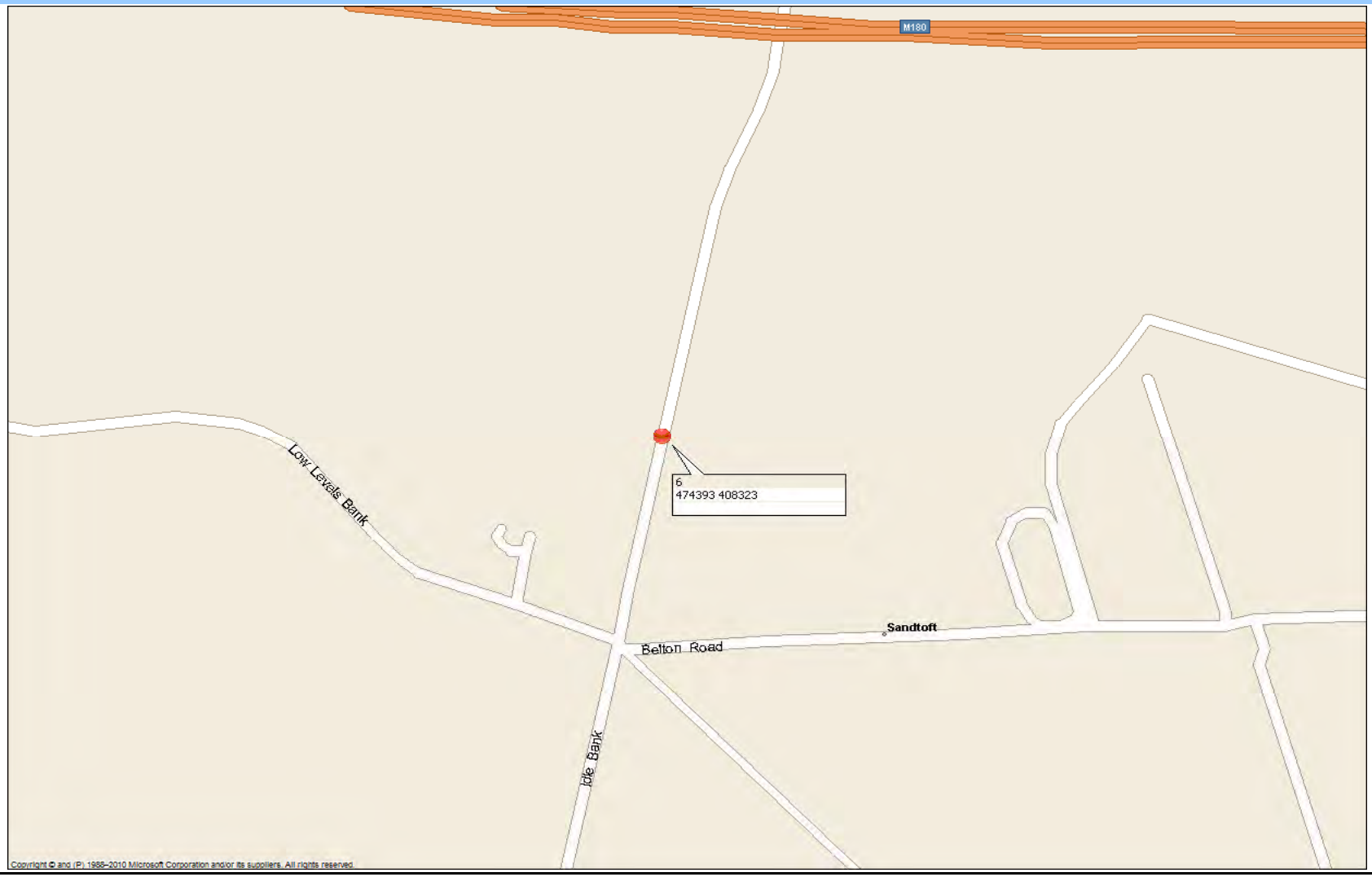
APPENDIX 16

GENERAL LOCATION PLAN



8493	NORTH LINCOLNSHIRE					Site	6	Location	High Levels Bank, Sandtoft (50mph), BT Pole, Outside 'Sandtoft Grange Farm' (474393 408323)					
07 September 2012	to	13 September 2012				Direction	Eastbound							
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Average Day														
0000	**2**	0	1	0	0	0	0	0	0	0	0	0	0	0
01:00	**2**	0	2	0	0	0	0	0	0	0	0	0	0	0
02:00	**2**	0	1	0	0	0	0	0	0	0	1	0	0	0
03:00	**2**	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00	**6**	0	3	0	0	0	0	0	0	0	1	0	0	1
05:00	**21**	0	12	1	1	0	0	0	0	0	3	1	0	2
06:00	**49**	0	33	2	1	0	1	0	2	1	4	2	0	2
07:00	**70**	0	52	4	2	1	1	0	3	1	3	3	0	1
08:00	**82**	0	59	5	1	1	1	0	3	0	3	5	0	2
09:00	**70**	1	40	7	1	1	3	0	4	1	4	8	0	1
10:00	**71**	1	47	8	1	1	1	0	4	1	3	3	0	1
11:00	**68**	1	38	10	1	1	1	0	3	1	5	4	0	1
12:00	**70**	1	39	11	1	1	2	0	4	1	5	5	0	0
13:00	**66**	0	39	8	2	1	1	0	4	1	5	5	0	1
14:00	**92**	1	62	9	1	2	1	0	5	0	4	5	0	1
15:00	**80**	1	56	7	1	1	1	0	3	1	4	4	0	1
16:00	**96**	1	75	6	1	1	1	0	1	0	4	5	0	1
17:00	**91**	0	72	7	1	1	1	0	1	0	3	4	0	1
18:00	**58**	0	48	2	0	1	0	0	1	0	2	3	0	0
19:00	**36**	0	28	3	0	0	0	0	0	0	1	2	0	0
20:00	**26**	0	21	2	0	0	0	0	0	0	1	0	0	1
21:00	**16**	0	14	0	0	0	0	0	0	0	1	0	0	0
22:00	**17**	0	15	0	0	0	1	0	0	0	0	0	0	0
23:00	**6**	0	4	0	0	0	0	0	0	0	1	0	0	0
07-19	**914**	**9**	**627**	**85**	**12**	**13**	**14**	**1**	**36**	**8**	**46**	**53**	**0**	**10**
06-22	**1040**	**10**	**723**	**93**	**12**	**13**	**15**	**2**	**38**	**9**	**53**	**58**	**0**	**14**
06-00	**1063**	**10**	**741**	**94**	**12**	**13**	**16**	**2**	**38**	**9**	**54**	**58**	**0**	**14**
00-00	**1098**	**10**	**761**	**95**	**14**	**14**	**16**	**2**	**39**	**10**	**60**	**59**	**0**	**18**

8493	NORTH LINCOLNSHIRE					Site	6	Location	High Levels Bank, Sandtoft (50mph), BT Pole, Outside 'Sandtoft					
07 September 2012	to	13 September 2012				Direction	Westbound		Grange Farm' (474393 408323)					
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Average Day														
0000	**6**	0	5	0	0	0	0	0	0	0	0	0	0	0
01:00	**3**	0	2	0	0	0	0	0	0	0	0	0	0	0
02:00	**3**	0	2	0	0	0	0	0	0	0	0	0	0	0
03:00	**2**	0	1	0	0	0	0	0	0	0	0	0	0	0
04:00	**4**	0	4	0	0	0	0	0	0	0	0	0	0	0
05:00	**30**	0	29	0	0	0	0	0	0	0	0	0	0	0
06:00	**58**	0	49	5	1	0	0	0	1	0	1	1	0	1
07:00	**87**	1	71	7	0	1	0	0	2	0	2	2	0	1
08:00	**118**	0	92	11	0	1	1	0	2	1	4	3	0	2
09:00	**84**	1	57	11	1	2	0	1	3	0	2	4	0	1
10:00	**79**	1	51	12	0	1	2	0	5	0	3	3	0	1
11:00	**81**	1	51	11	1	2	1	0	4	1	4	5	0	0
12:00	**80**	1	49	11	1	1	1	0	4	0	5	5	0	1
13:00	**90**	1	58	10	0	2	1	0	7	1	6	4	0	1
14:00	**89**	1	55	11	1	1	2	0	6	1	5	5	0	1
15:00	**94**	2	58	13	2	2	0	0	5	0	6	5	0	1
16:00	**107**	1	78	9	1	1	0	0	4	1	6	5	0	1
17:00	**109**	1	86	6	1	1	0	0	3	0	5	5	0	1
18:00	**87**	1	73	5	0	0	0	0	2	1	2	3	0	1
19:00	**56**	1	43	4	1	0	0	0	1	0	2	3	0	0
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21:00	**20**	0	18	1	0	0	0	0	0	0	0	0	0	0
22:00	**18**	1	15	1	0	0	0	0	0	0	0	0	0	0
23:00	**8**	0	8	0	0	0	0	0	0	0	0	0	0	0
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06-22	**1275**	**13**	**920**	**128**	**12**	**14**	**10**	**2**	**49**	**7**	**54**	**53**	**0**	**14**
06-00	**1301**	**14**	**943**	**128**	**12**	**14**	**10**	**2**	**49**	**7**	**55**	**53**	**0**	**14**
00-00	**1349**	**15**	**986**	**129**	**12**	**14**	**10**	**2**	**49**	**7**	**56**	**54**	**0**	**14**

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APPENDIX 17

Table 1

No.	What	Where	When	Specific Requirement	Lead Delivery Organisation	Indicative Phasing (Phases 1-4 0- 5 years; Phase 5 6-15)	Essential / Non Essential	Cost	Sources of Funding	Policy
Transport	Sandtoft Business Park	2015-2024	Access improvements to serve Employment Site SANE-1 to include a roundabout on Belton Road, a roundabout on High Levels Bank (C202) and a link road through the site. Off-site mitigations measures will be needed which are likely to include carriageway widening to the M180 overbridge; widening to Brook Corner; improvements to A18/High Levels Bank Junction; improvements to the Crowle Gyratory and traffic management works to Westgate Road. These measures will be delivered in a phased manner in accordance with a masterplan accompanying any planning application(s) to be agreed with NLC.	Private Sector Developers, North Lincolnshire Council	Phase 1/2	Essential	£3- £4M for access works , Link Road and off-site mitigation works.	Developer contributions (s106)	Core Strategy CS1,CS11 HELADPD SANE-1	Improve and enhance existing highways infrastructure through developer contributions.