

**Himley Village, NW Bicester
Response to OCC Report of 8th
November 2016**

Prepared for P3 ECo

November 2016

Himley Village

Response to OCC Report dated 8th November 2016

1.0 Introduction

A Transport Assessment Addendum was submitted to OCC in mid-October 2016 the focus of which was proposals for an interim improvement to the Bucknell Road/Howes Lane and Bucknell Road/Lords Lane junctions.

OCC have subsequently reviewed this and set out their response in a report dated 8th November 2016. This report responds to the principal issues raised by OCC.

2.0 Existing Junction Layouts

The existing junctions comprise a three arm major/minor priority junction (Bucknell Road/Howes Lane) and a three arm roundabout (Bucknell Road/Lords Lane). The existing layout of these junctions is shown in detail on drawing 1665/75/331 (Appendix A) which is a topographical survey completed on the 15th November 2016.

Bucknell Road/Howes Lane is directly adjacent to the rail overbridge that carries the Chilterns Rail Line. The bridge deck, abutments and wing walls are prominent features for users of the junction and there is height restriction of 4.5m beneath the bridge deck.

A tracking analysis has been undertaken for the existing junction and is shown on drawing 1665/75/332. This shows the existing problems with the movement of large vehicles through the junction that for the dominant movement between Howes Lane and Lords Lane, requires use of opposing traffic lanes. Large vehicles at the give way line on Howes Lane have to wait for Bucknell Road southbound to be clear before starting their left turn. Vehicles turning left into Howes Lane have to wait for the right turn lane on Howes Lane to be clear before starting their right turn. This has an impact on the efficiency of the junction as vehicles wait for opposing lanes to be clear. There are also potential safety issues as considerable judgement is needed by drivers as to when to start a manoeuvre and whilst an opposing lane might be clear initially there may be a conflicting vehicle part way through the manoeuvre.

There are some existing footways and crossings at the junction. The footways are generally 1.5m to 1.7m in width although the footway on the east side of Bucknell Road adjacent to the bridge abutment and wing wall is 1.35m in width.

On Howes Lane there is an uncontrolled pedestrian crossing comprising dropped kerbs and tactile paving. It has a length of 8.9m and requires pedestrians to cross three lanes of traffic. On Bucknell Road south there is no formal crossing although there is a central island that forms a traffic calming feature and this could be used by pedestrians to assist in crossing at this location. However, the island is formed from vehicle containment kerbs giving a higher upstand than pedestrians normally encounter.

On Bucknell Road north there is an uncontrolled crossing beneath the bridge comprising dropped kerbs and tactile paving. It has a length of 8.2m and requires pedestrians to cross two lanes of traffic. For pedestrians crossing west to east the bridge abutment restricts visibility to vehicles emerging from Howes Lane. Effectively pedestrians only have sight to the vehicle at the give way line and not any vehicles queuing behind. For pedestrians crossing east to west they have to look over their right shoulder to view vehicles exiting the roundabout. At busy

times of the day it is challenging for pedestrians to judge the gaps between relatively fast moving vehicles.

The Bucknell Road/Lords Lane roundabout is located north east of the rail bridge and does not have any unusual features in terms of layout. There are no paved footway around the junction and no formal pedestrian crossings of any of the arms.

2.0 Layout of Interim Junction Improvement

OCC have raised a number of issues in relation to the safety and feasibility of the interim junction improvement. The key concerns relate to carriageway and footway space and provision for cyclists.

Revised Layout

A topographical survey has been undertaken to replace the OS digital mapping that has been used as the base for the scheme design up to this point. The layout of the interim improvement has been revised to respond to the topographical survey and the issues raised by both OCC and in the Stage 1 RSA. The revised layout for the interim improvement is shown on drawing 1665/75/300 (Appendix B).

The revised layout has been reviewed against the highway boundary plans previously provided by OCC. The topographical survey has identified some clearly identifiable fence lines which match with the highway boundary plans. On this basis it can be confirmed that the revised layout can be delivered within the limits of the public highway. It should however be noted that in some locations there are currently bushes and trees that are located within the limits of the public highway, in front of fence lines. Some of these would have to be removed in order to accommodate new footways and sight lines.

The topographical survey has identified a number of manhole and inspection chamber covers. From this information it has been identified that the revised layout may require diversion or lowering of existing services. These locations are:

- North west side of Howes Lane
- South east side of Howes Lane
- West side of Bucknell Road
- North west side of Lords Lane

The impact of the interim improvement on existing services would need to be discussed with utility companies at the next stage of design.

Lane Widths and Tracking

Lane widths throughout the proposed interim junction scheme fully comply with guidance set out in the Department for Transport design document for signalised junctions, TD 50/04. The minimum lane width proposed is 3.0m located on the Bucknell Road southbound approach to Howes Lane. Elsewhere, lane widths are between 3.5m and 4.0m depending on the tracking of HGVs as they move through the junction.

An updated and expanded tracking analysis have been undertaken and this is set out on drawings 1665/75/301 to 330 (Appendix B). The analysis has been undertaken for the following vehicles:

- 16.5m maximum legal articulated HGV
- 15.9m articulated HGV
- 12.0m maximum legal rigid HGV
- 11.0m rigid HGV
- 11.98m bus

In addition to the maximum legal HGVs, slightly shorter HGVs have also been tracked to represent vehicles that are more likely to use the junction on a frequent basis.

The swept paths shown for each vehicle are the body, wing mirrors and wheels combined. The analysis shows that for the range of vehicles selected, all are able to move through the junction while remaining within their designated lane and without conflicting or overhanging kerb lines. This should be contrasted with the existing situation where, as set out above, the Bucknell Road/Howes Lane junction has major issues with the movement of HGVs with implications for both safety and capacity. The interim junction layout fully addresses these issues and is therefore a major improvement on the existing situation.

The accurate and reliable nature of the topographical survey has required some changes in the design for the area around the railway overbridge. The footway that in the previous version of the layout was on the north west side of Bucknell Road adjacent to the bridge abutment and wing wall has now been removed and the carriageway widened, bringing the kerb line closer to the structure.

The face of the kerb would be located to give a clearance of 0.7m to the face of the western bridge abutment compared to the current clearance of 1.5m. An initial review of Department for Transport design documents (primarily TD 27/05 and BD 78/99) has been undertaken and although there is no definitive guidance for the particular situation on Bucknell Road, it seems reasonable to assume from these documents that the absolute minimum clearance to the abutment and wing wall should be 0.6m, which at 0.7m the layout exceeds.

The bridge structure is a Network Rail asset and as the design is progressed there would need to be liaison with them on the revised highway layout in this location. Their principal concern is likely to be with regard to the risk of bridge strikes by vehicles. Currently there is no protection provided to the existing bridge structure in the form of higher kerbs, crash barriers or parapets. This maybe because the risk is assessed as being low but the desire to maintain footways may also have influenced the existing situation. Currently, if a driver lost control of their vehicle it is possible that there would be a collision with the abutments or wing walls.

The revised layout does bring the edge of the carriageway closer to the western bridge abutment but in practical terms this is not considered to increase the risk of a collision occurring or the consequence of such a collision. On the contrary, with the change in alignment beneath the bridge and introduction of traffic signals, the overall level of risk and consequence arising from a collision should it occur could be assessed as actually being lower. Nonetheless, given the reduced level of clearance and to mitigate concerns that Network Rail may have, a vehicle containment kerb is proposed along the length of the abutment and wing wall. This approach is considered an improvement on the existing situation where no level of protection is provided at all.

This preliminary view of risk will need to be set out in a formal assessment that will be submitted to Network Rail to demonstrate that the approach to mitigation is appropriate, sufficient and an improvement to the existing situation.

Visibility

The proposed interim junction improvement would be located wholly within a 30mph zone. Taking guidance from Department for Transport design documents TD 50/04 and TD 9/93, a desirable minimum sight stopping distance of 90m should therefore be provided to at least one primary signal associated with each movement.

Howes Lane, on the final 60m to the proposed stop line, has a curved approach and a slightly downward gradient. Visibility of 90m to the near side primary signal is achievable although the sight line does cross the opposing traffic lane. Visibility of 55m to the off side primary signal would be provided but again the sight line does cross the opposing traffic lane. To mitigate these issues it is proposed that the primary signals have a double aspect (two signal heads, one set above the other) and that signs are erected approximately 150m from the junction warning of traffic signals ahead and the potential for queuing traffic.

Lords Lane also has a curved approach over the final 100m to the stop line although it is less pronounced than on Howes Lane. Visibility of 90m would be achieved to both off side and near side primary signals although for the off side signal the sight line does cross the opposing traffic lane. To mitigate these issues it is proposed that both primary signals have a double aspect and that signs are erected approximately 150m from the junction warning of traffic signals ahead and the potential for queuing traffic.

Bucknell Road has straight approaches to the junction and the visibility of 90m would be achieved subject to large direction signs being located so as not to obstruct sight lines.

Pedestrian Facilities

The approach taken within the proposed layout of the interim junction is to improve the existing situation for pedestrians.

Footways are proposed around the Bucknell Road/Howes Lane junction, essentially as a re-provision of what exists currently. On Howes Lane the space required for large vehicles turning does result in two pinch points where the footway would be reduced to a minimum of 1.0m over a very short distance. This is permitted under OCC's Residential Road Design Guide (900mm absolute minimum width and consistent with Manual for Streets) and given the extremely low level of pedestrian movement in this area is not considered to be any practical hindrance to the movement of people on foot through the junction.

An uncontrolled 'walk with traffic' crossing of Bucknell Road beneath the bridge is proposed. This is broadly in the same location as the existing uncontrolled crossing beneath the bridge and so maintains current routes through the junction and wider connections beyond. This crossing was not proposed in the previous version of the design and addresses one of the issues in the Stage 1 RSA.

This crossing is slightly skewed and on the west side meets a curve rather than a straight. For pedestrians crossing west to east this would require them to look over their right shoulder in order to have sight of traffic coming from Howes Lane. This is considered to be an improvement compared to the existing situation where pedestrians at this location have very limited visibility of vehicles turning left from Howes Lane as previously set out above.

Uncontrolled 'walk with traffic' pedestrian crossings are also proposed on Howes Lane and Bucknell Road (south of Howes Lane) both with pedestrian refuges. Currently there are no formal pedestrian crossing facilities at the latter location. Pedestrian refuges are 1.5m in width

(in accordance with guidance in TD 50/04) and provision of these is an improvement on the existing situation.

TD 50/04 sets out the requirement for inter-visibility zones at signal controlled junctions and offers some flexibility where signals are installed at existing junctions and there are obstructions such as buildings. At the Bucknell Road/Howes Lane junction the wing wall and abutment to the bridge do not allow the full inter-visibility zone to be provided. However, a driver in a vehicle at the stop line has visibility to the full extent of all other stop lines and the full extent of all other pedestrian crossings. The objective of the inter-visibility zone would therefore be achieved and this is not considered to be an issue.

Uncontrolled 'walk with traffic' pedestrian crossing facilities are not currently proposed on any of the arms of the Lords Lane/Bucknell Road part of the interim junction. This reflects the existing situation where there are only soft grass verges around the roundabout and no crossing facilities on any arm of the roundabout. However, if required by OCC, crossing facilities could be provided although it should be noted that there are no onward connections to paved footways or footpaths.

The interim junction improvement maintains existing pedestrian routes through the junction but in addition through the introduction of signals and pedestrian refuges improves the overall environment for those using the junction on foot. The use of signals will result in periods of time on particular arms when traffic will be stopped making it easier for pedestrians to cross. The use of pedestrian refuges will also mean that pedestrians can make some crossings in two stages with reduced walking distances and vehicles approaching from only one direction. This overall improvement in this environment is particularly relevant against the future baseline of no improvement to this junction but with increased traffic flows as a result of housing development at the Exemplar and Application 1 sites and employment space elsewhere at NW Bicester.

Cycle Facilities

As previously described lane widths proposed are mainly between 3.5m and 4.0m which in most locations will provide more space than existing, creating a more comfortable environment for cyclists as they move through the junction. It is considered that this, together with the removal of the existing roundabout and the introduction of signals, will improve the overall environment for cyclists using the carriageways compared to the existing situation. As for pedestrians, this overall improvement is particularly relevant against the future baseline of no improvement to this junction but with increased traffic flows as a result of housing development at the Exemplar and Application 1 sites and employment space elsewhere at NW Bicester.

In terms of facilities segregated from trafficked carriageways, there is the potential for footways and crossings around the junction to be designated as shared use for both cyclists and pedestrians. This for example would allow cyclists travelling from Howes Lane to cross Bucknell Road and join the cycle route to the east and vice versa for those travelling from the east. Although the footways would be narrow generally for a shared route and there would be a pinch point this may not be considered to be an issue given the expected extremely low use by both pedestrians and cyclists.

Junction Capacity

The revised layout has resulted in some changes to the physical parameters of the junction. However, these are minor in relation to how they would affect capacity and so the LINSIG capacity assessments have not been re-run.

Summary

The layout of the interim junction has been revised in response to the topographical survey and issues raised by OCC and in the Stage 1 RSA. The revised design conclusively demonstrates that an interim improvement is feasible within the limits of the existing public highway and in particular the constraints of the railway overbridge. Furthermore, not only is the interim improvement physically deliverable but it would also result in an improvement compared to the existing layout in relation to the safe movement through the junction of HGVs, pedestrians and cyclists together with the increased level of protection to the Network Rail bridge. This comparison to the existing layout is relevant against the current future baseline of no improvements to the layout but with increased traffic flows as a result of housing development at the Exemplar and Application 1 sites and employment space elsewhere at NW Bicester. Without an improvement to the existing layout, the increased traffic flows are very likely to result in operational, capacity and safety issues at the junction which OCC as highway authority should not ignore.

3.0 Traffic Impact

3.1 Shakespeare Drive Residential Area

OCC have raised concerns about some traffic using unsuitable routes through the Shakespeare Drive residential area in response to congestion at the Howes Lane/Bucknell Road junction.

Vehicle turning movements for the junction have been obtained from the SATURN model which distributes traffic across a wide area network. It is assumed that SATURN is re-routing traffic through the Shakespeare Drive residential area as it is calculating that this is a quicker route due to increased times to pass through this junction. This implies that junction is congested although the LINSIG analysis in the Addendum gives a PRC value of 29.4% in the AM and 10.9% in the PM peak. It maybe therefore that SATURN is over estimating the level of congestion at the junction or just assuming that traffic is diverting to avoid waiting at signals.

In order to address the concern raised by OCC, the various SATURN output diagrams provided by WYG have been reviewed. One set of diagrams (See Appendix C) illustrates the change in flows between the tested 2024 Initial Mitigation scheme and the 2024 Reference Case. These show an increase in flows through the Shakespeare Drive residential area along the route of Shakespeare Drive (north of Middleton Stoney Road), Blenheim Drive, Leach Road, West Street and The Approach. Traffic flows on this route are slightly higher in the PM peak than in the AM peak.

The output diagrams showing the distribution of traffic from the NW Bicester development zones have also been reviewed. This shows that whilst the traffic from the development zones does pass through the area there is also an element that is terminating and originating in the area.

In considering the two sets of information together it has been concluded that the level of through traffic from both the development zones and from the Initial Mitigation scenario is best represented by combining the flows at the following two locations:

- Shakespeare Drive, north of its junction with Blenheim Drive
- Blenheim Drive, east of its junction with Shakespeare Drive

This translates into the following flows:

- AM Peak – Northbound flow of 91 vehicles
- AM Peak – Southbound flow of 123 vehicles

- PM Peak – Northbound flow of 96 vehicles
- PM peak – Southbound flow of 212 vehicles

Of this traffic 81 vehicles in the AM peak and 109 vehicles in the PM peak is attributable to Himley Village.

These flows have then been added to the vehicle turning movements obtained from SATURN (Tables 3-7 and 3-8) in the Addendum to produce the flows in Tables 1 and 2 below.

Northbound flows have been routed on Howes Lane north bound and then Bucknell Road south east bound. Southbound flows have been routed on Bucknell Road north west bound and Howes Lane southbound.

Table 1 – 2024 Initial Mitigation adjusted flows in the AM peak

AM (08.00-09.00)		TO				
		Bucknell Road (S)	Howes Lane	Bucknell Road (N)	Lords Lane	TOTAL
FROM	Bucknell Road (S)	0	124	37	241	402
	Howes Lane	93	0	81	537	711
	Bucknell Road (N)	18	60	0	2	80
	Lords Lane	186	619	3	0	808
	TOTAL	297	803	121	780	2001

Table 2 – 2024 Initial Mitigation adjusted flows in the PM peak

PM (17.00-18.00)		TO				
		Bucknell Road (S)	Howes Lane	Bucknell Road (N)	Lords Lane	TOTAL
FROM	Bucknell Road (S)	0	266	60	319	645
	Howes Lane	131	0	109	574	814
	Bucknell Road (N)	52	85	0	1	138
	Lords Lane	261	427	4	0	692
	TOTAL	444	778	173	894	2289

These flows have then been used to do a further run in LINSIG and the results are set out in Table 3 below and in Appendix D.

Table 3 – 2024 Initial Mitigation adjusted flows LINSIG Analysis

Initial Mitigation scenario with adjusted 2024 flows	AM (09.00-08.00)		PM (17.00-18.00)	
	DoS	Queue	DoS	Queue
Howes Lane	72.9%	13.9	84.6%	23.7
Bucknell Road south - ahead and left	68.2%	12.8	85.0%	22.2
Bucknell Road internal southbound – ahead and right	74.1%	8.9	84.9%	23.2
Bucknell Road internal northbound - ahead and right	64.6%	7.0	79.2%	11.8
Lords Lane	72.0%	13.0	64.9%	10.3
Bucknell Road north – ahead and left	26.4%	2.5	40.9%	4.4

As would be expected, with increased traffic flows the junction would become more congested overall with the PRC reducing to 21.5% in the AM peak and 5.8% in the PM peak compared to the results reported in Table 3-9 of the Addendum. As might be expected, Bucknell Road south (ahead and left) experiences an increase in congestion but with more minor increases on other arms. It should be noted however that overall in both peaks the junction remains within capacity overall and with no arms exceeding a DoS of 90%.

Based on the results reported above it is considered that it has now been demonstrated that the interim junction scheme does adequately mitigate the impact of the development scenario tested. Based on the LINSIG analysis it maybe that less through traffic will be attracted to route through the Shakespeare Drive residential area than the SATURN model is predicting.]

3.2 Additional Capacity Offered by the Interim Scheme

OCC have commissioned WYG to test the interim junction improvements with a range of different development scenarios. The results are set out in Technical Note 1 by WYG dated 4th November 2016.

We have the following comments and questions on the work by WYG:

1. A number of points are raised in paragraph 1.2.3 that appear to cast doubt on the robustness of the Bicester Saturn Model. ABA used the SATURN model for the assessment in the Himley Village TA Addendum at the request of OCC. We therefore assumed that OCC were satisfied that it was an appropriate tool to be used in the assessment.

2. Use of the SATURN model enables a 'like for like' comparison with the assessment work undertaken by Hyder in December 2014. Using traffic count data from 2016 as a baseline does not enable a 'like for like' comparison with the assessment work by Hyder.
3. Paragraph 2.2.1 sets out a development scenario to be tested. The developments in the scenario are not exactly the same as those in the 2024 Interim Year used by Hyder in their work from December in 2014 and in the Himley Village TA Addendum.
4. Clarity is needed as to the definition of a 'committed' site in relation to a resolution to grant planning consent and the signing of a legal agreement.
5. Various assumptions are made about the level of growth that will occur on other sites at various points in time. The basis for these assumptions needs to be made clear. It was apparent from a joint meeting between CDC and OCC on the 9th November that before running the scenarios in SATURN there had been no liaison between the two authorities on this matter. In addition, no account has been taken of 'optimism bias' in relation to the rate at which other development will actually be delivered.
6. Table 1 includes PRCs for a Scenario 5 but these do not relate to the information in the Himley Village TA Addendum. The correct PRCs are 29.4% in the AM and 10.4% in the PM.
7. We note that Scenario 11 (1200 homes on Himley Village, 26,000 sq m of employment space on the Albion land, 393 at the Exemplar and 507 homes on Application 1) with considerable development occupied elsewhere is very close to working. PRCs are -11.3% in the AM and -11.8% in the PM. The actual difference in queue lengths and congestion between a junction that has PRC of -11.3% and one that has a PRC of -11.0% is very marginal and **should be viewed in the context of the significant wider benefit resulting from the provision of additional housing.**
8. Paragraph 3.1.16 refers to a 'most likely' background development scenario. Given this scenario, a 2016 traffic baseline and previous decisions made by OCC regarding trigger points, we are very surprised that WYG have not tested the 'most likely' background development scenario with 900 homes north of the railway, 4 hectares of employment space elsewhere at North West Bicester and no change to the Howes Lane/Bucknell Road/Lords Lane junction. This in fact is the most likely future development scenario overall and should form the baseline against which the proposals for Himley Village together with the interim junction improvement should be judged. We strongly request that this work be undertaken as a matter of urgency and as part of this, consideration is given to the performance of the existing junctions should, for whatever reason, the strategic link road and tunnel not be delivered. Overall, we request that the current approach for development at North West Bicester (i.e. the 900 trigger point, 4 hectares of employment space with no junction improvement) is compared with the alternative Himley Village proposal on a fair and equitable basis. Currently, vital assessment work is missing or has not been reported with the implication that officers and Members across both local authorities do not fully understand the implications of historic decisions or the options going forward.

3.3 Middleton Stoney Road Crossroads

OCC notes that the impact of development of North West Bicester and other development sites allocated in the area, including at Heyford, will need to be addressed and that a proportionate financial contribution to these mitigation works has been offered as part of the Himley Village proposals. The mitigation measures included in Appendix L of the Addendum were intended to set out some initial options for further development. It is acknowledged that the works should seek to calm traffic while not reducing overall capacity and enhancing the quality of the village.

The works should be designed to comprehensively address the impact of development more widely in the area and also to minimise the attractiveness of Middleton Stoney as a route for traffic avoiding the M40. Engagement with Middleton Stoney Parish Council will be essential, as acknowledged by OCC.

Although not raised by OCC, construction traffic from the Himley Village development will access the site from the east on Middleton Stoney Road via junction 9 of the M40 and A41, rather than through Middleton Stoney.

4.0 Interim Sustainable Movement Strategy

The proposed prime and second connections to Bicester bring forward the connections agreed as part of the NW Bicester Masterplan. OCC have noted that the highway boundary is at the carriageway side of the ditch, rather than the hedge line and therefore the second connection would need to be located on land to the north of the hedge, as set out in the NW Bicester Masterplan. Negotiations with the land owners are ongoing and evidence of an in principle agreement will be provided in due course.

The proposal set out in the Addendum is to provide a bespoke bus service from occupation of the site, in addition to providing stops on Middleton Stoney Road in order to allow residents to access the 25A. This proposal provides a high level of bus service of around four buses per hour from occupation. OCC have suggested that the frequency of the 25A could be increased prior to occupation of development more than 400m from Middleton Stoney Road as an alternative to the bespoke route. However, this would be less effective as a means of providing an enhanced service to Himley Village and the arrangement set out in the Addendum remains the preferred approach.

It is acknowledged that once the Albion and Application 2 land is developed the Himley Village bespoke service would cease and a 'North West Bicester route 2' would be provided.

OCC comments that the Framework Travel Plan submitted along with the Addendum lacks detail on how sustainable travel plan patterns will be encouraged if Himley Village comes forward in isolation. However, the Framework Travel Plan sets out a series of strategies and measures, many of which specifically refer to Himley Village coming forward in advance of the rest of NW Bicester. Key elements referred to include the interim strategies for walking, cycling and bus services and other measures that are relevant are car club, EV infrastructure, personalised travel planning and use of technology such as apps and online resources.

In response to the other comments raised by OCC in relation to travel planning the Framework Travel Plan includes a commitment to employ a full time Travel Plan Coordinator in advance of occupation as well as a commitment to provide travel plans for all other uses and an outline of the contents of these non-residential travel plans. A Travel Plan Group will also be constituted to coordinate and oversee the Travel Planning process across the site. The roles of the Travel Plan Coordinator are also set out in detail in section 5.2 and this person would have the responsibility of developing the Framework Travel Plan.

5.0 NW Bicester Masterplan/SPD and Cherwell Local Plan

OCC states that the interim scheme is not consistent with Development Principle 6 of the NW Bicester Masterplan ("Cycling and walking will be encouraged and supported to be the first choice of transport in new development...") or with Bicester Policy 1 of the Cherwell Local Plan. Particular place shaping points relate to layout and integration, walkable neighbourhoods, footpaths and cycleways that link to existing networks, layout that prioritises non-car modes and

infrastructure to support sustainable modes of transport, including measures to address movement across Howes Lane and Lords Lane.

The interim proposals for Himley Village will provide a fine grained and walkable network of streets with facilities including a school, offices, shops, vet, community centre and pub provided early. This will place residents within a short walk of local facilities and employment opportunities. In addition physical infrastructure will be provided within the site to encourage sustainable travel including segregated cycle routes, generous footways and traffic-free green corridors, traffic calming and pedestrian crossing facilities. Moreover the proposed long term connections to Bicester will be brought forward early as the prime and second connections described in the Transport Assessment Addendum. These routes will include new crossings of Howes Lane and contributions will be made to improvements to the onward connections to Bicester identified as part of the NW Bicester Masterplan. A bus service is also proposed to serve the site from phase 1 at a frequency of a bus every 20 minutes and new stops will be provided on Middleton Stoney Road, giving access to the 25A and an overall combined frequency of four buses per hour.

The proposed interim arrangement at Himley Village provides a high quality environment that will be well connected to Bicester. Indeed, in terms of isolation from Bicester the site will be better connected, both in terms of walking and cycling connections and frequency of bus services, than the Exemplar scheme that is currently being built out. Himley Village is also located a similar distance from Bicester town centre as the Exemplar.

Finally, it should be acknowledged that any development of a masterplan that spans several different ownerships will inevitably result in development coming forward at different times. This means that at any one time up to the completion of the full masterplan, individual development parcels may not benefit from the full range of connections envisaged in the masterplan. However, the interim Himley Village proposals are consistent with the NW Bicester Masterplan and will enable the full masterplan to be implemented when the adjoining sites come forward for development. The prime and second walking and cycling connections are simply bringing forward proposals already set out within the masterplan. Furthermore, P3 Eco have consistently set out their commitment to delivery of the strategic link road and to contributing financially to it.

Appendix A – Existing Layout



- notes
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATION.
 2. DO NOT SCALE FROM THIS DRAWING.

FOR INFORMATION ONLY

25.11.16	ISSUED FOR INFORMATION	MT
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job
**HIMLEY VILLAGE, NW
 BICESTER**

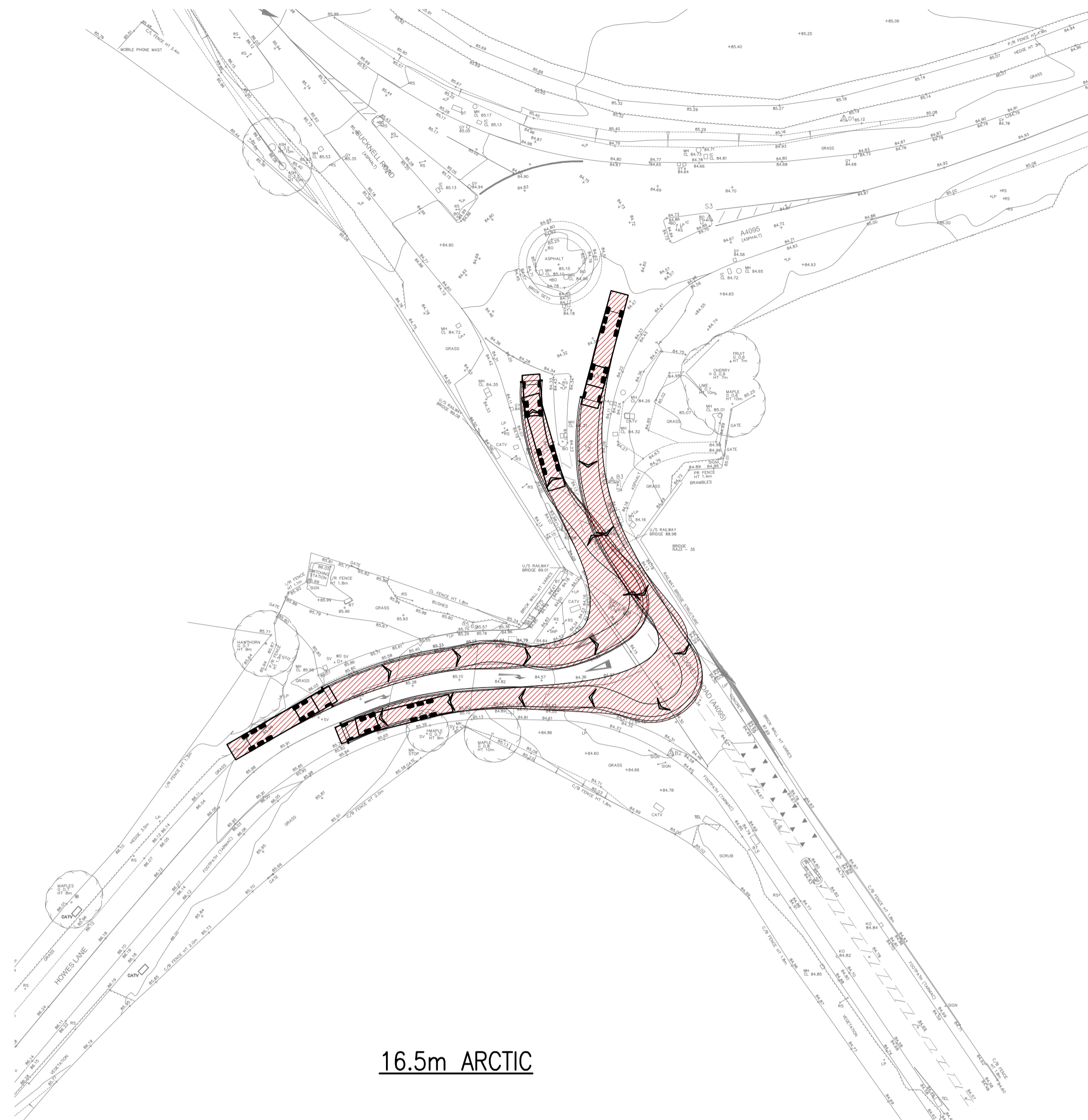
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**HOWES LANE / BUCKNELL ROAD + LORDS
 LANE / BUCKNELL ROAD JUNCTIONS
 EXISTING GENERAL LAYOUT**

drawn KM	checked MT
date NOV' 16	scale (original - A1) 1:500

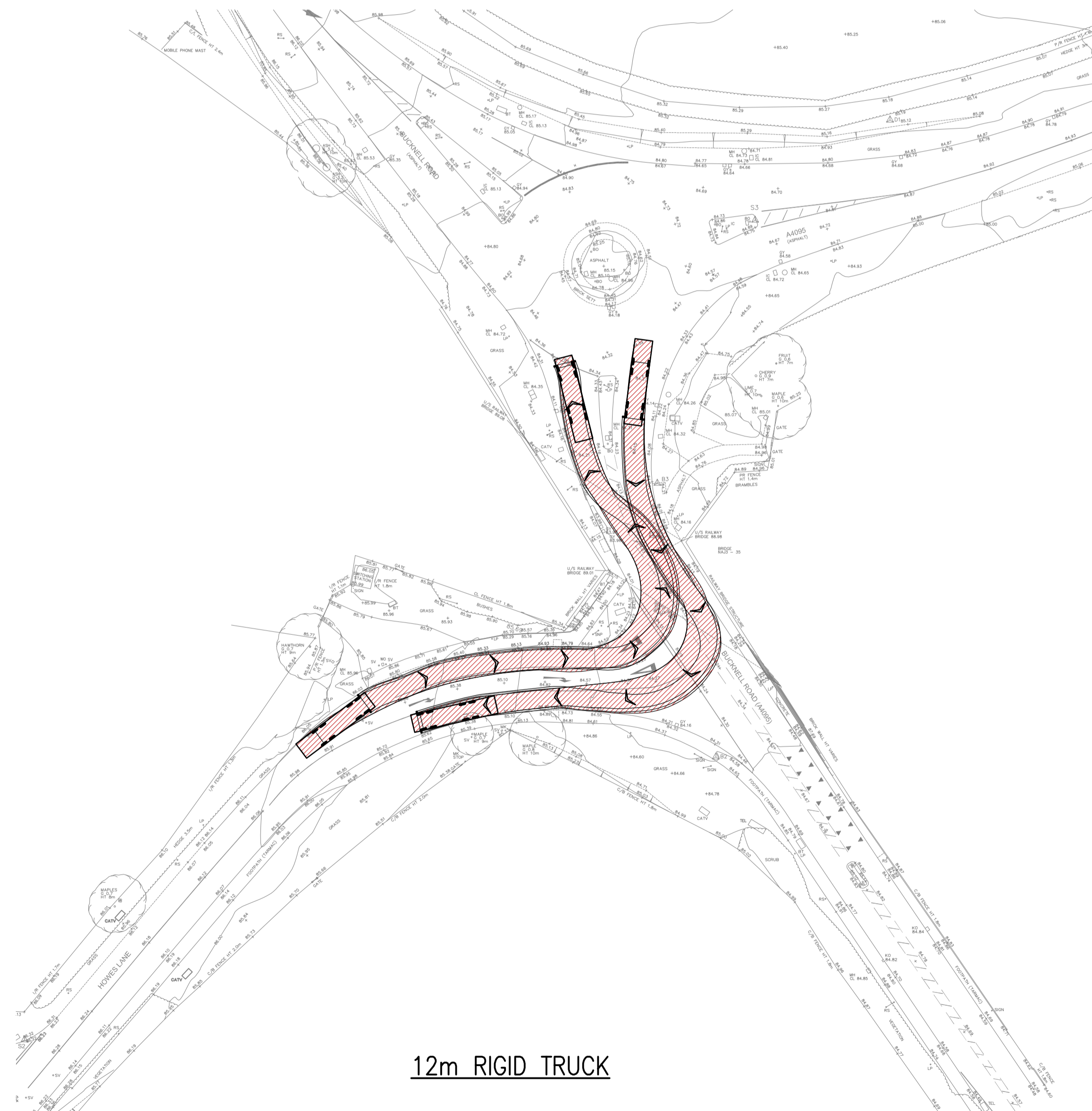
Alan Baxter

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diag. no. 1665/75/331	rev.
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16.5m ARCTIC

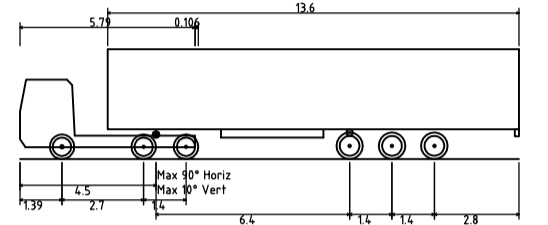


12m RIGID TRUCK

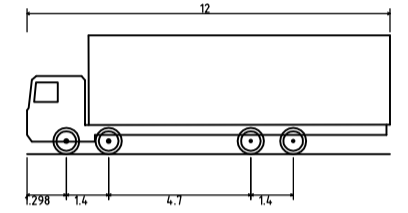
NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATION.
2. DO NOT SCALE FROM THIS DRAWING.
3. THE VEHICLE TRACKING SHOWN HAS BEEN GENERATED BY THE USE OF AUTODESK VEHICLE TRACKING 2015 AND IS BASED ON MOVEMENTS OF THE DESIGN VEHICLES AS INDICATED. THE COMPUTER PROGRAMME ASSUMES AN "OPTIMUM VEHICLE" IN TERMS OF PERFORMANCE AND DRIVER ABILITY AND HENCE ADDITIONAL AREAS FOR UNRESTRICTED MOVEMENT MAY BE REQUIRED. THE TRACKING AREAS SHOWN HAVE BEEN GENERATED ON THE ASSUMPTION OF A TWO-DIMENSIONAL LAYOUT; ADDITIONAL AREAS FOR UNRESTRICTED MOVEMENT MAY BE REQUIRED FOR SITES WITH SIGNIFICANT GRADIENTS.

TRACKING DOES NOT TAKE INTO CONSIDERATION VERTICAL HEIGHT OR EXISTING OBSTACLES THAT ARE NOT SHOWN IN THE LAYOUT PLANS.



Max Legal Articulated Vehicle (16.5m) - WH
 Overall Length 16.500m
 Overall Width 2.500m
 Overall Body Height 3.532m
 Min Body Ground Clearance 0.398m
 Max Track Width 2.500m
 Lock to Lock Time 6.68s
 Kerb to Kerb Turning Radius 6.670m



Rigid Truck with Wing Mirrors
 Overall Length 12.000m
 Overall Width 2.500m
 Overall Body Height 3.928m
 Min Body Ground Clearance 0.432m
 Track Width 2.471m
 Lock to Lock Time 6.90s
 Kerb to Kerb Turning Radius 11.900m

FOR INFORMATION ONLY

25.11.16 ISSUED FOR INFORMATION MT

job
**HIMLEY VILLAGE, NW
 BICESTER**

title
 HOWES LANE / BUCKNELL ROAD + LORDS
 LANE / BUCKNELL ROAD JUNCTIONS
 EXISTING TRACKING FOR 16.5m ARCTIC
 AND 12m RIGID TRUCK

drawn KM	checked MT
date NOV' 16	scale (original - A1) 1:500

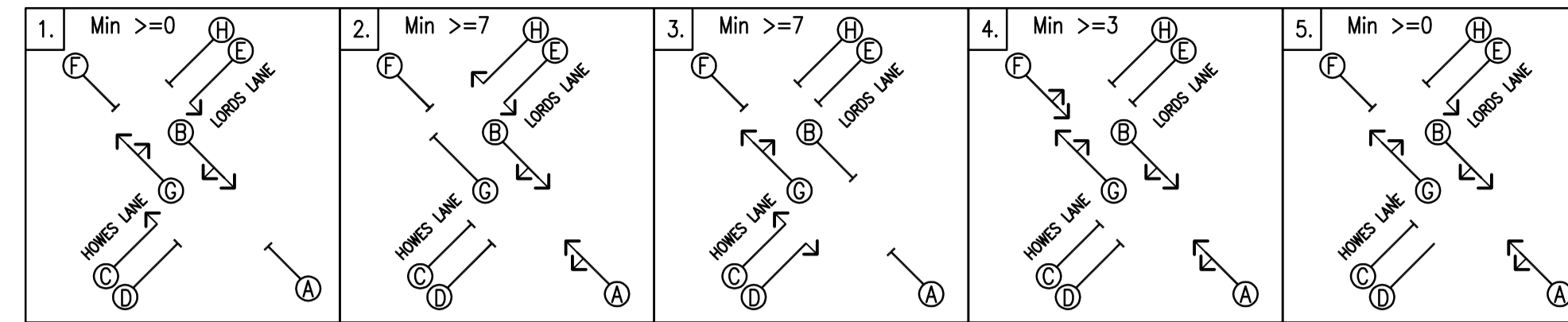
Alan Baxter

75 Cowcross Street London EC1M 6EL
 tel 020 7250 1555
 email aba@alanbaxter.co.uk
 www.alanbaxter.co.uk

drg. no. 1665/75/332	rev.
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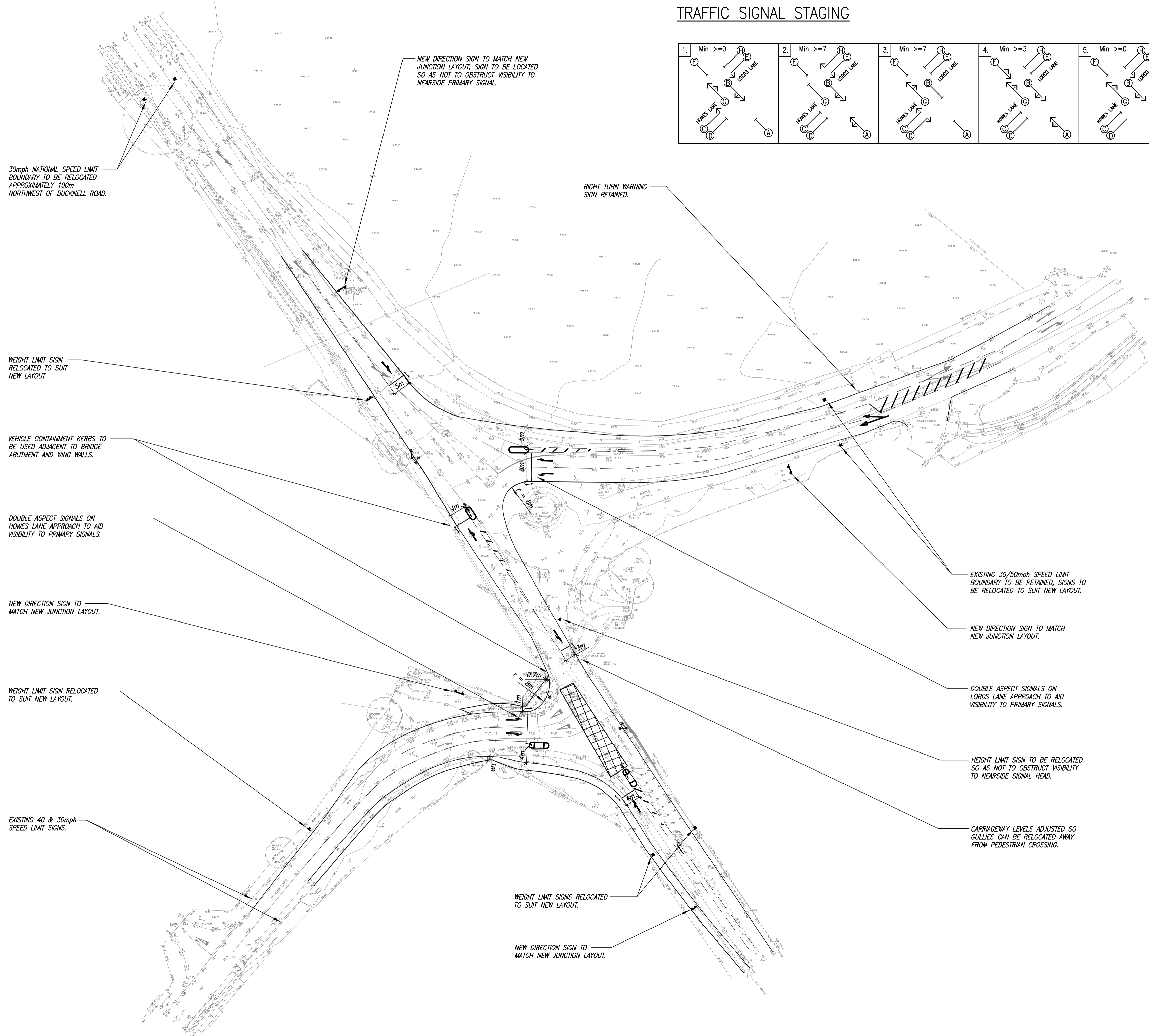
Appendix B – Revised Layout

TRAFFIC SIGNAL STAGING



notes

- HIGH FRICTION SURFACING TO BE USED FOR AN APPROPRIATE LENGTH ON THE APPROACH TO EACH STOP LINE.
- WARNING SIGNS OF QUEUES AHEAD TO BE PROVIDED ON HOWES LANE.
- NEW DIRECTION SIGNING TO BE PROVIDED WITHIN JUNCTION AS APPROPRIATE.



FOR INFORMATION ONLY

25.11.16 ISSUED FOR INFORMATION MT

job
HIMLEY VILLAGE, NW BICESTER

title
HOWES LANE / BUCKNELL ROAD + LORDS LANE / BUCKNELL ROAD JUNCTIONS GENERAL LAYOUT

drawn
KM

checked
MT

date
NOV' 16

scale (original - A1)
1:500

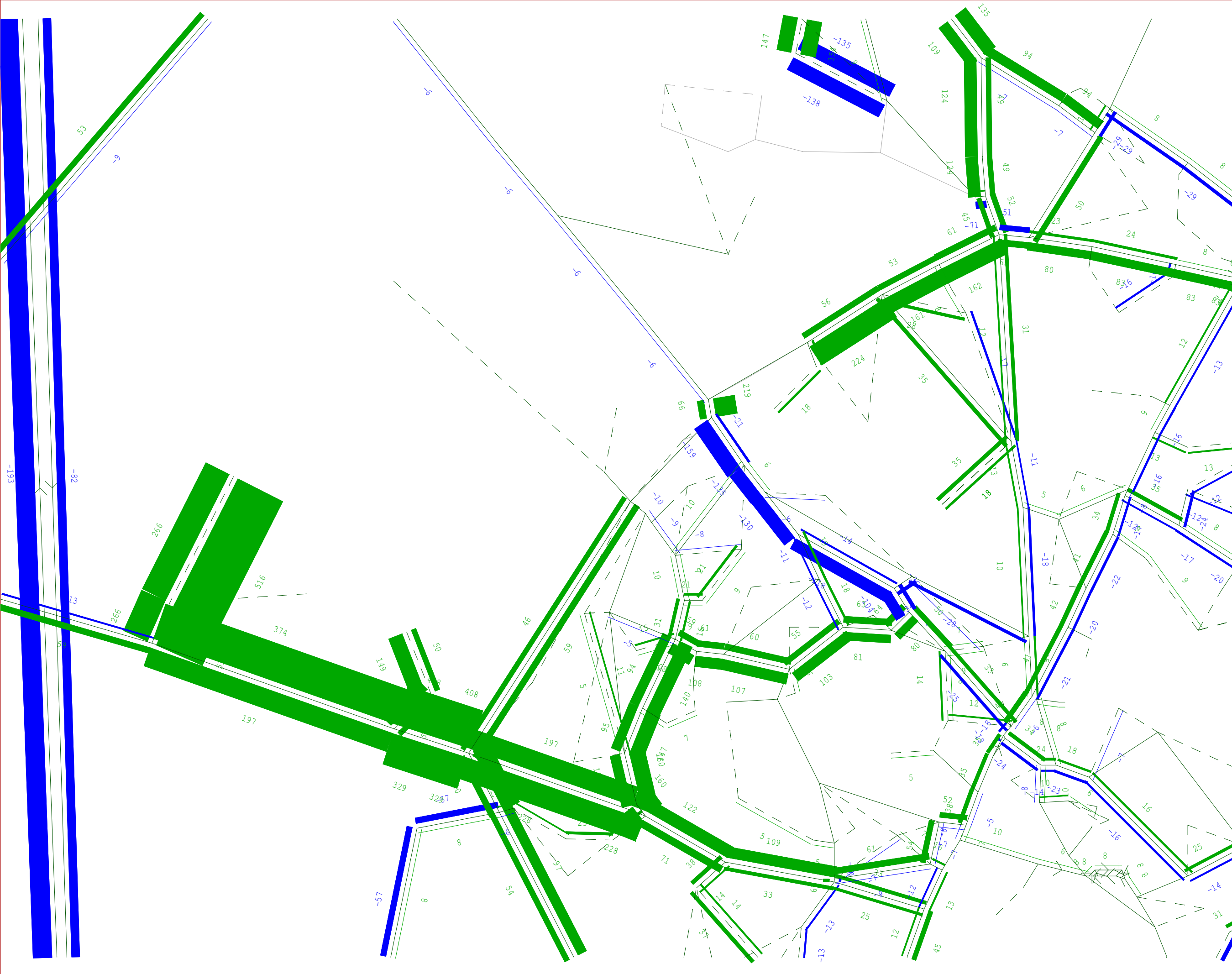
Alan Baxter

75 Cowcross Street London EC1M 6EL
tel 020 7250 1555
email aba@alanbaxter.co.uk
www.alanbaxter.co.uk

diag. no.
1665/75/300

rev.

Appendix C – SATURN Output



SATURN

Atkins Ltd /
DVV / ITS

_2024_Himley
_RefCase.UFS
ley_AddiMiti

Scale 16281

Link Annot:

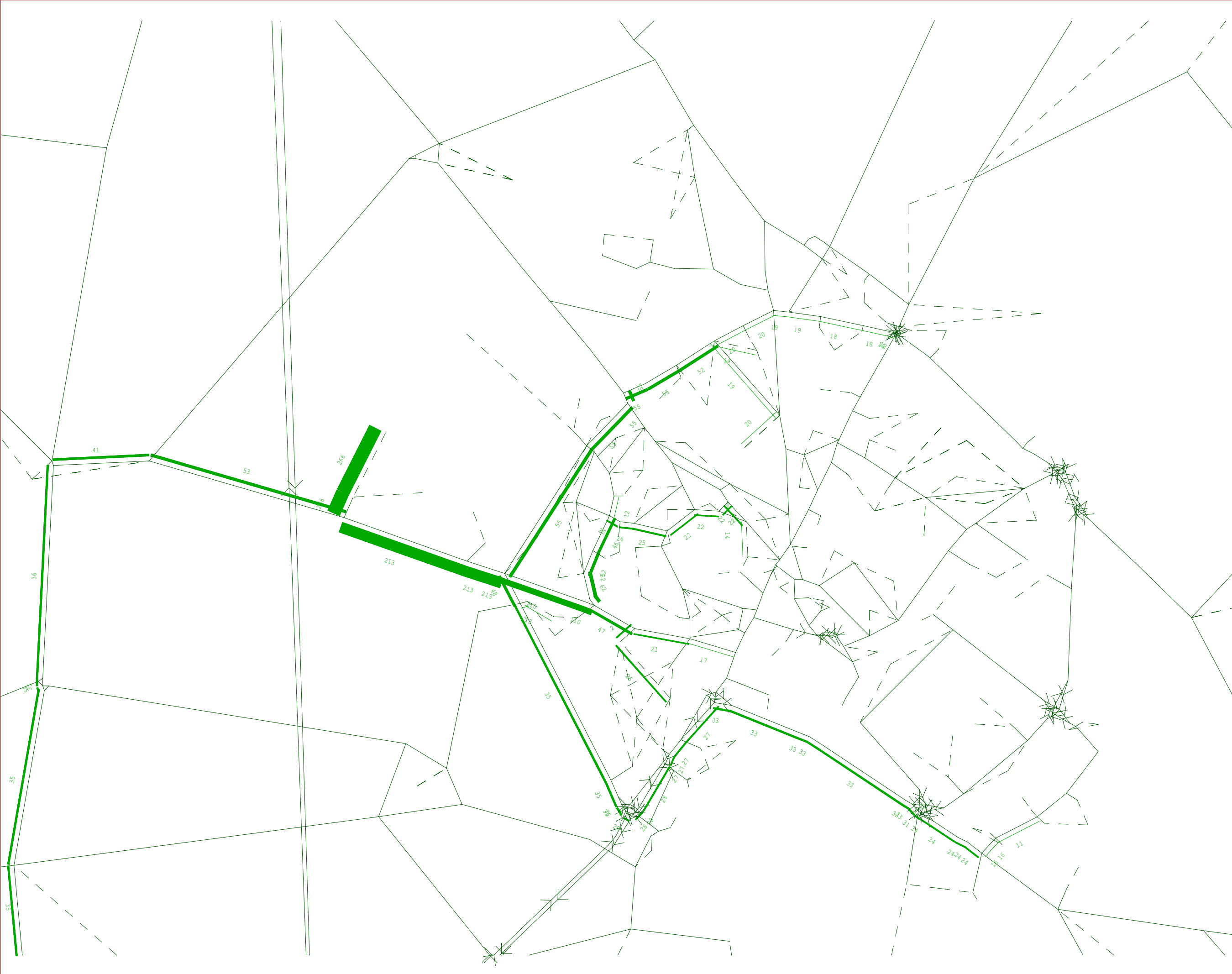
+ Demand flo
- Demand flo

Differ: 2-1

Bandwidths =
50./mm

9- 6-16

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

2024_Himley_
AddiMiti.UFS

Scale 32110

Link Annot:

S.L.A.

Bandwidths =
100./mm

Selected
Link
Assignment
Thru destin.
Zone 10001

Total Demand
Flow = 266

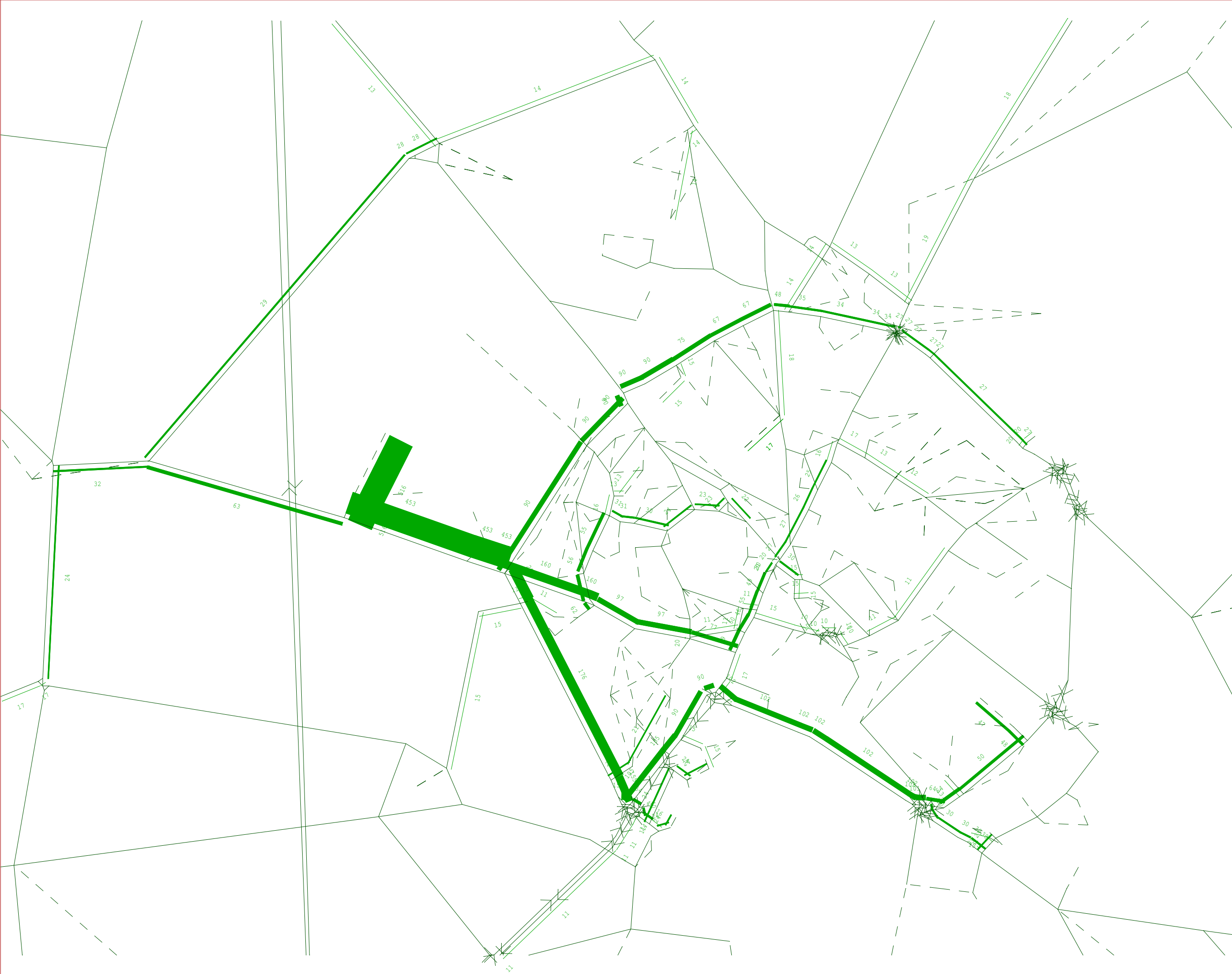
Mean OD time
441.6 S

Mean OD dist
6963.1 M

All User Cls

9- 6-16

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

2024_Himley_
AddiMiti.UFS

Scale 32110

Link Annot:

S.L.A.

Bandwidths =
100./mm

Selected
Link
Assignment
Thru origin
Zone 10001

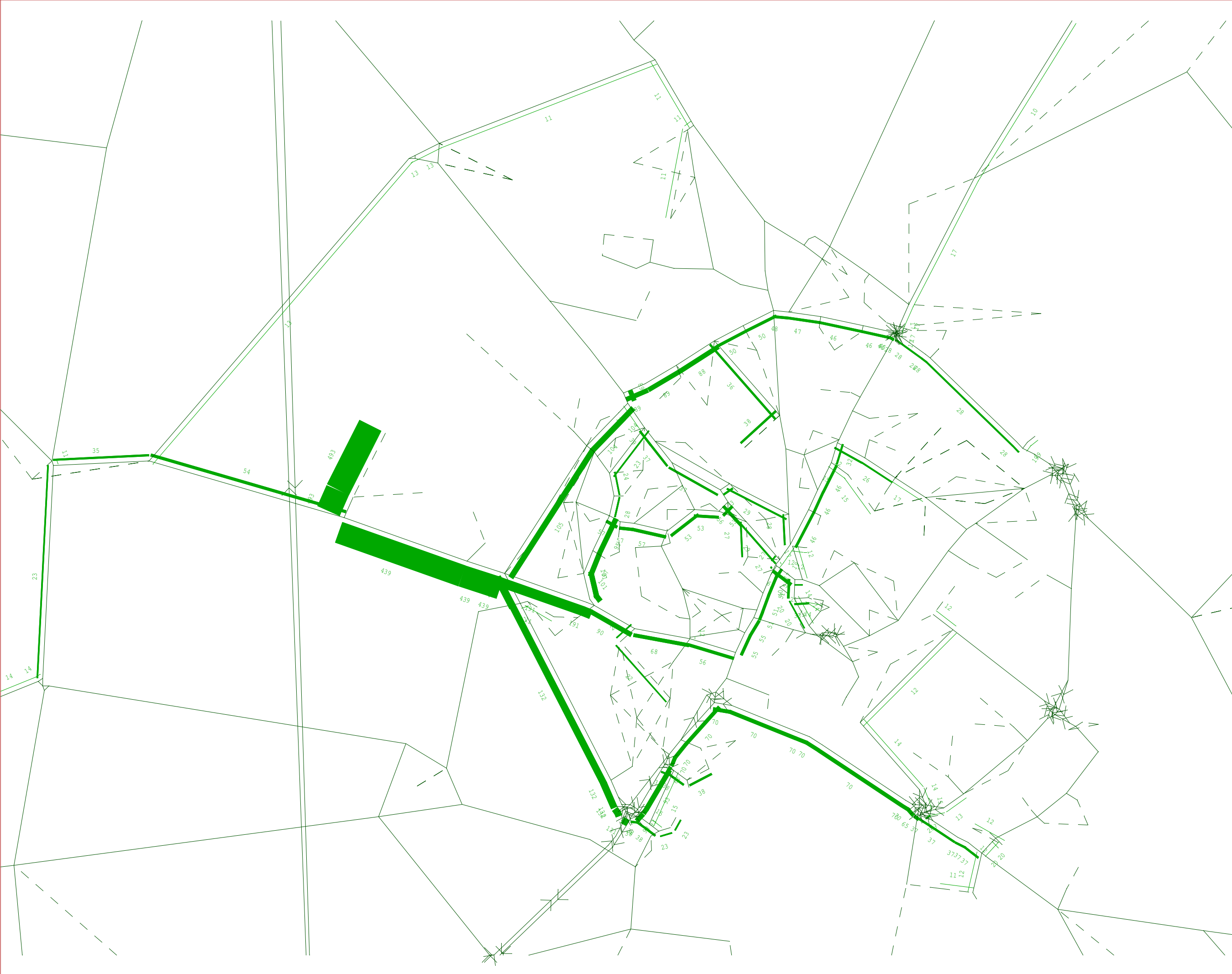
Total Demand
Flow = 516

Mean OD time
1001.2 S

Mean OD dist
6620.0 M

All User Cls

9- 6-16
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

2024_Himley_
AddiMiti.UFS

Scale 32110

Link Annot:

S.L.A.

Bandwidths =
100./mm

Selected
Link
Assignment
Thru destin.
Zone 10001

Total Demand
Flow = 493

Mean OD time
479.9 S

Mean OD dist
6061.3 M

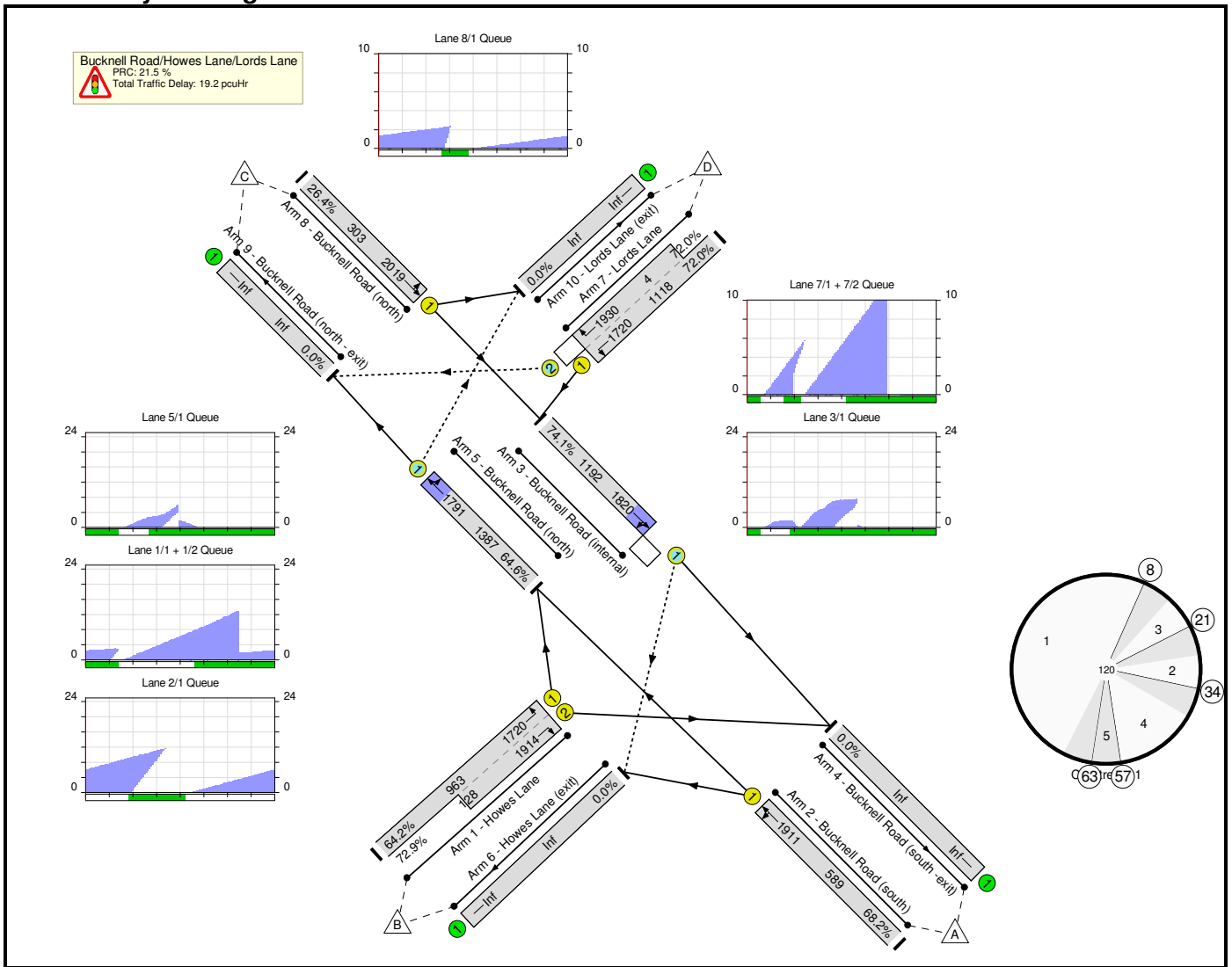
All User Cls

9- 6-16
WHITE YOUNG

Appendix D – LINSIG Output

Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios
Scenario 19: '2024 2600 homes + 10ha employment (interim junction + right turn ban) + Shakespeare Drive Rat Running Removed AM' (FG19: '2024 2600 homes + 10ha employment (interim junction + right turn ban) + Shakespeare Drive Rat Running Removed AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Turning Counts Data

Ref	Junction	Arms	Count	Modelled Flow (*)	Balancing Factor	% Diff	Diff	GEH
	J1:Bucknell Road/Howes Lane/Lords Lane	1 -> 4	-	93				
	J1:Bucknell Road/Howes Lane/Lords Lane	1 -> 5	-	618				
	J1:Bucknell Road/Howes Lane/Lords Lane	2 -> 5	-	278				
	J1:Bucknell Road/Howes Lane/Lords Lane	2 -> 6	-	124				
	J1:Bucknell Road/Howes Lane/Lords Lane	3 -> 4	-	204				
	J1:Bucknell Road/Howes Lane/Lords Lane	3 -> 6	-	679				
	J1:Bucknell Road/Howes Lane/Lords Lane	5 -> 9	-	118				
	J1:Bucknell Road/Howes Lane/Lords Lane	5 -> 10	-	778				
	J1:Bucknell Road/Howes Lane/Lords Lane	7 -> 3	-	805				
	J1:Bucknell Road/Howes Lane/Lords Lane	7 -> 9	-	3				
	J1:Bucknell Road/Howes Lane/Lords Lane	8 -> 3	-	78				
	J1:Bucknell Road/Howes Lane/Lords Lane	8 -> 10	-	2				

Traffic Flows, Actual

Actual Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	124	37	241	402
	B	93	0	81	537	711
	C	18	60	0	2	80
	D	186	619	3	0	808
	Tot.	297	803	121	780	2001

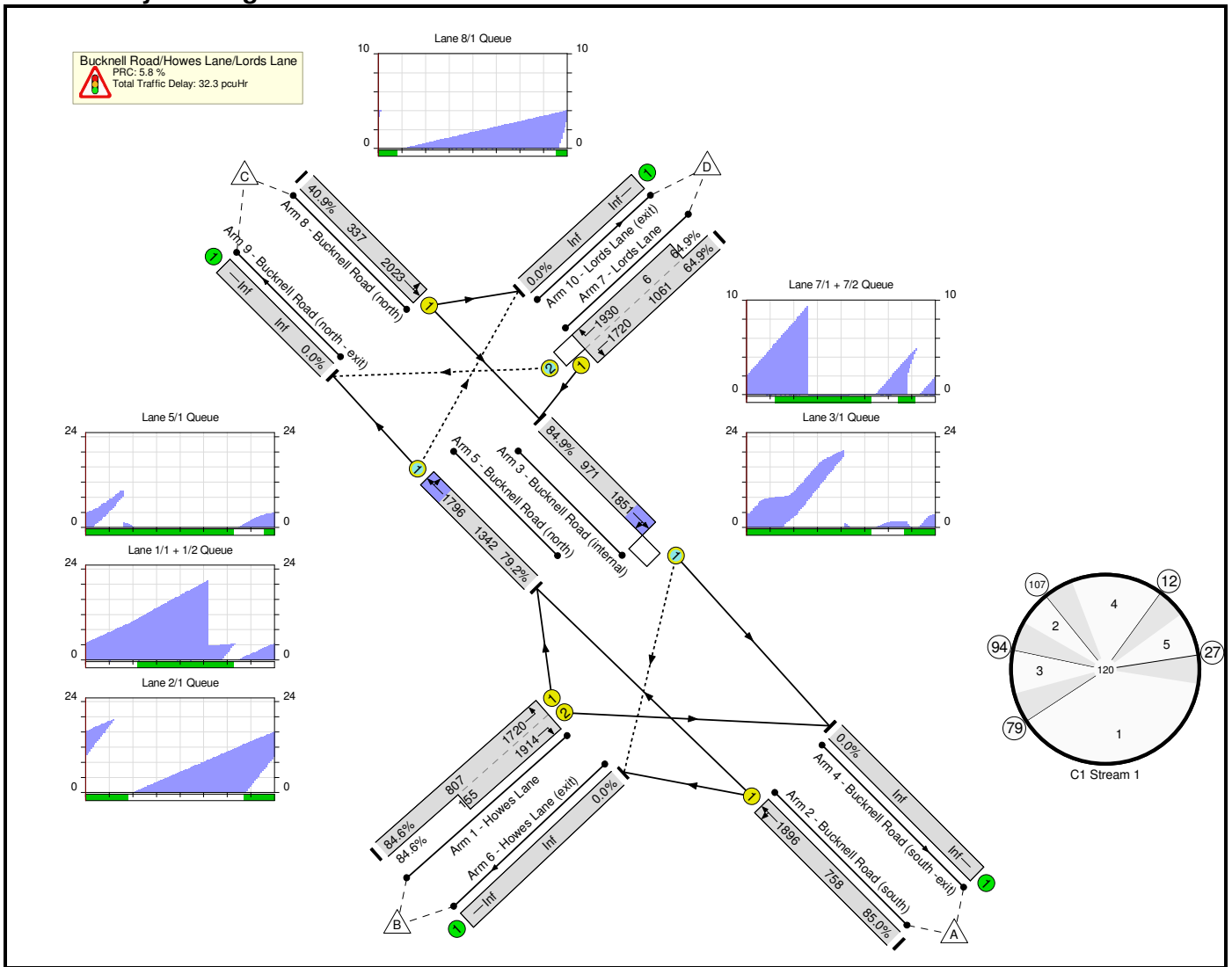
Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network: Howes Lane / Bucknell Road / Lords Lane Signal Jnc	-	-	-		-	-	-	-	-	-	74.1%	265	1184	10	19.2	-	-	
Bucknell Road/Howes Lane/Lords Lane	-	-	-		-	-	-	-	-	-	74.1%	265	1184	10	19.2	-	-	
1/1+1/2	Howes Lane Right Left	U	C D		1	72:7	-	711	1720:1914	963+128	64.2 : 72.9%	-	-	-	4.8	24.4	13.9	
2/1	Bucknell Road (south) Ahead Left	U	A		1	36	-	402	1911	589	68.2%	-	-	-	5.1	45.9	12.8	
3/1	Bucknell Road (internal) Ahead Right	O	B		1	101	-	883	1820	1192	74.1%	124	545	10	3.4	13.9	8.9	
5/1	Bucknell Road (north) Ahead Right	O	G		1	101	-	896	1791	1387	64.6%	142	636	0	1.6	6.6	7.0	
7/1+7/2	Lords Lane Left Right	U+O	E H		2:1	76:7	-	808	1720:1930	1118+4	72.0 : 72.0%	0	3	0	3.1	13.7	13.0	
8/1	Bucknell Road (north) Ahead Left	U	F		1	17	-	80	2019	303	26.4%	-	-	-	1.2	53.2	2.5	
C1 Stream: 1 PRC for Signalled Lanes (%):							21.5	Total Delay for Signalled Lanes (pcuHr):				19.23	Cycle Time (s): 120					
PRC Over All Lanes (%):							21.5	Total Delay Over All Lanes(pcuHr):				19.23						

Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios
Scenario 20: '2024 2600 homes + 10ha employment (interim junction + right turn ban) + Shakespeare Drive Rat Running Removed PM' (FG20: '2024 2600 homes + 10ha employment (interim junction + right turn ban) + Shakespeare Drive Rat Running Removed PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Turning Counts Data

Ref	Junction	Arms	Count	Modelled Flow (*)	Balancing Factor	% Diff	Diff	GEH
	J1:Bucknell Road/Howes Lane/Lords Lane	1 -> 4	-	131				
	J1:Bucknell Road/Howes Lane/Lords Lane	1 -> 5	-	683				
	J1:Bucknell Road/Howes Lane/Lords Lane	2 -> 5	-	379				
	J1:Bucknell Road/Howes Lane/Lords Lane	2 -> 6	-	266				
	J1:Bucknell Road/Howes Lane/Lords Lane	3 -> 4	-	313				
	J1:Bucknell Road/Howes Lane/Lords Lane	3 -> 6	-	512				
	J1:Bucknell Road/Howes Lane/Lords Lane	5 -> 9	-	169				
	J1:Bucknell Road/Howes Lane/Lords Lane	5 -> 10	-	893				
	J1:Bucknell Road/Howes Lane/Lords Lane	7 -> 3	-	688				
	J1:Bucknell Road/Howes Lane/Lords Lane	7 -> 9	-	4				
	J1:Bucknell Road/Howes Lane/Lords Lane	8 -> 3	-	137				
	J1:Bucknell Road/Howes Lane/Lords Lane	8 -> 10	-	1				

Traffic Flows, Actual

Actual Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	266	60	319	645
	B	131	0	109	574	814
	C	52	85	0	1	138
	D	261	427	4	0	692
	Tot.	444	778	173	894	2289

Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios

Network Results

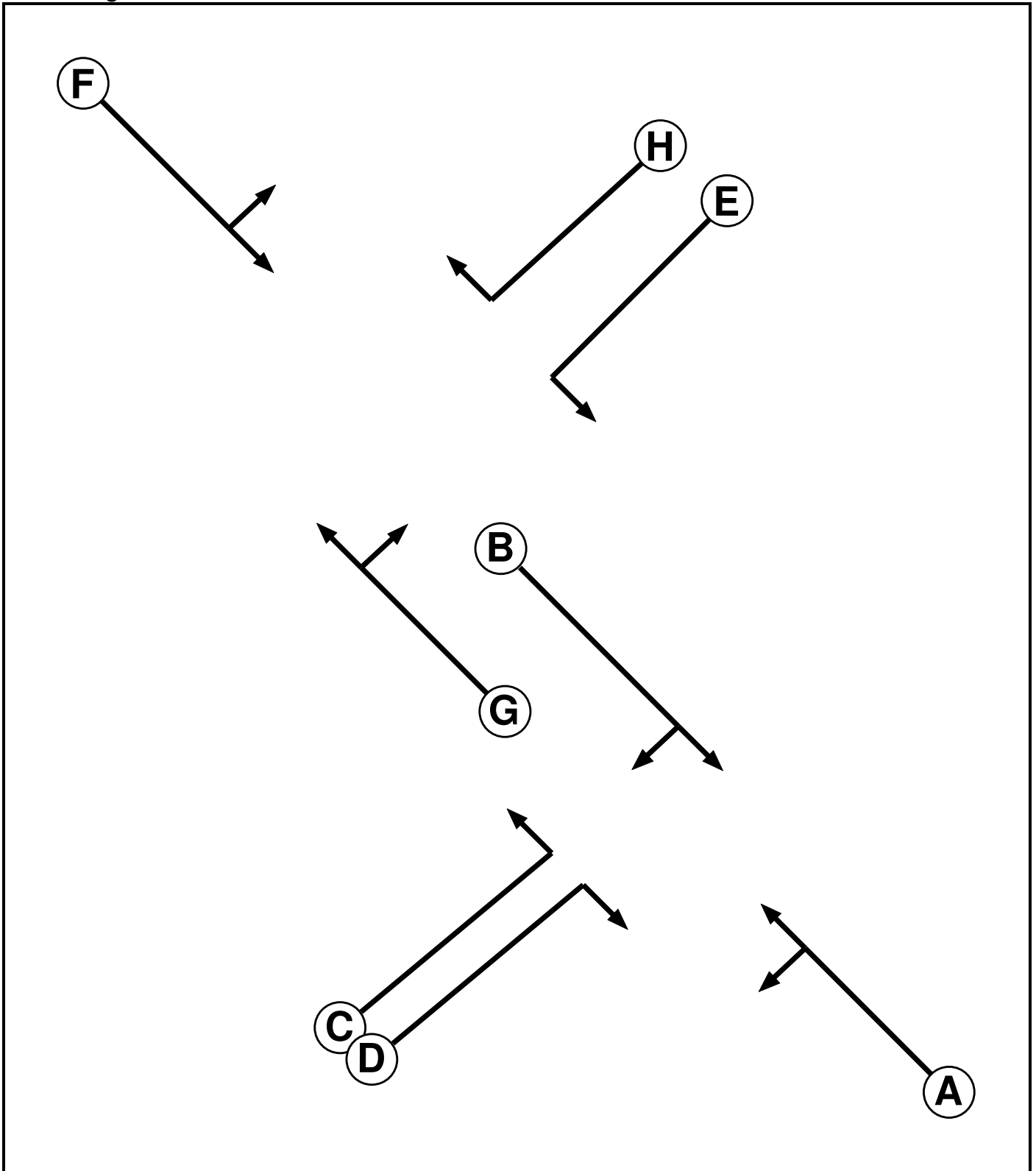
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network: Howes Lane / Bucknell Road / Lords Lane Signal Jnc	-	-	-		-	-	-	-	-	-	85.0%	187	1214	7	32.3	-	-	
Bucknell Road/Howes Lane/Lords Lane	-	-	-		-	-	-	-	-	-	85.0%	187	1214	7	32.3	-	-	
1/1+1/2	Howes Lane Right Left	U	C D		1	61:9	-	814	1720:1914	807+155	84.6 : 84.6%	-	-	-	9.1	40.4	23.7	
2/1	Bucknell Road (south) Ahead Left	U	A		1	47	-	645	1896	758	85.0%	-	-	-	8.6	47.9	22.2	
3/1	Bucknell Road (internal) Ahead Right	O	B		1	99	-	825	1851	971	84.9%	66	439	7	7.0	30.5	23.2	
5/1	Bucknell Road (north) Ahead Right	O	G		1	101	-	1062	1796	1342	79.2%	121	772	0	3.1	10.4	11.8	
7/1+7/2	Lords Lane Left Right	U+O	E H		2:1	72:7	-	692	1720:1930	1061+6	64.9 : 64.9%	0	4	0	2.5	13.1	10.3	
8/1	Bucknell Road (north) Ahead Left	U	F		1	19	-	138	2023	337	40.9%	-	-	-	2.1	53.7	4.4	
C1 Stream: 1 PRC for Signalled Lanes (%):							5.8	Total Delay for Signalled Lanes (pcuHr):				32.34	Cycle Time (s): 120					
PRC Over All Lanes (%):							5.8	Total Delay Over All Lanes(pcuHr):				32.34						

Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Traffic	1		7	7
F	Traffic	1		7	7
G	Traffic	1		7	7
H	Traffic	1		7	7

Phase Diagram



Phase Intergreens Matrix

		Starting Phase							
		A	B	C	D	E	F	G	H
Terminating Phase	A	-	6	6	-	-	-	-	-
	B	-	-	6	-	-	-	-	-
	C	6	-	-	-	-	-	-	-
	D	6	6	-	-	-	-	-	-
	E	-	-	-	-	6	-	-	-
	F	-	-	-	-	6	-	6	-
	G	-	-	-	-	-	-	6	-
	H	-	-	-	-	-	6	6	-

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

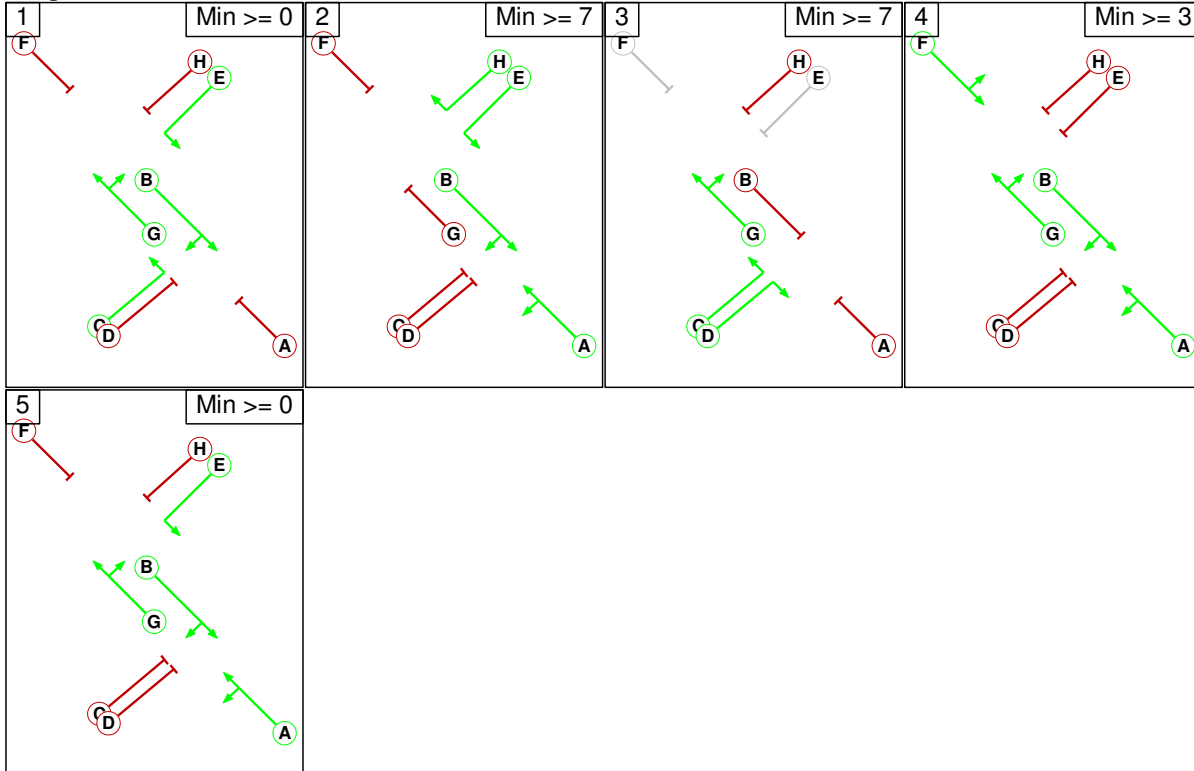
		To Stage				
		1	2	3	4	5
From Stage	1	-	6	6	6	6
	2	6	-	6	6	6
	3	6	6	-	6	6
	4	6	6	6	-	6
	5	6	6	6	6	-

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B C E G
1	2	A B E H
1	3	C D G
1	4	A B F G
1	5	A B E G

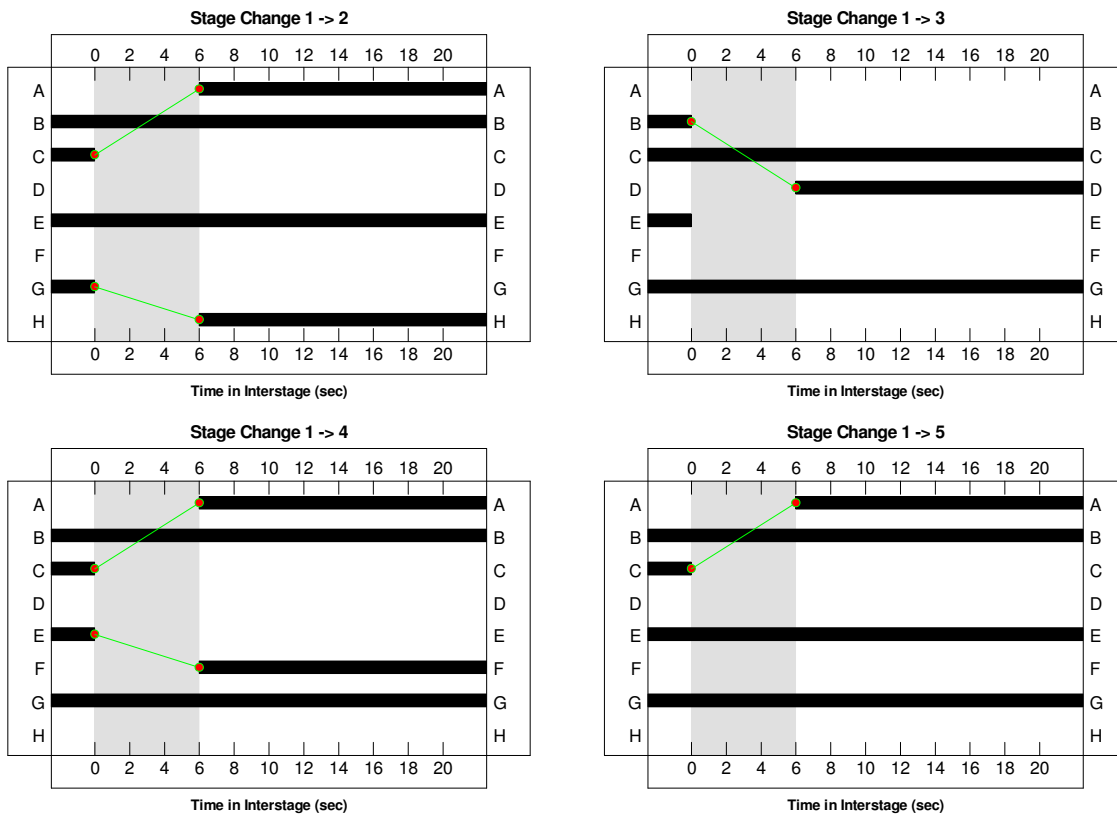
Stage Diagram

Stage Stream: 1



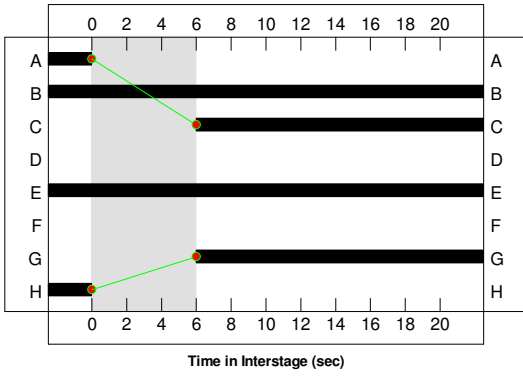
Interstage Diagram

Stage Stream: 1

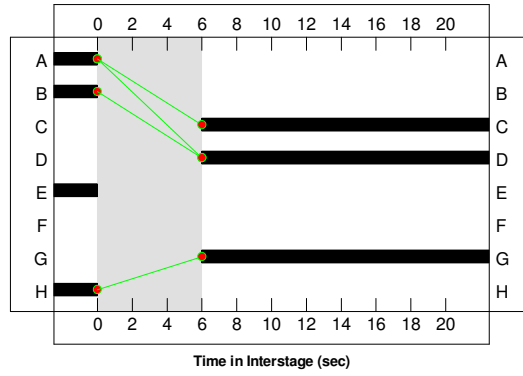


Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios

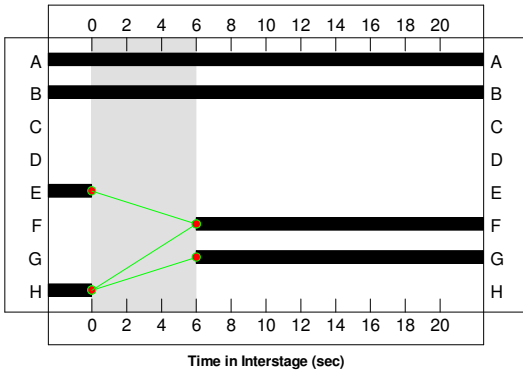
Stage Change 2 -> 1



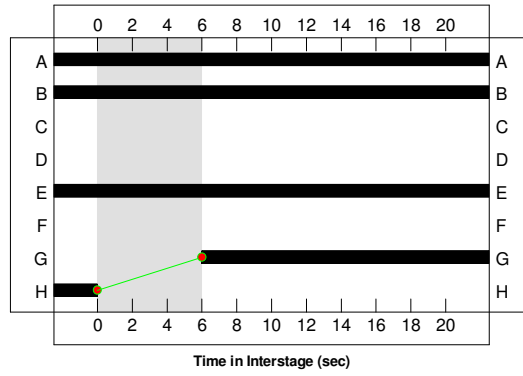
Stage Change 2 -> 3



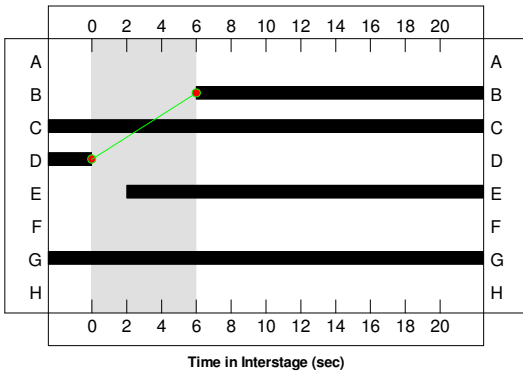
Stage Change 2 -> 4



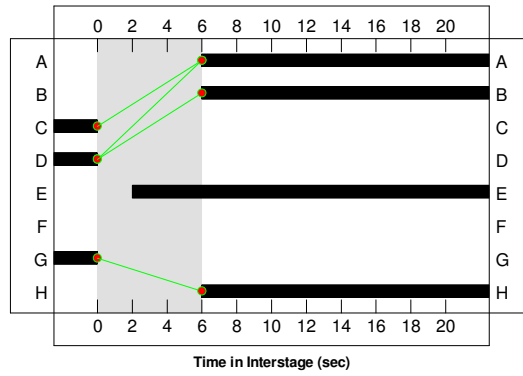
Stage Change 2 -> 5



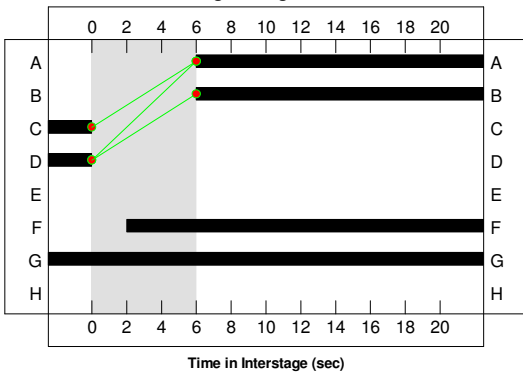
Stage Change 3 -> 1



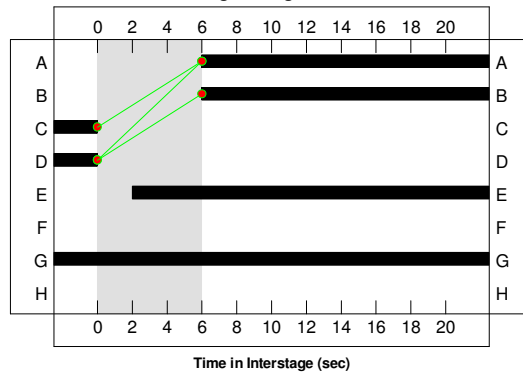
Stage Change 3 -> 2



Stage Change 3 -> 4

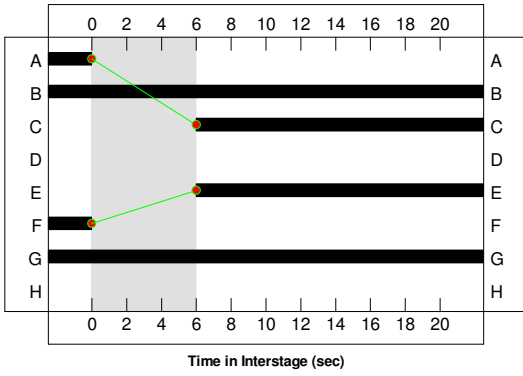


Stage Change 3 -> 5

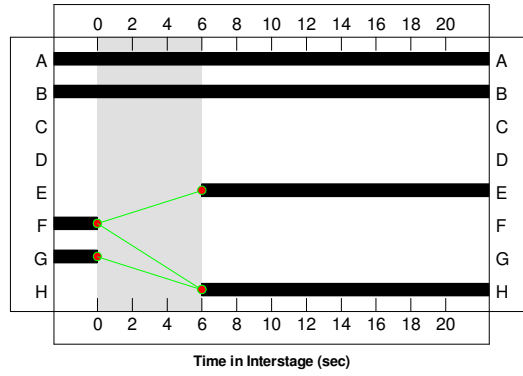


Howes Lane/ Bucknell Road/Lords Lane Option 5B - 120 second cycle - Scenarios 1a to 5a & 2024 scenarios

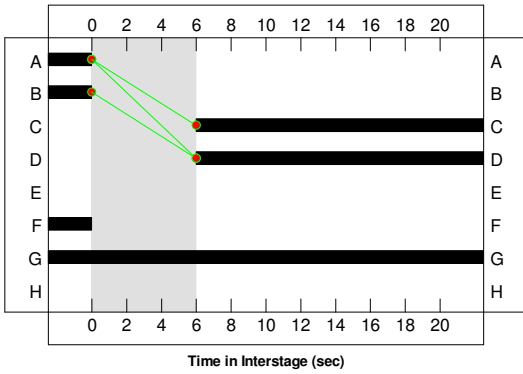
Stage Change 4 -> 1



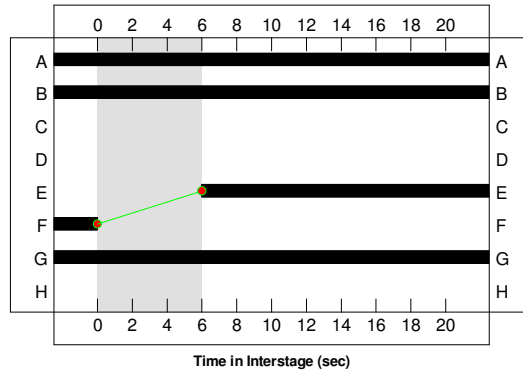
Stage Change 4 -> 2



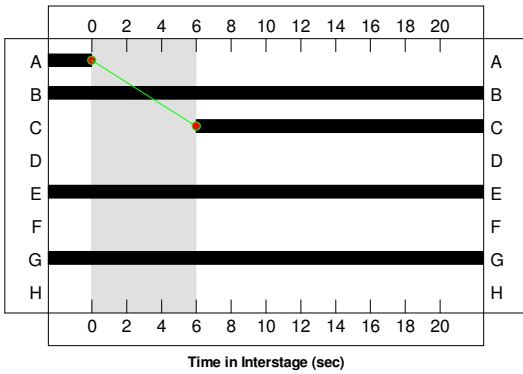
Stage Change 4 -> 3



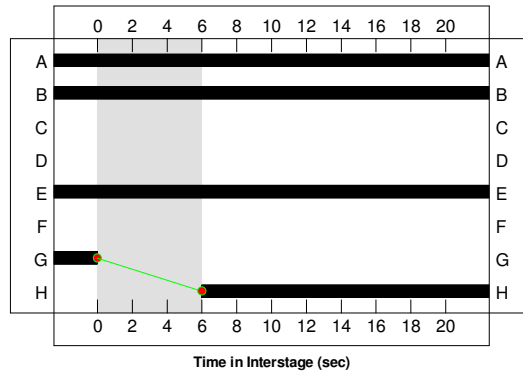
Stage Change 4 -> 5



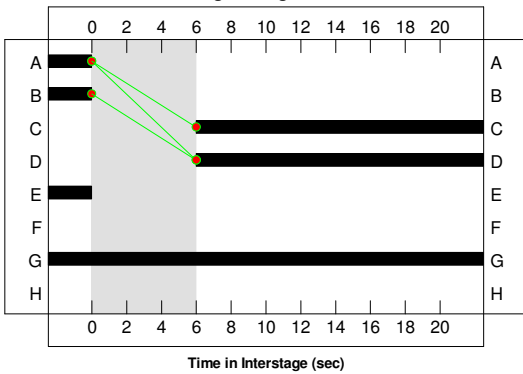
Stage Change 5 -> 1



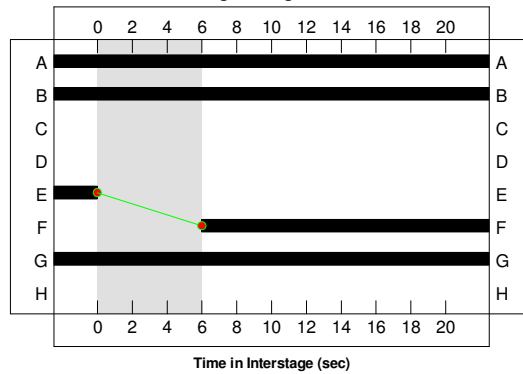
Stage Change 5 -> 2



Stage Change 5 -> 3



Stage Change 5 -> 4



Stage Minimums

Stage Stream: 1

Stage 1 Minimums for all possible Stage Changes

via Stage 1	To				
	Stage 2	Stage 3	Stage 4	Stage 5	
From	Stage 2	7	0	7	7
	Stage 3	0	7	3	0
	Stage 4	7	7	7	7
	Stage 5	7	0	7	7

Stage 2 Minimums for all possible Stage Changes

via Stage 2	To				
	Stage 1	Stage 3	Stage 4	Stage 5	
From	Stage 1	7	7	7	7
	Stage 3	7	7	7	7
	Stage 4	7	7	7	7
	Stage 5	7	7	7	7

Stage 3 Minimums for all possible Stage Changes

via Stage 3	To				
	Stage 1	Stage 2	Stage 4	Stage 5	
From	Stage 1	7	7	7	7
	Stage 2	7	7	7	7
	Stage 4	7	7	7	7
	Stage 5	7	7	7	7

Stage 4 Minimums for all possible Stage Changes

via Stage 4	To				
	Stage 1	Stage 2	Stage 3	Stage 5	
From	Stage 1	7	7	7	7
	Stage 2	7	7	7	7
	Stage 3	7	3	7	3
	Stage 5	7	7	7	7

Stage 5 Minimums for all possible Stage Changes

via Stage 5	To				
	Stage 1	Stage 2	Stage 3	Stage 4	
From	Stage 1	7	0	7	0
	Stage 2	0	7	0	0
	Stage 3	7	0	7	3
	Stage 4	0	0	7	7

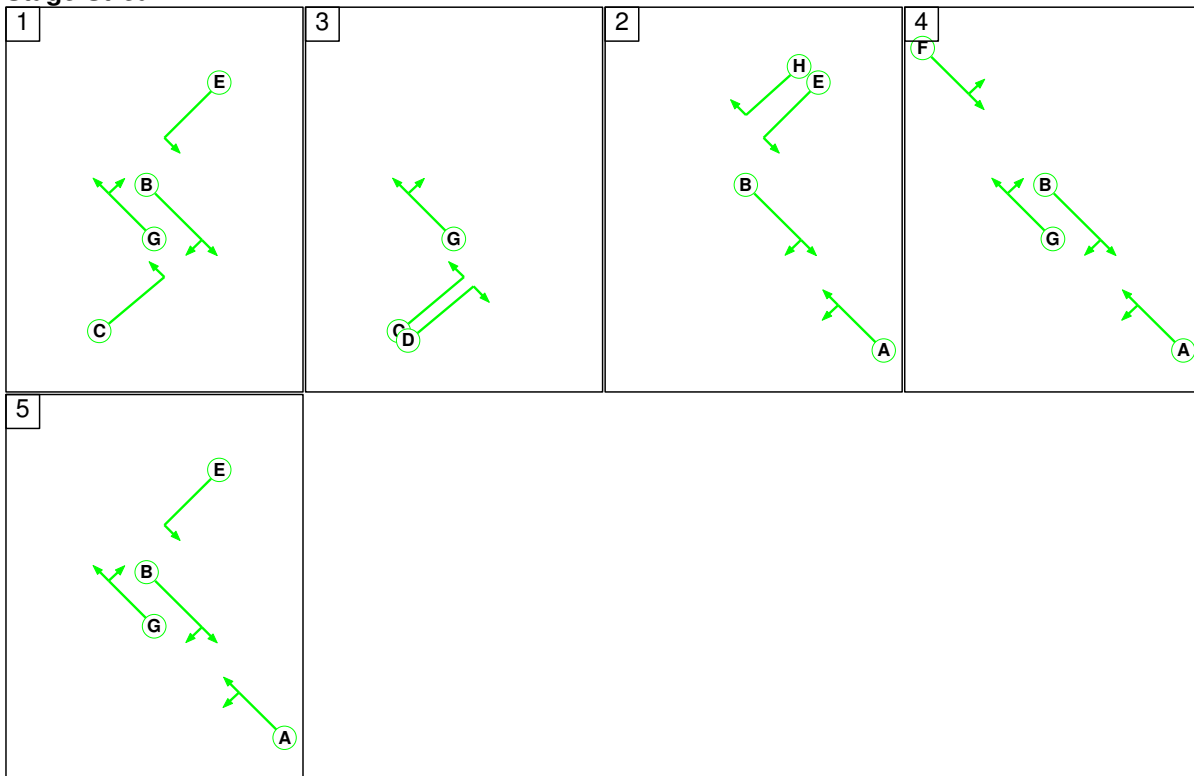
Overall Minimums

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Minimum	0	7	7	3	0

Stage Sequence Summary

Stage Sequence: Stage Sequence No. 1

Stage Stream: 1



Prepared by Malcolm Turner and Geoff Burrage
Reviewed by Malcolm Turner
Issued 24th Nov 2016

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