Technical Note

Transport Modelling Technical Addendum

Bankside Phase 2

Project Number: 16052-01
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1. Introduction

1.1 Markides Associated Ltd (MA) have been assisting Hallam Land Management Ltd with the transport related input to their outline planning application for up to 850 residential units on land to the south of Banbury, Oxfordshire known as Bankside Phase 2.

2. Planning Background

2.1 The site is identified within the Adopted Cherwell Local Plan 2011-2013 as Ban4 and is allocated for residential development. Adjacent to it is allocation Ban12, which is allocated for a replacement ground for Banbury Football Club and / or a new Secondary School.

2.2 An outline planning application for 700 units residential units on the BAN4 was submitted in June 2017 (application no 17/01408/OUT) and scoping discussions took place in advance of that application, with a meeting held with OCC on 28th January 2015 to discuss the Proposed Development and modelling methodology. Subsequent to that meeting, further feedback was been received from OCC in response to pre-application submissions to CDC in relation to the ES Scoping Submission.

2.3 Following submission of that application, further meetings were held with both OCC and CDC to discuss the application. Feedback given at the time was that the consideration should be given to the provision of access to the BAN4 site via BAN12, despite prior pre-application responses indicating that this was not required. As a result changes to the proposals to provide a new access into the BAN4 and BAN12 sites from Banbury Road, extension of the redline boundary for the site into the northern section of BAN12 and an increase in unit numbers to 850 has taken place.

2.4 Furthermore, in the interim a SATURN model of the whole of Banbury had been completed and is now being utilised to identify the changes in traffic flows that will occur as a result of all major development in Banbury. Rather than the previous methodology of forecasting future year traffic flow utilising TEMPRO growth factors, TRICS trip rates and data from Transport Assessment of committed development in the area, OCC have required that the Banbury SATURN model is used to obtain traffic flows forecasts. The resulting flows are then to be used in detailed junction capacity models.

2.5 A new application reflecting these changes was submitted in 2019 (19/01047/OUT) which was supported by a Transport Assessment using this methodology. OCC provided a response to the application (dated 26th July 2019) that included a number of comments relating to the modelling that was undertaken. These can be summarised as:

- The Transport Assessment provides no analysis of the number of trips that would be generated by the proposed development, nor of the development's trip distribution.
- There appear to be errors in the outputs from the Banbury SATURN model on which the traffic impact assessment has been based.
- Due to the above, the county council cannot be confident in the results of the junction capacity assessments or of the conclusions made regarding the requirements for mitigation.

2.6 Subsequent to this, further discussions were held with OCC and their Consultants WYG to identify what the issues with the SATURN model were and what was needed to rectify these. An assumption on where the traffic would be able to leave the site onto the wider road network was incorrect and amendments were made to the assumptions on the internal road layout. Finally, an additional scenario was added in 2031 to include the South East Link Road (SELR). OCC had requested a financial contribution towards the provision of this on the assumption that it would be delivered by 2031 and it is therefore important to understand the effect the SELR has on road performance with the development in place.

3. Purpose and Structure of this Note

3.1 This Technical Note therefore responds with the additional information requested by OCC on traffic flows and distribution and updates the individual junction capacity assessment that was undertaken within the TA. It is structured as follows:

- Section 4 covers the information related to the SATURN model, including trip generation, distribution and sense check;
- Section 5 updates the junction capacity modelling included in the TA with these new flows; and
- Section 6 provides a short summary.

4. Trip Generation and Distribution Assumptions

4.1 It should be noted at this point that all of the original assumptions for the SATURN modelling undertaken for the original Transport Assessment were all agreed with WYG and OCC prior

to the modelling being undertaken. We simply provided information on the number of units to be provided on site and the new access arrangement. Trip generation was then in line with the standard assumptions that WYG have used to assess all other committed developments in Banbury and distribution was based on data from an adjacent zone. The Transport Assessment explained the use of the SATURN model in paragraphs 5.9 to 5.11, which is repeated below:

"The Banbury Transport Model already includes assumptions for development on the BAN4 and BAN12 sites as these are allocated for development within the Cherwell Local Plan. For the BAN4 site, the model assumes that 50 dwellings are complete and occupied by 2021, 550 by 2026 and 600 by 2031. For BAN12 it is assumed that a 600 place secondary school is occupied on the site by 2031 (but not at 2026).

The Brief to OCC's modelling consultants for the Saturn modelling exercise associated with this application for redevelopment of BAN4 was as follows:

- *A 2026 Baseline Scenario for both AM and PM peaks was to be created with all residential development removed from site BAN4 and a 600 place secondary school located on BAN12 to be introduced.*
- *A 2026 With Development Scenario for both AM and PM peaks was to be created introducing 450 residential units on the BAN4 site and a 600 place secondary school on the BAN12 site.*
- *A 2031 Baseline Scenario for both AM and PM peaks was to be created with all residential development removed from site BAN4 and a 600 place secondary school located on BAN12 to be introduced.*
- *A 2031 With Development Scenario for both AM and PM peaks was to be created introducing 900 residential units on the BAN4 site and a 600 place secondary school on the BAN12 site.*

Access assumptions for the development proposal were that access would be available through the existing Longford Park development and a new access would be provided from the BAN12 site that also connects into BAN4. This would take the form of a signal controlled junction with Banbury Road."

4.2 The main error in the modelling work related to the assumption that vehicular traffic was able to enter and exit the Longford Park site via Canal Lane. However, the masterplan for the Longford Park development did not allow for a vehicular connection along this route, it

has only ever been intended to be a pedestrian and cycle access. This error has been corrected in subsequent model runs. The previous model runs also showed limited use of the proposed new access onto Oxford Road and amendments were made to assumptions on the internal road network to ensure that appropriate speeds / journey times were included.

4.3 Additional information on trip generation has been provided by WYG and this is replicated in Table 4.1 and Table 4.2.

Table 4.1 Modelling Assumptions for Bankside Phase 2

ID	Development Name	Dev Type	Total Units	2021	2026	2031	Dev Zone
Ref_30	Banbury 4 : Bankside Phase 2	C3 Dwellings	900	50	450	900	16144

Table 4.2 Trip Rates

	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Cars and LGVs	0.136	0.374	0.51	0.31	0.163	0.473
HGVs	0.003	0.002	0.005	0.001	0.001	0.002

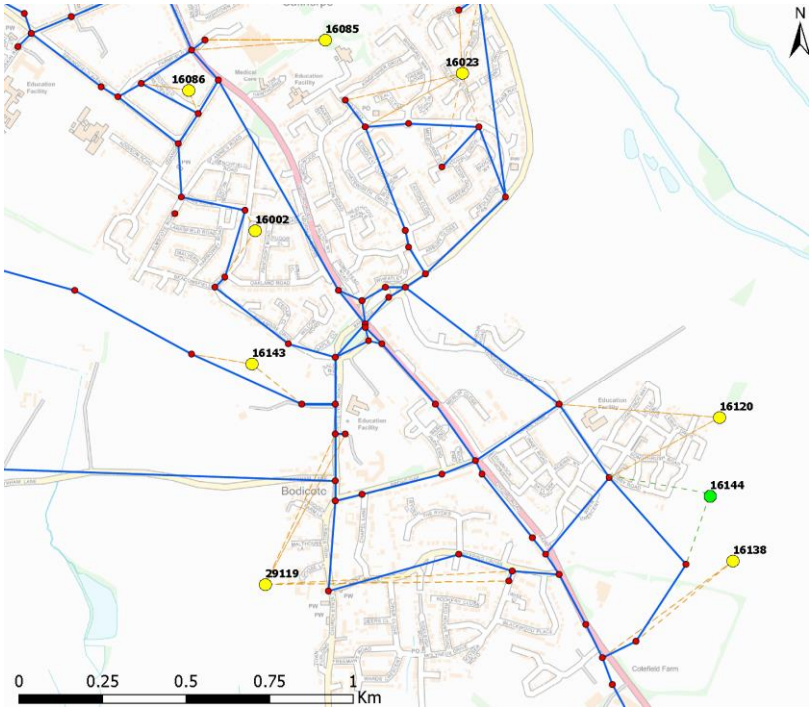
4.4 Applying the trip generation shown in Table 4.2 to the proposed levels of development in 2026 and 2031 gives the vehicle trip generation set out in Table 4.3.

Table 4.3 Vehicle Trip Generation

Units Numbers	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
450	63	169	232	140	74	214
900	125	338	463	280	148	428

4.5 With regard to trip distribution, this was taken from a combination of zones 16002, 16023 and 16120 of the existing model. These are shown in Figure 4.1.

Figure 4.1 Zones Used for Traffic Distribution



Source: WYG

4.6 In addition to the above, WYG have provided select link analysis of the traffic flows from zone 16144. These are provided in Appendix A. These show which access traffic travelling to and from the site would use. This traffic assignment in summarised in Table 4.4 and Table 4.5

Table 4.4 Traffic Assignment 2026

Mode	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
New Access – Oxford Road	37	24	61	22	32	54
Longford Park Access	7	130	137	37	16	53
Bankside Access	19	15	34	15	92	107
TOTAL	61	169	232	74	140	2143

Table 4.5 Traffic Assignment 2031

Mode	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
New Access – Oxford Road	38	82	120	63	30	93
Longford Park Access	12	224	236	32	78	110
Bankside Access	75	32	107	185	40	225
TOTAL	125	338	463	280	148	428

4.7 It can be seen that the entry and exit flows from the select link analysis match the trip generation flows, which shows that the model input is correct.

4.8 Examining the distribution of traffic in the select link diagrams, traffic to / from the north is using the Bankside and Longford Park accesses, whilst that to / from the south uses the new access onto Oxford Road. The issue with traffic using Canal Lane has been resolved. The distribution between Bankside and Longford Park varies by direction and time, but this is to be expected in an assignment model as it will be dependent on which is the least cost route under the traffic conditions at that particular time.

4.9 It therefore appears that the SATURN modelling is now fit for the purpose and the various plots provided by WYG are shown in Appendix B. We have therefore used the turning flow spreadsheets provided to produce turning flow diagrams for the network for the following scenarios:

- 2026 Baseline AM and PM peaks
- 2026 With Development AM and PM peaks
- 2031 Baseline AM and PM peaks
- 2031 With Development AM and PM peaks
- 2031 With Development and SELR AM and PM peaks

4.10 These can be seen in Appendix C.

5. Junction Capacity Assessment Updates

5.1 The junction capacity models used in the Transport Assessment have therefore been updated using these latest traffic flows and the additional scenario with the SELR introduced.

5.2 Each of the junctions are covered individually in the following sections with model outputs available in Appendix D.

High Street / South Bar Street / West Bar Street Roundabout

5.3 The ARCADY model results for this junction are summarised in Table 5.1.

Table 5.1 Horse Fair / High Street / South Bar Roundabout ARCADY Model Result Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Horse Fair	0.75	3.0	0.73	2.7
High Street	0.39	0.6	0.66	1.8
South Bar Street	0.50	1.1	0.62	1.7
West Bar Street	0.62	1.9	0.45	0.9
2026 Baseline + Dev				
Horse Fair	0.75	3.1	0.73	2.7
High Street	0.38	0.6	0.65	1.8
South Bar Street	0.56	1.3	0.62	1.7
West Bar Street	0.68	2.5	0.45	0.9
2031 Baseline				
Horse Fair	0.78	3.6	0.77	3.4
High Street	0.41	0.7	0.78	3.4
South Bar Street	0.60	1.6	0.63	1.8
West Bar Street	0.73	3.0	0.58	1.5
2031 Baseline + Dev				
Horse Fair	0.82	4.5	0.79	3.8
High Street	0.44	0.8	0.80	3.9
South Bar Street	0.66	2.0	0.66	1.9
West Bar Street	0.76	3.5	0.59	1.5
2031 SE Link Road Baseline + Dev				
Horse Fair	0.79	3.7	0.77	3.4
High Street	0.45	0.8	0.75	2.8
South Bar Street	0.51	1.1	0.63	1.7
West Bar Street	0.54	1.5	0.56	1.4

5.4 It can be seen that under all scenarios the junction operates RFC's below 0.85 and is therefore within capacity.

Oxford Road Corridor Signals

5.5 The LINSIG model results for this network of junctions is summarised in Table 5.2 and Table 5.3.

Table 5.2 Oxford Road Corridor LINSIG Model Results Summary 2026 Scenarios

Junction / Arm	Baseline				With Development			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road								
South Bar RA	71.6 : 73.4%	11.6	68.4 : 79.1%	11.0	69.8 : 72.3%	11.2	70.8 : 82.4%	11.8
Bloxham Road LR	86.1 : 83.2%	13.7	82.3 : 82.3%	11.6	89.1 : 75.9%	14.4	76.7 : 76.7%	10.9
Oxford Road AL	67.1 : 67.1%	18.1	67.4 : 67.4%	16.6	76.2 : 76.2%	17.6	70.5 : 70.5%	17.8
J2: Oxford Road / Upper Windsor Street								
Oxford Road LA	79.4 : 79.4%	16.9	85.6 : 85.6%	17.7	82.3 : 82.3%	14.7	77.2 : 77.2%	15.7
Upper Windsor Street L	59.8%	13.1	39.3%	7.7	57.2%	12.7	48.1%	9.0
Upper Windsor Street R	56.1%	5.8	54.8%	5.3	62.8%	6.0	66.1%	5.8
Oxford Road A	40.4%	7.8	42.6%	9.4	40.5%	10.6	42.3%	10.5
Oxford Road R	60.7%	9.4	55.3%	8.3	53.2%	8.1	63.7%	7.5
J3: Oxford Road / Hightown Road / Horton View								
Oxford Road LRA	87.0 : 87.0%	27.7	84.1 : 84.1%	19.6	93.8 : 93.8%	23.9	91.9 : 91.9%	21.7
Horton View LAR	60.4%	5.9	33.4%	3.6	60.3%	5.8	34.5%	3.7
Oxford Road AL	45.7%	6.1	49.7%	3.8	46.5%	7.2	50.4%	5.0
Oxford Road AR	35.3%	3.5	41.1%	3.5	36.7%	4.6	41.8%	3.6
Oxford Road LA	50.1%	3.4	50.1%	3.5	50.9%	3.6	51.0%	4.7
Oxford Road A	31.2%	4.7	37.5%	6.0	31.8%	6.7	39.3%	8.0
Oxford Road A	40.0%	11.4	42.6%	9.7	40.7%	12.6	39.4%	8.9
Oxford Road AR	37.1 : 48.5%	8.5	86.8 : 86.8%	9.6	37.1 : 45.4%	9.4	58.9 : 79.8%	9.0
Hightown Road RL	87.2%	10.2	90.1%	12.8	94.0%	12.3	89.6%	12.7
J4: Oxford Road / Sainsburys / Farmfield Road								
Oxford Road L	44.0%	12.0	63.0%	15.3	47.4%	13.1	55.9%	13.4
Oxford Road RA	39.9%	8.4	42.9%	8.2	42.7%	9.1	52.2%	10.6
Sainsburys RAL	79.0 : 79.0%	5.6	91.9 : 91.9%	15.6	73.0 : 73.0%	4.9	92.7 : 92.7%	16.1
Farmfield Road LAR	78.8%	7.5	18.6%	2.1	72.6%	7.1	18.6%	2.1
Oxford Road ARL	77.0 : 77.0%	21.9	91.3 : 91.3%	30.3	83.9 : 83.9%	25.8	91.5 : 91.5%	30.8

Table 5.3 Oxford Road Corridor LINSIG Model Results Summary 2031 Scenarios

Junction / Arm	Baseline				With Development			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road								
South Bar RA	73.2 : 73.2%	11.6	77.8 : 77.8%	16.2	76.8 : 83.5%	13.6	80.5 : 80.5%	17.9
Bloxham Road LR	93.0 : 81.9%	17.3	80.4 : 80.4%	11.5	86.7 : 86.0%	18.8	81.8 : 81.8%	11.9
Oxford Road AL	80.0 : 80.0%	22.4	72.5 : 72.5%	20.0	85.6 : 85.6%	21.6	74.8 : 74.8%	21.1
J2: Oxford Road / Upper Windsor Street								
Oxford Road LA	79.6 : 79.6%	16.9	81.1 : 81.1%	24.8	82.6 : 82.6%	25.0	87.7 : 87.7%	27.8
Upper Windsor Street L	63.9%	13.7	59.3%	11.0	66.5%	14.3	52.7%	10.0
Upper Windsor Street R	59.8%	6.0	66.5%	5.8	63.0%	6.4	63.7%	5.9
Oxford Road A	41.8%	8.9	44.8%	13.2	43.1%	12.7	46.6%	18.9
Oxford Road R	67.5%	9.6	70.3%	9.1	70.4%	10.1	69.6%	9.7
J3: Oxford Road / Hightown Road / Horton View								
Oxford Road LRA	97.4 : 97.4%	35.7	102.3 : 102.3%	50.5	102.2 : 102.2%	54.9	100.2 : 100.2%	46.9
Horton View LAR	62.7%	6.3	38.5%	3.9	55.3%	5.5	38.8%	4.1
Oxford Road AL	49.4%	8.3	50.4%	6.8	52.2%	17.1	52.4%	16.2
Oxford Road AR	36.6%	4.1	41.6%	4.6	39.1%	5.7	43.5%	5.2
Oxford Road LA	53.3%	3.2	54.6%	3.7	54.4%	4.8	56.4%	4.0
Oxford Road A	31.4%	6.2	35.6%	6.2	34.3%	6.6	39.8%	6.7
Oxford Road A	42.5%	13.2	42.2%	12.7	39.5%	10.6	39.8%	10.0
Oxford Road AR	67.3 : 67.3%	9.6	81.3 : 81.8%	11.0	44.3 : 59.4%	10.6	90.2 : 90.2%	13.8
Hightown Road RL	98.8%	15.7	102.8%	21.0	101.4%	18.0	98.7%	17.6
J4: Oxford Road / Sainsburys / Farmfield Road								
Oxford Road L	51.9%	14.7	58.2%	16.2	56.6%	14.8	61.2%	14.3
Oxford Road RA	48.1%	10.4	46.8%	13.1	51.5%	8.9	52.7%	9.2
Sainsburys RAL	68.5 : 68.5%	4.7	102.5 : 102.5%	27.6	54.2 : 54.2%	4.0	98.7 : 98.7%	22.3
Farmfield Road LAR	83.6%	8.7	18.0%	1.9	70.7%	7.9	16.0%	1.8
Oxford Road ARL	90.8 : 90.8%	30.6	91.4 : 91.4%	31.3	101.7 : 101.7%	52.3	95.5 : 95.5%	36.0

5.6 Looking firstly at the 2026 scenario, it can be seen that the development does result in some increases in degree of saturation and queue lengths. However, in all circumstances the junctions remain within theoretical capacity and the queue length changes are 3 vehicles or less. On that basis, the development cannot be said to have a severe impact on the surrounding road network under by 2026.

5.7 In 2031, the degree saturation in some locations exceed 100% in the baseline and this is worsened with the introduction of development traffic. We have therefore considered potential mitigation measures for this location. Within the TA a localised improvement scheme was identified that consisted of increases in flare lengths on some approaches. This has been re-run with the new flows and the results

Table 5.4 Oxford Road Corridor LINSIG Model Results Summary 2031 Scenarios – With Mitigation in Place

Junction / Arm	Baseline				With Development			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road								
South Bar RA	73.2 : 73.2%	11.6	77.8 : 77.8%	16.2	75.9 : 86.1%	13.3	80.5 : 85.3%	18.1
Bloxham Road LR	93.0 : 81.9%	17.3	80.4 : 80.4%	11.5	90.3 : 88.7%	20.1	81.8 : 81.8%	11.9
Oxford Road AL	80.0 : 80.0%	22.4	72.5 : 72.5%	20.0	83.7 : 83.7%	22.8	74.8 : 74.8%	27.0
J2: Oxford Road / Upper Windsor Street								
Oxford Road LA	79.6 : 79.6%	16.9	81.1 : 81.1%	24.8	83.7 : 83.7%	17.0	82.9 : 82.9%	28.0
Upper Windsor Street L	63.9%	13.7	59.3%	11.0	65.0%	14.1	58.4%	10.6
Upper Windsor Street R	59.8%	6.0	66.5%	5.8	63.0%	6.4	73.5%	6.4
Oxford Road A	41.8%	8.9	44.8%	13.2	43.7%	14.4	45.6%	20.3
Oxford Road R	67.5%	9.6	70.3%	9.1	68.7%	9.7	75.7%	10.0
J3: Oxford Road / Hightown Road / Horton View								
Oxford Road LRA	97.4 : 97.4%	35.7	102.3 : 102.3%	50.5	97.5 : 97.5%	47.1	95.7 : 95.7%	45.9
Horton View LAR	62.7%	6.3	38.5%	3.9	52.5%	5.4	37.1%	4.0
Oxford Road AL	49.4%	8.3	50.4%	6.8	53.7%	18.4	53.2%	17.3
Oxford Road AR	36.6%	4.1	41.6%	4.6	40.2%	6.8	44.1%	6.3
Oxford Road LA	53.3%	3.2	54.6%	3.7	56.3%	4.3	57.3%	3.8
Oxford Road A	31.4%	6.2	35.6%	6.2	35.4%	8.0	40.4%	8.1
Oxford Road A	42.5%	13.2	42.2%	12.7	40.6%	11.9	40.4%	11.0
Oxford Road AR	67.3 : 67.3%	9.6	81.3 : 81.8%	11.0	45.5 : 58.7%	12.2	88.8 : 88.8%	14.6
Hightown Road RL	98.8%	15.7	102.8%	21.0	96.3%	14.7	94.4%	15.1
J4: Oxford Road / Sainsburys / Farmfield Road								
Oxford Road L	51.9%	14.7	58.2%	16.2	58.8%	14.3	63.4%	15.2
Oxford Road RA	48.1%	10.4	46.8%	13.1	53.6%	10.2	54.6%	10.4
Sainsburys RAL	68.5 : 68.5%	4.7	102.5 : 102.5%	27.6	51.4 : 51.4%	3.9	93.5 : 93.5%	17.6
Farmfield Road LAR	83.6%	8.7	18.0%	1.9	67.2%	7.6	14.8%	1.8
Oxford Road ARL	90.8 : 90.8%	30.6	91.4 : 91.4%	31.3	97.4 : 97.4%	38.3	92.3 : 92.3%	30.5

5.8 It can be seen that under the new modelled flows the scheme previously identified would still effectively mitigate the effect of the development proposals.

5.9 In addition, we have also assessed the effects of the SELR on the With Development Scenario and these are summarised in Table 5.5. This shows that the SELR would also mitigate the effects of development traffic. Hallam Land Management are therefore prepared to contribute financially towards the delivery of the SELR as an alternative to the provision of localised mitigation measures on Oxford Road.

Table 5.5 Oxford Road Corridor LINSIG Model Results Summary 2031 Scenarios – With SELR in Place

Junction / Arm	Baseline				With Development			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road								
South Bar RA	73.2 : 73.2%	11.6	77.8 : 77.8%	16.2	77.8 : 82.0%	14.1	76.6 : 86.0%	15.1
Bloxham Road LR	93.0 : 81.9%	17.3	80.4 : 80.4%	11.5	82.6 : 82.6%	13.3	80.1 : 80.1%	12.1
Oxford Road AL	80.0 : 80.0%	22.4	72.5 : 72.5%	20.0	70.3 : 70.3%	17.8	74.0 : 74.0%	18.6
J2: Oxford Road / Upper Windsor Street								
Oxford Road LA	79.6 : 79.6%	16.9	81.1 : 81.1%	24.8	84.4 : 84.4%	15.4	81.1 : 81.1%	24.8
Upper Windsor Street L	63.9%	13.7	59.3%	11.0	53.2%	11.1	51.2%	9.3
Upper Windsor Street R	59.8%	6.0	66.5%	5.8	63.9%	6.2	67.0%	5.9
Oxford Road A	41.8%	8.9	44.8%	13.2	42.2%	10.5	43.7%	11.6
Oxford Road R	67.5%	9.6	70.3%	9.1	61.8%	9.7	73.1%	9.9
J3: Oxford Road / Hightown Road / Horton View								
Oxford Road LRA	97.4 : 97.4%	35.7	102.3 : 102.3%	50.5	84.8 : 84.8%	17.3	95.7 : 95.7%	33.9
Horton View LAR	62.7%	6.3	38.5%	3.9	67.7%	7.1	44.8%	4.9
Oxford Road AL	49.4%	8.3	50.4%	6.8	45.2%	5.7	50.2%	4.7
Oxford Road AR	36.6%	4.1	41.6%	4.6	36.9%	4.6	41.5%	6.2
Oxford Road LA	53.3%	3.2	54.6%	3.7	50.4%	3.8	53.9%	3.6
Oxford Road A	31.4%	6.2	35.6%	6.2	31.4%	5.0	39.9%	7.8
Oxford Road A	42.5%	13.2	42.2%	12.7	39.8%	11.9	40.0%	11.0
Oxford Road AR	67.3 : 67.3%	9.6	81.3 : 81.8%	11.0	62.6 : 62.6%	10.1	68.8 : 84.8%	12.3
Hightown Road RL	98.8%	15.7	102.8%	21.0	84.9%	9.9	95.3%	15.4
J4: Oxford Road / Sainsburys / Farmfield Road								
Oxford Road L	51.9%	14.7	58.2%	16.2	45.0%	12.9	63.2%	16.8
Oxford Road RA	48.1%	10.4	46.8%	13.1	40.6%	9.5	57.1%	16.9
Sainsburys RAL	68.5 : 68.5%	4.7	102.5 : 102.5%	27.6	76.9 : 76.9%	5.9	95.8 : 95.8%	19.6
Farmfield Road LAR	83.6%	8.7	18.0%	1.9	80.6%	7.9	56.1%	2.0
Oxford Road ARL	90.8 : 90.8%	30.6	91.4 : 91.4%	31.3	80.9 : 80.9%	24.0	95.1 : 95.1%	34.5

Cherwell Street / Bridge Street / Concord Avenue Signals

5.10 The LINSIG model results for this junction is summarised in Table 5.6.

Table 5.6 Cherwell St/Bridge St/Concord Ave LINSIG Model Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Concord Avenue L	34.1	3.7	34.2	3.3
Concord Avenue AR	111	112.5	114.7	100.2
Bridge Street East	22.1	2.6	19.7	1.4
Cherwell Street AL	81.9	16.4	115.9	50.0
Cherwell Street R	88.0	16.3	84.3	9.1
Bridge Street West	111.3	54.5	116.4	78.0
2026 Baseline + Dev				
Concord Avenue L	32.5	2.8	34.0	3.2
Concord Avenue AR	128.7	180.5	115.9	105.6
Bridge Street East	31.6	2.3	19.4	1.3
Cherwell Street AL	96.8	18.8	115.9	50.0
Cherwell Street R	105.6	27.7	84.6	9.2
Bridge Street West	128.1	107.2	120.7	93.2
2031 Baseline				
Concord Avenue L	33.0	2.8	33.8	3.3
Concord Avenue AR	128.4	178.5	121.9	131.7
Bridge Street East	30.3	2.3	20.1	1.4
Cherwell Street AL	104.0	28.6	123.8	63.7
Cherwell Street R	119.2	51.2	109.5	28.5
Bridge Street West	125.5	102.1	128.4	123.2
2031 Baseline + Dev				
Concord Avenue L	32.8	2.8	32.0	2.9
Concord Avenue AR	137.9	231.3	120.2	130.9
Bridge Street East	37.5	2.6	18.0	1.4
Cherwell Street AL	104.5	32.0	132.1	80.9
Cherwell Street R	113.0	43.3	110.1	29.4
Bridge Street West	137.5	133.0	130.9	132.1
2031 SE Link Road Baseline + Dev				
Concord Avenue L	33.1	2.8	36.8	3.4
Concord Avenue AR	128.7	181.3	122.8	143.5
Bridge Street East	30.9	2.3	22.8	1.4
Cherwell Street AL	111.3	44.1	105.2	32.4
Cherwell Street R	107.9	30.3	76.8	8.6
Bridge Street West	125.2	101.3	120.9	86.1

5.11 It can be seen that under all scenarios this junction is over capacity. The provision of the SELR goes some way towards improving its performance, and brings it to a comparable performance as the baseline, but it remains over-capacity.

Bloxham Road / Queensway Road Junction

5.12 The LINSIG model results for this junction is summarised in Table 5.7

Table 5.7 Bloxham Road / Queensway LINSIG Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Bloxham Road South	74.3	10.6	75.0	10.8
Queensway Left	54.1	6.4	37.3	4.1
Queensway Right	72.2	8.6	75.5	9.6
Bloxham Road North	48.4	6.6	64.8	10.9
2026 Baseline + Dev				
Bloxham Road South	74.9	10.6	75.2	10.8
Queensway Left	54.1	6.4	37.3	4.1
Queensway Right	75.3	9.3	76.3	9.8
Bloxham Road North	46.4	6.1	63.5	10.6
2031 Baseline				
Bloxham Road South	79.5	12.2	76.6	11.2
Queensway Left	58.8	7.1	39.6	4.3
Queensway Right	76.2	9.4	73.1	8.8
Bloxham Road North	50.3	6.7	70.3	13.0
2031 Baseline + Dev				
Bloxham Road South	80.3	12.3	77.3	11.4
Queensway Left	60.0	7.1	40.6	4.4
Queensway Right	81.5	10.3	76.9	9.5
Bloxham Road North	53.4	6.3	69.1	12.5
2031 SE Link Road Baseline + Dev				
Bloxham Road South	78.2	11.4	76.1	11.1
Queensway Left	56.8	6.6	38.9	4.2
Queensway Right	75.6	9.0	76.5	9.5
Bloxham Road North	50.5	6.9	68.4	12.0

5.13 This junction operates within capacity under all scenarios.

Bloxham Road / Springfield Road Priority Junction

5.14 The PICADY model results for this junction is summarised in Table 5.8.

Table 5.8 Bloxham Road / Springfield Road PICADY Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Springfield Avenue Left	0.42	0.7	0.50	1.0
Springfield Avenue Right	0.33	0.5	0.77	3.1
Bloxham Road S Ahead + Right	0.25	0.3	0.16	0.2
2026 Baseline + Dev				
Springfield Avenue Left	0.45	0.8	0.50	1.0
Springfield Avenue Right	0.45	0.8	0.79	3.3
Bloxham Road S Ahead + Right	0.28	0.4	0.16	0.2
2031 Baseline				
Springfield Avenue Left	0.54	1.2	0.62	1.6
Springfield Avenue Right	0.42	0.7	0.82	3.7
Bloxham Road S Ahead + Right	0.33	0.5	0.21	0.3
2031 Baseline + Dev				
Springfield Avenue Left	0.57	1.3	0.65	1.8
Springfield Avenue Right	0.59	1.4	0.90	5.7
Bloxham Road S Ahead + Right	0.34	0.5	0.21	0.3
2031 SE Link Road Baseline + Dev				
Springfield Avenue Left	0.37	0.6	0.53	1.1
Springfield Avenue Right	0.44	0.8	0.81	3.5
Bloxham Road S Ahead + Right	0.29	0.4	0.17	0.2

5.15 This junction operates within capacity under all scenarios.

Oxford Road Bankside Slip Road Priority Junctions

5.16 The PICADY model results for these junctions are summarised in Table 5.9 and Table 5.10

Table 5.9 Oxford Road / Bankside Slip Road East PICADY Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Bankside Slip E	0.22	0.3	0.34	0.5
2026 Baseline + Dev				
Bankside Slip E	0.23	0.3	0.34	0.5
2031 Baseline				
Bankside Slip E	0.34	0.6	0.42	0.7
2031 Baseline + Dev				
Bankside Slip E	0.32	0.5	0.41	0.7
2031 SE Link Road Baseline + Dev				
Bankside Slip E	0.49	1.0	0.56	1.3

Table 5.10 Oxford Road / Bankside Slip Road West PICADY Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Bankside Slip W	0.39	0.6	0.29	0.4
2026 Baseline + Dev				
Bankside Slip W	0.48	0.9	0.31	0.4
2031 Baseline				
Bankside Slip W	0.44	0.8	0.32	0.5
2031 Baseline + Dev				
Bankside Slip W	0.43	0.8	0.30	0.4
2031 SE Link Road Baseline + Dev				
Bankside Slip W	0.34	0.5	0.23	0.3

5.17 It can be seen that these junctions operates within capacity under all scenarios.

Bankside / Longford Park Roundabout

5.18 The ARCADY model results for this junction is summarised in Table 5.11

Table 5.11 Bankside / Longford Park ARCADY Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCU)	RFC	Queue (PCU)
2026 Baseline				
A4260 Slip Road	0.19	0.2	0.24	0.3
Bankside East	0.47	0.9	0.50	1.0
Site Access	0.12	0.1	0.17	0.2
Bankside West	0.33	0.5	0.28	0.4
2026 Baseline + Dev				
A4260 Slip Road	0.21	0.3	0.29	0.4
Bankside East	0.49	1.0	0.55	1.3
Site Access	0.24	0.3	0.22	0.3
Bankside West	0.34	0.5	0.29	0.4
2031 Baseline				
A4260 Slip Road	0.19	0.2	0.26	0.4
Bankside East	0.55	1.3	0.56	1.3
Site Access	0.12	0.2	0.21	0.3
Bankside West	0.36	0.6	0.35	0.5
2031 Baseline + Dev				
A4260 Slip Road	0.24	0.3	0.36	0.6
Bankside East	0.57	1.3	0.69	2.2
Site Access	0.21	0.3	0.26	0.4
Bankside West	0.37	0.6	0.36	0.6
2031 SE Link Road Baseline + Dev				
A4260 Slip Road	0.30	0.4	0.38	0.6
Bankside East	0.79	3.5	0.91	8.7
Site Access	0.39	0.7	0.30	0.4
Bankside West	0.62	1.6	0.50	1.0

5.19 This junction continues to operate within capacity under all scenarios apart from in the PM peak 2031 with the SELR in place. The Bankside East arm of the junction would have an RFC in excess of the practical maximum of 0.85, but queuing remains reasonable, indicating that the junction would operate reasonably well.

Oxford Road / Weeping Cross / Longford Park Signals

5.20 The LINSIG model results for this junction is summarised in Table 5.12 to Table 5.14

Table 5.12 Oxford Road / Longford Park / Weeping Cross LINSIG Results Summary 2026

Junction / Arm	Baseline				With Development			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road								
Oxford Road N	65.8	13.2	61.9	11.4	65.4	12.8	60.3	10.4
Oxford Road S Ahead	34.1	1.6	41.9	2.0	33.4	1.5	41.1	1.9
Oxford Road S Ahead/Right	34.9	1.8	43.3	2.2	34.2	1.7	42.3	2.1
Site Access	0.0	0.0	0.0	0.0	19.1	0.9	33.5	1.5
J2: Oxford Road / Upper Windsor Street								
Oxford Road N Ahead	35.3	1.6	33.2	1.5	35.1	1.7	32.3	1.5
Oxford Road N Ahead/Right	37.4	1.8	35.1	1.7	37.6	2.0	34.6	1.8
Weeping Cross	43.2	2.4	9.5	0.5	43.9	2.5	12.2	0.6
Oxford Road S Ahead/Left	64.0	11.3	79.1	20.8	62.7	10.7	77.1	19.1

Table 5.13 Oxford Road / Longford Park / Weeping Cross LINSIG Results Summary 2031

Junction / Arm	Baseline				With Development			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road								
Oxford Road N	74.7	18.7	63.5	12.0	81.6	22.7	62.3	11.4
Oxford Road S Ahead	38.3	1.7	45.0	2.1	43.5	1.7	43.9	2.1
Oxford Road S Ahead/Right	39.3	1.9	46.3	2.3	44.6	1.9	45.3	2.3
Site Access	0.0	0.0	0.0	0.0	80.6	10.9	69.0	3.8
J2: Oxford Road / Upper Windsor Street								
Oxford Road N Ahead	40.2	1.8	34.0	1.5	44.5	1.8	30.8	1.4
Oxford Road N Ahead/Right	42.6	2.0	36.0	1.7	48.8	2.7	35.8	1.9
Weeping Cross	73.4	6.0	29.3	1.6	45.1	5.3	36.0	2.0
Oxford Road S Ahead/Left	71.7	15.9	84.8	26.0	79.6	20.5	82.5	23.8

Table 5.14 Oxford Road / Longford Park / Weeping Cross LINSIG Results Summary 2031 – With SELR

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue	DoS	Queue
J1: Oxford Road / Bloxham Road				
Oxford Road N	79.3	21.4	65.8	13.2
Oxford Road S Ahead	42.8	1.8	43.7	2.1
Oxford Road S Ahead/Right	44.1	1.9	45.1	2.3
Site Access	77.2	9.4	63.2	3.3
J2: Oxford Road / Upper Windsor Street				
Oxford Road N Ahead	43.3	1.8	32.6	1.5
Oxford Road N Ahead/Right	46.0	2.1	37.9	2.0
Weeping Cross	42.4	4.7	50.6	2.9
Oxford Road S Ahead/Left	79.0	20.3	82.1	23.3

5.21 This junction operates within capacity under all scenarios.

Oxford Road / Twyford Road Priority Junction

5.22 The PICADY model results for this junction is summarised in Table 5.15.

Table 5.15 Oxford Road / Twyford Road PICADY Model Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Twyford Road Left	0.0	0.0	0.0	0.0
Twyford Road Right	0.20	0.3	0.23	0.3
Banbury Road S Ahead + Right	0.02	0.0	0.02	0.0
2026 Baseline + Dev				
Twyford Road Left	0.0	0.0	0.0	0.0
Twyford Road Right	0.21	0.3	0.25	0.3
Banbury Road S Ahead + Right	0.07	0.2	0.02	0.0
2031 Baseline				
Twyford Road Left	0.0	0.0	0.0	0.0
Twyford Road Right	0.23	0.3	0.22	0.3
Banbury Road S Ahead + Right	0.02	0.0	0.0	0.0
2031 Baseline + Dev				
Twyford Road Left	0.0	0.0	0.0	0.0
Twyford Road Right	0.24	0.3	0.24	0.3
Banbury Road S Ahead + Right	0.03	0.1	0.0	0.0
2031 SE Link Road Baseline + Dev				
Twyford Road Left	0.0	0.0	0.0	0.0
Twyford Road Right	0.23	0.3	0.21	0.3
Banbury Road S Ahead + Right	0.02	0.0	0.0	0.0

5.23 This junction operates within capacity under all scenarios.

Oxford Road / Aynho Road Signals

5.24 The LINSIG model results for this junction is summarised in Table 5.16

Table 5.16 Oxford Road / Aynho Road LINSIG Result Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Oxford Road N	68.2	16.1	80.7	21.7
Aynho Road	71.2	4.7	84.8	11.7
Oxford Road S	70.8	19.3	85.4	27.5
Adderbury Court	0.0	0.0	0.0	0.0
2026 Baseline + Dev				
Oxford Road N	68.6	16.4	81.3	21.9
Aynho Road	70.7	5.0	84.2	11.5
Oxford Road S	72.1	20.0	85.7	27.9
Adderbury Court	0.0	0.0	0.0.	0.0
2031 Baseline				
Oxford Road N	74.1	18.8	81.8	22.8
Aynho Road	75.3	6.2	91.9	13.5
Oxford Road S	80.7	25.3	94.8	38.5
Adderbury Court	0.0	0.0	0.0	0.0
2031 Baseline + Dev				
Oxford Road N	73.5	18.4	81.9	22.8
Aynho Road	73.5	5.6	93.9	14.5
Oxford Road S	79.1	24.2	98.4	46.5
Adderbury Court	0.0	0.0	0.0	0.0
2031 SE Link Road Baseline + Dev				
Oxford Road N	76.3	19.3	91.9	30.5
Aynho Road	76.8	5.0	91.4	13.3
Oxford Road S	72.7	20.6	86.2	28.8
Adderbury Court	0.0	0.0	0.0	0.0

5.25 In 2026 the junction is expected to operate within capacity. By 2031, the junction exceeds practical capacity in the PM peak but does not exceed theoretical capacity. The SELR results in a slight improvement in performance at this junction.

Upper Windsor Street / Swan Close Signals

5.26 The LINSIG model results for this junction is summarised in Table 5.17

Table 5.17 Upper Windsor Street / Swan Close LINSIG Results Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	DoS	Queue (PCUs)	RFC	Queue (PCUs)
2026 Baseline				
Swan Close Left	15.8	1.9	19.5	2.5
Swan Close Right	76.0	12.4	56.4	9.4
Upper Windsor St N A	76.0	13.1	56.4	6.8
Upper Windsor St N L	13.7	1.3	37.1	4.4
Upper Windsor St S A	48.7	8.3	49.6	7.5
Upper Windsor St S R	68.0	4.2	38.5	1.9
2026 Baseline + Dev				
Swan Close Left	17.0	2.1	20.2	2.6
Swan Close Right	75.4	12.3	57.9	9.6
Upper Windsor St N A	74.1	12.7	56.3	7.0
Upper Windsor St N L	14.6	1.4	38.4	4.6
Upper Windsor St S A	45.0	7.4	48.7	7.5
Upper Windsor St S R	68.0	4.2	38.5	1.9
2031 Baseline				
Swan Close Left	17.9	2.3	21.2	2.8
Swan Close Right	72.8	11.8	60.6	10.0
Upper Windsor St N A	74.3	12.3	58.4	7.8
Upper Windsor St N L	16.0	1.5	38.0	4.5
Upper Windsor St S A	43.5	7.1	50.6	8.1
Upper Windsor St S R	71.1	4.5	32.7	1.5
2031 Baseline + Dev				
Swan Close Left	17.6	2.2	20.8	2.7
Swan Close Right	75.9	12.6	59.2	10.0
Upper Windsor St N A	77.2	13.1	60.4	7.6
Upper Windsor St N L	17.6	1.8	42.4	5.3
Upper Windsor St S A	44.9	7.3	54.8	8.7
Upper Windsor St S R	72.7	4.7	29.8	1.4
2031 SE Link Road Baseline + Dev				
Swan Close Left	17.2%	1.7	33.7%	3.9
Swan Close Right	72.3%	11.8	56.2%	6.9
Upper Windsor St N A	13.2%	1.6	20.1%	2.6
Upper Windsor St N L	74.3%	12.5	58.6%	9.8
Upper Windsor St S A	55.4%	9.6	53.4%	8.4
Upper Windsor St S R	66.6%	3.7	30.4%	1.4

5.27 The junction operates within capacity under all scenarios.

Bankside / Hightown Road / Lambs Crescent Priority Junction

5.28 The PICADY model results for this junction is summarised in Table 5.18

Table 5.18 Bankside / Hightown Rd / Lambs Crescent Model Result Summary

Junction / Arm	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	RFC	Queue (PCUs)	RFC	Queue (PCUs)
2026 Base				
Lambs Crescent	0.0	0.0	0.0	0.0
Hightown S	0.06	0.1	0.06	0.1
Bankside Left	0.12	0.1	0.16	0.2
Bankside Right	0.86	5.4	0.58	1.4
Hightown N	0.0	0.0	0.0	0.0
2026 Base + Dev				
Lambs Crescent	0.0	0.0	0.0	0.0
Hightown S	0.06	0.1	0.07	0.1
Bankside Left	0.13	0.2	0.18	0.2
Bankside Right	0.86	5.3	0.61	1.5
Hightown N	0.0	0.0	0.0	0.0
2031 Base				
Lambs Crescent	0.0	0.0	0.0	0.0
Hightown S	0.06	0.1	0.07	0.1
Bankside Left	0.18	0.2	0.22	0.3
Bankside Right	0.88	6.0	0.56	1.3
Hightown N	0.0	0.0	0.0	0.0
2031 Base + Dev				
Lambs Crescent	0.0	0.0	0.0	0.0
Hightown S	0.06	0.1	0.07	0.1
Bankside Left	0.26	0.3	0.25	0.3
Bankside Right	0.89	6.4	0.59	1.4
Hightown N	0.0	0.0	0.0	0.0
2031 SE Link Road Base + Dev				
Lambs Crescent	0.0	0.0	0.0	0.0
Hightown S	0.06	0.1	0.07	0.1
Bankside Left	0.10	0.1	0.07	0.1
Bankside Right	0.75	3.0	0.56	1.2
Hightown N	0.0	0.0	0.0	0.0

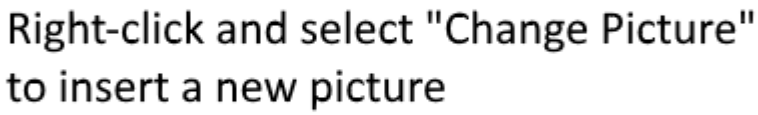
5.29 In all scenarios the right turn out of Bankside has an RFC just above 0.85. However, the development proposals have no impact on this. The SELR reduces the RFC on this movement down to 0.75.

6. Summary

6.1 In summary:

- Additional information has been provided by OCC's Consultants WYG regarding trip rates and distribution assumptions, which has been provided in this Note;
- Select link analysis has allowed a sense check on the model output, with trips matching the generation and model distribution appearing logical;
- Updated junction modelling shows little change from the TA, with the previously proposed scheme on Oxford Road continuing to mitigate the impact of the development traffic in 2031;
- The With Development and South East Link Road tests all show that the SELR improves the performance of almost all junctions, at least back to baseline conditions. The only junction to see a worsening of performance is the Bankside / Longford Park site access roundabout, but this still operated acceptably.
- Hallam Land Management are therefore prepared to offer a financial contribution towards the delivery of the link road as an alternative to the provision of localised junction improvements.

Photo 6.1 Title



SATURN

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_F26_Ban4_Ph
2_AM_Net.UFS

Scale 14181

Link Annot:

S.L.A.

Bandwidths =
100./mm

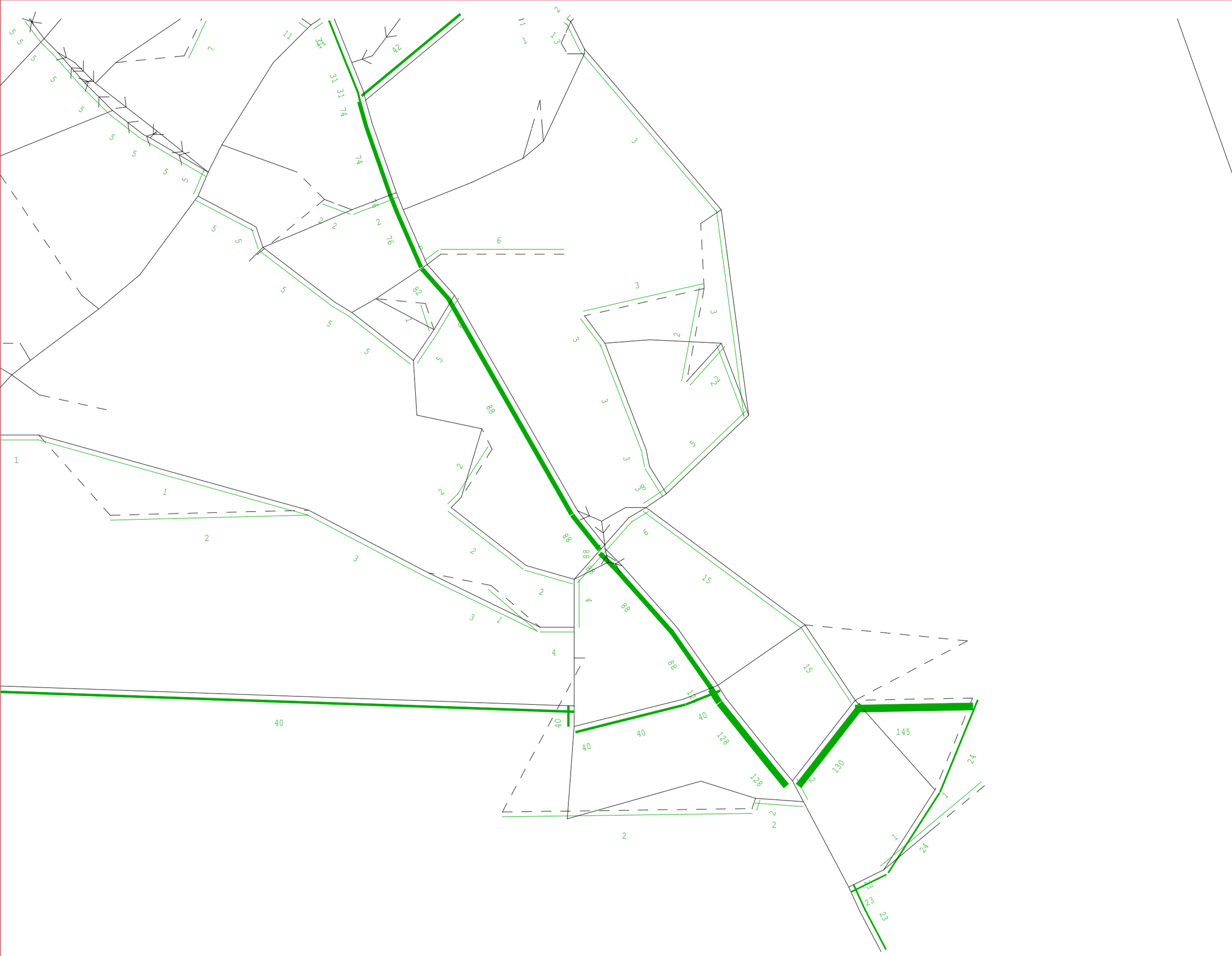
Selected
Link
Assignment
Thru destin.
Zone 16144

Total Demand
Flow = 63

All User Cls

8-10-19

WHITE YOUNG



SATURN

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2_AM_Net.UFS

Scale 14181

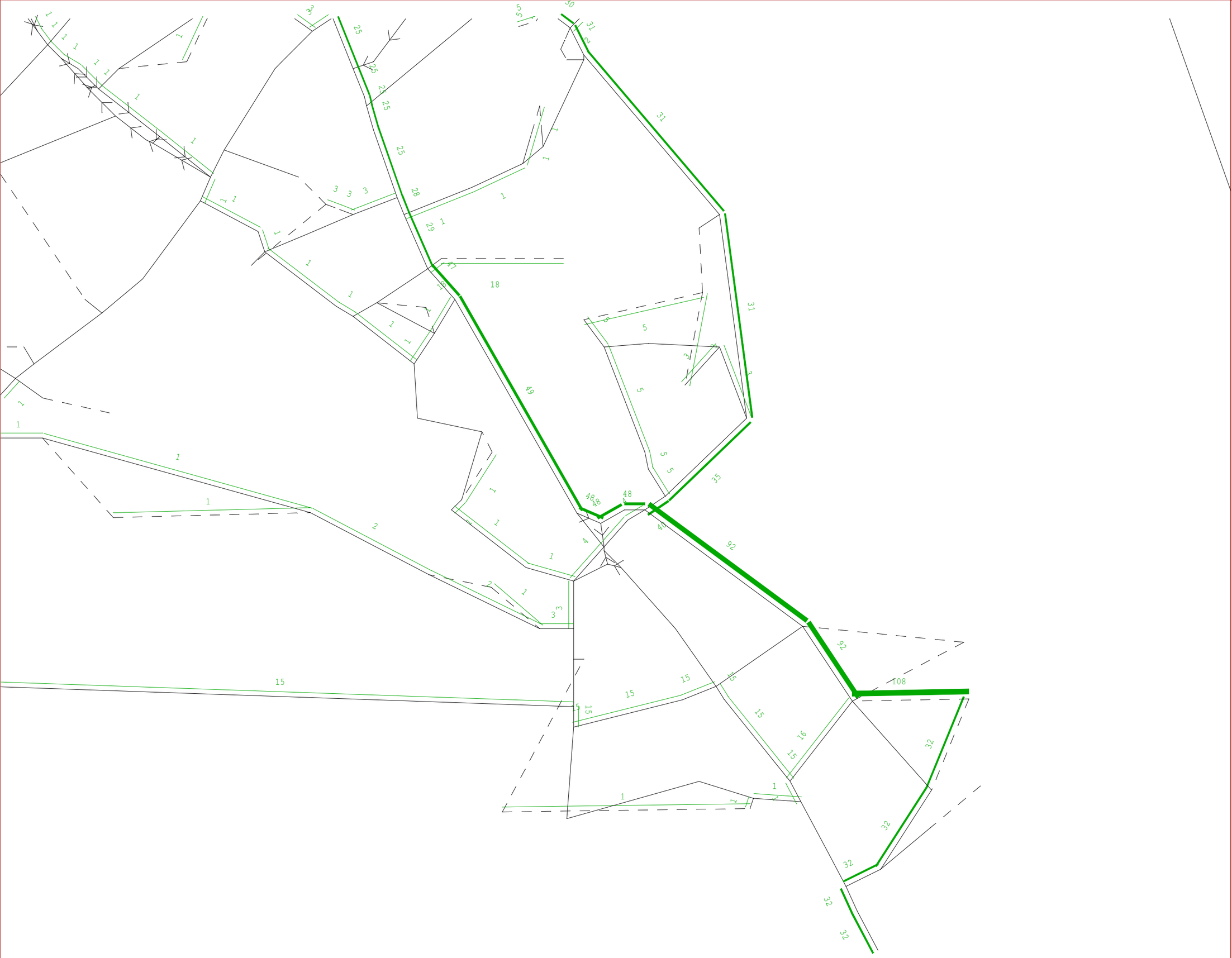
Link Annot:

S.L.A.

Bandwidths =
100./mm

8-10-19

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

_F26_Ban4_Ph
2_PM_Net.UFS

Scale 14274

Link Annot:

S.L.A.

Bandwidths =
100./mm

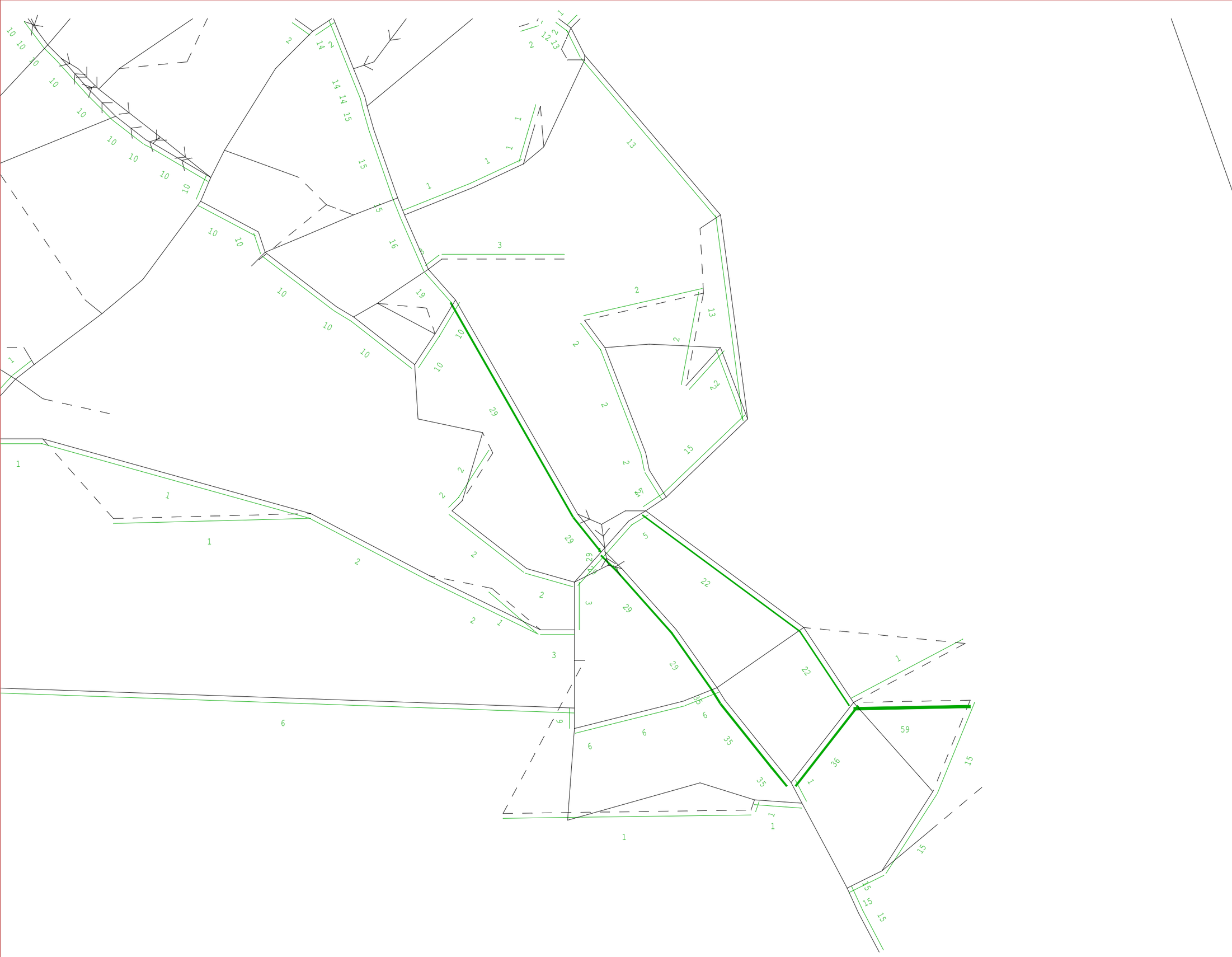
Selected
Link
Assignment
Thru destin.
Zone 16144

Total Demand
Flow = 140

All User Cls

8-10-19

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

_F26_Ban4_Ph
2_PM_Net.UFS

Scale 14274

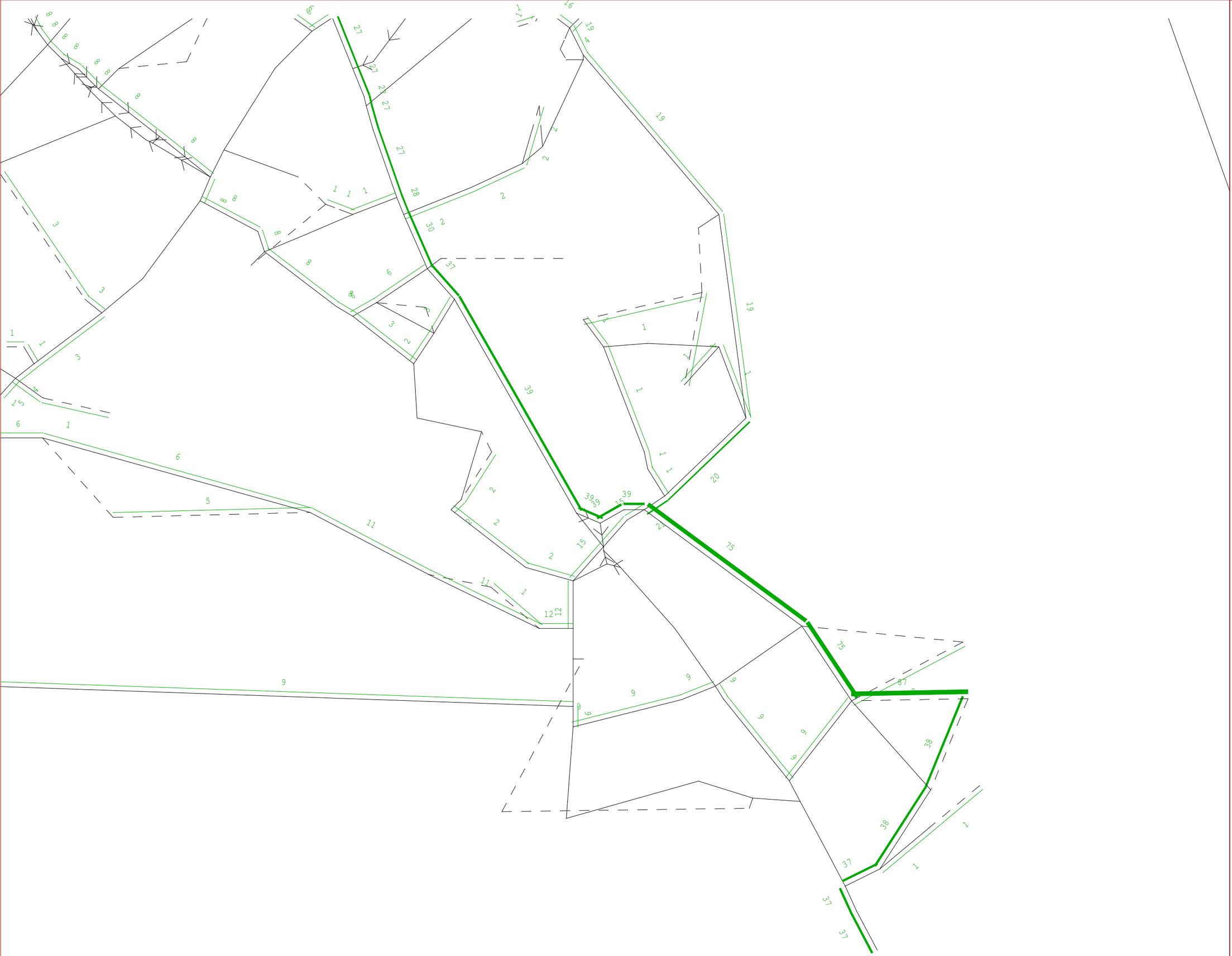
Link Annot:

S.L.A.

Bandwidths =
100./mm

8-10-19

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

_F31_Ban4_Ph
2_AM_Net.UFS

Scale 14274

Link Annot:

S.L.A.

Bandwidths =
100./mm

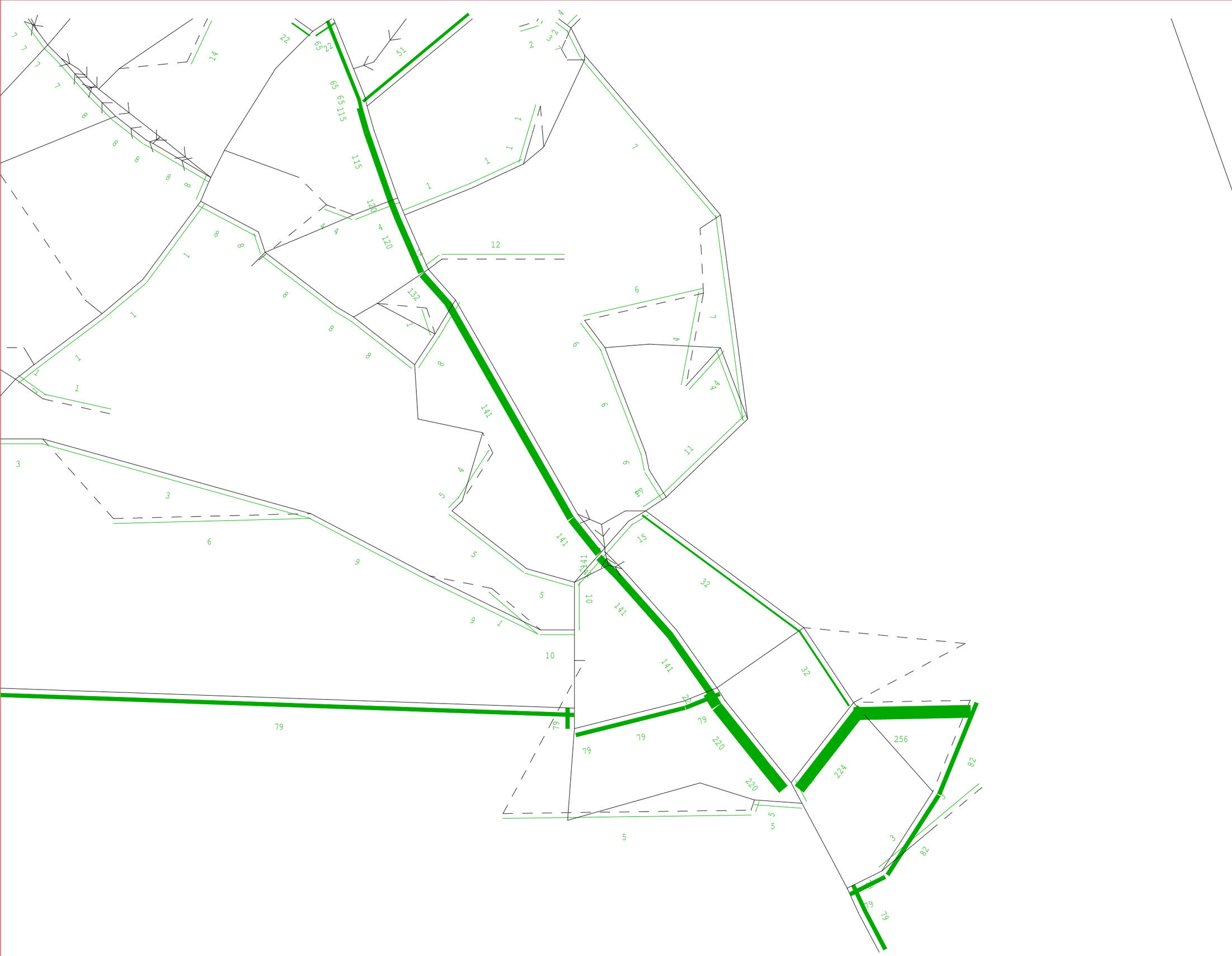
Selected
Link
Assignment
Thru destin.
Zone 16144

Total Demand
Flow = 125

All User Cls

8-10-19

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

_F31_Ban4_Ph
2_AM_Net.UFS

Scale 14274

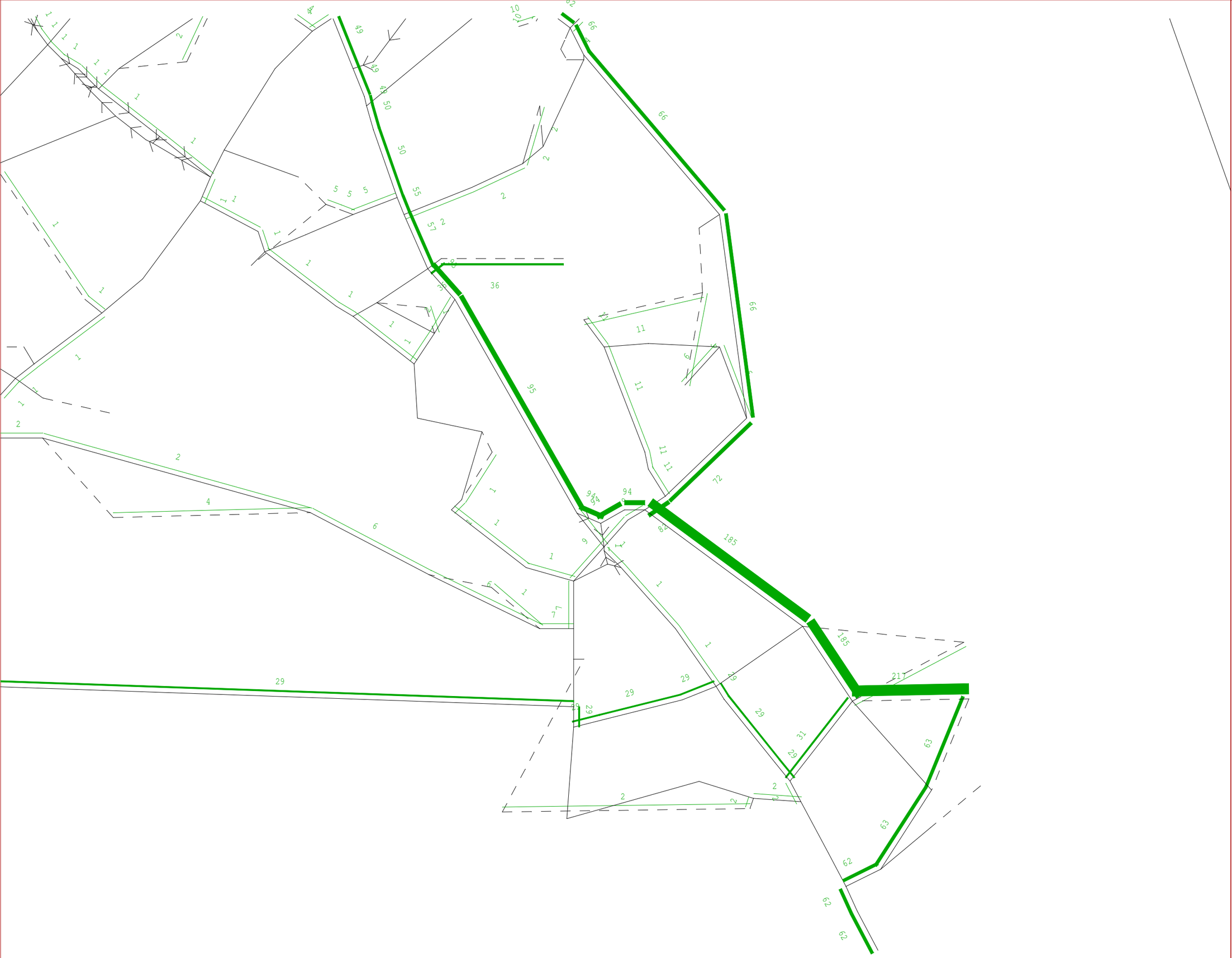
Link Annot:

S.L.A.

Bandwidths =
100./mm

8-10-19

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

_F31_Ban4_Ph
2_PM_Net.UFS

Scale 14274

Link Annot:

S.L.A.

Bandwidths =
100./mm

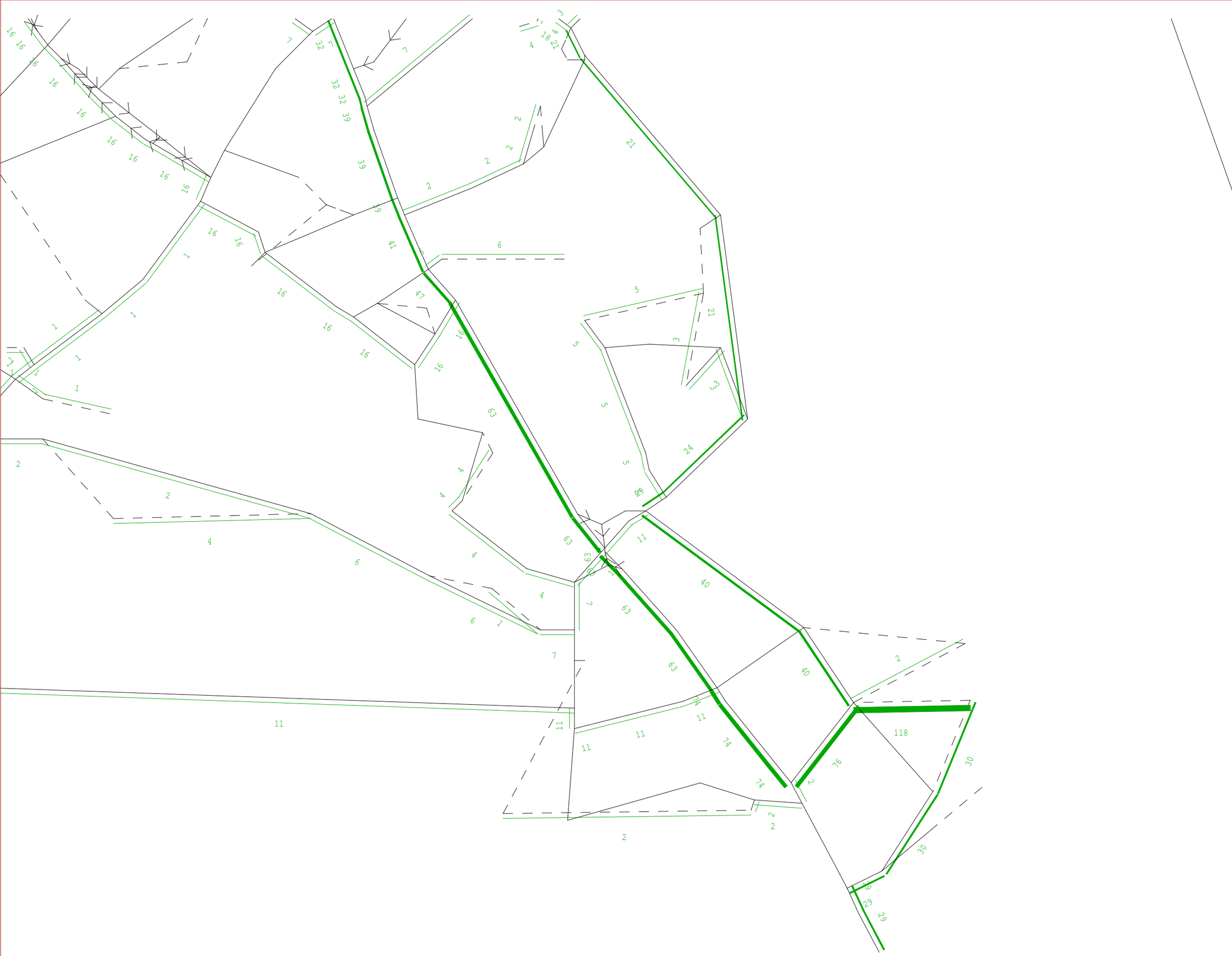
Selected
Link
Assignment
Thru destin.
Zone 16144

Total Demand
Flow = 280

All User Cls

8-10-19

WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

_F31_Ban4_Ph
2_PM_Net.UFS

Scale 14274

Link Annot:

S.L.A.

Bandwidths =
100./mm

8-10-19

WHITE YOUNG