

## Annex D

### Impact of constructing link road on its own (Scenario 2):

1. Figures 1 and 2 (Annex E) illustrate the predicted changes in traffic flows. Absolute values are given in table 2 of this Annex.
2. The model predicts that 98 pcus (9%) during the AM and 124 pcus (9%) during the PM will switch their route from using Tadcaster Road to Bishopthorpe Road as a direct result of the availability of the new link Road. The model assigns traffic to the network so that it experiences the least cost and delay for its journey. The model predicts that the proposed link road will provide a more attractive route for these vehicles.
3. As might be expected, the model predicts that the new road provides an immediate relief for Church Lane, with all but local traffic (7 pcus AM, 13 pcus PM) effectively switching to this new link. It is accepted that levels will not in reality drop this low, a limitation of this type of strategic model is that the level of detail contained in it is not always sufficient to pick up minor local flow movements.
4. It is predicted that some of the traffic, 98 pcus (41%) in the AM and 66 pcus (23%) in the PM, that uses Appleton Road (South and towards Copmanthorpe), switches route to use the Copmanthorpe Link and the new link Road. This contributes to a reduction in flow for Main Street a net reduction of 107 pcus (29%) in the AM, 73 pcus (25%) PM.
5. The effects that the above flow changes will have on junction capacities at key locations on the highway network are shown in table 5 (Annex E). An increase in the available 'reserve capacity' of 10% during the AM and 6% in the PM over the base 2011 flows is predicted at the Tadcaster Road / Sim Balk Lane traffic lights. This means that this amount of additional traffic growth could be accommodated without increasing delays over the base position, or that there will be a reduction in delay at the junction of this order.
6. More modest increases in junction reserve capacity of 3% and 4% are predicted for St Helens Road / Tadcaster Road junction. Smaller, less than 2%, increases are seen on the rest of Tadcaster Road and The Mount.
7. Bishopthorpe Road sees an increase in traffic of 142 pcus (18%) AM and 221 (22%) PM South of the Terry's development site and 43 pcus (6%) AM and 119 pcus (12 %) PM North of this. The effect on the junction capacity at Bishopthorpe Road / Scarcroft Road signals is a modest worsening in the PM peak reserve capacity of -3%.

### Impact of Development Traffic on its own: (Scenario 3)

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8. Figures 3 and 4 (Annex E) illustrate the predicted changes in traffic flow that would result from scenario 3. Absolute values are given in table 3, Annex E.
9. The figures show the trip distributions associated with a development of the Terry's site generating 757 arrivals and 299 departures in the AM peak, 342 arrivals and 673 departures in the PM peak. As might be expected the impact extends over a wide area of the network. Note that small flow changes of less than 10 pcus are not illustrated.
10. The SATURN model takes into account 'knock on' effects so while some links see a consequential increase, others may see a decrease as a result of vehicles reassigning their route away from routes that become busier.
11. Increases in flow are predicted for Bishopthorpe Road North of Terry's, 326 pcus (31%) AM and 381 pcus (31%) PM, and South of Terry's 187 pcus (22%) AM, 99 pcus (11%) PM. On Tadcaster Road flow increases are seen of 74 pcus (6%) AM and 93 pcus (6%) PM.
12. The effect on network capacity on key junctions is shown in table 5 (Annex E). A reduction in reserve capacity is predicted at Tadcaster Road / Sim Balk Lane of (-3% AM & -1% PM), Tesco Roundabout (-2% AM & -4% PM), at the St Helens Road / Tadcaster Road junction of (-5% AM & -5% PM), at The Mount / Dalton Terrace lights of (-7% AM & -7% PM) and at Bishopthorpe Road / Scarcroft Road of (-8% AM & -11% PM).

### Impact of Link Road and Development Traffic: (Scenario 4)

13. Figures 5 and 6 (Annex E) illustrate the predicted changes in traffic flow that would result from scenario 4. Absolute values are given in Table 4 of Annex E.
14. Some of the benefits of the new link road are still present particularly the benefit to the junction of Tadcaster Road / Sim Balk Lane with reserve capacity improvements of (9% AM, 3% PM). As might be expected the link will also continue to provide relief for Church Lane and Main Street in Bishopthorpe.
15. The link road provides some relief for Tadcaster Road 75 pcus (7%) AM and 85 pcus (6%) PM. At the St Helens Road junction, however the increase in side road flow on St Helens Road effectively cancels out the improvements in capacity with no improvement in the AM (0%) and only a small improvement in capacity in the PM of 2% (Annex E, table 5). Further into the City any benefits of the link road are lost due to the increases in flow due to the development traffic.
16. The effect of Bishopthorpe Road is that there is a significant increase in traffic predicted North of the Terry's site 338 pcus (32%) AM, 453 (35%)

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PM, and South of the site 402 (38%) AM & 399 (34%) PM. These increases are due to the combined effect of the development traffic and the reassignment of traffic from Tadcaster Road as a result of constructing the new link road. South of Terry's this increase is probably manageable although it would have an impact on any junction proposals for access to the Terry's site. North of Terry's the main consequence is felt at the Scarcroft Road lights with a significant reduction in the reserve capacity (-8% AM, -13% PM).

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**Table 1:** Scenario 1, AM and PM flows in PCUs, existing network 2011:

<b>2 Way Flows (Existing 2011) Scenario 1</b>	<b>AM flow PCUs</b>
Tadcaster Road	1169
Bishopthorpe Road (South of Terry's)	659
Bishopthorpe Road (North of Terry's)	727
Church Lane	154
Main Street	482
Link Road	
Appleton Road	336
<b>2 Way Flows (Existing 2011) Scenario 1</b>	<b>PM flow</b>
Tadcaster Road	1444
Bishopthorpe Road (South of Terry's)	775
Bishopthorpe Road (North of Terry's)	837
Church Lane	420
Main Street	363
Link Road	
Appleton Road	355

**Table 2:** Scenario 2, AM and PM flows in PCUs, with link road, 2011. Change compared to base scenario 1.

<b>2 Way Flows (Link only) Scenario 2</b>	<b>AM flow PCUs</b>	<b>Change PCUs</b>	<b>Percentage</b>
Tadcaster Road	1071	-98	-9%
Bishopthorpe Road (South of Terry's)	802	142	18%
Bishopthorpe Road (North of Terry's)	771	43	6%
Church Lane	7	-147	-95%
Main Street	374	-107	-29%
Link Road	410	410	0%
Appleton Road	238	-98	-41%
<b>2 Way Flows (Link only) Scenario 2</b>	<b>PM flow PCUs</b>	<b>Change PCUs</b>	<b>Percentage</b>
Tadcaster Road	1320	-124	-9%
Bishopthorpe Road (South of Terry's)	996	221	22%
Bishopthorpe Road (North of Terry's)	956	119	12%
Church Lane	13	-410	-97%
Main Street	290	-73	-25%
Link Road	707	707	0%
Appleton Road	289	-66	-23%

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**Table 3:** Scenario 3, AM and PM flows in PCUs, with development, 2011. Change compared to base scenario 1.

<b>2 Way Flows (Development only) Scenario 3</b>	<b>AM flow PCUs</b>	<b>Change PCUs</b>	<b>Percentage</b>
Tadcaster Road	1243	74	6%
Bishopthorpe Road (South of Terry's)	847	187	22%
Bishopthorpe Road (North of Terry's)	1052	326	31%
Church Lane	280	125	45%
Main Street	546	63	12%
Link Road	0	0	
Appleton Road	367	31	8%
<b>2 Way Flows (Development only) Scenario 3</b>	<b>PM flow PCUs</b>	<b>Change PCUs</b>	<b>Percentage</b>
Tadcaster Road	1537	93	6%
Bishopthorpe Road (South of Terry's)	873	99	11%
Bishopthorpe Road (North of Terry's)	1219	381	31%
Church Lane	512	89	17%
Main Street	388	24	6%
Link Road	0	0	
Appleton Road	386	30	8%

**Table 4:** Scenario 4, AM and PM flows in PCUs, with development, 2011. Change compared to the existing base scenario 1.

<b>2 Way Flows (Link + Development) Scenario 4</b>	<b>AM flow PCUs</b>	<b>Change PCUs</b>	<b>Percentage</b>
Tadcaster Road	1094	-75	-7%
Bishopthorpe Road (South of Terry's)	1060	402	38%
Bishopthorpe Road (North of Terry's)	1066	338	32%
Church Lane	7	-147	-95%
Main Street	409	-73	-18%
Link Road	639	639	0%
Appleton Road	245	-91	-37%
<b>2 Way Flows (Link + Development) Scenario 4</b>	<b>PM flow PCUs</b>	<b>Change PCUs</b>	<b>Percentage</b>
Tadcaster Road	1361	-83	-6%
Bishopthorpe Road (South of Terry's)	1175	399	34%
Bishopthorpe Road (North of Terry's)	1291	453	35%
Church Lane	13	-410	-97%
Main Street	293	-71	-24%
Link Road	882	882	0%
Appleton Road	295	-62	-21%

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**Table 5:** Percentage changes in reserve capacity at key junctions:

+ values indicate an increase in reserve capacity compared to the existing base scenario 1

- values indicate a decrease in reserve capacity compared to the existing base scenario 1

AM 2011	Scenario 1 No Dev No Link	Scenario 2 No Dev Link	Scenario 3 Development No Link	Scenario 4 Development & Link
Tadcaster Road / Sim Balk Lane	0	+10	-3	+9
Tesco Roundabout	0	+1	-2	-2
Tadcaster Road / St Helens Road	0	+3	-5	0
The Mount / Dalton Terrace	0	+1	-7	-5
The Mount / Scarcroft Road	0	+1	-1	-1
The Mount / Holgate road	0	+1	0	0
Blossom Street / Queen Street	0	+1	-1	-1
Bishopthorpe Road / Scarcroft Road	0	0	-8	-8

PM 2011	Scenario 1 No Dev No Link	Scenario 2 No Dev Link	Scenario 3 Development No Link	Scenario 4 Development & Link
Tadcaster Road / Sim Balk Lane	0	+6	-1	+3
Tesco Roundabout	0	+2	-4	-2
Tadcaster Road / St Helens Road	0	+4	-5	+2
The Mount / Dalton Terrace	0	+1	-7	-6
The Mount / Scarcroft Road	0	+2	-3	-2
The Mount / Holgate road	0	+1	+1	+1
Blossom Street / Queen Street	0	0	-1	-1
Bishopthorpe Road / Scarcroft Road	0	-3	-11	-13

Fig 1. AM Flow changes due to new link road scenario 2 (refer table 2):

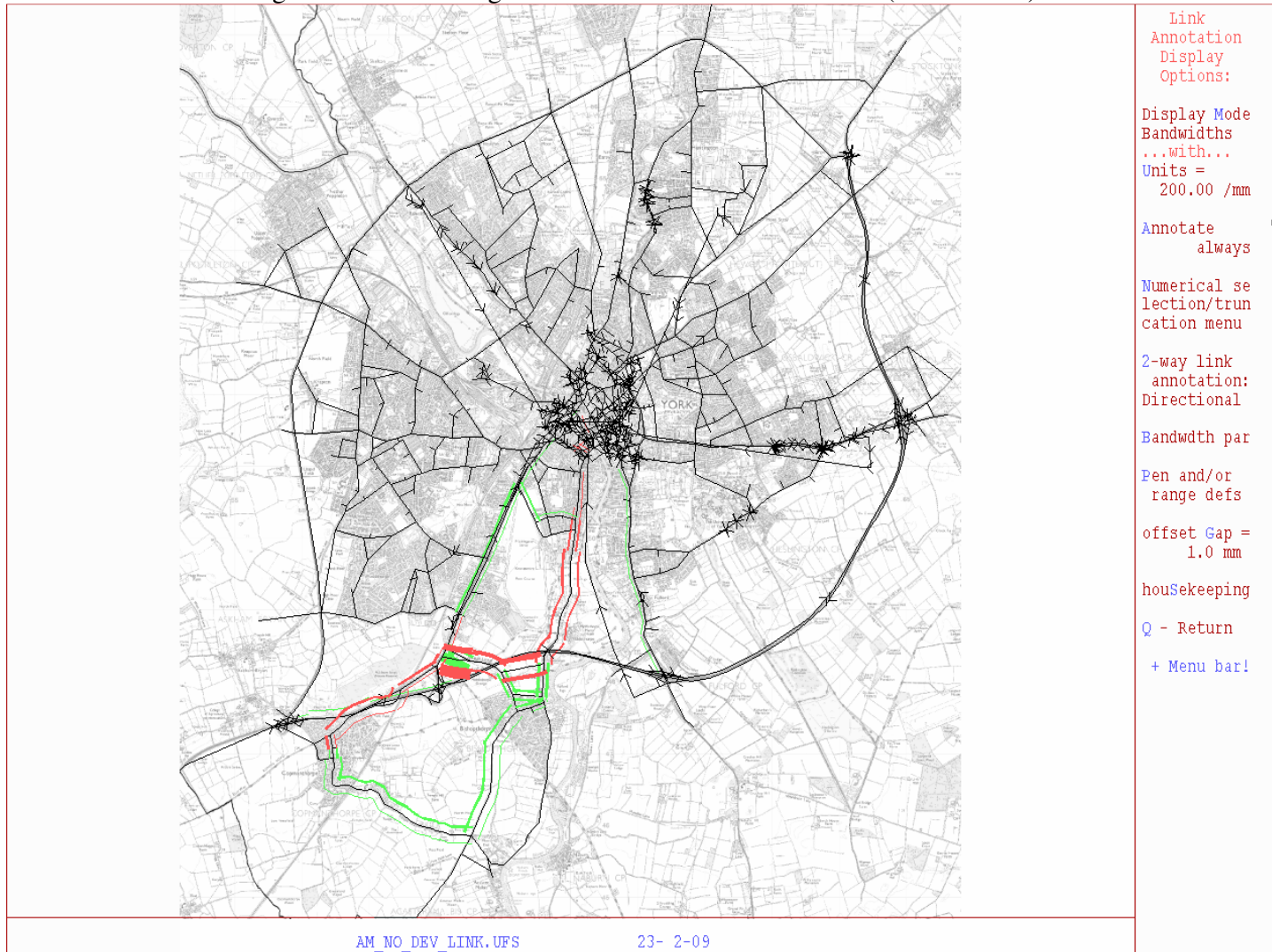


Fig 2. PM Flow changes due to new link road scenario 2 (refer table 2):

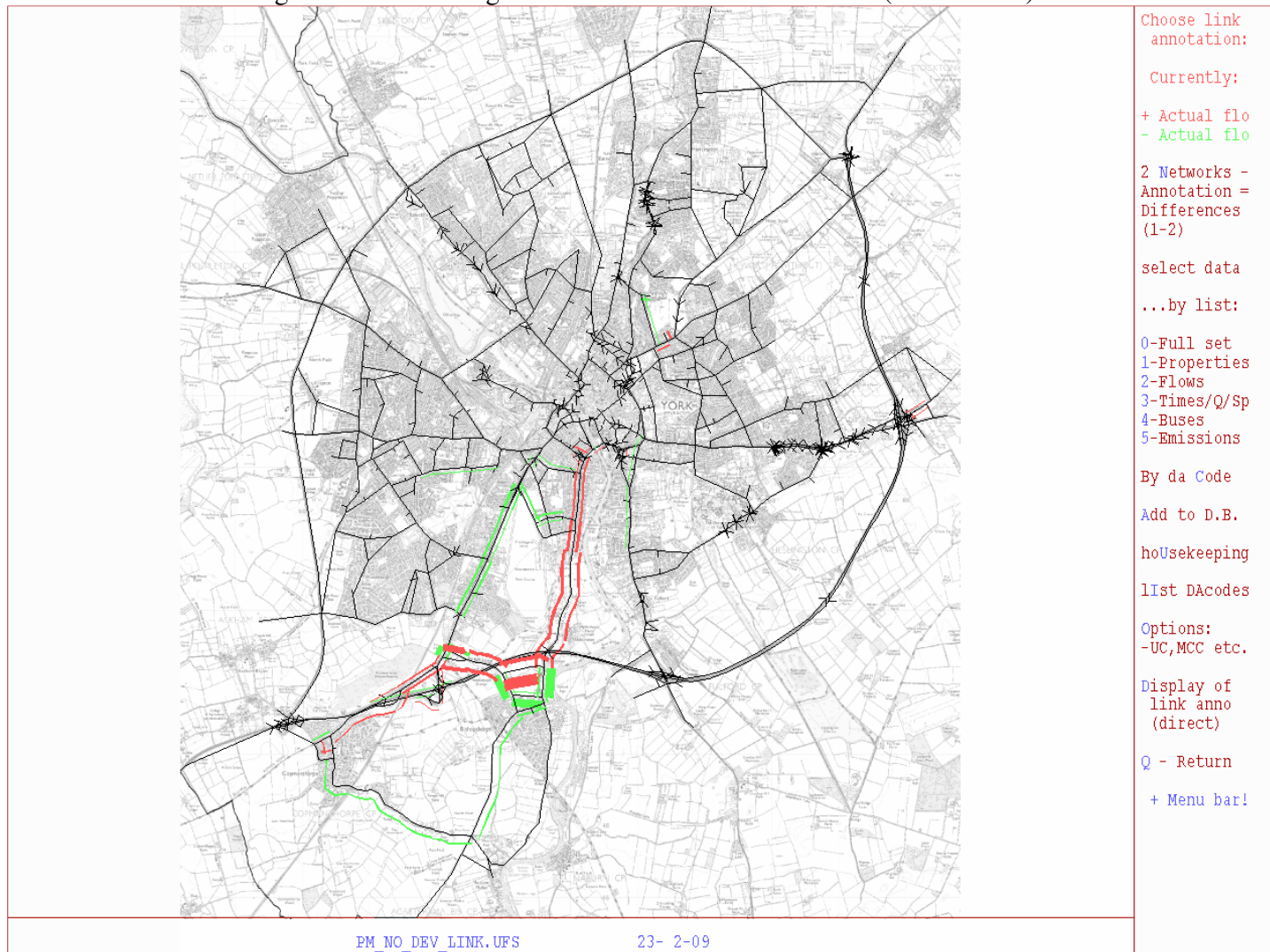
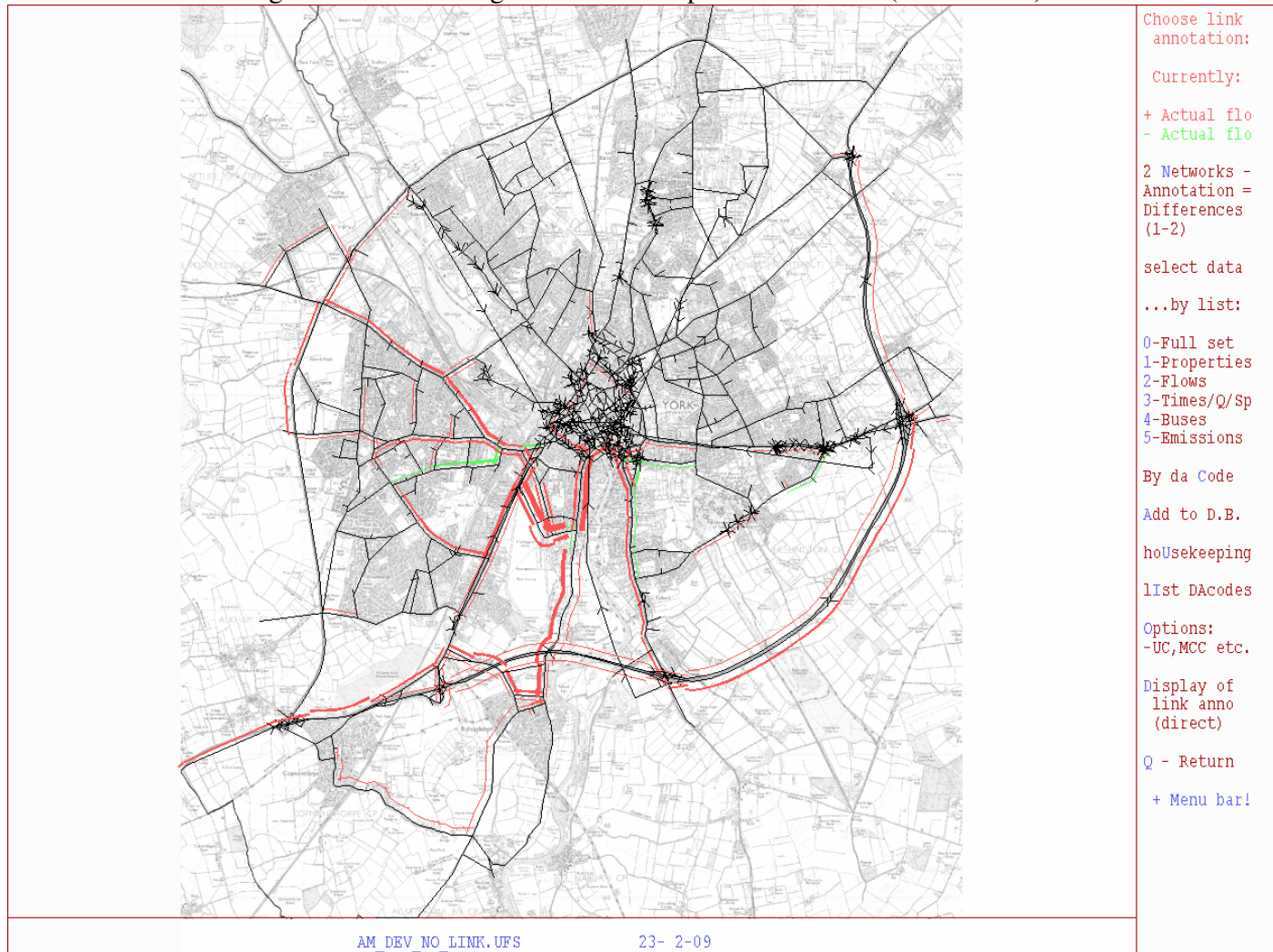




Fig 3. AM Flow changes due to development scenario 3 (refer table 3):



Choose link  
annotation:  
  
Currently:  
  
+ Actual flo  
- Actual flo  
  
2 Networks -  
Annotation =  
Differences  
(1-2)  
  
select data  
  
...by list:  
0-Full set  
1-Properties  
2-Flows  
3-Times/Q/Sp  
4-Buses  
5-Emissions  
  
By da Code  
Add to D.B.  
hoUsekeeping  
list DACodes  
  
Options:  
-UC,MCC etc.  
  
Display of  
link anno  
(direct)  
  
Q - Return  
  
+ Menu bar!

Fig 4. PM Flow changes due to development scenario 3 (refer table 3):

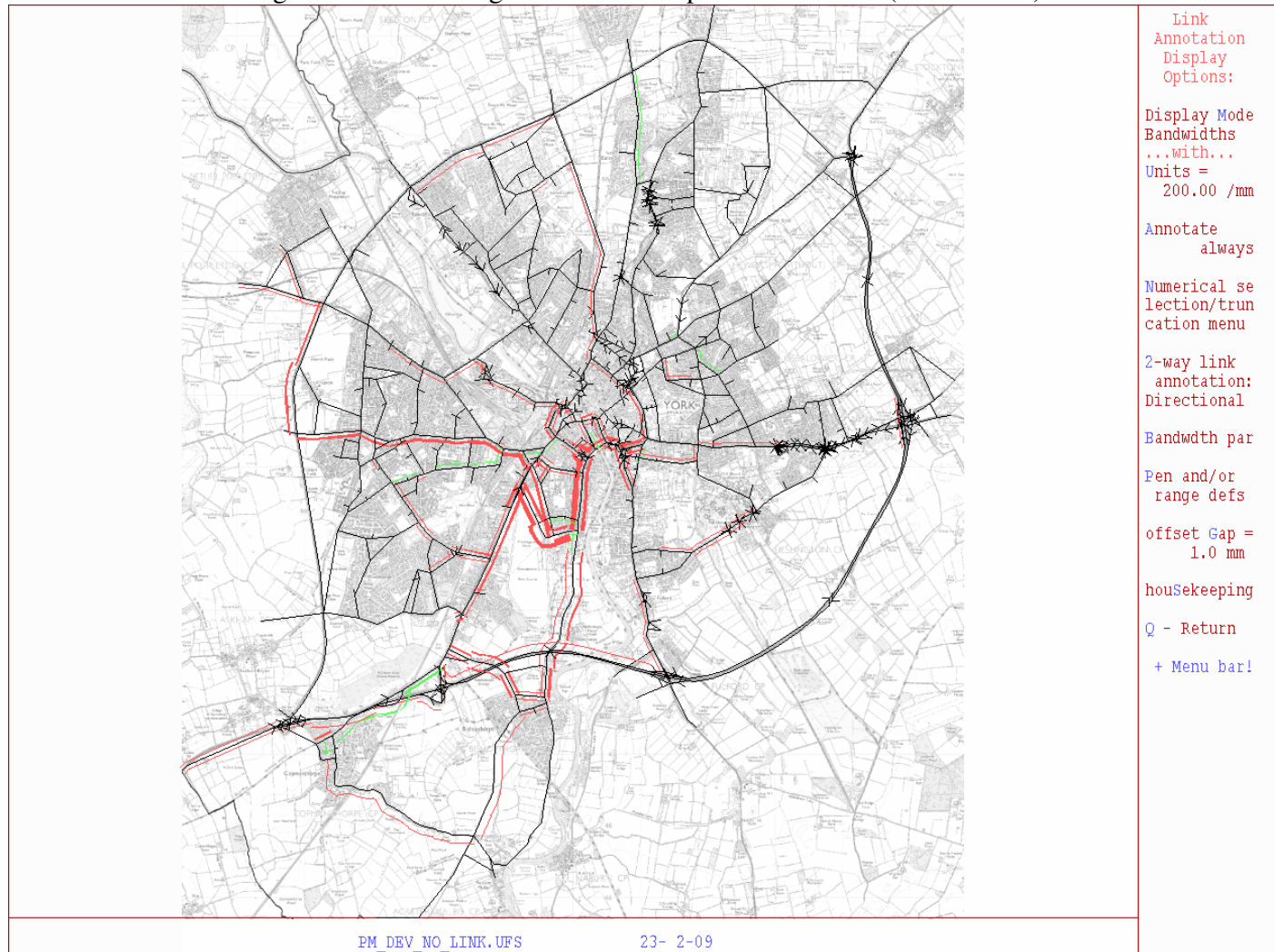
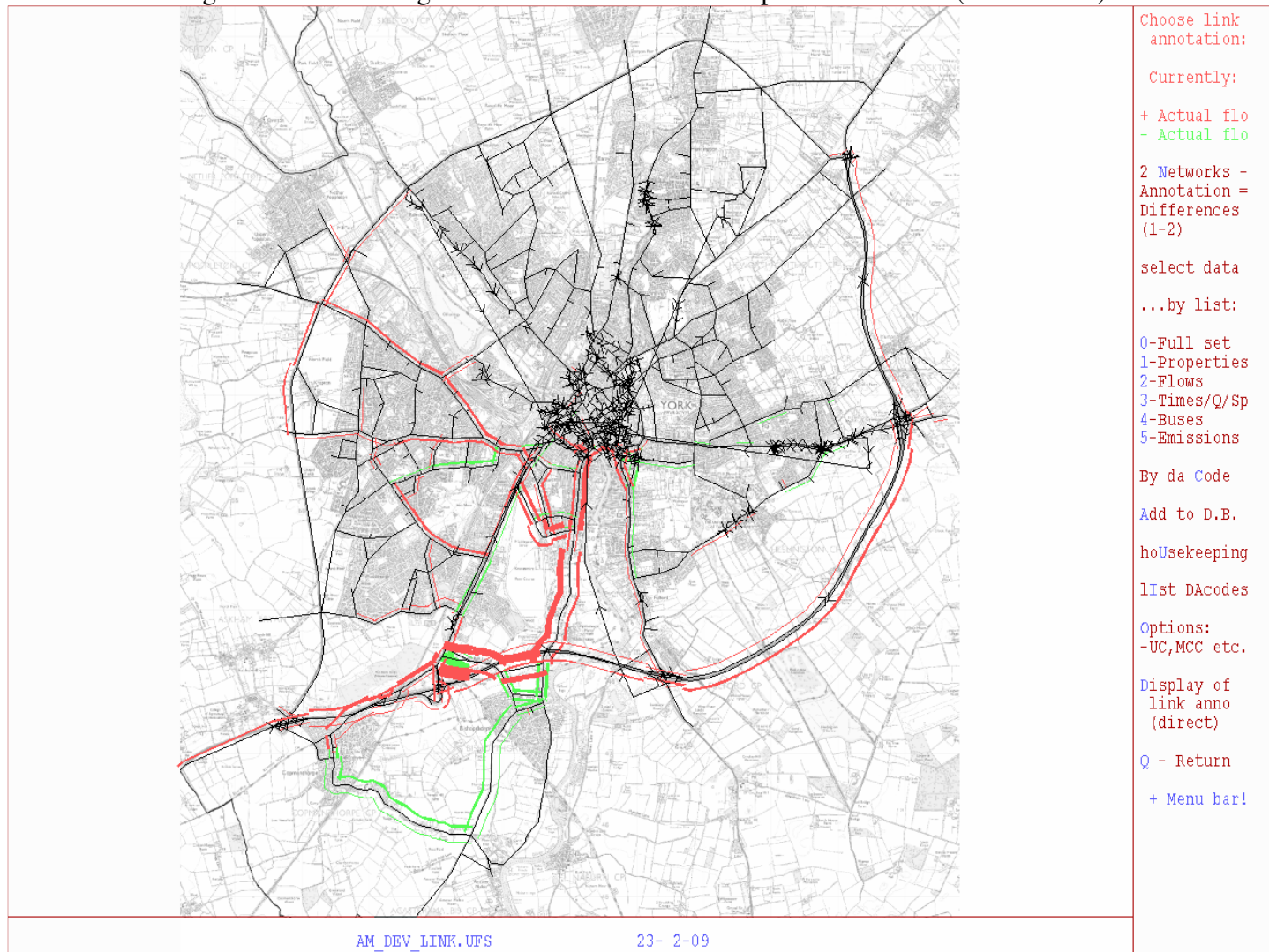


Fig 5. AM Flow changes due to link road and development scenario 4 (refer table 4):



Choose link  
annotation:

Currently:

+ Actual flo  
- Actual flo

2 Networks -  
Annotation =  
Differences =  
(1-2)

select data

...by list:

0-Full set  
1-Properties  
2-Flows  
3-Times/Q/Sp  
4-Buses  
5-Emissions

By da Code

Add to D.B.

hoUsekeeping

list DACodes

Options:  
-UC,MCC etc.

Display of  
link anno  
(direct)

Q - Return

+ Menu bar!

Fig 6. PM Flow changes due to link road and development scenario 4 (refer table 4):

