

# Arnold Laver Brabazon Hangar

DC Committee A, Wednesday 4<sup>th</sup> March 2020



## Transport and Highways

Laurence Fallon, Transport Development Manager



# Critical Transport Matters

- 1. Viable, realistic and attractive alternatives to car use*
- 2. Effective Marketing, Promotion and Travel Planning*
- 3. Restricting Parking on & off-site*
- 4. Safe Accessibility & Crowd Management*
- 5. Network Management and reducing congestion*
- 6. Safe and appropriate construction management*

# Assessment pathway

*Summer - Autumn 2019 – Agreeing the scope of work*

*Autumn 2019 – Applicant commissions modelling*

*December 2019 – Application submitted*

*23 December – Transport DM initial comments (App 5, p326)*

*January – February 2020 – Negotiation and dialogue*

*February 28<sup>th</sup> – Final Comments (App 5, p304)*

*March – Report to committee, conditions and obligations*

# Transport Assessment Outcomes

## ***a. Mode Share – How will people travel to the Arena?***

- a. Understanding demand*
- b. Transport Package - P&R / Shuttles / Rail / Active Travel / Management*

## ***b. Securing of Mode Shares - How will this be enforced?***

- a. Planning Conditions & Obligations*
- b. Minimal on-site parking*
- c. Control of off-site Parking*
- d. Travel Plan 'lock-ins' and penalties*

## ***c. Highway Impacts – How will these be minimised?***

- a. Modelling outputs*
- b. Event timings*
- c. Active Network Monitoring and Management*

# *Understanding Demand*



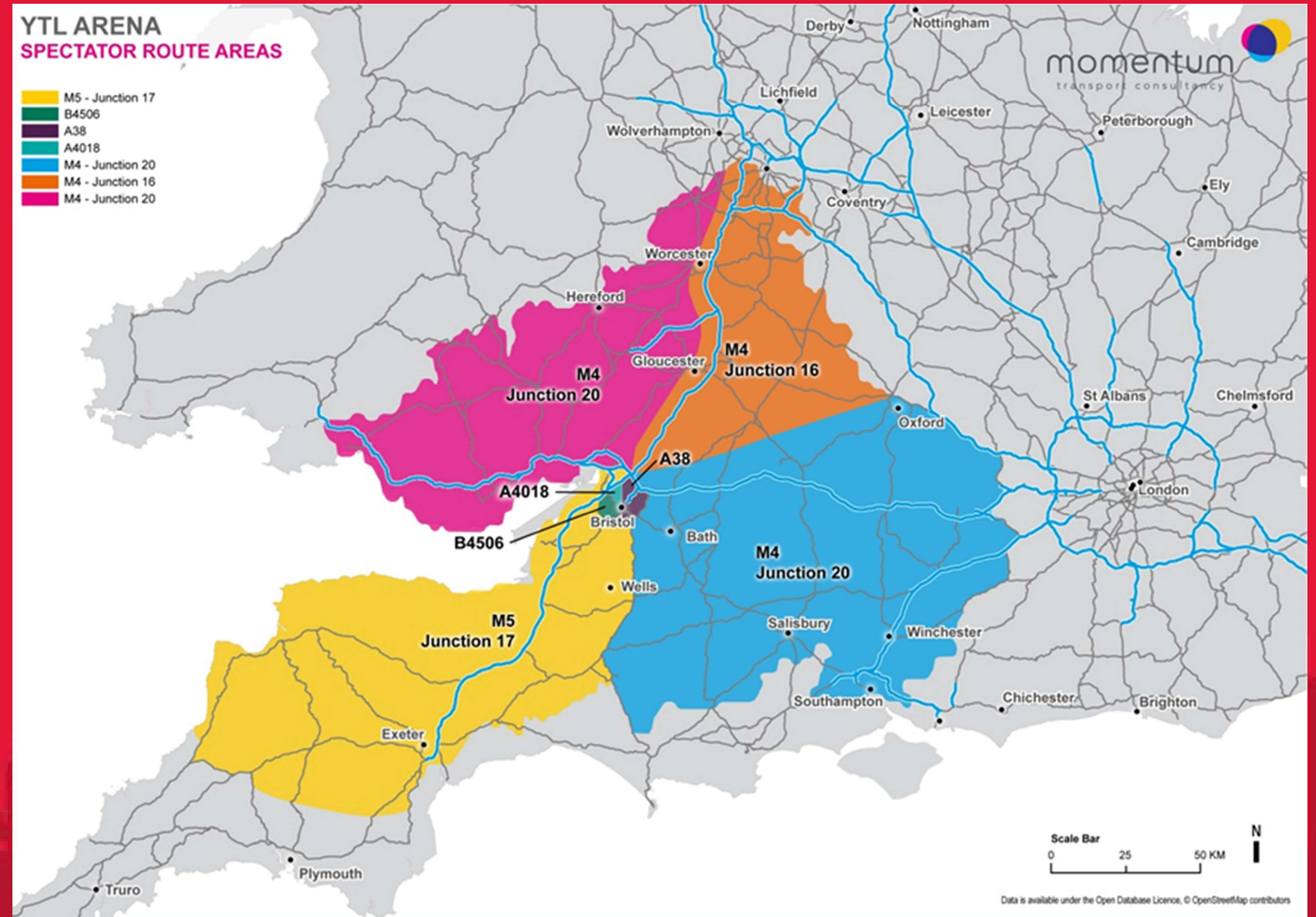
# Understanding Demand – regional venue

## a. Evidence base

Massive Attack Concerts, 2019  
Ashton Gate Concerts, 2019  
City Centre consent, 2016  
Other Arena mode share data

## b. Geographical draw

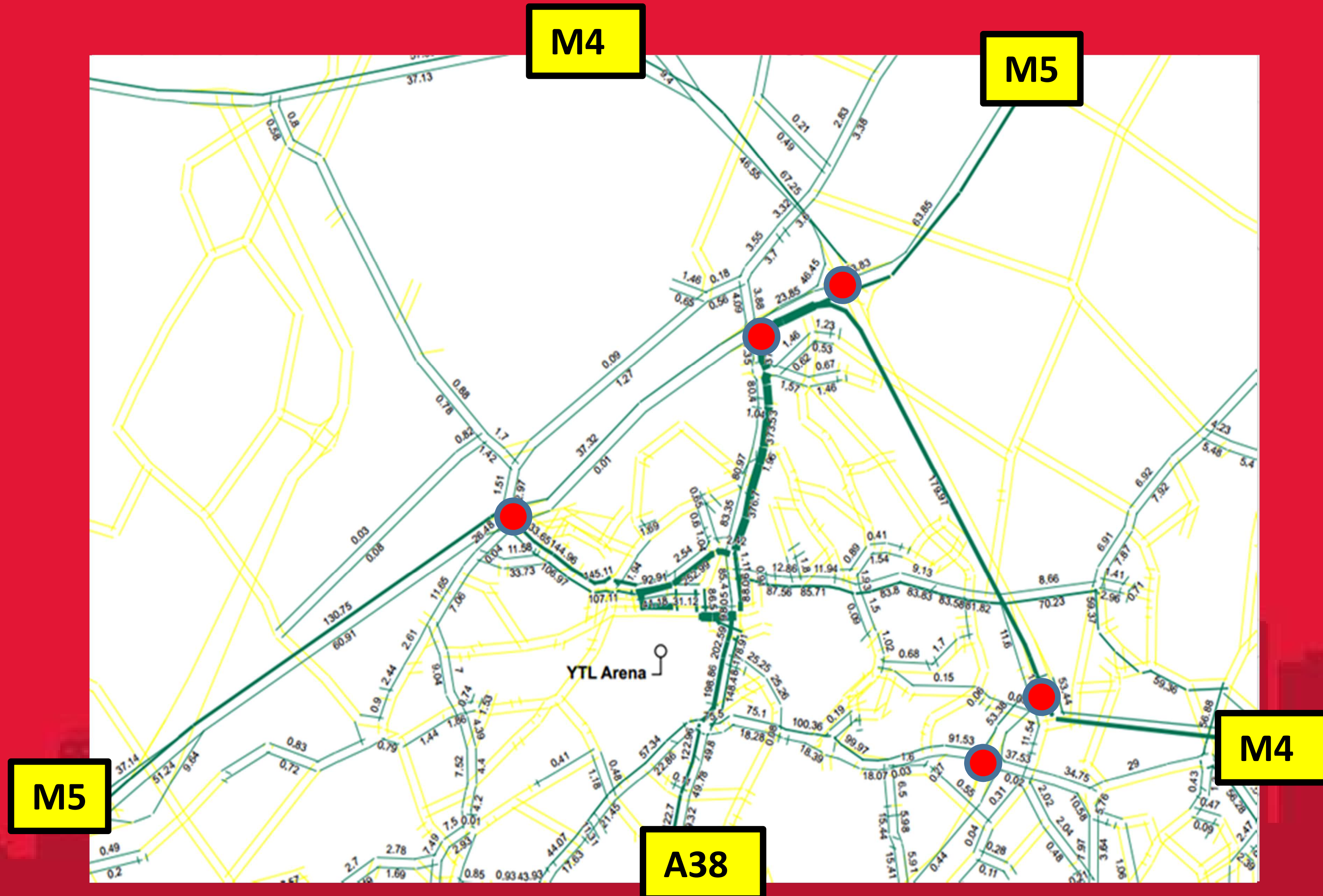
South West	63%
Greater London	9%
Wales	8%
South East	8%
West Midlands	5%
East Midlands	2%
East of England	2%
North West	2%



# Understanding Demand – *routing*

## Route Choice

M5 (South)	14%
M49 / M4 (West)	13%
M5 (North)	9%
M4 (East)	27%
A4174 (East)	8%
A38 (South)	18%
B4056 (South)	8%
A4018 (South)	1%



Do Minimum – 3,500 parking spaces, no P&R or CPZ

# Assessment scenarios

## ***Do Minimum – 17,000 Event, opening year (2022)***

*3,463 car parking spaces*

*No Park & Ride provision*

*Shuttle buses from City Centre (replicating Massive Attack services)*

*No off-site parking controls, travel plan measures or investment in public transport*

## ***Do Something – 17,000 Event, opening year (2022)***

*1,574 car parking spaces on site*

*5 Park and Ride sites*

*Shuttle buses from City Centre*

*Off-site Controlled Parking Zones*

*Increased Coach, Rail and Bus Capacity*

*Travel plan measures, targets and penalty mechanisms*



# *Transport Package*



# Transport Package – *Park and Ride (P&R)*

## *P&R Spaces (vehicles)*

<i>Portway</i>	<i>500</i>
<i>The Mall</i>	<i>500</i>
<i>Bristol Parkway</i>	<i>300</i>
<i>UWE</i>	<i>343</i>
<i>Lyde Green P&amp;R</i>	<i>246</i>
<b>Total</b>	<b>1,889</b>

**Mode Share**                      **30%**

**Conditions – HE 01**

*all 7,000+ events*

*Portway Contribution (s106)*

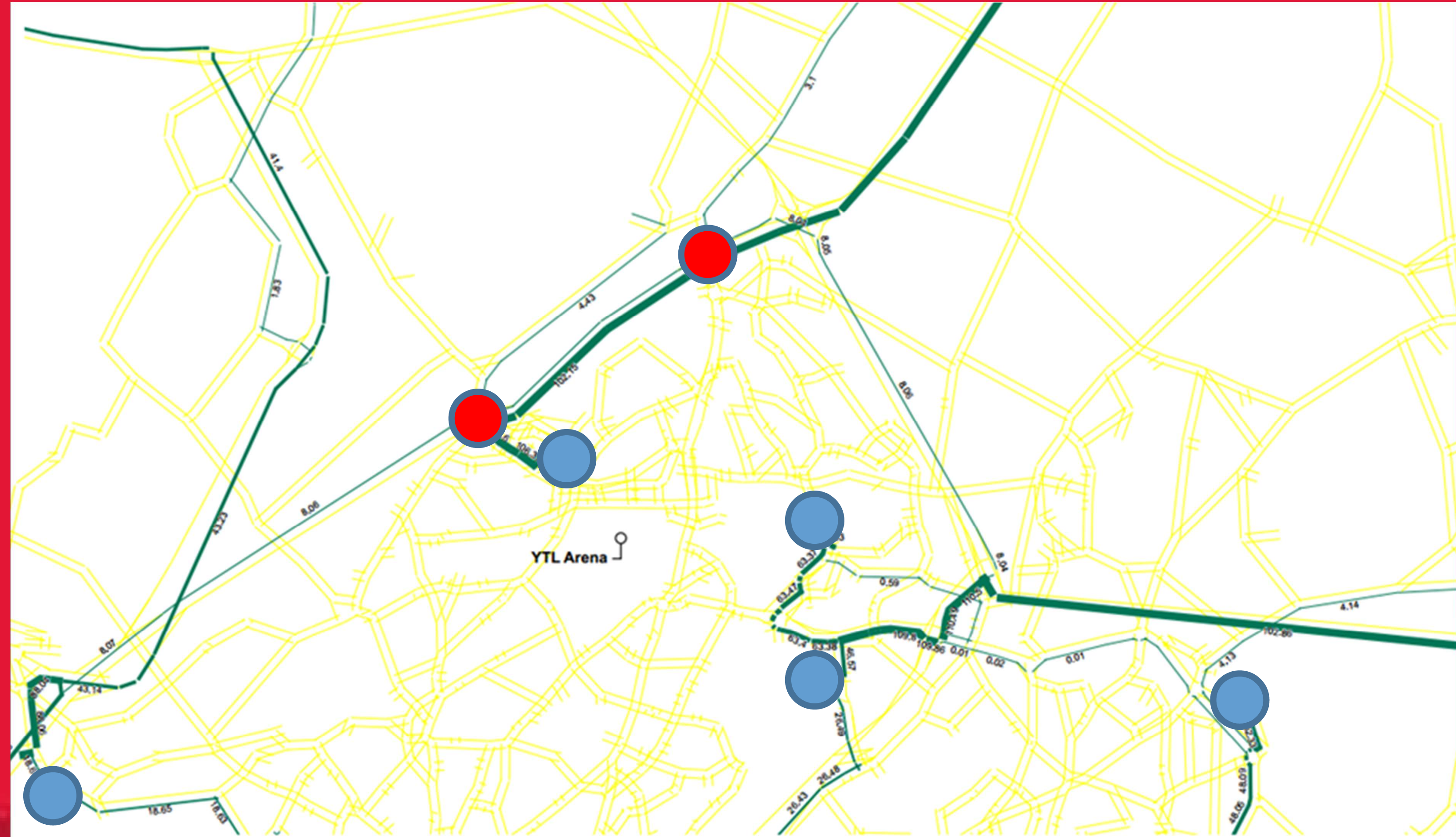
*minimum bus spec*

*passenger facilities*

*confirmation of agreements*

*ticketing arrangements*

*changes to be evidenced*



**Do Something – 1,500 spaces on site, 5no P&R sites**

# Transport Package – *Shuttle Buses*

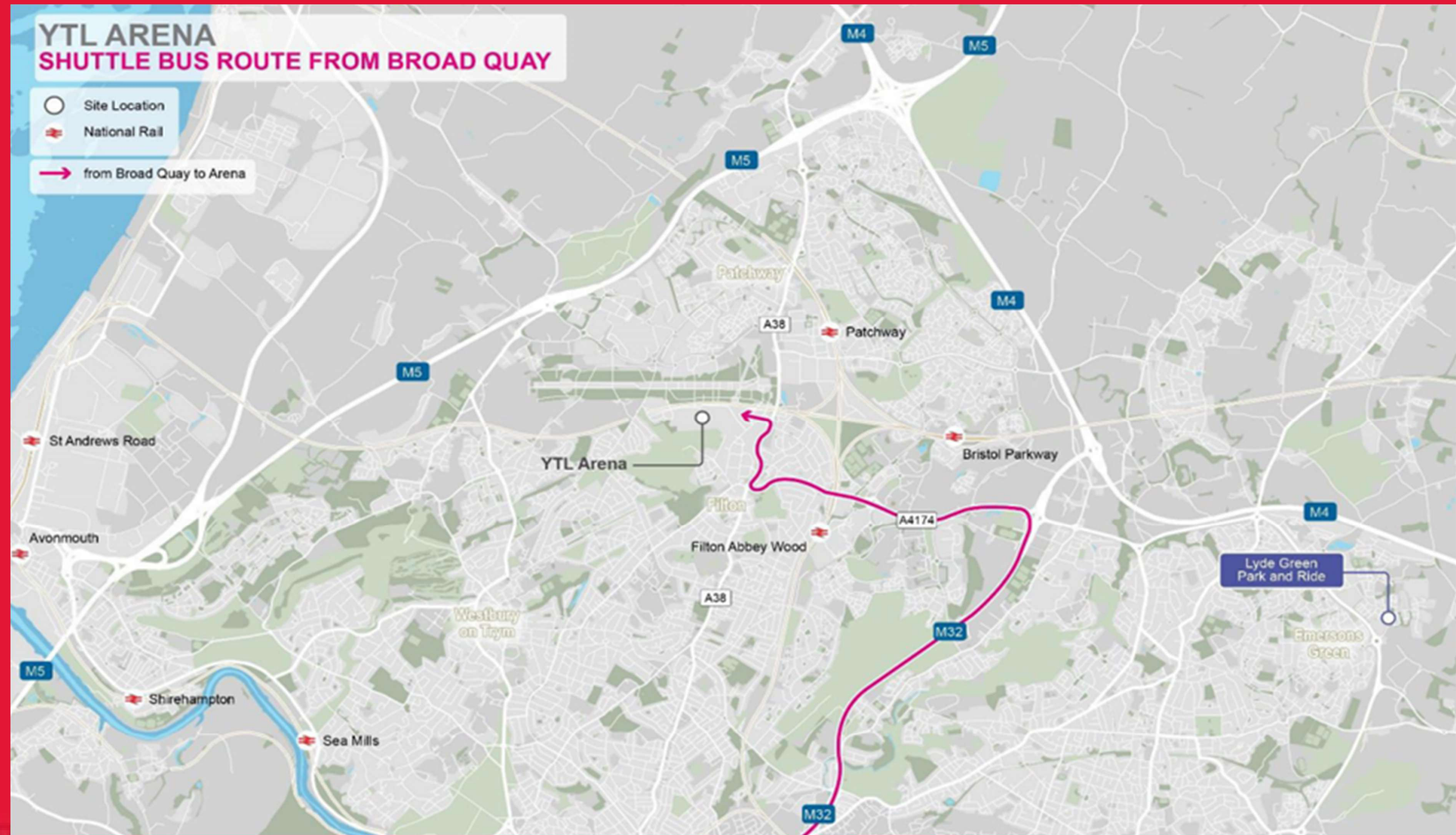
## *Facilities*

*City Centre pick up points*  
*Dedicated Arena stops*  
*Real-time information*  
*On-site facilities*

***Mode Share***      ***16%***

***Condition HE 02***

*all 7,000+ events*  
*minimum spaces / buses*  
*minimum bus spec*  
*passenger facilities*  
*confirmation of agreements*  
*ticketing arrangements*  
*changes to be evidenced*



# Transport Package – Rail Enhancements

## MetroWest 2 Proposals

North Filton Station – Dec '21 (TBC)

Current Station Design - 126m platform

3 carriage trains

Hourly frequency

Mode Share opening year - 3%

Increased-capacity trains – 5 carriages

Requirements – Condition 77

Increased frequency of trains

Event-specific shuttle services

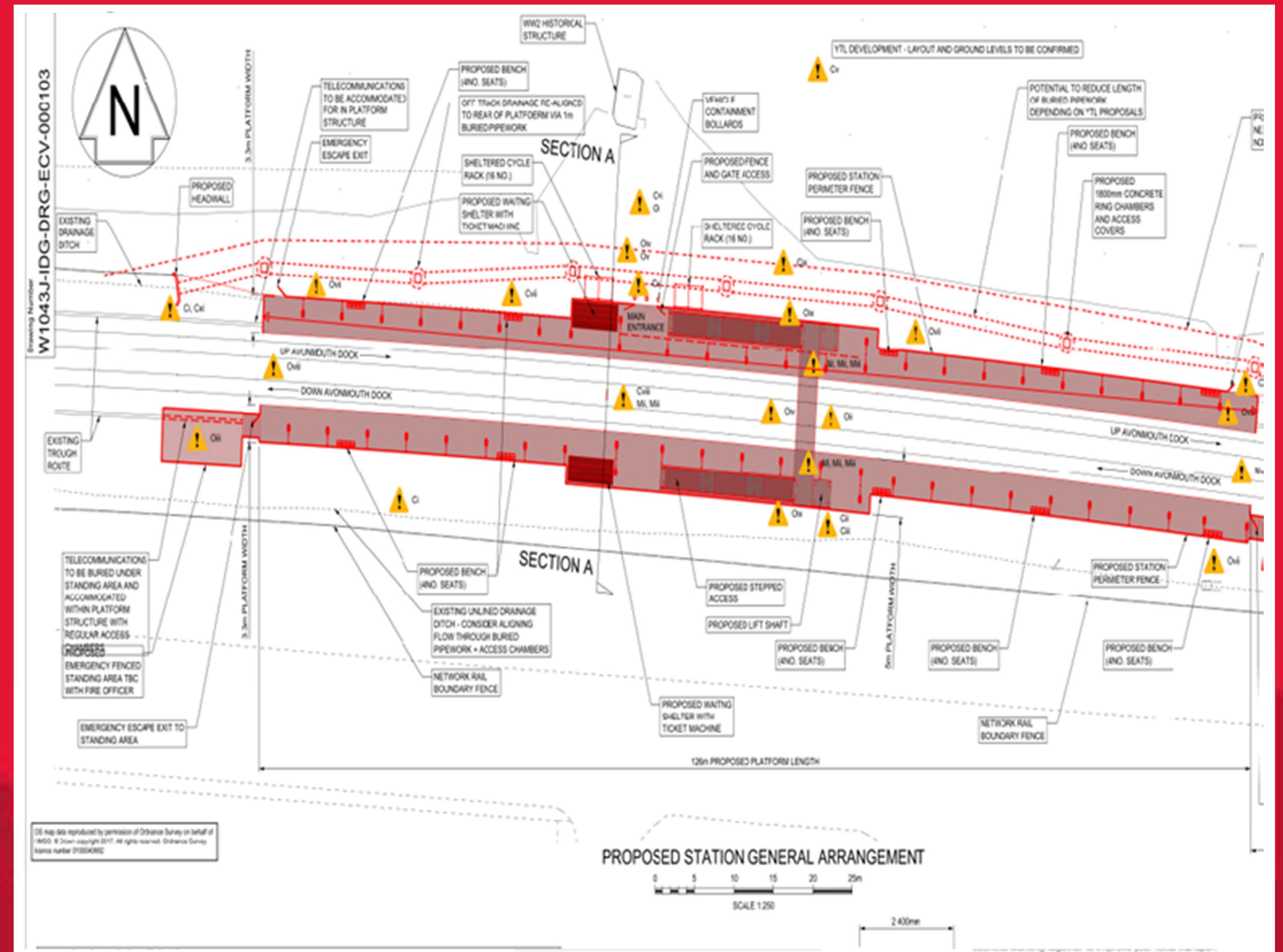
Applicant / GWR / NR / WECA to agree

Potential for expanding facilities

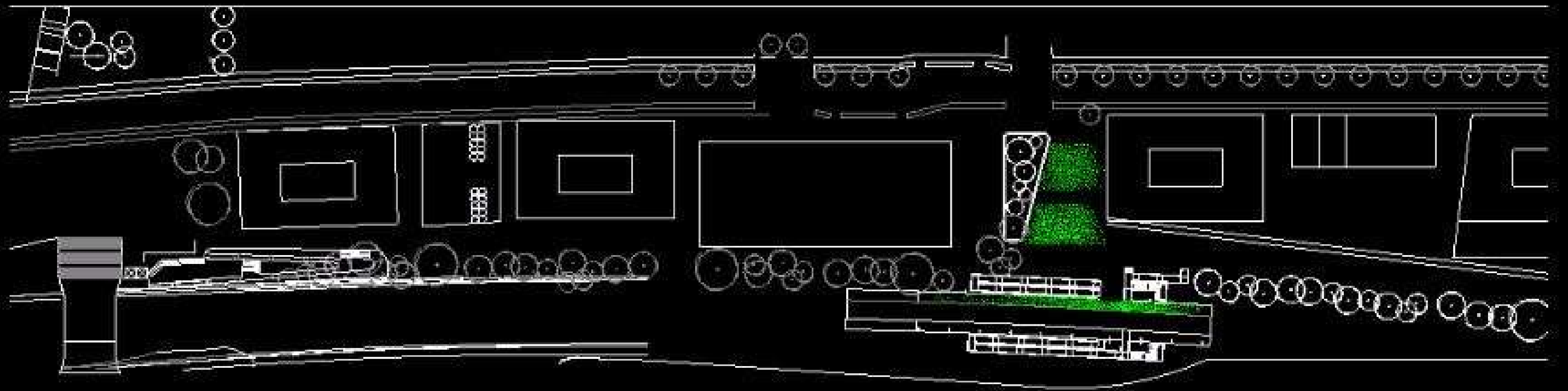
Future Mode Share – 12%

4x 5-carriage trains per hour

Pedestrian Crowd modelling submitted







00:29:13

# Transport Package – *Bus Enhancements*

## ***MetroBus CPME***

*Directly serving arena*

*Linkage to Parkway & Centre*

*Reliant on CPNN infrastructure*

***Mode Share opening year - 3%***

***Requirements – Condition 78***

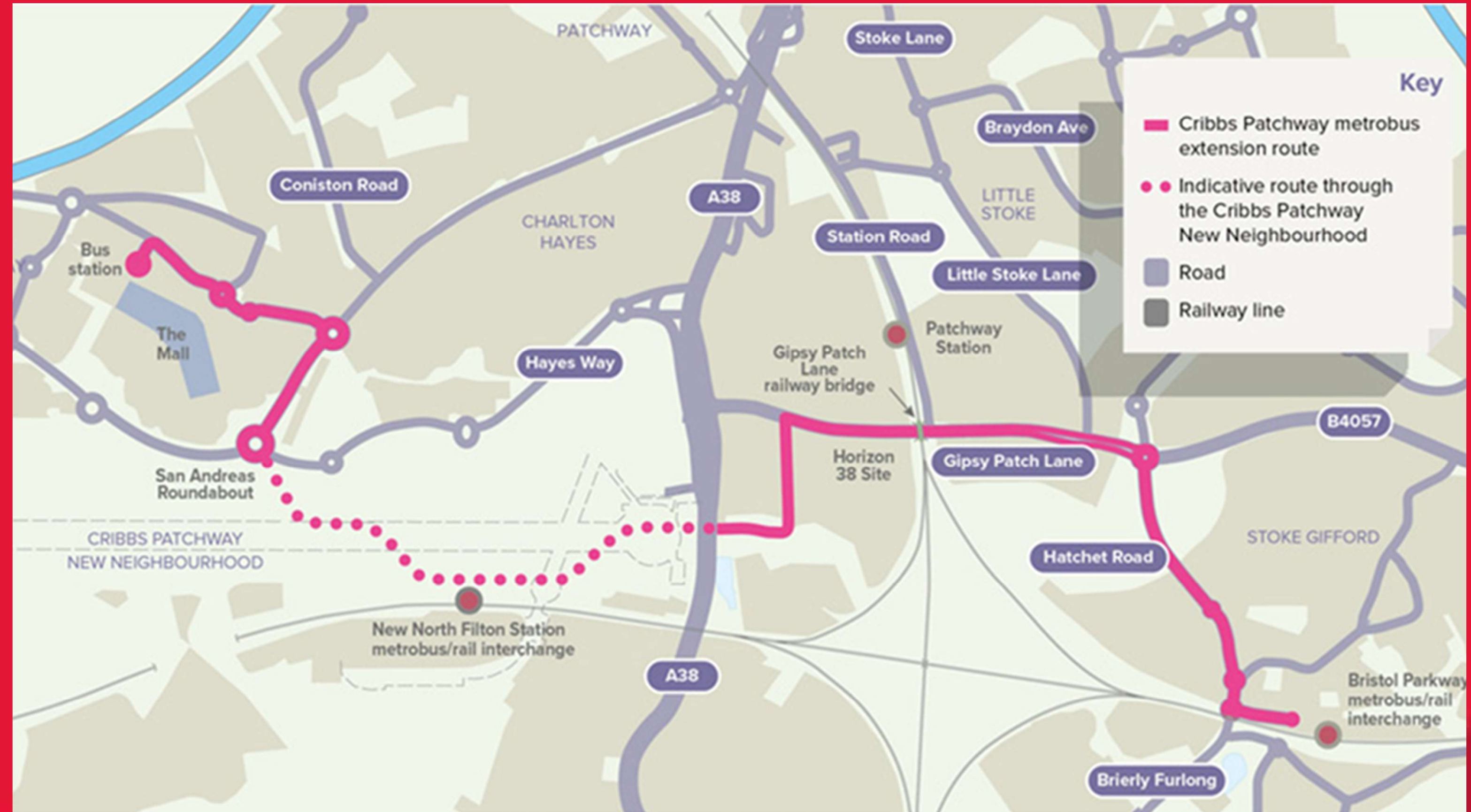
*Potential for pump-priming*

*Applicant / operator agreement*

*Potential for expanding facilities*

***Future Mode Share – 5%***

*CPNN PT services will increase*



# Transport Package – *Cycling Infrastructure*

*Mode Share opening year - 5%, future year 8%*

*Investment in Cycling*

**CPNN - £2.875m**

*Pen Park Road*

*Charlton Road*

*Brentry Lane*

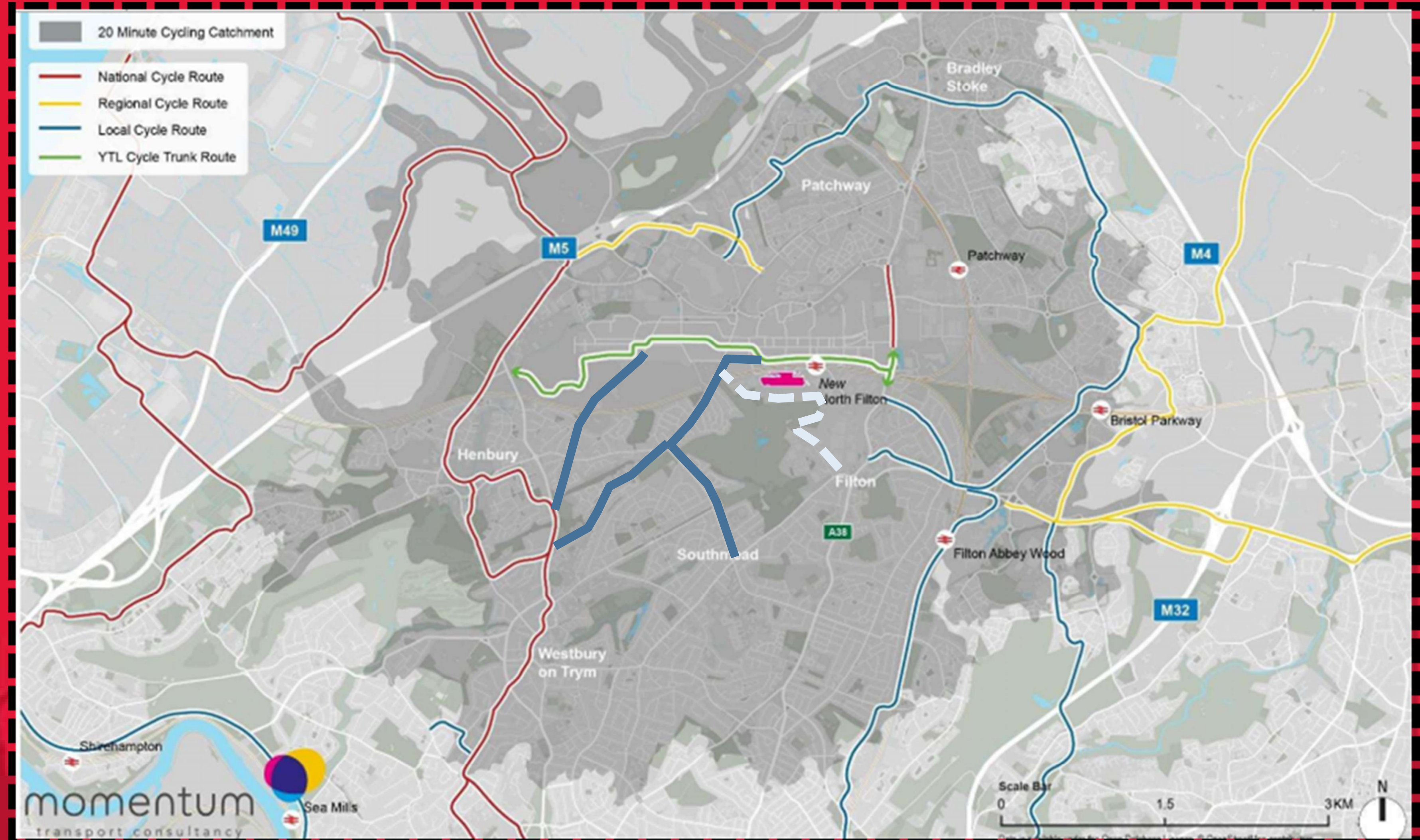
*Golf Course Lane*

**Financial Contribution**

*Charlton Road*

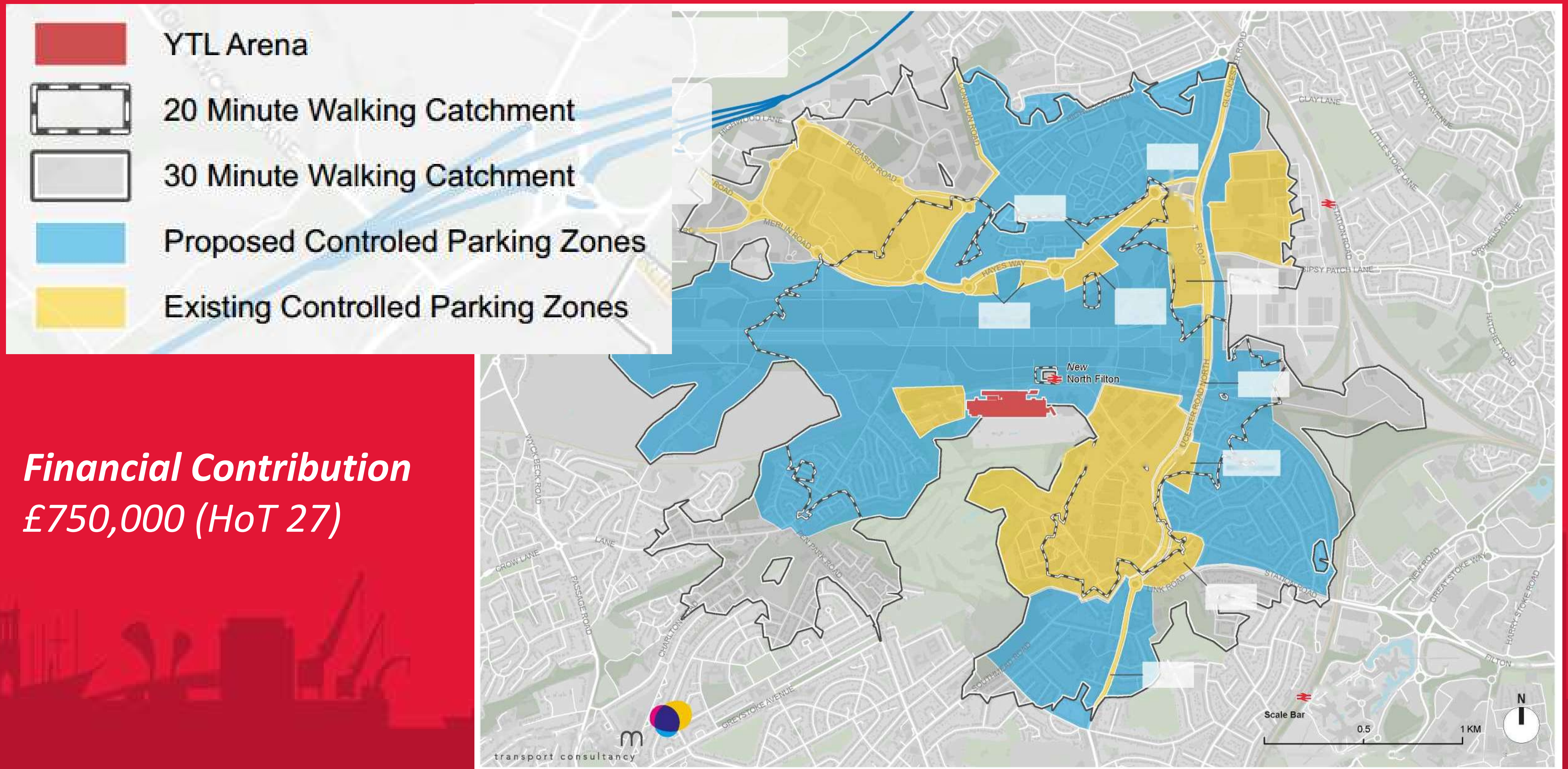
**Cycle Parking on-site**

*Condition 76*





# Transport Package – Restrictive Parking



**Financial Contribution**  
**£750,000 (HoT 27)**

# Transport Package – Travel Plan Targets & Penalties

Scenario / Mode share	Car				Coach	Rail	Bus	City Centre Shuttle Bus	Taxi	Ped Cycle	TOTAL
	Park on Site	Park and Ride	Pick up / dropped off	On street parking							
Do Something	25%	30%	10%	0%	3%	3%	3%	16%	5%	5%	100%
Visitors (17,000 event)	4,250	5,100	1,700	0%	510	510	510	2,720	850	850	17,000
Vehicles (17,000 event)	1,574	1,889	630	0	10	1	8	39	315		4,466

*Failure to complete event monitoring – up to £200,000 over 5 years*

*Failure to meet mode share targets – up to £100,000 over 5 years*

*- triggers need for additional survey work – up to £100,000 over 5 years*

*Failure of the Travel Plan in any given year – up to £100,000 over 5 years*

# Mode Share Comparison

Scenario / Mode share	Car				Bus	Rail	Coach	City Centre Shuttle Bus	Taxi	Ped Cycle	TOTAL
	Park on Site	Park elsewhere	Pick up / dropped off	Park and Ride							
Massive Attack Filton, 2019	57%						12%	25%		6%	100%
Brabazon Hangar (proposed)	25%	0%	10%	<b>30%</b>	<b>3%</b>	<b>3%</b>	3%	<b>16%</b>	5%	<b>5%</b>	100%
Motorpoint Arena Nottingham	74%				4%	11%			7%	4%	100%
Temple Island Arena (2015)	57%			13%	5%	15%	2%		2%	7%	100%
Ashton Gate, Bristol	62%			23%		7%			1%	7%	100%
First Direct Arena Leeds	80%				4%	5%	2%		6%	3%	100%

# ***Sustainable Travel Contributions***

## ***Financial Contributions (s106) towards:***

- **£562,000** towards the expansion of Portway Park and Ride facility*
- **£750,000** to fund the delivery of an Event-Day Restrictive Parking Zone*
- **£450,000** to fund two arena-specific shuttle bus facilities in the city centre*
- **£30,000** to fund the BCC staff resources required to manage shuttle buses*
- **£75,000** towards the delivery of improved cycling facilities along Charlton Rd*
- **£30,990** to fund the monitoring of the Travel Plan*
- **£500,000** maximum Travel Plan penalties for failure to meet requirements*
- **Financial contributions / funding of increased rail and bus services***

# ***Sustainable Travel – Key Conditions***

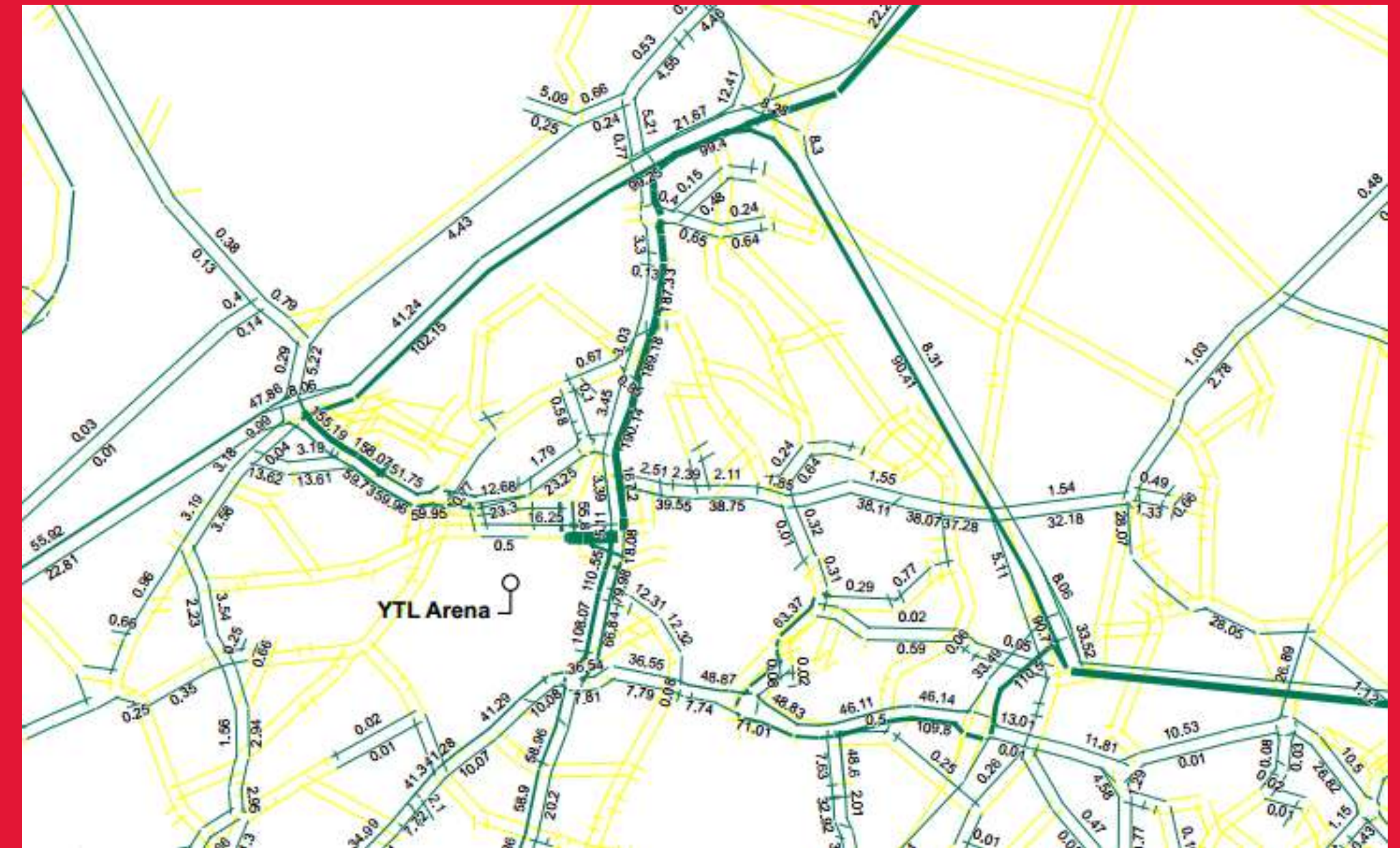
- ***74 - Transport Management Plan – prior to commencement***
- ***75 - Car Park Management Plan – “***
- ***76 - Cycling Management Plan – “***
- ***77 – Rail Service Strategy – within 6 months of commencement***
- ***78 – Bus Service Strategy – “***
- ***79 – Signage and Wayfinding “***
- ***80 - Event and Travel Ticket Sales Strategy “***
- ***HE 01 – Park and Ride Strategy “***
- ***HE 02 – City Centre Shuttle Bus Strategy “***
- ***HE 03 - Event Management Strategy – six months prior to first event***
- ***HE 05 & 06 – Visitor and Staff Travel Plans – prior to occupation***

# *Transport Modelling*



# GBATS-SATURN

- *Regional Strategic model*
- *Informs impacts of large development*
- *Covers 08:00-09:00 and 17:00-18:00*
- *Assesses routing of traffic*
- *Model flows fed into detailed modelling*



# VISSIM - Microsimulation

- *Local highway network modelling*
- *Calibrated to 16:30-18:30 period*
- *expanded to include BCC's highway network*



# Traffic Impacts – GBATS Strategic Model (1700-1800)

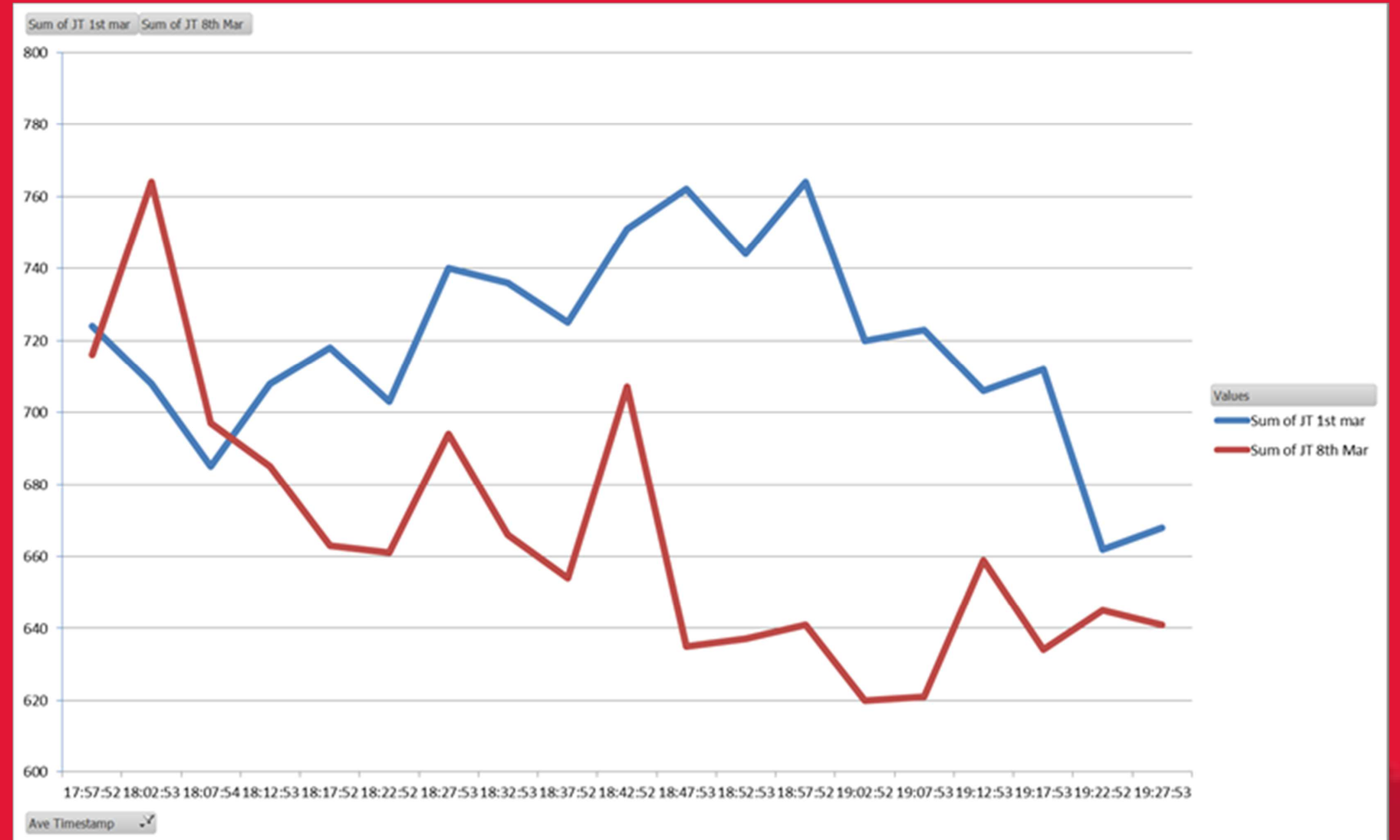
Time Period	Arrival Profile
16:00-17:00	5%
17:00-18:00	15%
18:00-19:00	31%
19:00-20:00	31%
20:00-21:00	7%
<b>TOTAL</b>	<b>89%</b>

Location	7,000 Double Event	17,000 Event Do Minimum	17,000 Event Do Something
A38 Gloucester Road, north of Monks Park Avenue	Red	Purple	Red
Filton Avenue north of Muller Road	Red	Red	Red
Filton Avenue, north of Toronto Road	Red	Light Blue	Light Blue
B4056 Southmead Road, north of Pen Park Road	Purple	Red	Red
Pen Park Avenue west of Southmead Rd	Purple	Light Blue	Light Blue
B4056 Southmead Road south of Pen Park Road	Red	Red	Light Blue

**5-10% increase in traffic, 10%+ increase in traffic**



# Traffic Impacts – VISSIM Microsimulation



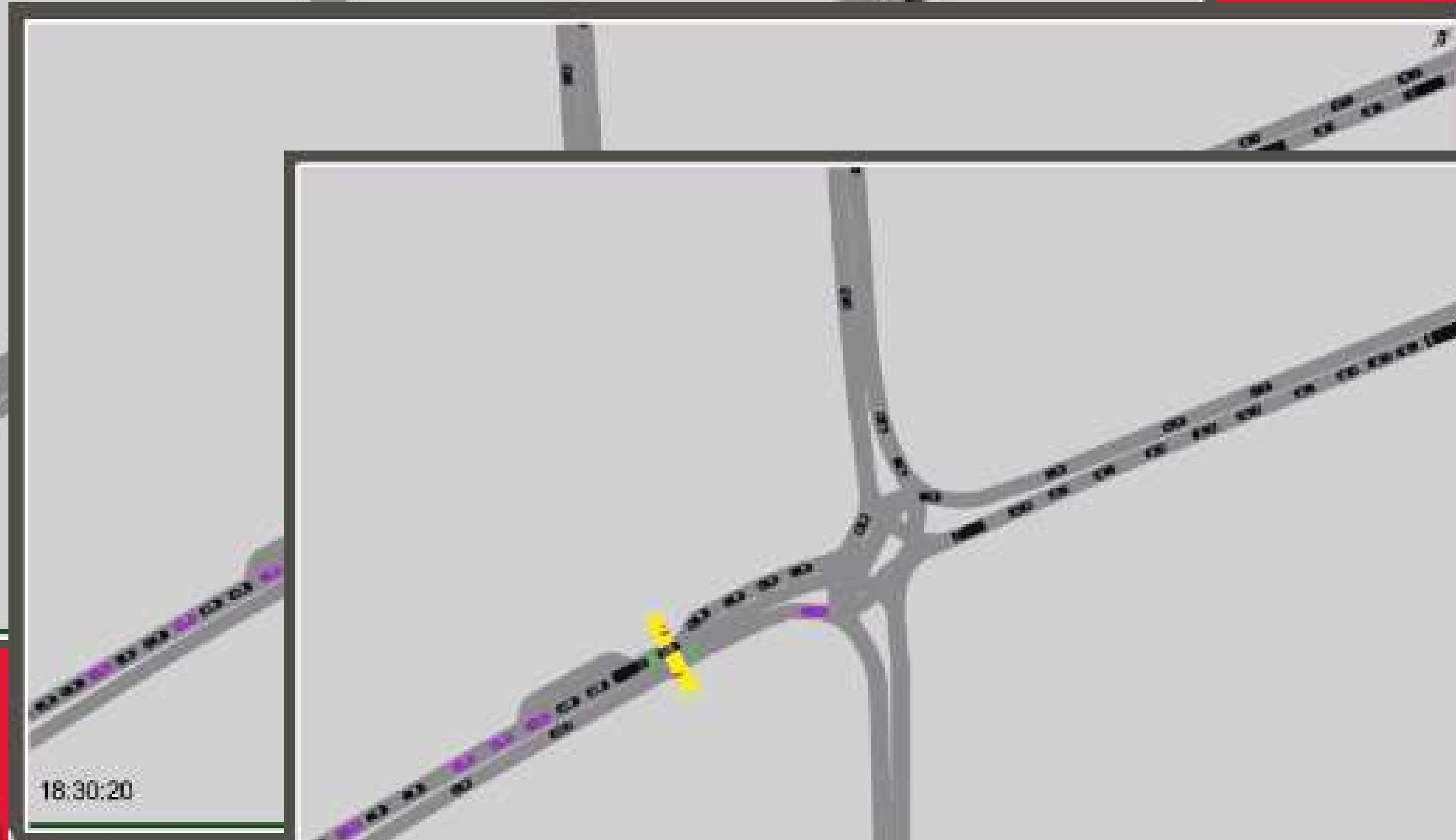
*Above: extension of peak hour conditions (Massive Attack)*

*Left: extension of scope of VISSIM model into BCC area*

# Traffic Impacts – VISSIM Microsimulation – A38 / Toronto Rd



# Traffic Impacts – VISSIM Microsimulation – Southmead Road



# ***Highway Network Mitigation 01***

***Delivery of an intelligent transport network for the area (HE 04) including:***

- a. M5 Junction 16 and the A38 between the M5 and Toronto Road, Horfield*
- b. M5 Junction 17 area and around Hayes Way to Gypsy Patch Lane*
- c. B4056 Southmead Road, between the A4174 and Pen Park Road*
- d. Filton Avenue North*

***Improvements to include:***

- a. Study work to involve BCC, SGC and HE officers*
- b. Potential linkage of signal junctions*
- c. Additional CCTV / ANPR cameras to allow for monitoring / management*
- d. Control Centre Management*
- e. Improved signal hardware*
- f. Junction realignment*
- g. Installation of additional Variable Message Signage*
- h. New ducting and communications networks*

# ***Highway Network Mitigation 02***

## ***Financial Contributions (s106) towards:***

***£312,500 towards a fibre optic communications network (ie BNET)***

***£100,000 towards the study and scheme design***

***£75,000 to fund a Southmead-area wide mitigation study***

***£130,000 to fund new signal controllers to run SCOOT / UTC or similar***

***£25,000 to fund additional control centre staff resource***

***£200,000 to fund the installation of Traffic Signal CCTV monitoring***

***£440,000 to fund additional Variable Message Signage in BCC / SGC***

# ***Highway Network Mitigation 03 (HE 07)***

## ***Weekdays***

- *Avoidance of Weekday PM Peak - no finishes between 15:00 and 18:30*
- *No start time earlier than 20:30*

## ***Saturday Events (Aug – May) exceeding 6,999 spectators (capacity) must not***

- *finish between 13:00 - 15:00 or 16:30 - 18:30*
- *start between 13:30 - 15:30 or 18:00 - 20:00*

***Tuesday Evenings and Saturday (non-matchdays) to be agreed in writing***  
***Avoidance of clashes with International Cricket Matches at GCCC***

# ***Traffic Management Plan – Opening Year***



- Completed Highway Infrastructure
- ▨ Completed Development
- ▨ Temporary Car Parking

Brabazon Roundabout

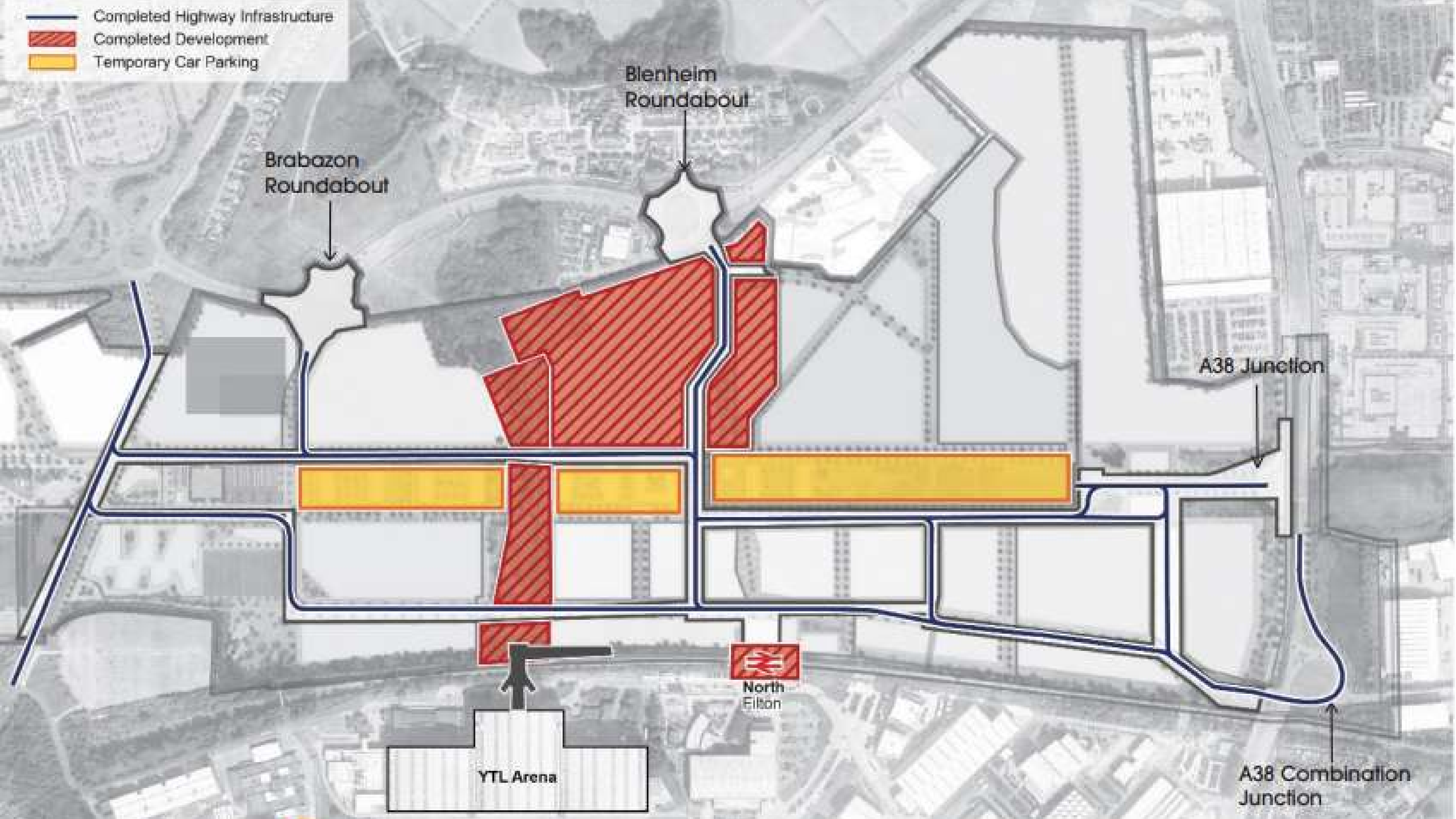
Blenheim Roundabout

A38 Junction

North Eilston

YTL Arena

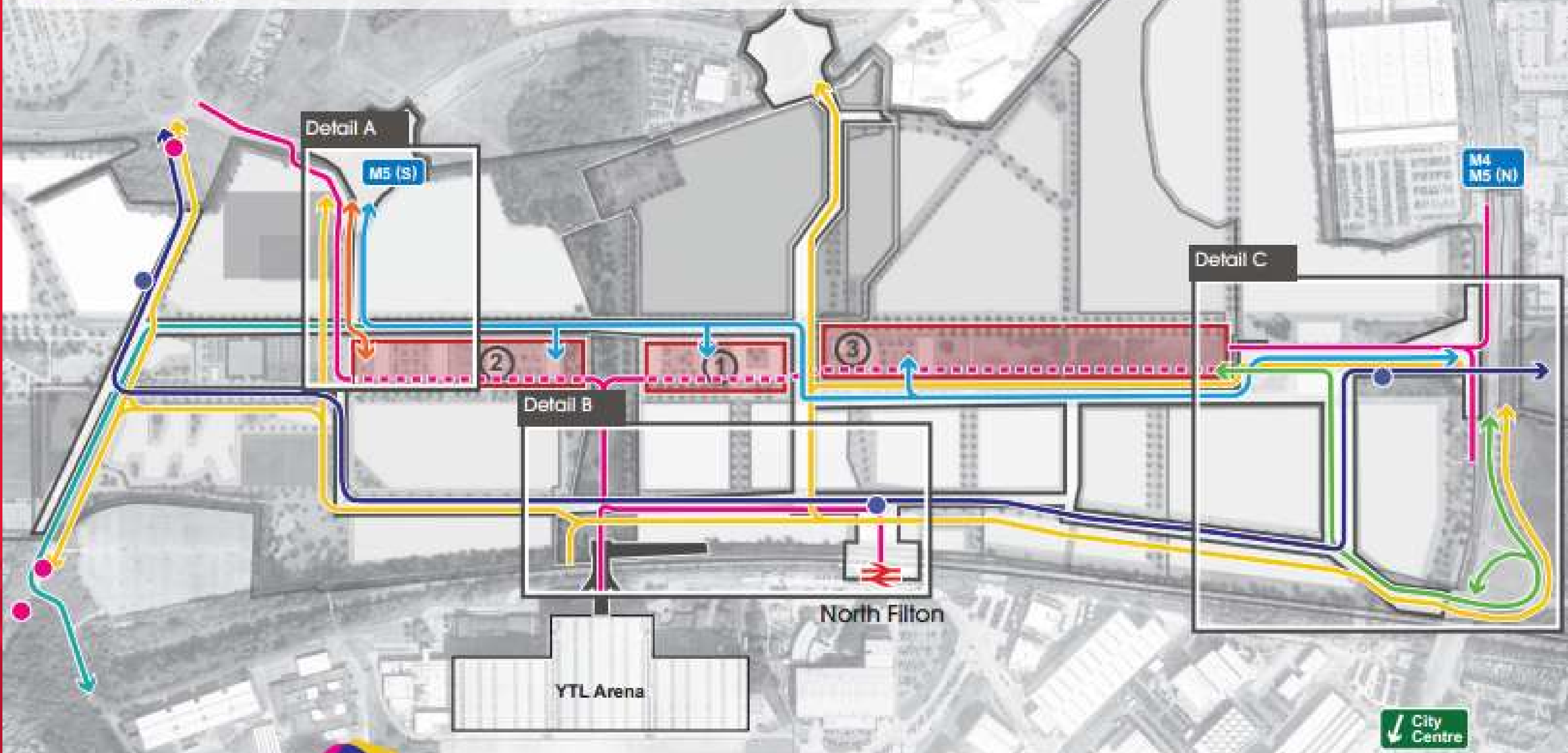
A38 Combination Junction



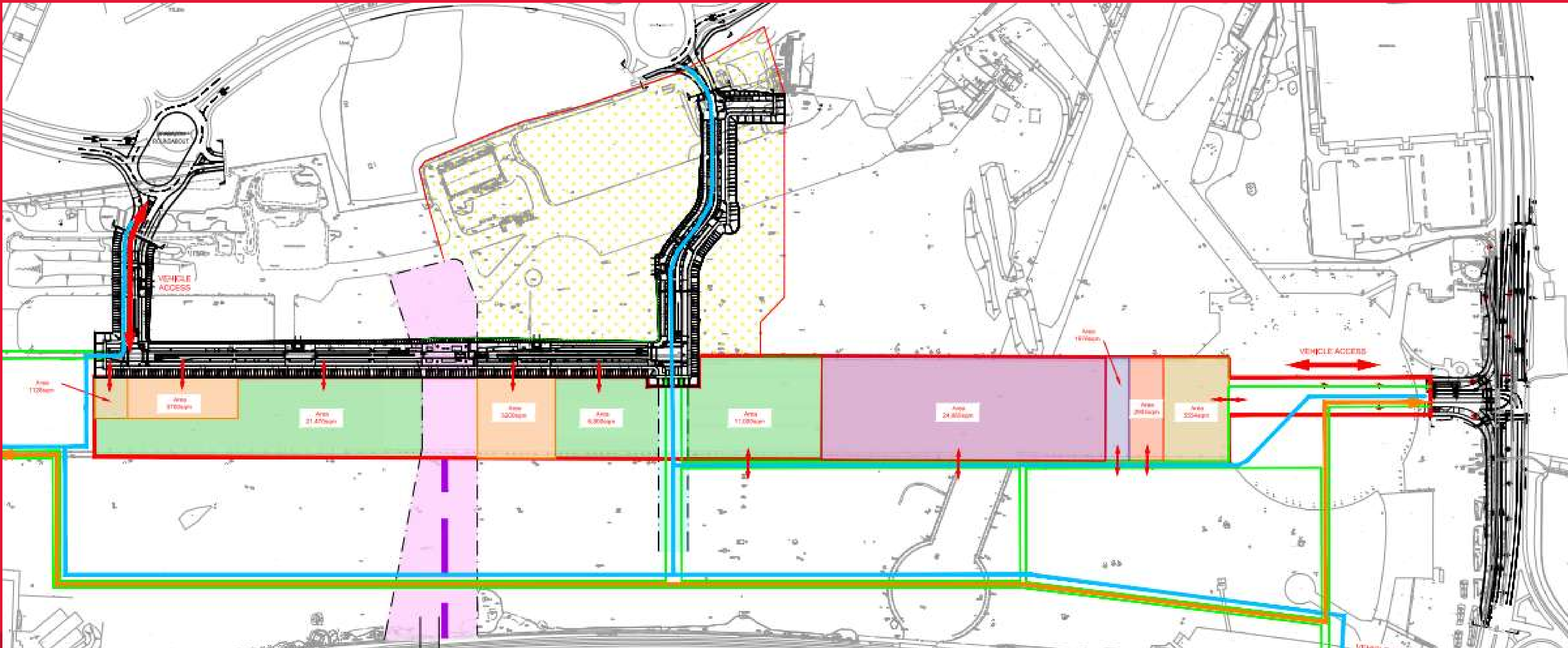


- Portway Park & Ride
- City Shuttle, Lyde Green Parkway, & UWE Park & Ride
- Pedestrian Route
- Private Car
- Metro Bus
- Blue Badge Route
- Cycle Routes

- Metro Bus Stop
- Bus Gate
- Temporary Car Park (1, 2 & 3)



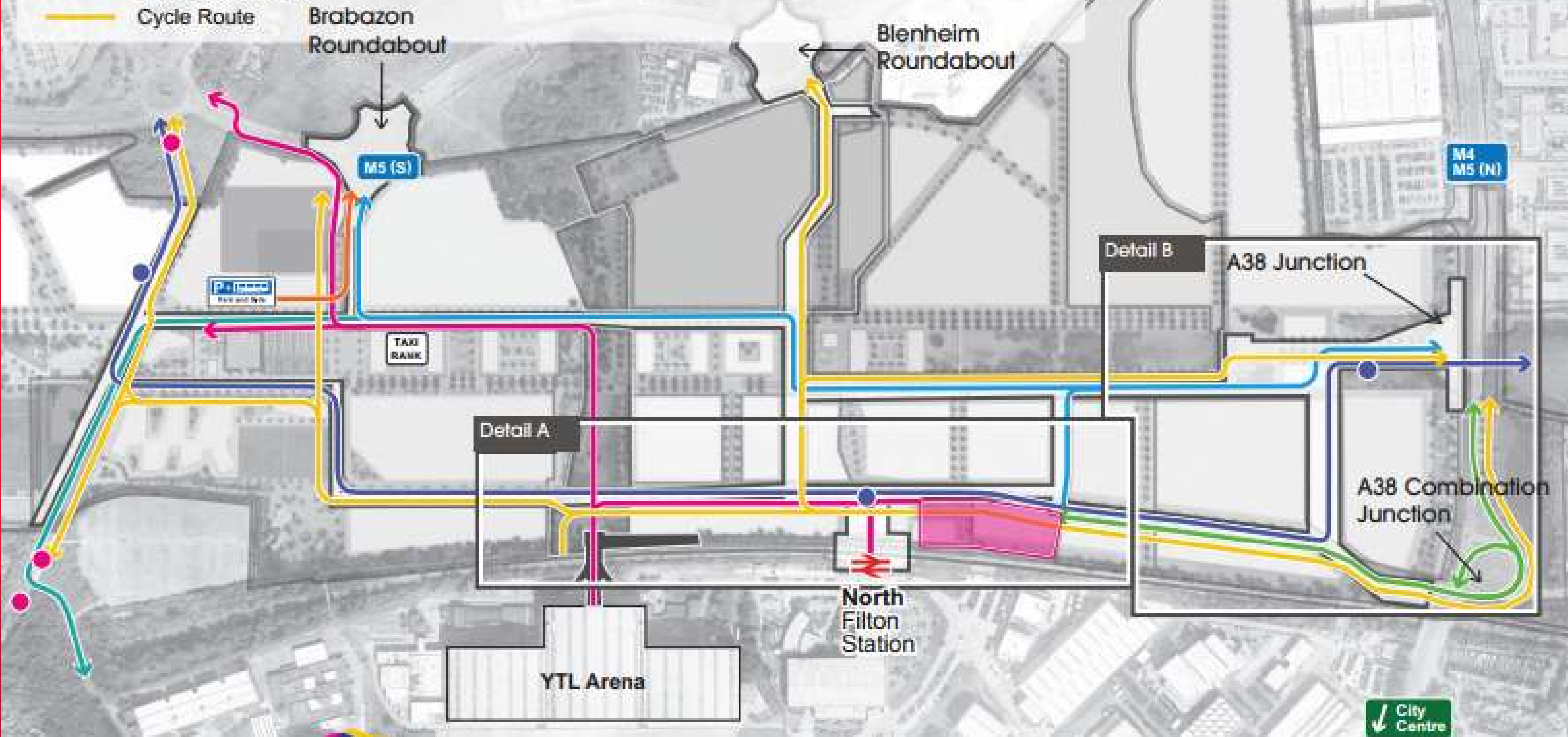
# Temporary Transport Hub



# ***Transport Management – Future Year***

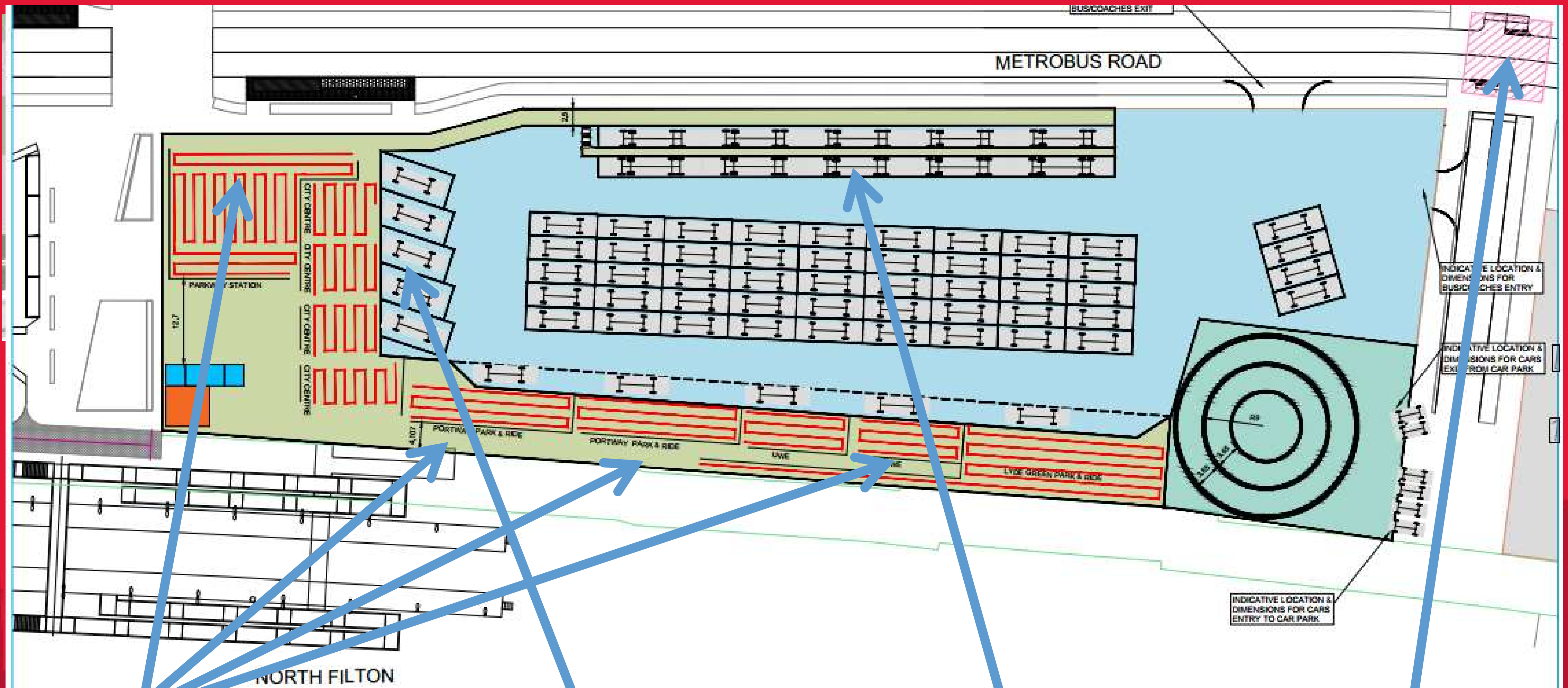


- Portway Park & Ride
- City Shuttle, Lyde Green Parkway, & UWE Park & Ride
- Pedestrian Route
- Private Car
- Metro Bus
- Blue Badge Route
- Cycle Route
- Metro Bus Stop
- Bus Gate
- Transport Hub



# *Transport Hub – permanent scenario (indicative)*

*Pick up and Drop-off provision*



*Park and Ride*

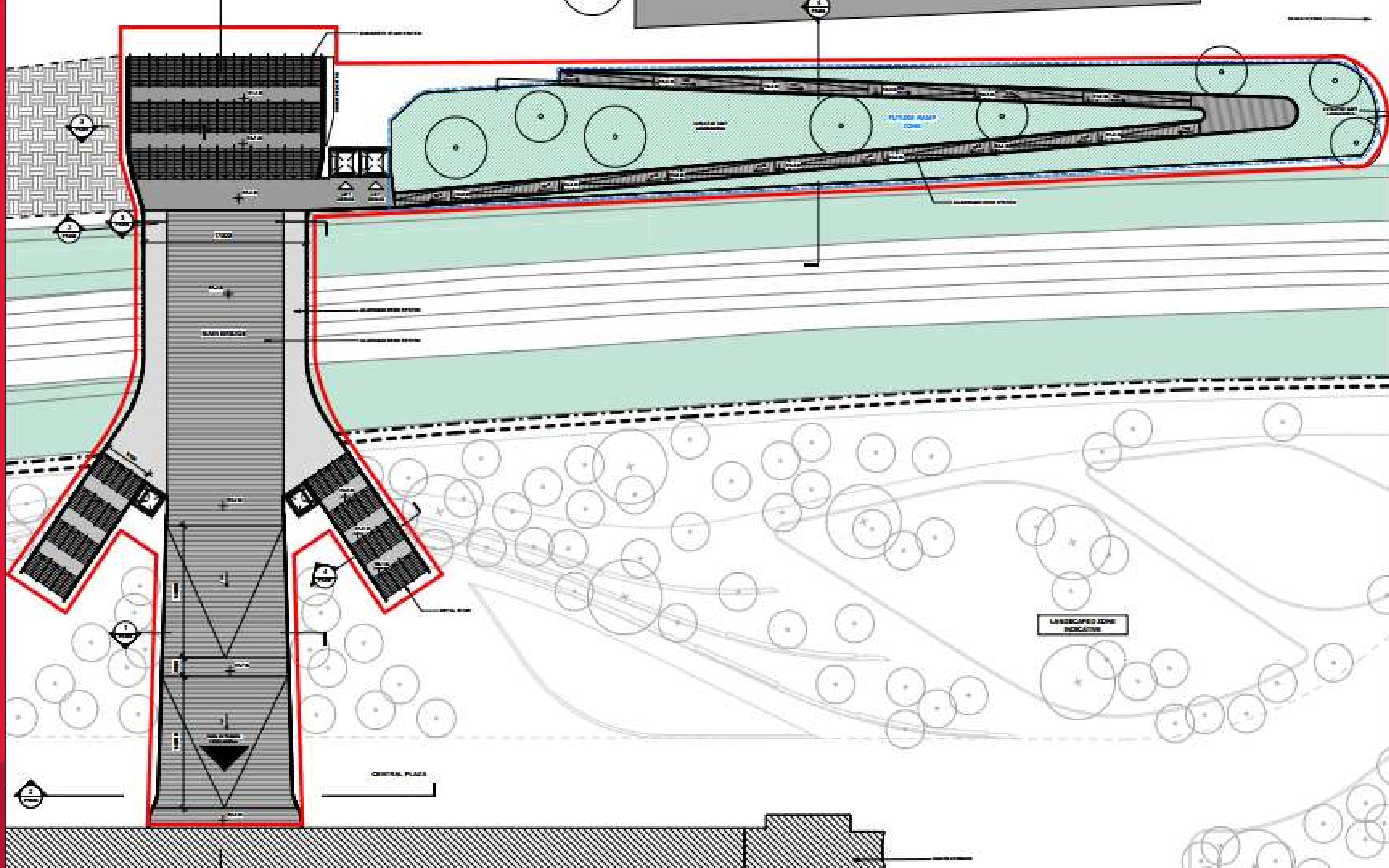
*City Centre Shuttle*

*Coaches*

*Bus Priority*

# *Access to the Venue*





**YTL Arena**  
YTL GROUP

**Legend**

- Area reserved for landscaping
- Area reserved for building
- Area reserved for parking
- Area reserved for other uses
- Area reserved for other uses

**Scale**

1:1000

**Notes**

1. All dimensions are in meters.

2. All dimensions are rounded up to the nearest whole number.

3. All dimensions are subject to change without notice.

4. All dimensions are subject to the availability of the site.

5. All dimensions are subject to the availability of the site.

6. All dimensions are subject to the availability of the site.

7. All dimensions are subject to the availability of the site.

8. All dimensions are subject to the availability of the site.

9. All dimensions are subject to the availability of the site.

10. All dimensions are subject to the availability of the site.

11. All dimensions are subject to the availability of the site.

12. All dimensions are subject to the availability of the site.

13. All dimensions are subject to the availability of the site.

14. All dimensions are subject to the availability of the site.

15. All dimensions are subject to the availability of the site.

16. All dimensions are subject to the availability of the site.

17. All dimensions are subject to the availability of the site.

18. All dimensions are subject to the availability of the site.

19. All dimensions are subject to the availability of the site.

20. All dimensions are subject to the availability of the site.

21. All dimensions are subject to the availability of the site.

22. All dimensions are subject to the availability of the site.

23. All dimensions are subject to the availability of the site.

24. All dimensions are subject to the availability of the site.

25. All dimensions are subject to the availability of the site.

26. All dimensions are subject to the availability of the site.

27. All dimensions are subject to the availability of the site.

28. All dimensions are subject to the availability of the site.

29. All dimensions are subject to the availability of the site.

30. All dimensions are subject to the availability of the site.

31. All dimensions are subject to the availability of the site.

32. All dimensions are subject to the availability of the site.

33. All dimensions are subject to the availability of the site.

34. All dimensions are subject to the availability of the site.

35. All dimensions are subject to the availability of the site.

36. All dimensions are subject to the availability of the site.

37. All dimensions are subject to the availability of the site.

38. All dimensions are subject to the availability of the site.

39. All dimensions are subject to the availability of the site.

40. All dimensions are subject to the availability of the site.

41. All dimensions are subject to the availability of the site.

42. All dimensions are subject to the availability of the site.

43. All dimensions are subject to the availability of the site.

44. All dimensions are subject to the availability of the site.

45. All dimensions are subject to the availability of the site.

46. All dimensions are subject to the availability of the site.

47. All dimensions are subject to the availability of the site.

48. All dimensions are subject to the availability of the site.

49. All dimensions are subject to the availability of the site.

50. All dimensions are subject to the availability of the site.

51. All dimensions are subject to the availability of the site.

52. All dimensions are subject to the availability of the site.

53. All dimensions are subject to the availability of the site.

54. All dimensions are subject to the availability of the site.

55. All dimensions are subject to the availability of the site.

56. All dimensions are subject to the availability of the site.

57. All dimensions are subject to the availability of the site.

58. All dimensions are subject to the availability of the site.

59. All dimensions are subject to the availability of the site.

60. All dimensions are subject to the availability of the site.

61. All dimensions are subject to the availability of the site.

62. All dimensions are subject to the availability of the site.

63. All dimensions are subject to the availability of the site.

64. All dimensions are subject to the availability of the site.

65. All dimensions are subject to the availability of the site.

66. All dimensions are subject to the availability of the site.

67. All dimensions are subject to the availability of the site.

68. All dimensions are subject to the availability of the site.

69. All dimensions are subject to the availability of the site.

70. All dimensions are subject to the availability of the site.

71. All dimensions are subject to the availability of the site.

72. All dimensions are subject to the availability of the site.

73. All dimensions are subject to the availability of the site.

74. All dimensions are subject to the availability of the site.

75. All dimensions are subject to the availability of the site.

76. All dimensions are subject to the availability of the site.

77. All dimensions are subject to the availability of the site.

78. All dimensions are subject to the availability of the site.

79. All dimensions are subject to the availability of the site.

80. All dimensions are subject to the availability of the site.

81. All dimensions are subject to the availability of the site.

82. All dimensions are subject to the availability of the site.

83. All dimensions are subject to the availability of the site.

84. All dimensions are subject to the availability of the site.

85. All dimensions are subject to the availability of the site.

86. All dimensions are subject to the availability of the site.

87. All dimensions are subject to the availability of the site.

88. All dimensions are subject to the availability of the site.

89. All dimensions are subject to the availability of the site.

90. All dimensions are subject to the availability of the site.

91. All dimensions are subject to the availability of the site.

92. All dimensions are subject to the availability of the site.

93. All dimensions are subject to the availability of the site.

94. All dimensions are subject to the availability of the site.

95. All dimensions are subject to the availability of the site.

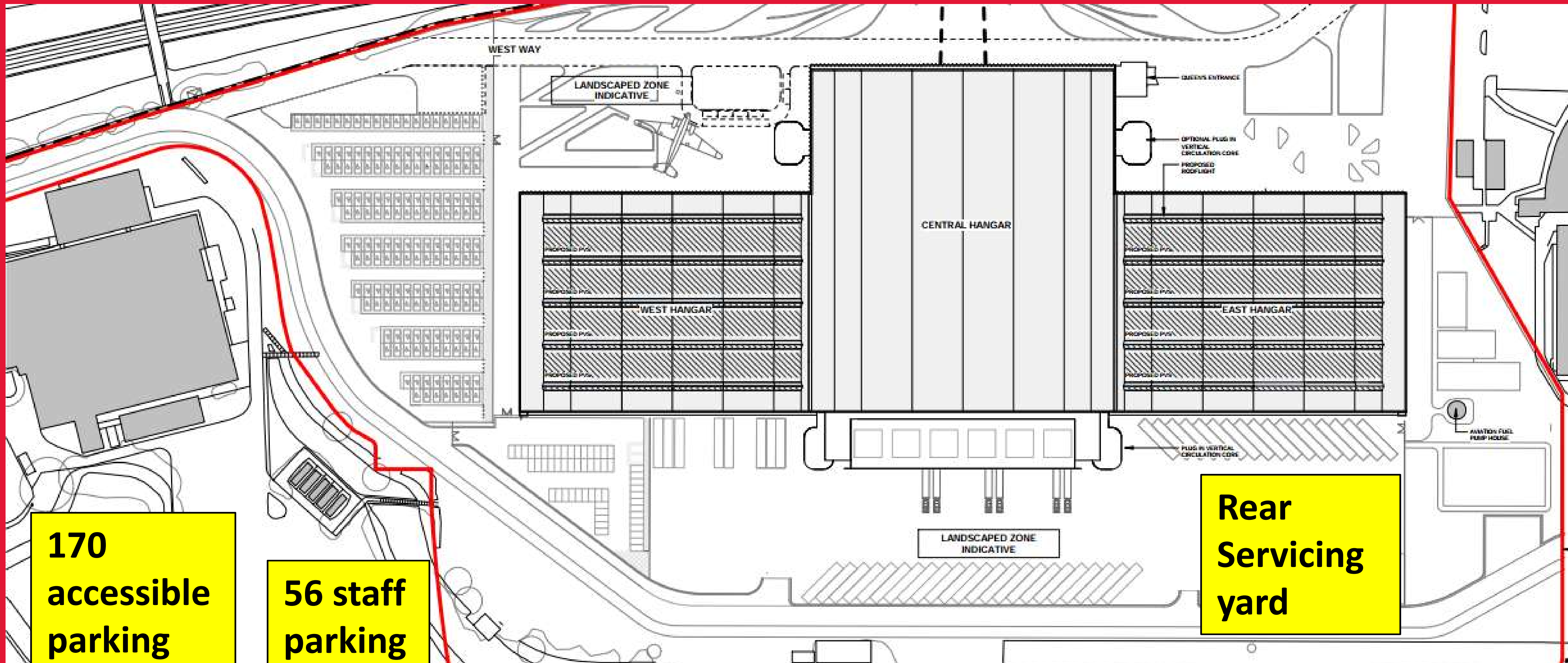
96. All dimensions are subject to the availability of the site.

97. All dimensions are subject to the availability of the site.

98. All dimensions are subject to the availability of the site.

99. All dimensions are subject to the availability of the site.

100. All dimensions are subject to the availability of the site.



**170  
accessible  
parking  
spaces**

**56 staff  
parking  
spaces**

**Rear  
Servicing  
yard**



# ***On-site Layout & Management – Key Conditions***

- ***6 & 7 - Construction Management –***      *prior to commencement*
- ***74 - Transport Management Plan –***      *“*
- ***75 - Car Park Management Plan –***      *“*
- ***76 - Cycling Management Plan –***      *“*
- ***HE 05 & 06 – Visitor & Staff Travel Plan -***      *prior to occupation*
- ***43 – Refuse / Recycling***      *“*
- ***50 – Delivery & Servicing Plan***      *“*  
*including Freight consolidation*

# ***Summary 01 – Investment in infrastructure***

***Refer to p323-325 of report (Appendix 5)***

***£5.39m package of public / private investment***

***£3.65m of developer investment in infrastructure, in addition to:***

***up to 39 City Centre Shuttle Buses***

***up to 54 Park and Ride buses across 5 sites***

***Potential Rail Shuttle Services***

***Increased bus and rail frequencies***

***£1.74m Investment from WECA / BCC / SGC regional funding***

***In addition to existing MetroWest / MetroBus investment***

# *Summary*

*Is the development acceptable in Transport terms?*

*NPPF paragraph 102:*

- potential impacts of development addressed*
- infrastructure and technology opportunities are taken*
- promotion of walking, cycling and public transport*
- identifying adverse impacts and avoiding / mitigating them*

*103:*

- Major development in areas that can be made sustainable*
- Offering a genuine choice of transport modes*

# Laurence Fallon

Transport Development Manager



t: 0117 903 6846

e: [laurence.fallon@bristol.gov.uk](mailto:laurence.fallon@bristol.gov.uk)

Twitter: <https://twitter.com/BristolCouncil>

Web: <http://www.travelwest.info/>

Linked In: <http://uk.linkedin.com/pub/laurence-fallon/94/30a/679>

