

TECHNICAL NOTE

Job Name: Broad Street Mall
Job No: 332110742
Note No: BSMR-STN-BSM-XX-TN-TR-0109
Date: 30/07/2025
Prepared By: Senal Wijeweera
Subject: **Broad Street Mall – Future Car Park Access and Vehicle Trip Re-assignment**

1. Introduction

- 1.1. This Technical Note (TN) has been prepared by Stantec on behalf of McLaren (Broad Street Mall) Limited. It outlines the proposed changes to the access arrangements for the Broad Street Mall (BSM) car park and the resulting reassignment of vehicle trips. These changes form part of the planning application for the redevelopment of the BSM shopping centre (Planning Application No. 240173).

2. Background

- 2.1. The consented development (*planning ref: 240173*) includes a reduction in the number of existing public parking spaces (784 spaces) due to the partial demolition of the MSCP requiring 331 spaces, and a further proportion of existing spaces allocated for private residential lease (up to 100 spaces).
- 2.2. Upon the re-opening of the MSCP following construction, the revised number of available spaces for public use will be 353 spaces.
- 2.3. Under the consented proposals vehicle access to the BSM MSCP was to be reconfigured internally to address the new barrier and ramp locations; however access from both the A329 IDR and from Castle Street was retained as per the current arrangement.

3. Revised BSM MSCP Access

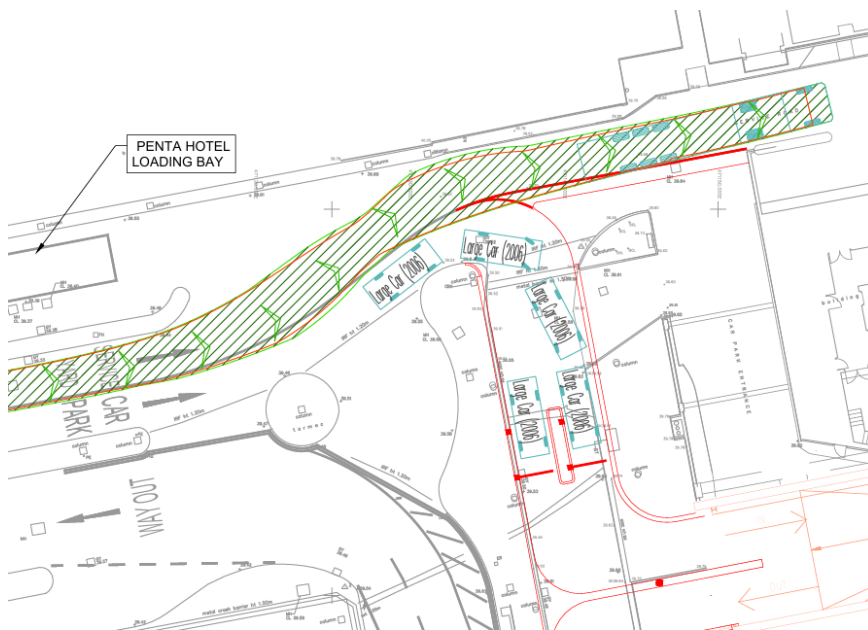
- 3.1. Since receiving planning consent, it has been necessary to review the vehicle access arrangements at basement level. A revised access arrangement has been developed that would mean vehicle access to the BSM MCSP would only be possible from the A329 IDR to the west, and access from Castle Street would be removed.
- 3.2. The revised MSCP access arrangement is illustrated in **Appendix A**, and the following sections of this note set out the impacts of the revised access arrangements across the local road network leading from the reassignment of vehicle trips to the MSCP.

Barrier Capacity

- 3.3. Under the proposed arrangement, two entry barriers will be provided, consistent with the existing barrier provisions.
- 3.4. Survey data for the car park recorded a peak inbound flow of 52 vehicles at a peak time of year (Christmas run up) over a 15-minute period, equivalent to approximately 200 vehicles per hour (vph).

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- 3.5. The IStructE Car Park Design guidance states that where automated payment systems are provided, each barrier lane typically accommodates around 360 vph. On this basis, the provision of two entry barriers will deliver more than sufficient capacity/resilience and will not result in queuing that impacts the external highway network
- 3.6. Furthermore, the peak inbound flow identified above is based on the current car park provision, which will be reduced in the future. Accordingly, a reduction in demand is also expected, further lessening the potential for queuing.
- 3.7. Even in a worst case scenario with only a single barrier in operation, future queues are not expected to exceed 2 or 3 vehicles. An extract of the proposed barrier arrangement is provided below and illustrates that in reality, up to five/six cars would be able to queue on the approach to the proposed barriers and still leave clear access for an articulated lorry to the BSM service yard.



4. Local Network Baseline Conditions

- 4.1. Details of the existing traffic flows on the local roads have been acquired from the previously submitted November 2018 Transport Assessment (TA) created by Connect Consultants for the same site.
- 4.2. The TA detailed manual traffic count surveys of the Chatham Street / Friar Street / A329 slip roundabout, the Castle Street / Castle Hill / A329 slip roundabout and the Broad Street Mall access on the A329.
- 4.3. The surveys were conducted on 28th June 2018 between the hours of 07:00 – 10:00 and 16:00 – 19:00 to capture the weekday morning and evening peak periods. The morning peak hour for the network was identified as 07:30 and 08:30, while the evening peak hour was determined to fall between 16:30 and 17:30.

2023 Base Traffic Flows Scenario

- 4.4. Growth factors were applied to the 2018 traffic flows to represent a 2023 Forecast Year scenario which applied projected economic growth and local development forecasts utilising the Temprow 7.3 database. These were around 8% overall.

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- 4.5. The **2023 Base** AM and PM traffic flow data are illustrated in **Figure 4.1** and **Figure 4.2** respectively and contained in **Appendix B**.
- 4.6. In reality, the impact of the Covid pandemic has meant that traffic flows have been steadily increasing, but haven't yet reached 2018 levels, hence the growth factors applied to the 2018 data effectively represent traffic growth from now to around 2030, beyond the scheme completion year. In reality, there was effectively no traffic growth from 2015 to 2019 in Reading, due to RBC's investment in other means of travel and wider network constraints, and it continues to be RBC's policy to seek to deliver growth through more sustainable travel means, rather than any further car traffic growth, especially in the town centre.

Figure 4.1: 2023 Base Traffic Flow – AM Peak

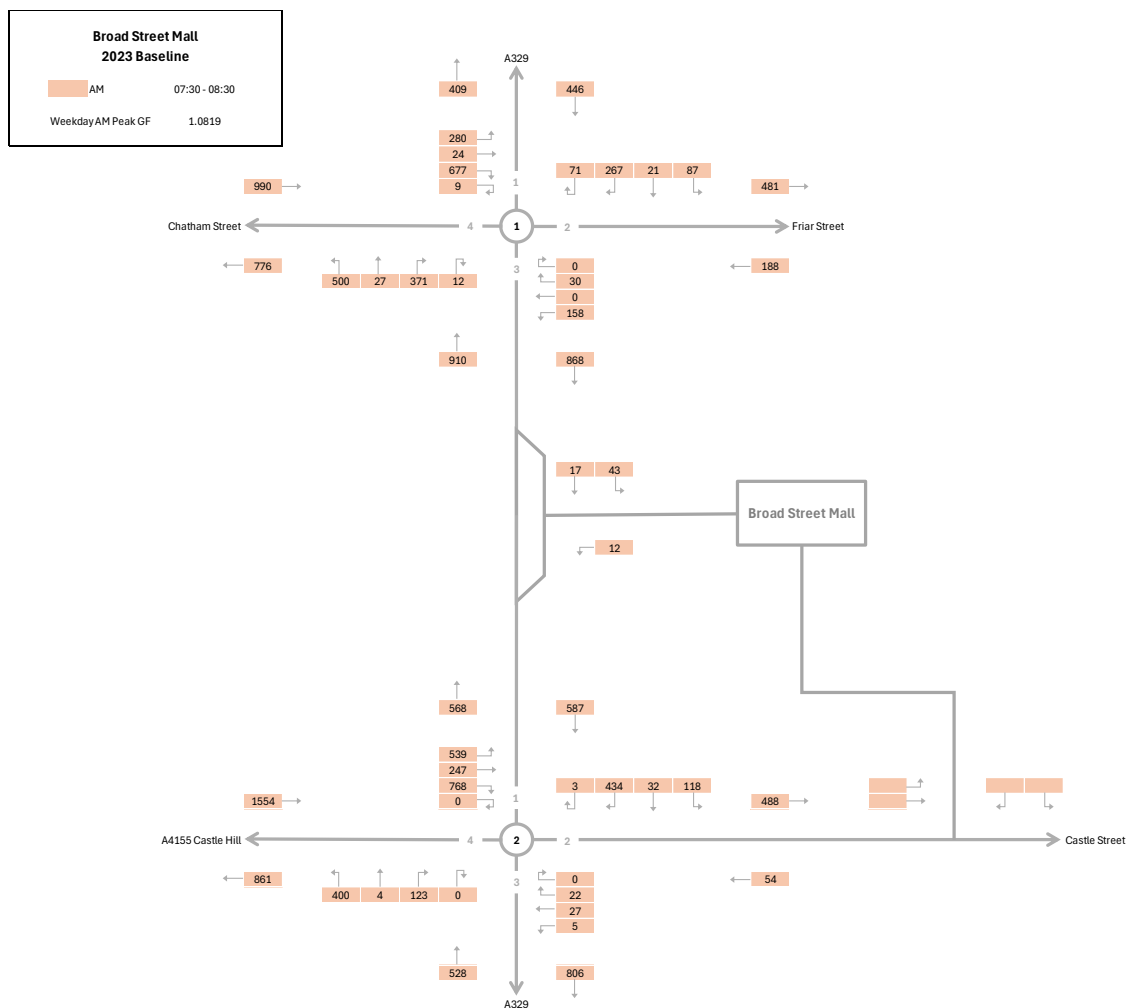
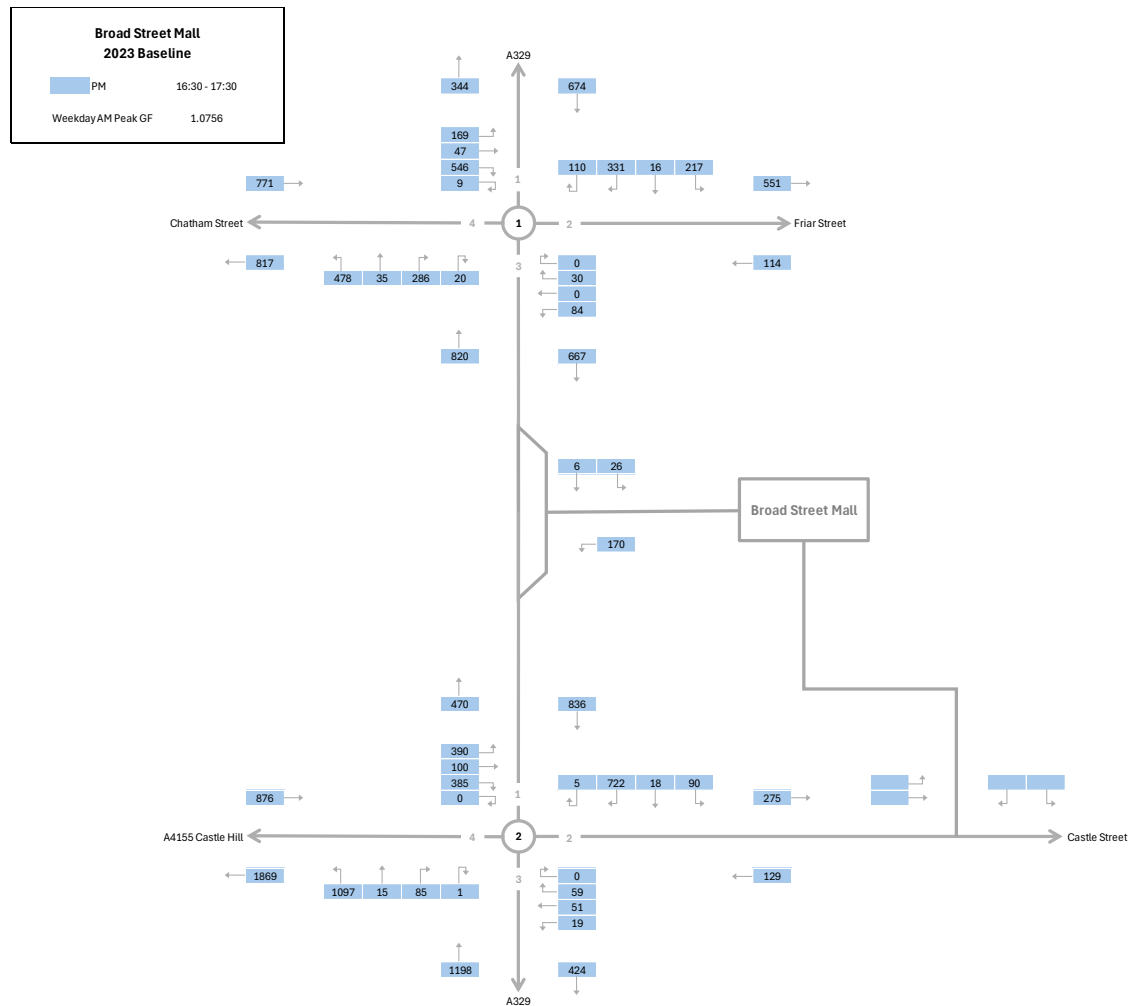


Figure 4.2: 2023 Base Traffic Flows – PM Peak



5. Existing Car Park Generation - November 2022 Survey

- 5.1. To support the latest planning application, the BSM car park was surveyed for a week long duration between Monday 14th November and Sunday 20th November 2022. From this data the busiest weekday peak periods have been identified. For both the AM and PM peak hour this was observed on Tuesday, between 09:15 – 10:15 in the morning and 17:00 – 18:00 in the evening.
- 5.2. As previously noted, the car park currently operates with two access points where the western access via A329 IDR provides two-way movement (i.e entry & exit) whereas the southern access via Castle Street only provides for inbound access to the car park. In assessing the existing use case, both the western and southern entrances have been considered. A summary of the existing peak hour inbound/outbound traffic movement per access are summarised in **Table 5.1**.

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Table 5.1: Existing Inbound and Outbound BSM Car Park Traffic (November 2022)

Peak Period	Inbound			Outbound (onto IDR)
	Western Access	Southern Access	Combined	
AM	77	74	151	11
PM	39	46	85	156

- 5.3. To understand the vehicle trip assignment of the existing car park, the trips summarised in Table 5.1 have been considered and distributed through the road network based on a combination of first principles movement assumptions and turning proportions identified in the 2023 baseline traffic flow data.

Inbound Traffic

- Arrivals to the car park via Castle Street would use the Castle Street Roundabout and would have derived from either A4 Castle Hill or the A329 (South) Off Slip.
- Arrivals to the car park via the A329 slip lane would use the Friar Street roundabout to the north and would arrive from the north Caversham Road off-slip arm or Chatham Street to the west.
- The estimated 2023 traffic flow (Figure 4.1 & 4.2) for the Caversham Road (north) ahead movement (i.e. A329 on-slip) are assumed to be BSM related trips only and equate to around 50% of the total car park arrival flow at this access. This proportion has been applied to the recorded November 2022 demand with the other 50% of trips arriving from Chatham Street (west).

Outbound Traffic

- Vehicles travelling south after exiting the car park have been distributed at the Castle Hill roundabout in accordance with the traffic volumes observed in the 2023 baseline flows. It was observed that approximately 11% of vehicles continue straight on to the A329 south and 3% U-turn to rejoin the A329 IDR north which will predominantly be car park based traffic.
- These turning proportions have been applied to the recorded November 2022 outbound demand with the remaining 86% of trips assumed to be departing westbound to A4155 Castle Hill.

BSM Service Yard Vehicle Trips

- Vehicle trips generated by the BSM service yard share the same access/egress from the A329 IDR as the BSM car park. Background data of the service yard usage between January and September 2022 shows around 9 in/out vehicle trips in the AM peak hour and 4 in/out during the PM peak hour.
- These trips will have been captured as part of the overall 2018 baseline junction surveys and the distribution of such trips are assumed to be split evenly to the A329 IDR north and south of the site access.

- 5.4. The calculated assignment of the existing BSM vehicle movements, based on the November 2022 surveys, can be seen in network plans contained in **Appendix C**.

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- 5.5. To establish a base network model that does not incorporate BSM MSCP related trips, the existing car park only trip generation has been subtracted (retains service yard trips) to create a '**2023 Base without BSM Car Park**' network models which are presented in **Appendix D**.
- 5.6. This revised base model can subsequently be combined with the proposed BSM car park and residential car park trip generation to assess the overall impact of the proposed BSM development which is detailed in Section 6 onwards.

6. Revised Car Park Demand and New Assignment

- 6.1. The development proposal includes a reduction in public parking provision at the BSM car park from 784 spaces to 353 spaces, representing a 45% decrease. To reflect this reduction in parking capacity, the associated parking demand to/from the BSM car park has been proportionally reduced by 45%. A summary of the revised inbound and outbound BSM car park traffic is summarised in **Table 6.1**.

Table 6.1: Summary of Proposed Inbound and Outbound BSM Traffic

Peak Period	Existing (784 Spaces)		Proposed (353 Spaces)	
	Inbound	Outbound	Inbound	Outbound
AM	151	11	68	5
PM	85	156	38	70

Future Car Park Assignment

- 6.2. The future car park access arrangement retains the western access to/from the A329 IDR meaning all inbound vehicle movements that previously utilised the Castle Street access are required to be reassigned to enter from the IDR.
- 6.3. The proposed car park trip assignment has been developed in accordance with the same principles as the assignment used for the existing demand. Vehicles travelling northbound from the IDR (south) would now stay on the A329 IDR mainline passing under the Castle Street IDR junction and head towards the Friar Street roundabout using the south facing off-slip. From there, these vehicles would be required to do a U-turn manoeuvre to access the BSM car park entry point. Similarly, vehicles that previously approached from the A4 Castle Hill to travel straight ahead are assumed to turn left onto the IDR and head towards the Friar Street roundabout using the south facing off-slip to make the U-turn into the BSM car park entry point. The proposed car park assignment for the future 353 public spaces is presented in **Appendix E**.

7. Proposed Residential Generation & Assignment

- 7.1. The development proposal includes an allocation of up to 100 spaces that are for the future residential units. To provide a complete impact assessment of the proposed changes to the car park access, the associated vehicle trips generated from these residential spaces have been considered across the same local road network.
- 7.2. Not all residents that have leased one of the 100 available spaces would generate trips to/from the BSM car park during the peak hours. However, based on a typical TRICS daily flow profile, we have assumed as a worst case that the 100 residential spaces could generate approximately 60 outbound trips in the AM peak and 60 inbound trips during the PM peak. This reflects a typical journey to work scenario for residential development, although for a site in this location, we would expect a lower level of car use in reality.

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7.3. Following a review of the DataShine Travel to Work Census data, it was evident that many residents living in the Reading town centre area work in the town centre also. Outside of this, people are working in locations across eastern, southern and western areas. On this basis the outbound residential vehicle trip assignment at the IDR/Castle Street roundabout during the AM peak has been assumed as follows. For the returning Inbound trips in the PM peak the same distribution has been assumed for the returning journeys;

- 50% Ahead onto IDR.
- 40% Right to Castle Hill/A4 Bath Road.
- 10% U-turn to Caversham Road and Caversham.

7.4. The resulting residential car park trip assignment is presented in **Appendix E**.

8. Hexagon Event Traffic

- 8.1. The proposed modifications to the BSM car park will not affect the existing access arrangements for either Car Park B (used for Hexagon events), Hexagon parking immediately in front of the theatre at basement level, or the small number of operational parking spaces allocated to the student accommodation, so these have not been adjusted.
- 8.2. This assessment has considered the peak operational hours of the existing BSM multi-storey car park, as detailed in Section 5. For the Hexagon, the busiest period for MSCP use was based on a weekday evening event. Accordingly, the inbound traffic volumes assessed for the 5–6pm peak hour incorporates a level of traffic associated with Hexagon event activity.
- 8.3. For reference, the analysis is based on a recorded inbound flow of 85 vehicles between 5-6pm on the Tuesday. On other weekdays, the corresponding inbound flows ranged between 25 and 45 vehicles during the same period. Higher flows are observed from 6-7pm, but the background traffic flows are much lower in this period.
- 8.4. On event days, there is typically a short period of elevated outbound traffic much later in the evening. However, these movements occur well outside the network peak period and being outbound in nature, are not affected by the proposed access changes in any event.
- 8.5. Similarly, for matinee performances at the Hexagon, any associated inbound traffic would generally arrive in the early afternoon, outside of the network peak period. As such, the proposed reassignment would not materially impact the operation of surrounding junctions.

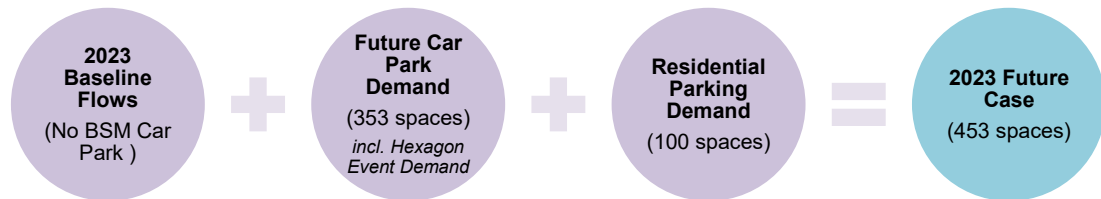
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9. Proposed Development Impact Assessment

2023 Future Case Traffic Flows Scenario

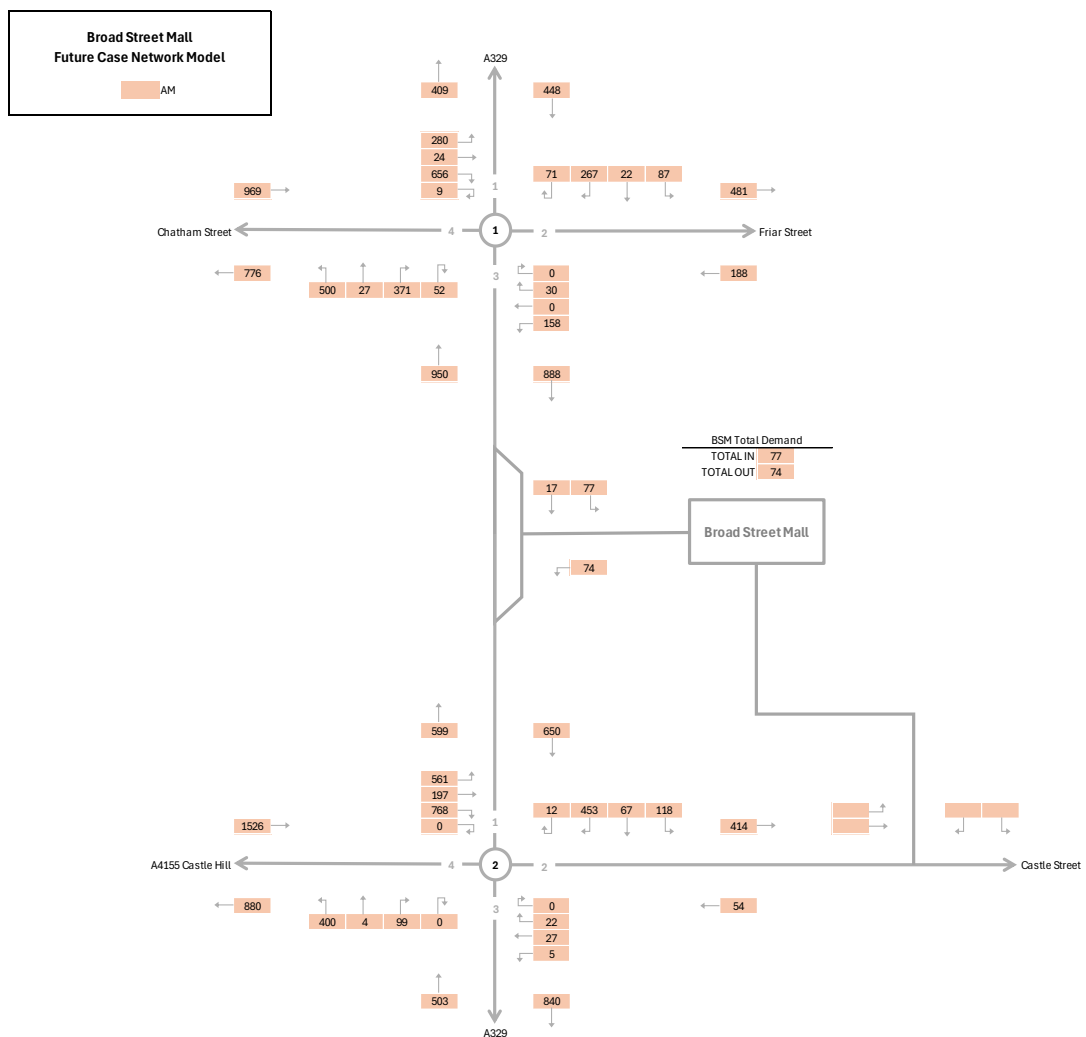
- 9.1. The proposed development generation has been calculated by removing the existing car park demand from the 2023 Base traffic flows and adding this to the proposed parking demand for the 353 public spaces and the proposed residential parking demand, as illustrated below in **Figure 9.1**.

Figure 9.1: Proposed Development Generation Methodology



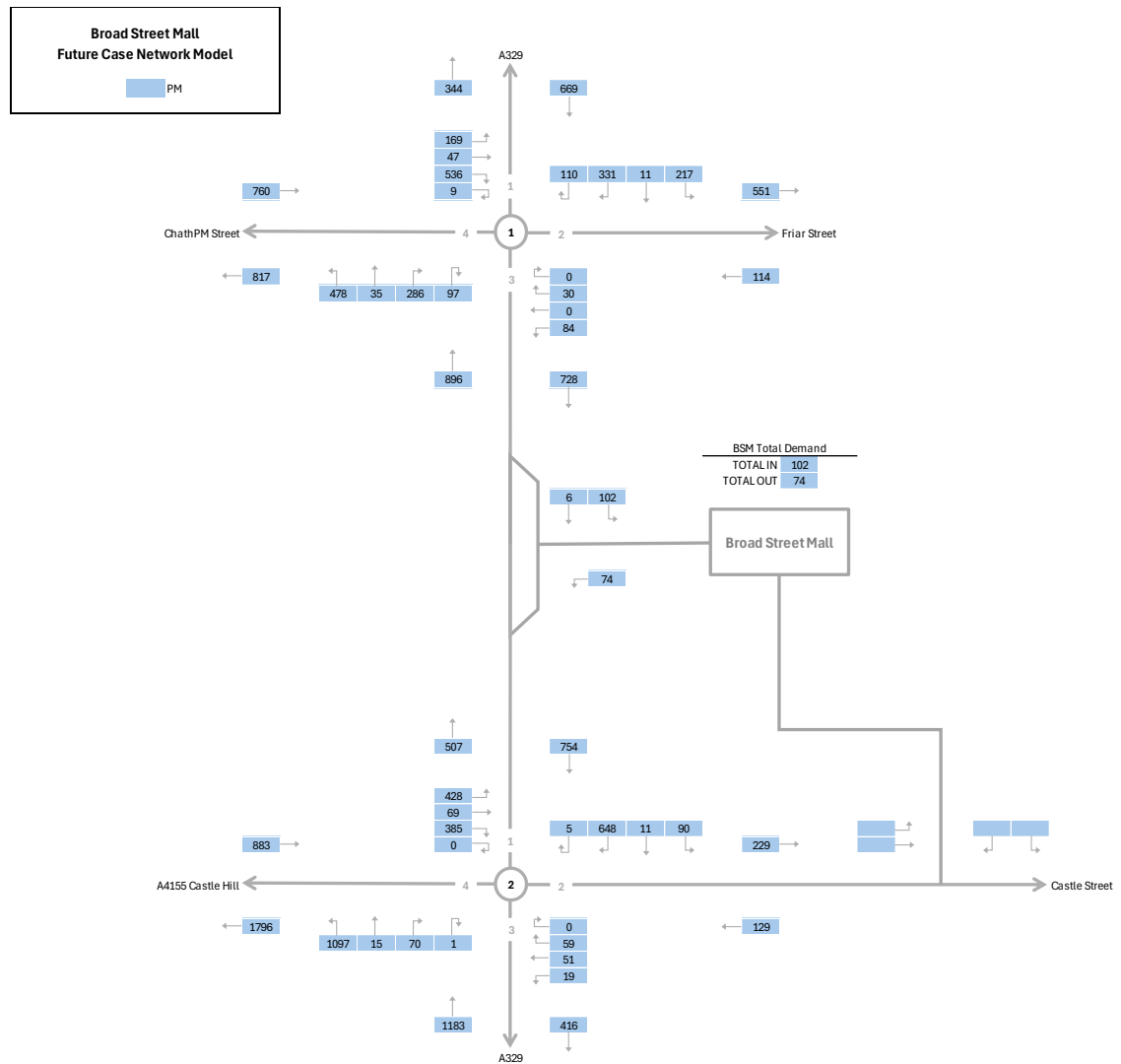
- 9.2. The resulting future year traffic flows scenario based on the 2023 base plus the BSM Development vehicle generation are illustrated in **Figure 9.2** and **Figure 9.3** respectively and contained in **Appendix F**.

Figure 9.2: 2023 Future Case Traffic Flow – AM Peak



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Figure 9.3: 2023 Future Case Traffic Flow – PM Peak



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Impacts Assessment

- 9.3. To understand the impact of the proposed development and future access arrangements, the difference in traffic volumes has been calculated between the 2023 Base (Section 4) and the revised 2023 Future case. The results for the Friar Street and Castle Street roundabouts are summarised below in **Table 9.1** to **9.4** which summarise the 2023 Future Year flows with the difference to the baseline given in brackets.

Friar Street roundabout

Table 9.1: Friar Street Roundabout – AM Peak

Friar St Roundabout	Arm 1	Arm 2	Arm 3	Arm 4	Total	% Change
Arm 1 A329 north (off slip)	71	87	22 (+2)	267	448 (+2)	+0.4%
Arm 2 Friar Street	30	0	0	158	188	0%
Arm 3 A329 south (off slip)	27	371	52 (+40)	500	950 (+40)	+4%
Arm 4 Chatham Street	280	24	656 (-21)	9	969 (-21)	-2%
Total Junction					2554 (+20)	+0.8%

Table 9.2: Friar Street Roundabout – PM Peak

Friar St Roundabout	Arm 1	Arm 2	Arm 3	Arm 4	Total	% Change
Arm 1 A329 north (off slip)	110	217	11 (-5)	331	669	-1%
Arm 2 Friar Street	30	0	0	84	114	0%
Arm 3 A329 south (off slip)	35	286	97 (+77)	478	896	+9%
Arm 4 Chatham Street	169	47	536 (-11)	9	760	-1%
Total Junction					2440 (+61)	+3%

- 9.4. The impact assessment comparing the 2023 Base and 2023 Future scenarios indicates that the proposed development would have a minimal impact on the flows through the Friar Street roundabout.
- 9.5. During the AM peak, total traffic volumes at the junction are projected to increase marginally by 20 vehicles, with only minor variations across individual arms. These include a 2% reduction the A329 north off-slip and a 4% increase on the A329 south off-slip.
- 9.6. In the PM peak, total junction traffic volumes are forecast to increase by 61 vehicles overall (approximately 3%), primarily due to a 9% rise on the A329 south off-slip arm. Changes on other approaches, such as Chatham Street and Friar Street are negligible.
- 9.7. In terms of absolute traffic flow, the most notable change is associated with vehicles exiting the A329 south off-slip and u-turning around the junction to access the BSM car park. This reassignment could result in an increase of approximately 77 additional trips making this movement during the PM peak hour, partly offset by reduced public car park entry flows.

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- 9.8. Overall, the proposed development and revised car park arrangements are expected to result in only a modest redistribution of traffic. These changes are not considered significant and are unlikely to affect the overall performance of the Friar Street roundabout.

Castle Street roundabout

Table 9.3 Castle Street Roundabout – AM Peak

Friar St Roundabout	Arm 1	Arm 2	Arm 3	Arm 4	Total	% Change
Arm 1 A329 north (off slip)	12 (+9)	118	67 (+34)	453 (+19)	650 (+62)	+11%
Arm 2 Castle Street	22	0	27	5	54	0%
Arm 3 A329 south (off slip)	4	99 (-25)	0	400	503 (-25)	-5%
Arm 4 A4 Castle Hill	561 (+22)	197 (-49)	768	0	1526 (-27)	-2%
Total Junction					2734 (+11)	+0.4%

Table 9.4 Castle Street Roundabout – PM Peak

Friar St Roundabout	Arm 1	Arm 2	Arm 3	Arm 4	Total	% Change
Arm 1 A329 north (off slip)	5 (-1)	90	11 (-7)	648 (-74)	754 (-82)	-10%
Arm 2 Castle Street	59	0	51	19	129	0%
Arm 3 A329 south (off slip)	15	70 (-15)	1	1097	1183 (-15)	-1%
Arm 4 A4 Castle Hill	428 (+38)	69 (-31)	385	0	883 (+7)	1%
Total Junction					2949 (-90)	-3%

- 9.9. The comparison between the 2023 Base and 2023 Future scenarios for the Castle Street roundabout shows limited overall impact, with minor changes in traffic distribution across the roundabout arms during both peak periods
- 9.10. In the AM Peak, total traffic volumes are projected to increase marginally by 11 vehicles (0.4%). Notable changes in specific turning movements include a 11% increase on the A329 north off-slip driven by increases in outbound Car Park trips generated by the proposed residential parking. As Castle Street will no longer provide access to the car park, vehicle flows to this arm could reduce by approximately 15%.
- 9.11. During the PM peak hour, an overall reduction of 90 vehicles (3%) is forecast across the roundabout. The A329 north off-slip (Arm 1) sees the most significant decrease, with 82 fewer vehicles equating to a 10% reduction. The remaining approaches have only recorded small changes.
- 9.12. Overall, the proposed development and revised car park arrangements are expected to result in only a modest redistribution of traffic and results in a slight reduction in the total junction traffic flows.

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10. Other Matters

Rights of Access

- 10.1. Following the closure of the former basement roundabout arrangement (through installation of barriers), there was no formal right of access agreed for Penta Hotel service traffic to exit through the BSM service yard. The proposed BSM access arrangement would not change this, and also does not preclude Penta Hotel from re-opening the mini-roundabout in order to facilitate outbound vehicle movements.

Off-Site Highway Works

- 10.2. The BSM car park is served by a network of advance directional signage located across the local highway network. As a result of the proposed closure of vehicular access from Castle Street, it will be necessary to update the associated highway signage to ensure drivers are appropriately directed to the car park.
- 10.3. In agreement with RBC, it is proposed that the required amendments to directional signage, together with any associated changes to road markings that may be required, are secured by way of an appropriate planning condition requiring detailed drawings, and separate Agreement prior to implementation (e.g. S278).

11. Conclusion

- 11.1. This note effectively considers a worst case impact since it:
- Takes a peak weekday from one of the busiest times of the year for BSM car park use
 - Assumes there is an evening event on at The Hexagon
 - Assumes the residential car park will be 100 spaces and that 60 of these will arrive/depart in the network peak hours
- 11.2. The removal of the Castle Street access and consolidation of vehicle entry via the A329 IDR has resulted in only a modest redistribution of traffic flows across the Friar Street and Castle Street roundabouts.
- 11.3. The assessment of the revised Broad Street Mall (BSM) car park access arrangements and associated traffic reassignment indicates that the proposed changes will have a limited impact on the surrounding local road network during the most affected weekday peak hours. Outside of these peak hours, the reassignment effects will be even more limited.
- 11.4. Overall, traffic volumes during both AM and PM peak periods show only minor variations, and it is concluded that the proposed development and revised car park access arrangements are not anticipated to affect the operational performance of the local highway network.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
TN-TR-0109	P01	05/08/2025	Senal W	JH	SW	SW
TN-TR-0109	P01.2	03/09/2025	Joe H	SW	SW	SW
TN-TR-0109	P01.3	15/09/2025	Joe H	SW	SW	SW

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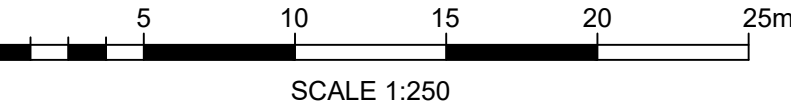
Appendix A Revised BSM Car Park Access Arrangement



Stantec UK Limited
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P01 - FIRST ISSUE	JH	-	2025.07.11
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Issue Status

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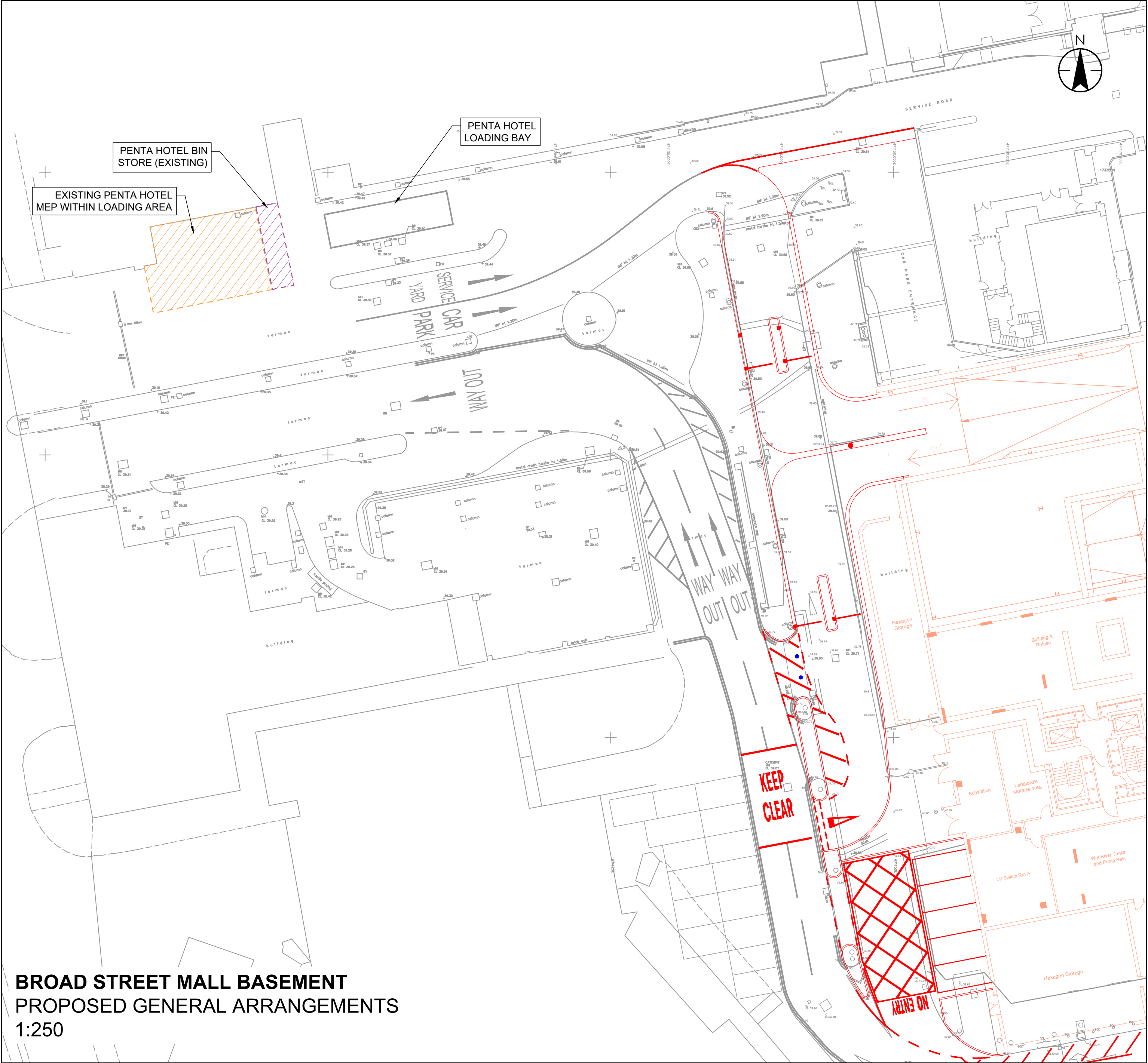
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Title
PROPOSED ACCESS/EGRESS
ARRANGEMENT - BASEMENT LEVEL
ALTERNATIVE PERMANENT LAYOUT
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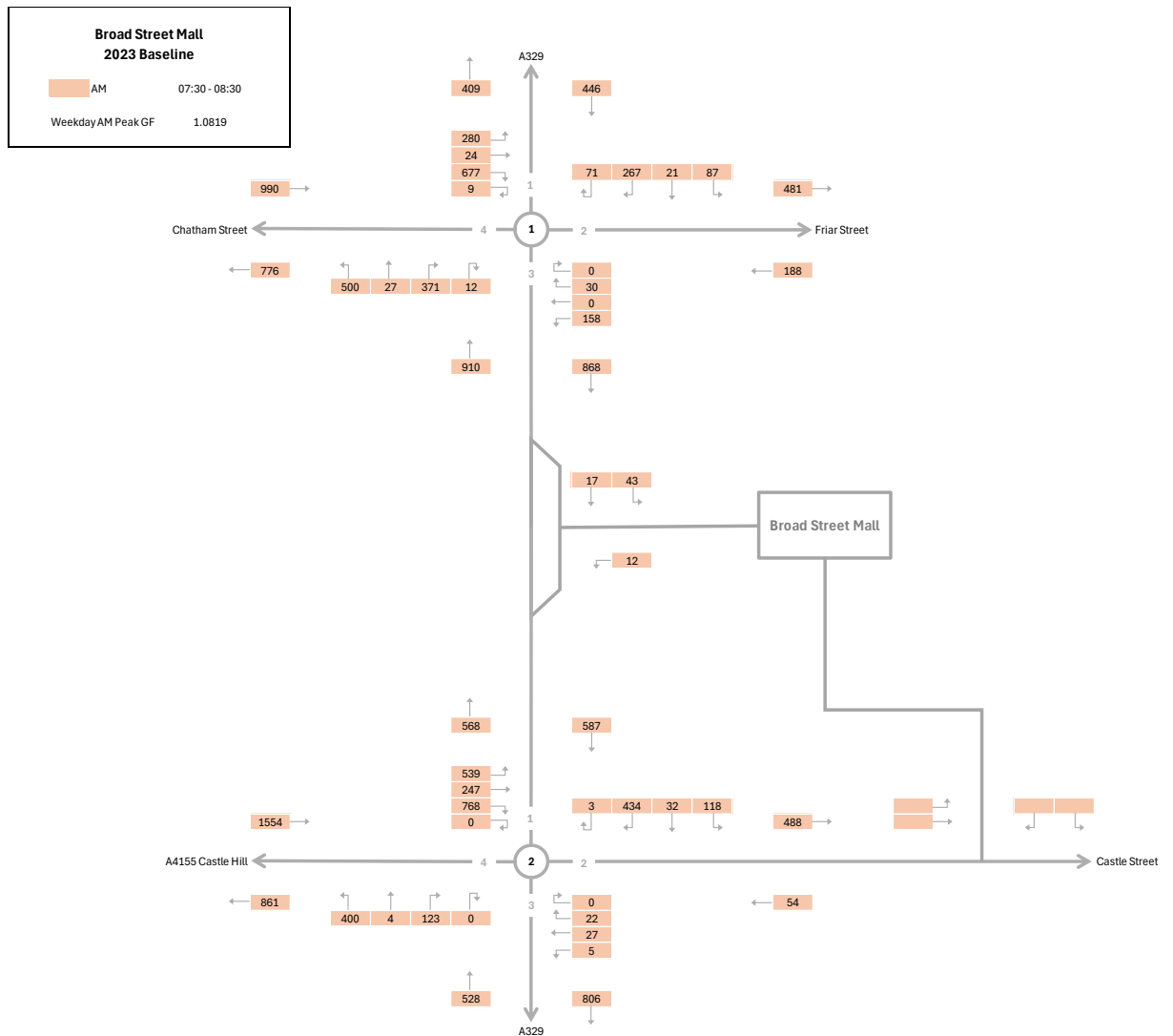
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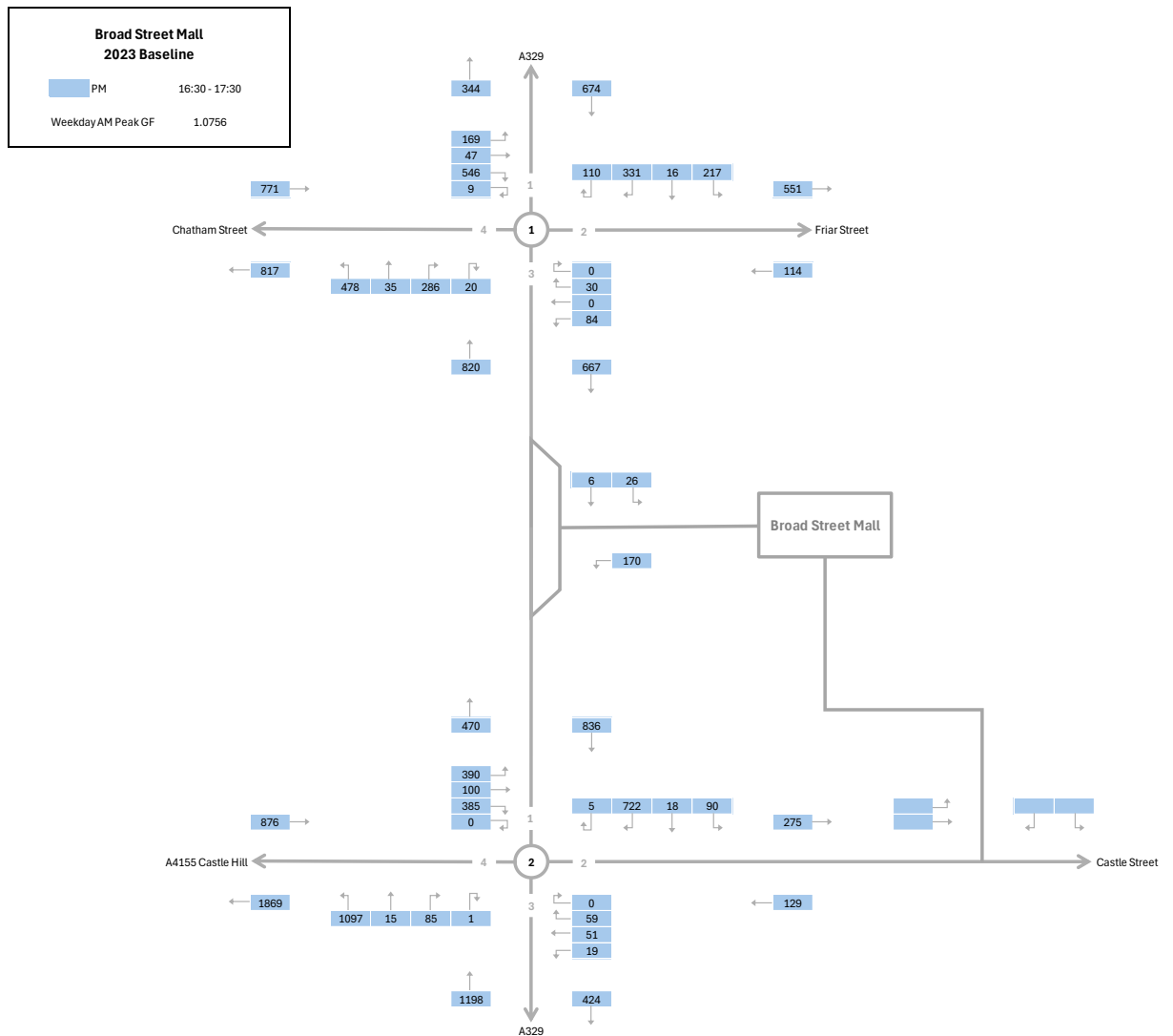
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Appendix B 2023 Base Network Traffic Flows

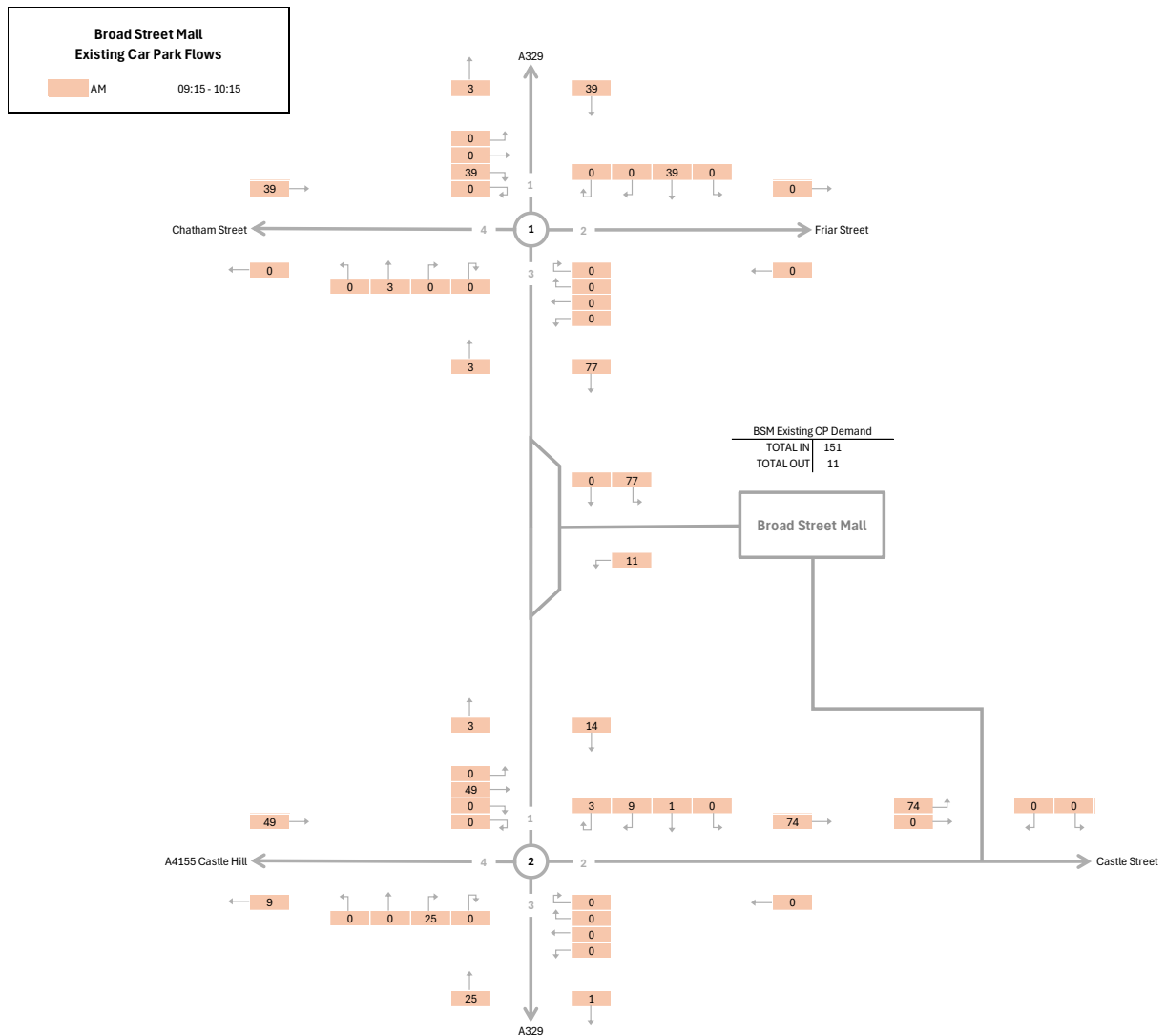


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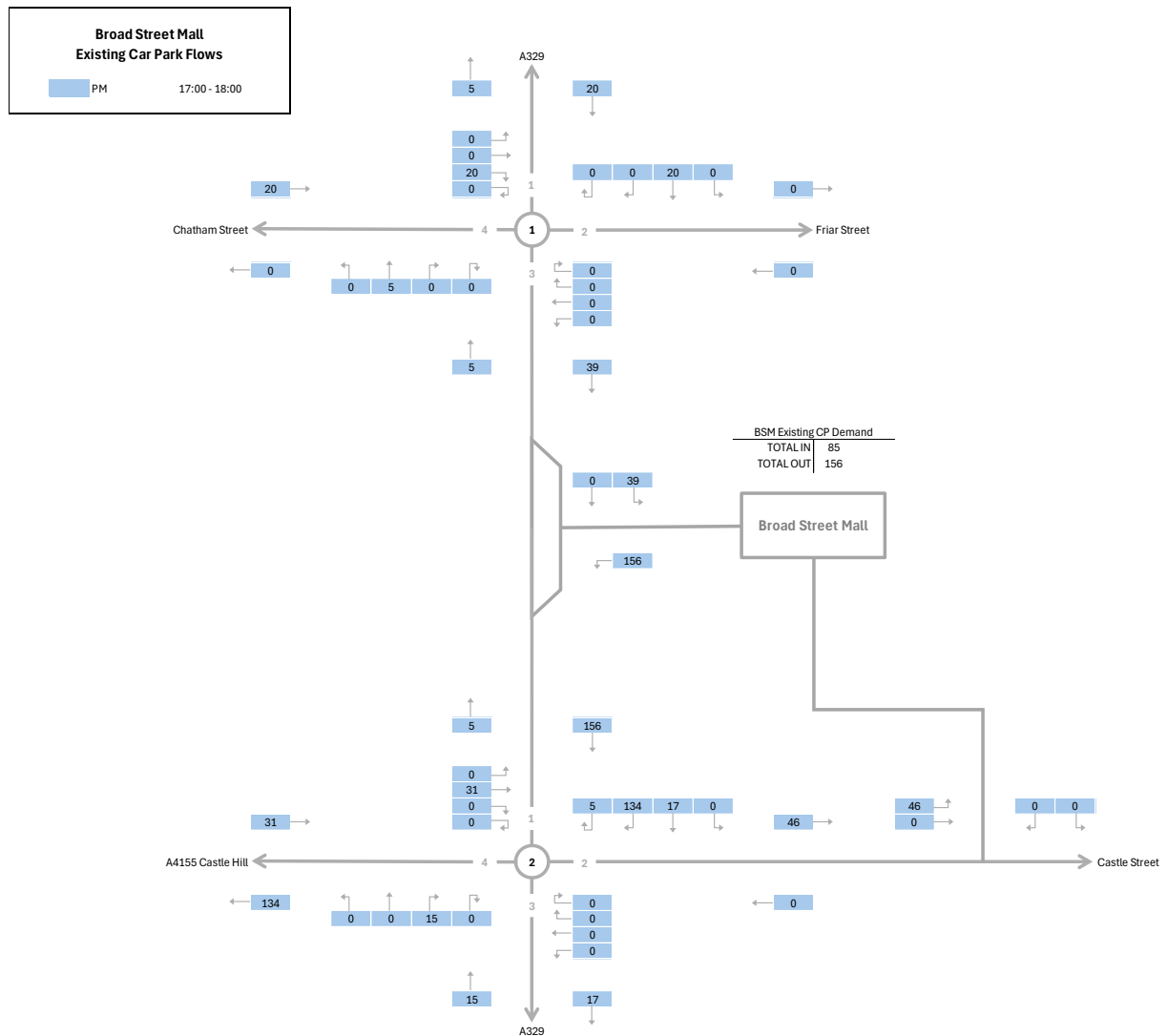


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Appendix C BSM Car Park Only Traffic Flows (November 2022)

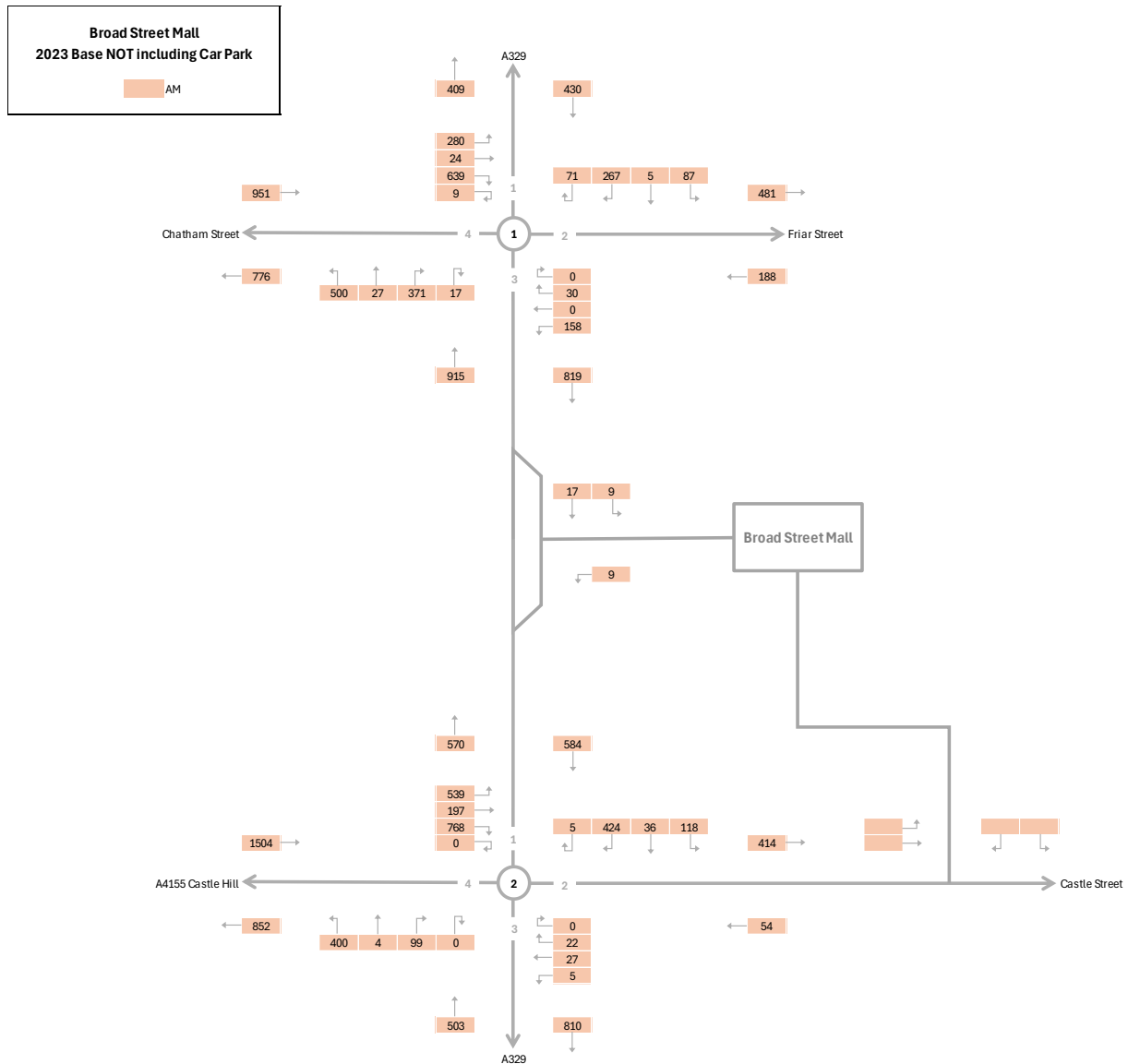


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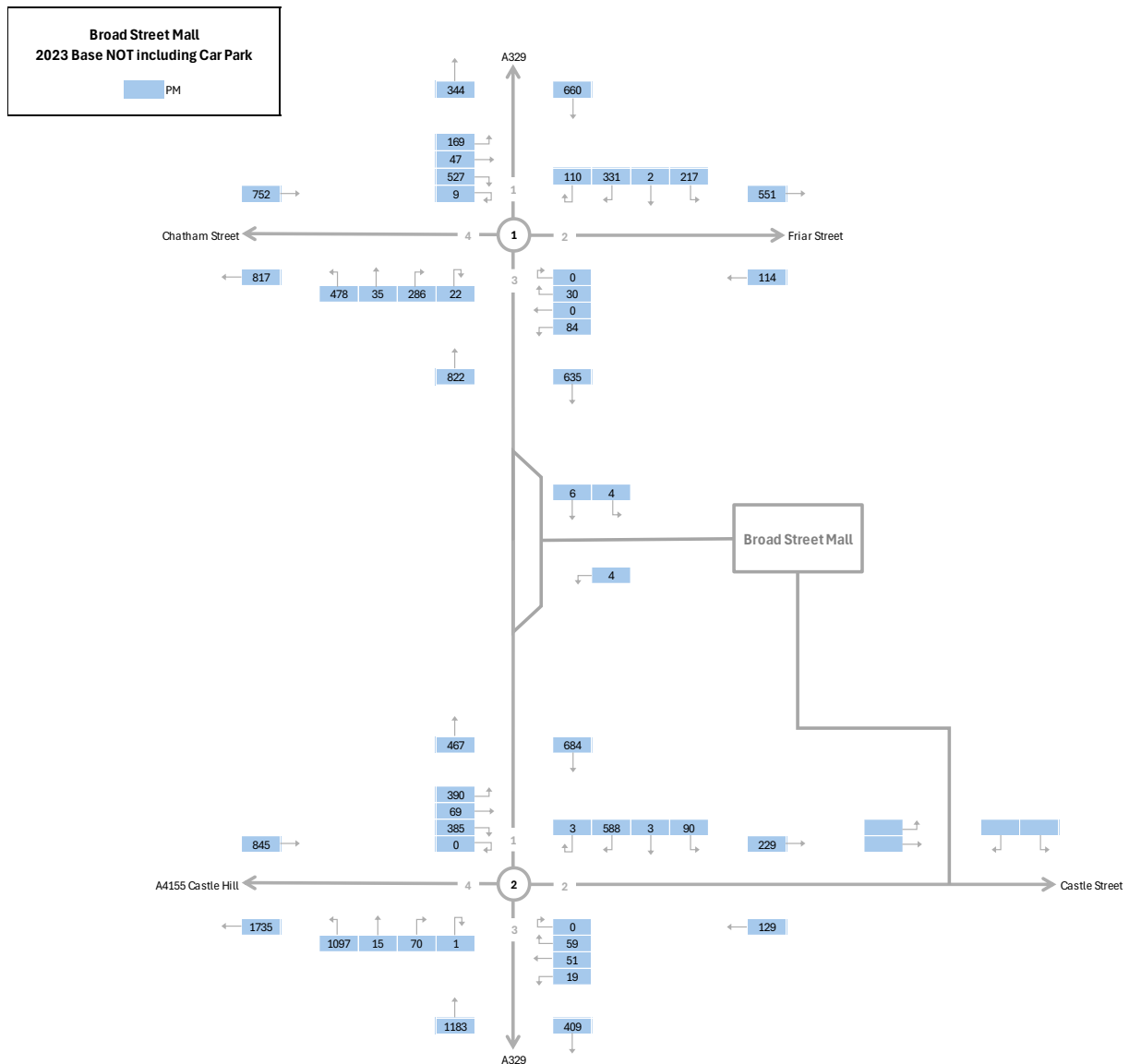


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Appendix D 2023 Base Network Traffic Flows (without BSM Car Park)



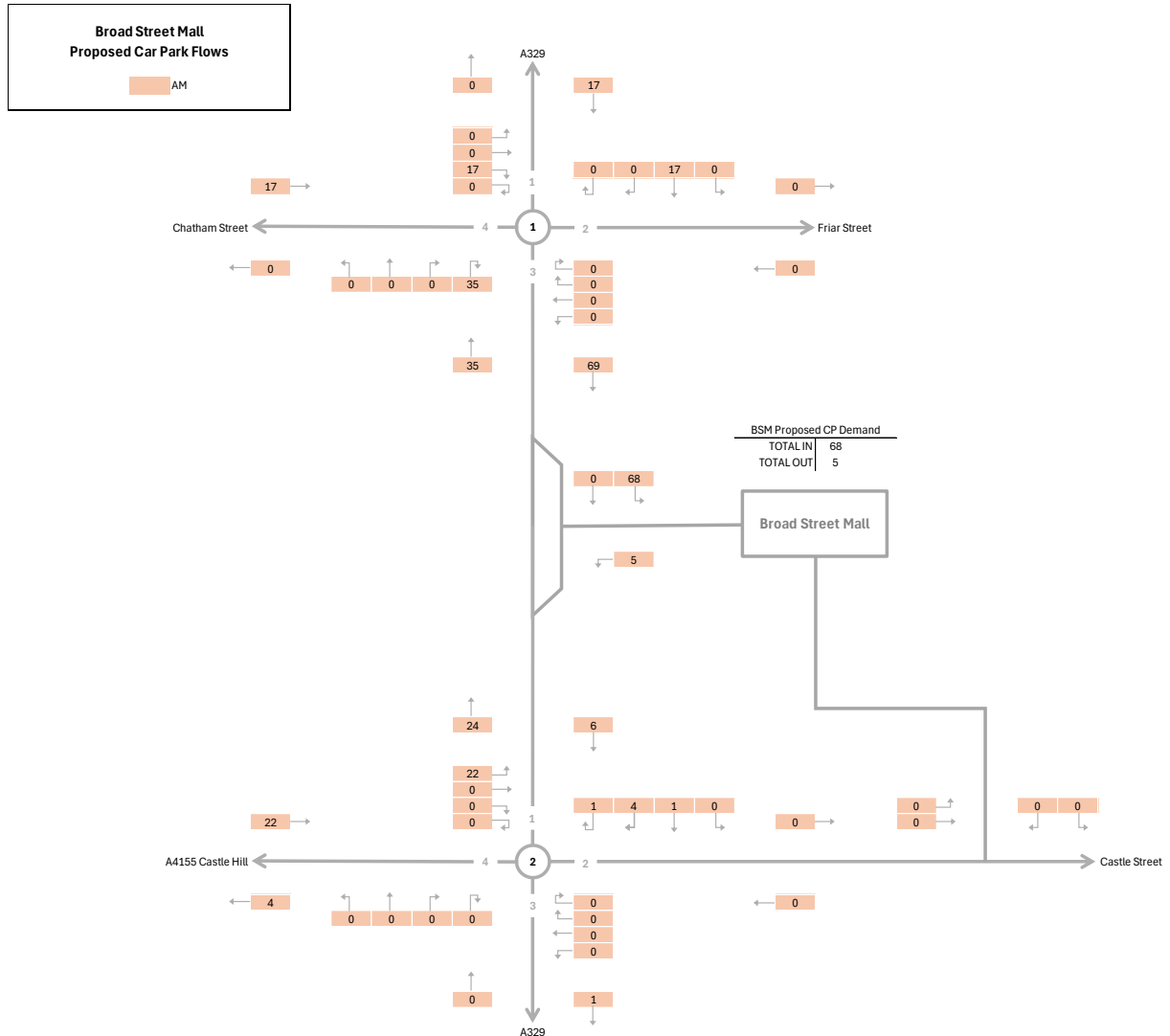
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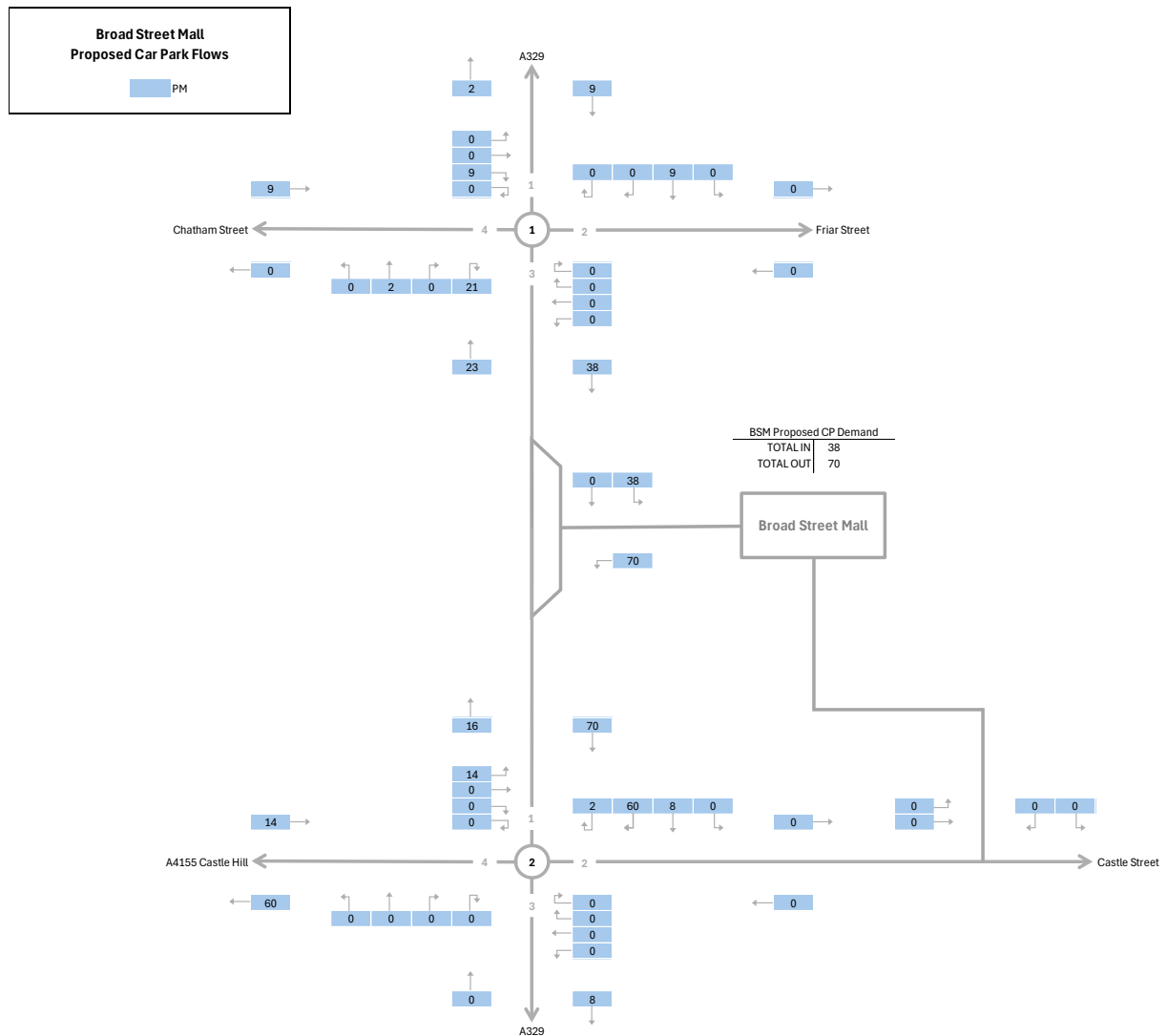
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Appendix E Proposed Development Network Traffic Flows

Future Car Park

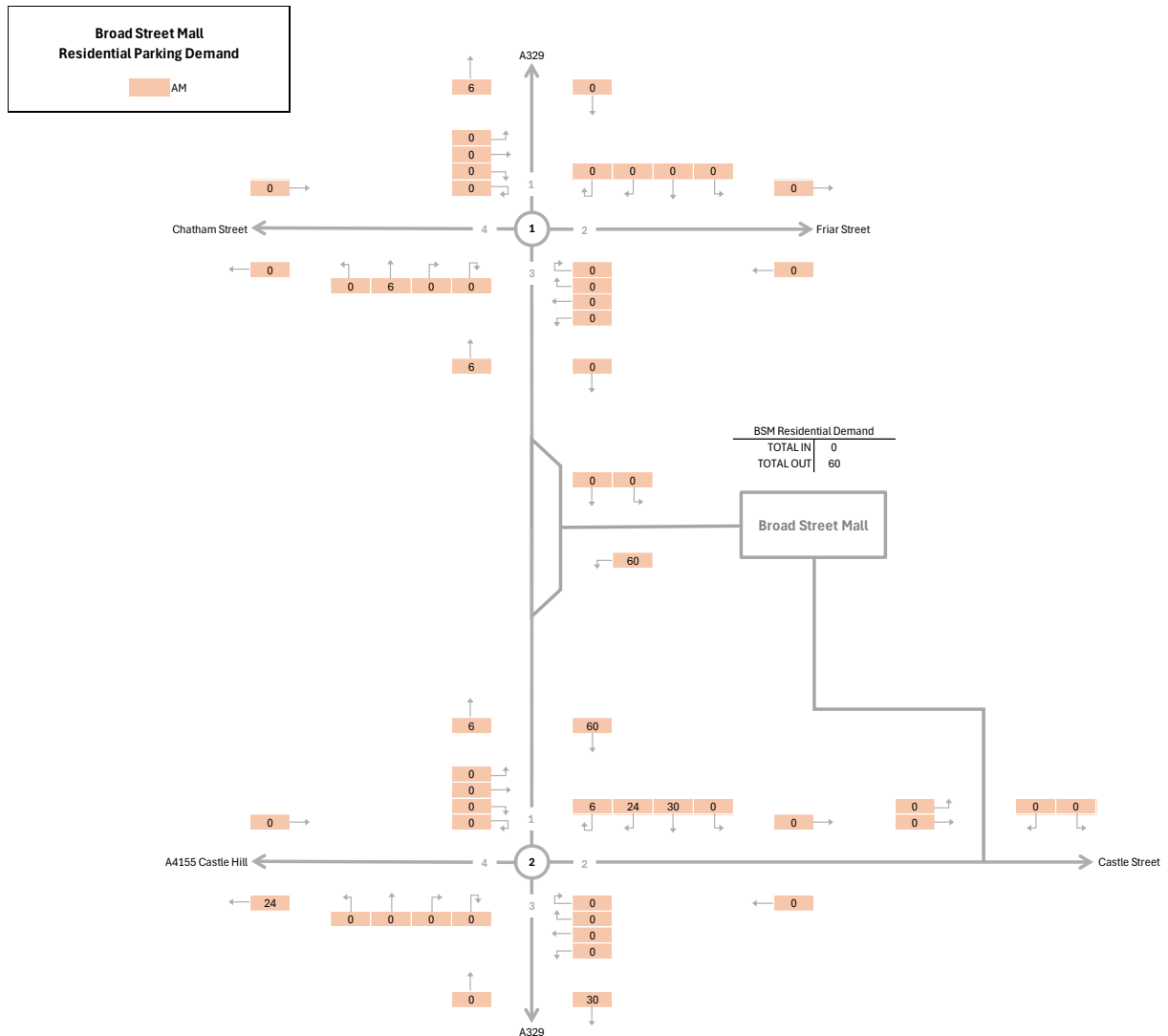


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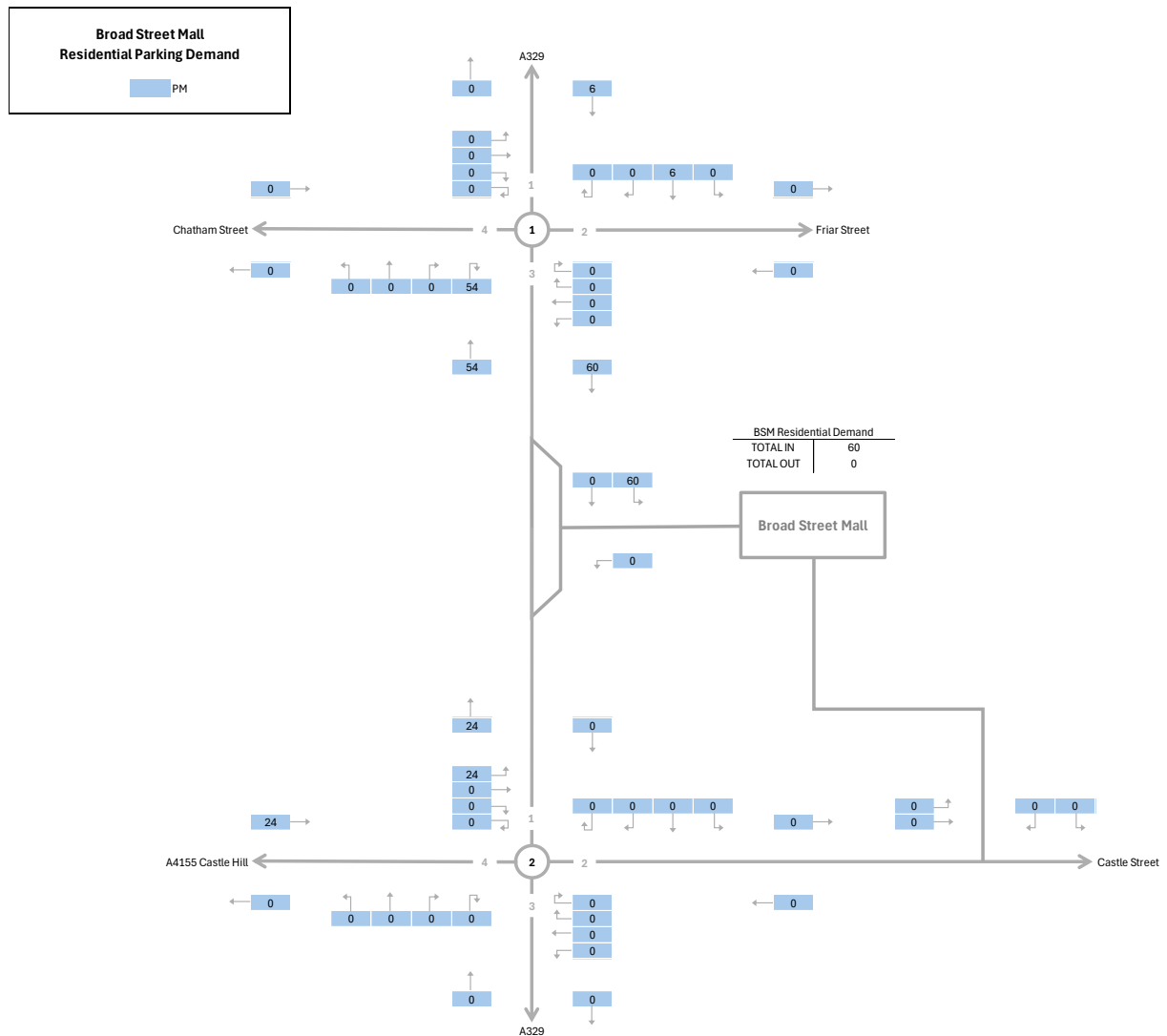


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Future Residential

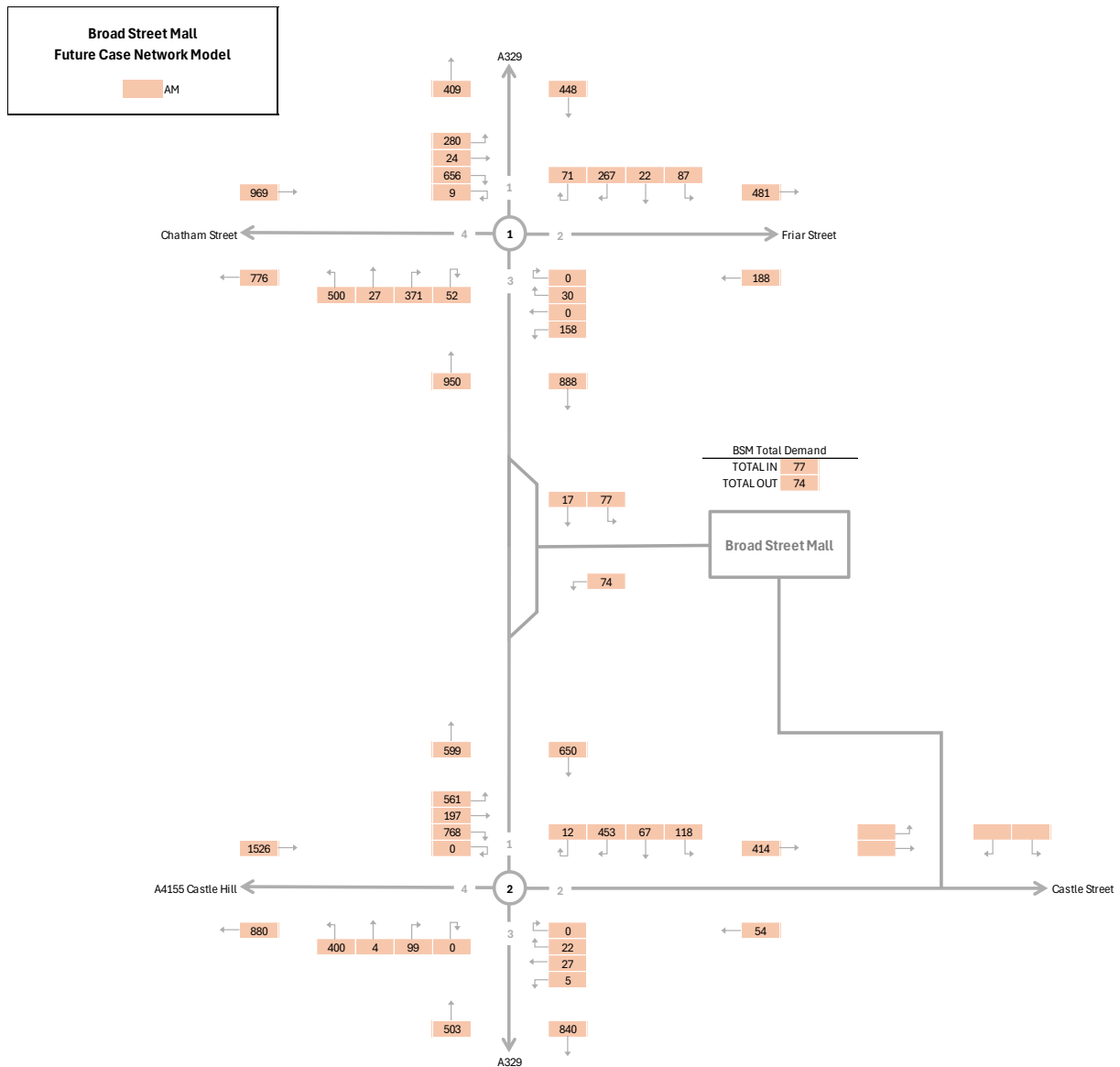


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Appendix F 2023 Future Case (incl. Development) Network Traffic Flows



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