







Circle Square, Oxford Road, Manchester – Plot 14: MSCP, Hotel & Energy Centre

Transport Assessment Addendum

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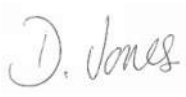
Danny Jones MPlan MRTPI Transport Planner		30 August 2016

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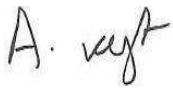
Alex Vogt BSc (Hons) MSc MCIHT Technical Director		30 August 2016

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1.0 Introduction

1.1 Project Introduction

1.1.1 Curtins has been appointed on behalf of Oxford Property Trading Ltd (OPTL) and Bruntwood Limited to provide all traffic and transport advice in relation to the redevelopment of the former BBC site, Oxford Road, Manchester.

1.1.2 Redevelopment of the Site, and land immediately adjacent to it, represents an opportunity for comprehensive employment led, mixed-use regeneration unparalleled elsewhere on the Corridor.

1.1.3 To support the redevelopment of the Site, a Strategic Regeneration Framework was prepared and agreed with the Manchester City Council (MCC) Executive Committee in 2013. This was reinforced with a masterplan and phasing strategy which was approved by the MCC Executive Committee in July 2015.

Phase 1A

1.1.4 The first phase of the agreed masterplan, known as Phase 1A was submitted in September 2015 and consisted of:

'Erection of 1no. 12 storey serviced apartment building (Sui Generis) with ground floor ancillary areas including reception, residents' hub and amenities and 1no. part 13 storey part 17 storey serviced apartment building (Sui Generis) with ground and mezzanine floor ancillary areas including reception, residents' hub and amenities, plus commercial units (Use Class A1, A2, A3, A4, B1, D2) and associated access, landscaping and cycle parking facilities.'

Phase 1B

1.1.5 The second phase of the agreed masterplan is known as Phase 1B was submitted in January 2016 and consisted of four planning applications summarised as follows:

1. Build to Rent Residential Buildings 5&6 by OPTL;
2. Build to Rent Residential Buildings 7&8 by OPTL;
3. Commercial Buildings 2&4 by Bruntwood Limited and Public realm including Commercial Building 3 (Pavillion) by OPTL; and
4. Multi Storey Car Park (MSCP) on Plot 14 by Bruntwood Limited.

1.1.6 A summary of the four Phase 1B planning applications is provided in **Table 1.1:**

	PRS Buildings 5 & 6	PRS Buildings 7 & 8	Commercial Buildings 2 & 4	MSCP	Total
Residential Units	411	266	0	0	677
Office	0m^2	0m^2	28,394m^2	0m^2	28,394m^2
Ground Floor 'Retail' Units	1,476m^2	1,737m^2	4,951m^2	1,603m^2	9,767m^2
Car Parking Spaces	n/a	n/a	n/a	1,023	1,023
Cycle Spaces	206	133	385	0	724

Table 1.1 – Phase 1B Proposed Uses and Floorspaces

1.1.7 The Phase 1B proposals also included the following works to the local highway network:

- Junction improvements to the Oxford Road / Charles Street junction to be included as part of the planning application for PRS Buildings 5 and 6. This is to facilitate the right-turn of general traffic onto Charles Street from Oxford Road and to provide a wider cycle lane on the east side of Oxford Road; and
- Junction improvements to create access into the MSCP from A34 / Brook Street.

1.1.8 In June and July 2016, planning permission was secured for the four planning applications submitted to Manchester City Council for Phase 1B.

1.1.9 A single Transport Assessment document covering all four planning applications (reference **TPMA1356/1B/TA**) formed part of the approved submission.

Plot 14: MSCP, Hotel & Energy Centre

1.1.10 The existing MSCP consent on Plot 14 was approved on 23 June 2016 (Ref. 111028/FO/2016/C1). The approved description of development is as follows:

"Demolition of any existing structures and erection of multi-storey car park (1028 spaces including spaces for disabled car users) in a 10-storey building, with ground and mezzanine commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Café), A4 (drinking Establishment), B1 (Offices), D1 (Non-Residential Institutions Creche only) and D2 (Assembly and Leisure Gym only)) and associated access, servicing, landscaping and cycle parking facilities."

1.1.11 Since securing Planning Permission Bruntwood Ltd has undertaken a review of the design of the MSCP (Application ref: 111028). The proposals have been altered to include:

- A six storey hotel to be located on top of the MSCP approved on Plot 14 of the masterplan;

- An Energy Centre to serve the entire Circle Square masterplan. The Energy Centre will comprise a Combined Heat and Power (CHP) Plant, which will be located within the curtilage of the MSCP, replacing one of the currently approved commercial units;
- An additional floor of car parking (Floor 11) to be incorporated within the curtilage of the approved building, with no change to its scale or massing. This will result in a total car parking capacity of up to 1,100 spaces, a net uplift of 72 spaces to that approved under the existing consent;
- Associated changes to the ground floor layout to accommodate the Energy Centre and hotel servicing and lobby; and
- Minor amendments to the facades related to these changes and evolving detailed design of the MSCP building.

1.1.12 These modifications represent a significant change to the approved MSCP scheme. Consequently, the applicant is required to submit a fresh full planning application under section 70 of the Town and Country Planning Act 1990, incorporating the previously consented MSCP proposals, together with the additional car parking, hotel and energy centre and associated changes.

1.1.13 The principle of an MSCP accommodating 1,028 spaces of the scale, massing and siting as proposed on the site is established by virtue of the existing consent granted in June.

1.2 Purpose of the Report

1.2.1 Considering the above, it has been agreed through consultation with Manchester City Council (MCC) Highways Officers that a Transport Assessment Addendum (TAA) should be provided as an update to the Phase 1B Transport Assessment (reference **TPMA1356/1B/TA)**.

1.2.2 This TAA has been prepared to support the planning application for the revised Plot 14 proposals. It contains the required information to inform Highway Officers at MCC and Transport for Greater Manchester (TfGM) with regard to all traffic and transportation matters associated with the alterations to Plot 14.

1.3 Scope of the Report

1.3.1 In preparing the wider Phase 1B proposals, extensive scoping discussions have been held with Highway Officers at MCC, and Highways Engineers at Transport for Greater Manchester (TfGM). This included a number of formal meetings as follows:

- A meeting with MCC Highways and TfGM on the 4th September 2015;
- A meeting with MCC Highways on the 29th October 2015;
- A meeting with MCC Highways on the 5th November 2015;

- A meeting with MCC Highways and TfGM on the 13th November 2015; and
- A meeting with MCC and TfGM on Thursday 3rd December.

1.3.2 In order to discuss the revised Plot 14 proposals, Curtins also met with MCC Highways Officers on the 2nd August 2016.

1.3.3 During this meeting it was agreed that the likely traffic generation associated with the revised Plot 14 proposals would not significantly impact on the surrounding highway network, and that the robust assessment work previously undertaken by Curtins in supporting the Phase 1B applications would already account for the changes brought about by the revised proposals.

1.3.4 In light of the above, this TA contains the following:

- An updated audit of accessibility by all modes of travel including walking, cycling, and public transport;
- A review of highway safety within the vicinity of the site for the most recent five years in the context of the revised proposals;
- Details of the proposed access strategy for pedestrians and all vehicles;
- Relevant vehicle tracking drawings to demonstrate the proposed vehicular access and servicing arrangements;
- Details of the proposals and revised proposed car parking arrangements;
- Details of future vehicular trips associated with the revised Plot 14 proposals;
- A 'sensitivity test' capacity assessment of the MSCP access junction off Upper Brook Street;
- Details of any mitigation measures (where necessary) to accommodate the development; and
- A review of the relevant local and national transport planning policy.

1.4 Structure of the Report

1.4.1 Following on from this introduction, **Section 2** of this report considers the Site location and existing situation, focusing on the surrounding highway network and reviewing the Personal Injury Accident records within the vicinity of the Site.

1.4.2 **Section 3** gives an overview of the development proposals including details on proposed access, car parking, and a servicing and refuse collection strategy.

1.4.3 **Section 4** considers the Site's accessibility by sustainable modes of transport, including walking, cycling and public transport.

1.4.4 **Section 5** considers the traffic forecasting methodology and results, including sensitivity tests considering a pro-rata increase in MSCP parking provision and trip generation for a city centre hotel.

1.4.5 **Section 6** summarises key national and local transport planning policy, reviewing how the development proposals compare to principles and guidance. A summary and conclusion is provided in **Section 7**.

2.0 Existing Situation

2.1 Site Location

2.1.1 The application Site comprises land in the south eastern part of the masterplan, with a site area of approximately 0.53 hectares. It is bounded by Cloak Street to the north, Princess Street to the east, the Mancunian Way to the south and Oxford House to the west.

2.1.2 **Plan TPMA1407-001** illustrates the location of the Site in relation to the surrounding areas, and **Plan TPMA1407-002** shows the Site in a more local context relating to the local highway network.

2.2 Existing Use

2.2.1 The area currently accommodates Armstrong House with a small allocation of surface level car parking. Prior to the commencement of development a prior notification application will be issued to the Local Planning Authority for the demolition of Armstrong House, as such the baseline conditions considered in this assessment will assume that these demolition works have already taken place.

2.3 Site Context

2.3.1 Manchester is characterised by a compact City Centre and the Site is within walking distance of the city's economic, civic, cultural and leisure offer.

2.3.2 To the north of the Site, on the eastern bank of the River Medlock are located residential apartments within Princess House and Montana House, both rising to approximately 12 storeys. Together these blocks accommodate c.130 apartments.

2.3.3 Further north of the Site, Charles Street has a mix of building heights and uses, including a number of public houses and bars to the eastern end, and residential use at its junction with Oxford Road. The Grade II listed Lass O'Gowrie pub is located north of the Site on Charles Street. Further Grade II and Grade II* Listed buildings are located further north on Princess Street and Whitworth Street West.

2.3.4 The Site is not within a Conservation Area but the border of the Whitworth Street Conservation Area lies to the north on Whitworth Street.

2.3.5 To the north east of the Site is the former UMIST campus, which is now known as the Sackville Street campus (or North Campus) of the University of Manchester. Princess Street bridges the River Medlock, a tributary of the River Irwell.

2.3.6 The Mancunian Way fly-over is situated along the Site's southern boundary and creates a barrier between the Site and the main University Campuses further south. There are a number of car parks

and sports pitches located under the Mancunian Way. Overall, the appearance is of a fragmented and poorly landscaped urban grain.

2.3.7 To the west of the Site, which also forms part of the wider Masterplan Site, is the Manchester Technology Centre (Oxford House). This building remains in active office use with commercial units located on the ground floor.

2.3.8 Further west of the Site is Oxford Road, which contains a mixture of uses and buildings. There are also a number of hotels within the immediate vicinity of the Site on Oxford Road, including the Grade II* Listed Palace Hotel and a new Holiday Inn Express. The Grade II Listed Dancehall Theatre located on Oxford Road overlooks the Masterplan Site from the west.

2.4 Existing Access

2.4.1 Vehicular access to the Site is currently achieved from the east via a signalised junction with Brook Street; and from the north west via the continuation of the Brancaster Road/Sorton Street/Cloak Street link between Oxford Road in the west and Brook Street in the east.

2.4.2 Pedestrian access to the Site is available from the same locations. Footways are provided along Brancaster Road/Sorton Street/Cloak Street and Brook Street, and there is a signalised pedestrian crossing at Brook Street. Additionally, a subway facilitates access to the site underneath the Brook Street carriageway.

2.4.3 Armstrong House and its associated parking is accessible via Brancaster Road from the west or Cloak Street from the east.

2.5 Surrounding Highway Network

Charles Street

2.5.1 Charles Street extends along an east/west alignment approximately 140m to the northern boundary of the Proposed Development, comprising a two-way carriageway with a single lane in each direction.

2.5.2 Charles Street extends for approximately 400m between a priority controlled T-junction with Princess Street in the east, and a signalised junction with Oxford Road and Hulme Street in the west.

2.5.3 In the vicinity of the Site, Charles Street is approximately 8m wide including an advisory cycle lane present on the northern and southern sides of the road. The highway is subject to a 30mph speed limit, and there is street lighting present along its length. Footways are provided along the northern and southern sides of the carriageway which are approximately 2m – 3m in width.

2.5.4 At the signalised junction with Oxford Road, there are advance-stop cycle lines and pedestrian crossing facilities complete with tactile paving on all arms. There are also pedestrian guardrails present where appropriate.

2.5.5 Under the proposed Oxford Road Bus Priority Package (BPP) currently being implemented by MCC and Transport for Greater Manchester (TfGM), general vehicles would not be able to turn right from Oxford Road to Charles Street.

Princess Street/Brook Street

2.5.6 The A34 Princess Street/Brook Street runs adjacent to the eastern boundary of the Proposed Development. The road extends for approximately 1km between a signalised controlled junction with John Dalton Street and Albert Square in the north, and the A34 Brook Street in the south. Princess Street also forms a signalised junction with Charles Street.

2.5.7 In the vicinity of the Site, Princess Street is approximately 10m wide including designated on-street parking along the western side of the road. The highway is subject to a 30mph speed limit, and there is street lighting present along its length. Footways are provided along the eastern and western sides of the carriageway which are approximately 2m – 3m in width.

2.5.8 Princess Street has recently been modified as part of the Oxford Road BPP, and as of November 2015, it became a two-way road.

Oxford Road

2.5.9 Oxford Road is situated to the west of the Proposed Development, and runs adjacent to the western boundary of the wider site. In the vicinity of the Site the road comprises a two-way carriageway, with two lanes in each direction including a Bus/Taxi/Cycle Lane in each direction.

2.5.10 Oxford Road extends for approximately 2.1km between a signalised junction with Whitworth Street, Whitworth Street West and Oxford Street in the north to a signalised junction with Moss Lane East and Wilmslow Road in the south. The road also forms a priority controlled junction with Brancaster Road, and a signalised junction with Charles Street. Footways are provided along the eastern and western sides of the carriageway which are approximately 2m – 3m in width.

2.5.11 In the vicinity of the Site, Oxford Road is approximately 15m wide. The highway is subject to a 30mph speed limit, and there is street lighting present along its length.

2.5.12 As part of the Oxford Road BPP, work has begun on converting the corridor into a bus and cycle corridor.

2.5.13 The improvements will see the introduction of new bus infrastructure, segregated cycle lanes on both sides of the carriageway and a ban on all general traffic with the exception of taxis and some local access routes. In the vicinity of the Site, a local access route will enable traffic to travel in a northbound direction, with access onto Brancaster Road and Whitworth Street West.

2.5.14 As mentioned previously a right turn ban is currently proposed as part of the BPP and this will prevent general vehicles turning from Oxford Road into Charles Street.

Brancaster Road Link

2.5.15 Brancaster Road, Sorton Street and Cloak Street currently provide a continuous link through the Site. The link provided vehicular and pedestrian access to the former Total car park, but also access to Oxford Road and Bruntwood property on the southern side of the carriageway. Vehicles can travel from Oxford Road to Brook Street, but a one-way system half way along Cloak Street prevents the reverse route.

2.5.16 The roads vary in width between approximately 3.5m and 8m.The highway is subject to a 30mph speed limit, and there is street lighting present along its length. Footways are provided along both sides of the carriageway which are approximately 2m – 3m in width.

2.6 Highway Safety

2.6.1 Personal Injury Accident (PIA) data has been obtained from TfGM for between 01/02/10 and 31/01/15. The search area included:

- A section of Oxford Road (approximately 350m in length) between New Wakefield Street and Sidney Street, including all junctions in-between;
- A section of Charles Street (approximately 225m in length) between Oxford Road and Princess Street, including all junctions in-between;
- A section of the A34 (approximately 350m in length, southwards from Charles Street) including all junctions in-between;
- Brancaster Road, Sorton Street and Cloak Street (approximately 250m in length) between the A34 and Oxford Road; and
- A section of the Mancunian Way (approximately 250m in length) to the south of the Site.

2.6.2 A summary of the data can be seen in **Table 2.1:**

Junction/Link	Slight	Serious	Fatal	Totals
Oxford Road Link	3	0	0	**3**
Oxford Road/New Wakefield Street	2	1	0	**3**

Junction/Link	Slight	Serious	Fatal	Totals
Oxford Road/Charles Street/Hulme Street	9	0	0	**9**
Oxford Road/Chester Street	7	0	2	**9**
Oxford Road/Brancaster Road	2	0	0	**2**
Oxford Road/Sidney Street	1	0	0	**1**
Charles Street Link	1	0	0	**1**
Charles Street/Mallard Street	1	0	0	**1**
Charles Street/Princess Street	3	1	0	**4**
A34 Link	1	0	0	**1**
A34 Brook Street/A34 Princess Street Roundabout	1	1	0	**2**
A34/Sackville Street	2	0	0	**2**
Mancunian Way Link	1	0	0	**1**
Mancunian Way/Westbound On-slip	14	0	0	**14**
Totals	**48**	**3**	**2**	**53**

Table 2.1 – Personal Injury Accident Data Summary

2.6.3 There have been a total of 53 accidents recorded in the latest five year period available, comprising 48 slight, three serious and two fatal collisions.

2.6.4 The first fatal collision occurred on 19/02/2011 at 10:00. The records indicate that two vehicles collided as one pulled out from Chester Street into the path of an oncoming vehicle travelling along Oxford Road. The listed contributory factors given are 'Possible Driver 1 – Failed to signal/misleading signal' and 'Possible Driver 2 – 'Failed to look properly'.

2.6.5 The second fatal collision occurred on 10/09/2011 at 23:35. The records indicate that a vehicle was travelling north west along Oxford Road when a pedestrian stepped out into the carriageway. The listed contributory factor given was 'Very likely Pedestrian – Careless/reckless/in a hurry'.

2.6.6 There is nothing to suggest there is an unusual safety issue from the breakdown as indicated in **Table 2.1**. Furthermore following a thorough review of the records, it is not considered that there is an existing safety issue that is likely to be exacerbated by the Proposed Development.

2.6.7 It is considered the revised development proposals on Plot 14 will have an imperceptible impact on highway safety.

3.0 Development Proposals

3.1 Overview of Proposals

3.1.1 The formal description of development is as follows:

"Demolition of any existing structures and erection of multi-storey car park (up to 1,100 spaces including 50 spaces for disabled car users), hotel (150 beds) and energy centre in a part 10, part 16 storey building, with ground and mezzanine commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Café), A4 (drinking Establishment), B1 (Offices), D1 (Non-Residential Institutions Creche only) and D2 (Assembly and Leisure Gym only))."

3.1.2 The quantum of development and change from the previously consented MSCP are summarised in **Table 3.1**, and the masterplan proposals are shown in **Appendix A**:

Use	Number	Floorspace (Gross External Area)	Change from Approved Masterplan
Retail Units	1 unit – Use Classes A1, A3, A4 and D2	282m^2	- 800m^2
Office	-	-	-
Residential	-	-	-
Hotel	150 beds	7,696m^2	150 beds / 7,696m^2
Energy Centre	-	1,150m^2	1,150m^2
Car Park	1,100 spaces (max)	34,725	72 spaces / 0m^2
Maximum Height	18 storeys / 94.575m AOD	-	8 storeys / 22.9m AOD

Table 3.1 – Personal Injury Accident Data Summary

3.2 Energy Centre

3.2.1 The Energy Centre would provide power for the wider Circle Square masterplan. It is envisaged that, typically, fuel would be delivered by tanker once every three weeks, and there would be weekly and monthly service vehicles.

3.2.2 There would be no other significant vehicular trips associated with the Energy Centre.

3.3 Hotel

3.3.1 The proposed hotel comprises approximately 150 bedrooms. As with the other elements of the Circle Square masterplan, the hotel will have no designated car parking. Instead it is envisaged hotel guests could utilise the additional MSCP parking provision (additional 72 spaces).

3.3.2 It is envisaged the hotel would require two or three deliveries per week, including refuse collection.

3.4 Multi Storey Car Park (MSCP)

Parking Provision and Layout

3.4.1 Under the revised development proposals, parking provision within the MSCP will increase from 1,028 spaces to 1,100.

3.4.2 The MSCP ground floor layout is shown on **Drawing TPMA1407-106.**

MSCP Access

3.4.3 An initial junction layout was approved as part of the Phase 1B application. Since approval, Curtins has been working with TfGM and MCC in order to prepare a detailed design secured through a s.278 agreement.

3.4.4 Broadly similar to the initial access drawing, this developed layout has been approved by the TfGM Central Design Board. The complete s.278 package is currently with MCC for review.

3.4.5 The junction layout is shown on **Drawing ICMA40-S278-3-002**.

3.4.6 The layout builds upon the existing situation by providing a new right turn lane on Brook Street (southbound), a new left turn lane on the Mancunian Way Off-slip, relocated pedestrian crossing facilities and the introduction of a new arm opposite the Mancunian Way off-slip. This arm would extend under the proposed MSCP and would be the primary means of access for the car park.

3.4.7 The new arm would also serve as a route for service vehicles that require access to the wider masterplan site. As service vehicles will use the route a headroom of at least 5.5m has been agreed with MCC Highways.

3.4.8 The existing subway under Brook Street will be retained. However, a new retaining wall and significant ground works will be necessary adjacent to the existing retaining wall to support the junction works.

3.4.9 The existing pedestrian/cycle paths on the western side of the subway will tie into the proposed public realm adjacent to the car park.

Car Park Barriers

3.4.10 The inbound barriers for the car park will be located approximately 70m from Brook Street to ensure that there is sufficient waiting space for vehicles entering the car park. The outbound barriers will be approximately 60m from Brook Street.

3.4.11 This arrangement is broadly as per the approved Phase 1B application.

3.5 Cycle Parking

3.5.1 Cycle parking for 15 bicycles will be provided within the curtilage of the building for the hotel use. These spaces are in addition to the spaces that will be delivered for Phases 1A and 1B.

3.6 Stopping Up Orders

3.6.1 One of the key objectives of the masterplan is to restrict vehicle movements through the Site to ensure high quality, permeable pedestrian and cycle routes that are safe and attractive.

3.6.2 A total of five applications across the masterplan have been successfully concluded to stop up the necessary areas of highways. Specifically relevant to Phase 1B and the current proposals, the extent of Cloak Street/Sorton Street (under s.247 of the Town and Country Planning Act) and a disused spur of the Mancunian Way (under s.116 of the Highways Act) have been stopped up.

3.6.3 The Made Order and Made Plan for Cloak Street/Sorton Street produced by the Department for Transport (DfT) is included within **Appendix B**. Also within the appendix is confirmation of the stopping-up of the disused Mancunian Way spur.

3.7 Access and Servicing Strategy

3.7.1 The proposed servicing strategy for the entire Masterplan is based on two key access points as set out below.

MSCP Access

3.7.2 The MSCP access will be broadly retained as proposed and approved throughout the Phase 1B application.

3.7.3 Once the masterplan is fully constructed, it is proposed that refuse vehicles and service vehicles could enter the Site via the MSCP access at Brook Street. They will then travel in a northerly direction towards the Phase 1A site, via the proposed Brancaster Avenue to the east of Building 13. Vehicles will then travel past the Phase 1A buildings before turning west towards the large area of public realm and Buildings 5/6. They will then travel in a southerly direction past the eastern side of buildings 2 and 4 before turning east back onto Brancaster Avenue. Where this meets Princess Street vehicles will turn right towards the Mancunian Way and Brook Street.

3.7.4 **Drawing TPMA1407-103** illustrates a car accessing the MSCP via Upper Brook Street, before egressing via Princess Street.

3.7.5 A loading bay has been included so that servicing and refuse vehicles can load/unload adjacent to the proposed hotel, away from traffic along the adopted highway and the proposed high-quality pedestrian/cycle link along Brancaster Road. **Drawing TPMA1407-106** illustrates the proposed loading bay, situated on the southern side of the carriageway adjacent to the servicing core in the south east corner of the site.

Brancaster Avenue

3.7.6 The Brancaster Avenue access arrangement will also be retained as proposed and approved throughout the Phase 1B application.

3.7.7 Refuse vehicles, service vehicles and fire tenders could also enter the proposed Brancaster Avenue public realm corridor from Oxford Road. They will then travel in an easterly direction towards Princess Street before bearing north at Medlock Place towards the Phase 1A site, and continuing along much the same route as above.

3.7.8 Taxis, and students at key drop-off pick-up periods of the year will also be able to follow a similar route but will be able to turn around at the top of Medlock Place and travel back to Brancaster Avenue when accessing the wider masterplan.

3.7.9 There are two exceptions to the above route. The first is access between Buildings 10 and 11 to allow the Environment Agency (EA) to access the river wall. It is understood that this access would be used infrequently and under normal circumstances it would be a pedestrian/cycle route only. The second exception is access between Buildings 10 and 11 for an Electricity North West vehicle to access the substation. Again this will be required very infrequently and the manoeuvre could be assisted via a banksman. Information on these movements formed part of the approved Phase 1A application.

3.7.10 In terms of hotel taxis and drop-off/pick-up, this will be undertaken along Brancaster Avenue; away from Brook Street/Princess Street and the proposed loading and servicing bay.

3.8 Swept Path Analysis

3.8.1 To demonstrate that the above routes are acceptable a series of swept path analysis drawings have been prepared.

3.8.1 Swept path analysis for a large refuse vehicle accessing the site and stopping in the proposed loading bay is shown on **Drawing Number TPMA1407/100.**

3.8.2 A rigid service vehicle undertaking the same manoeuvre is shown on **Drawing Number TPMA1407/102.**

3.8.3 A rigid fuel tanker undertaking the same manoeuvre is shown on **Drawing Number TPMA1407/107.**

4.0 Accessibility by Sustainable Modes of Travel

4.1 Introduction

4.1.1 One of the key elements of national and local planning policy is to ensure that new developments are located in areas where alternative modes of travel are available. Developments should not be isolated but should instead be located close to complementary land uses. Encouraging the integration of planning and transport supports the aim of reducing overall travel and use of private car.

4.1.2 The accessibility of the Proposed Development is considered in this context for the following modes of travel:

- Pedestrian Accessibility;
- Cycle Accessibility; and
- Public Transport Accessibility.

4.2 Pedestrian Accessibility

4.2.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities.

4.2.2 The Chartered Institution of Highways and Transportation (CIHT) document entitled 'Providing for Journeys on Foot' suggests walking distances which are relevant to this planning application. These are reproduced in **Table 4.1**:

CIHT Category	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Table 4.1 – CIHT Recommended Walking Distances

4.2.3 To assist in summarising the accessibility of the Site by foot, an indicative pedestrian catchment plan has been produced. **Plan TPMA1407-003** shows distances of 500m, 1,000m and 2,000m which are termed 'Desirable', 'Acceptable' and the 'Preferred Maximum' by the CIHT for commuting trips – considered appropriate for a Proposed Development comprising an MSCP, and wider sightseeing trips associated with the proposed hotel use.

4.2.4 There are a number of residential properties within 500m walking distance of the Site including dwellings located as far as Sackville Street to the north, Grosvenor Street to the east, Booth Street East and Booth Street West to the south and Cambridge Street to the west.

4.2.5 There are additional properties further afield in all directions within the wider walking catchments including areas of Manchester city centre, Salford, Ancoats, New Islington, Ardwick, Hulme and Castlefield.

4.2.6 As well as existing residential properties, there are a number of employment uses within walking distance of the Site throughout the city centre. More specifically, Spinningfields is situated approximately 1,500m walk to the north west of the Site, the Northern Quarter is situated approximately 1,000m to the north east and Castlefield lies approximately 1,000m to the west. These locations include a wide variety of commercial properties with varying professions.

4.2.7 Furthermore, within the 500m – 1,000m desirable walking distance catchment area, there are a number of educational facilities including:

- The University of Manchester;
- Manchester Metropolitan University; and
- The Royal Northern College of Music.

4.2.8 Educational facilities within the pedestrian catchments include the Sugden Sports Centre, science and engineering teaching facilities, business schools, student hubs and Student Unions.

4.2.9 Along and adjacent to Oxford Road there are a number of additional facilities and services available including café's, restaurants, bars, take-away's, convenience stores, retail outlets, places of worship, high street banks, All Saints Park, hotels and gym/leisure facilities. It is considered that the majority of everyday facilities and goods can be accessed within a 500m walk of the Site.

4.2.10 Further services and facilities are also accessible within the 1,000m catchment. In addition to those already discussed, these include the Manchester Central Library, Manchester Aquatics centre, pharmacies and healthcare centres.

4.2.11 Manchester city centre, in addition to its existing residential and commercial premises, exhibits various museums/tourist attractions; of which the majority are accessible within 2,000m walk from the Site. Access to larger supermarkets and Manchester Royal Infirmary is also achievable.

4.2.12 There is already a high pedestrian footfall in the area, and so high quality pedestrian facilities exist as a result including those discussed previously in **Section 2** along Oxford Street and the A34 in particular.

4.2.13 It is considered that the Site is situated within a highly accessible area, with a number of complimentary land uses within walking distance.

4.3 Cycle Accessibility

4.3.1 In order to assist in assessing the accessibility of the Site by cycle, **TPMA1407-004** presents a 5km cycle catchment for the Site. This distance equates to a journey time of around 25 minutes, while cycling at a speed of 12 kmph.

4.3.2 The 5km catchment encompasses all of Manchester city centre including all major transport links, shopping centres, bars, restaurants, leisure centres, tourist attractions and places of worship as well as a number of neighbouring areas such as Cheetham Hill to the north, Salford to the north west, Fallowfield to the south and Gorton to the east.

4.3.3 Existing cycle infrastructure along Oxford Road, Charles Street and Princess Street facilitates cycle access into Manchester city centre. All major train and bus stations within Manchester city centre are within 5km of the Site, and are accessible following Sustrans cycle routes.

4.3.4 Following the completion of the Oxford Road BPP improvements, it is envisaged that the local routes in the vicinity of the Site will be used even more frequently. Furthermore, should Brancaster Road be closed to vehicular traffic (except for emergency, disabled and servicing access), it is envisaged that the Brancaster Road link will become a key pedestrian/cycle route from Oxford Road, through the Site to the University.

4.3.5 There are two national cycle routes within close proximity of the Site. National Cycle Route 6 to the west can be accessed via Hulme Street. Route 6 passes through Watford, Luton, Milton Keynes, Northampton, Market Harborough, Leicester, Derby, Nottingham, Worksop, Sheffield, Manchester, Blackburn, Preston, Lancaster, Kendal and Windermere, and will connect London and Threlkeld in Cumbria when complete. More locally, the route connects the Site to areas in the north west of Greater Manchester such as Radcliffe, and to the south west including areas such as Chorlton-cum-Hardy.

4.3.6 National Cycle Route 66 to the east can be accessed via Store Street. It runs from central Manchester to Spurn Head via Bradford, Leeds, York, Beverley and Kingston upon Hull. More locally, the route connects the Site to the north east of Greater Manchester, including areas such as Failsworth.

4.4 Public Transport Accessibility

4.4.1 The Site is well situated to take advantage of existing public transport infrastructure within Manchester city centre. **Plan TPMA1407-005** demonstrates the areas accessible via public transport within 10, 20 and 30 minutes of the Site. The 30 minute catchment extends as far as Bolton in the north, Stalybridge

in the east, Manchester Airport to the south and Birchwood to the west. Accessibility by bus, rail and Metrolink are considered further below.

Bus

4.4.2 Guidance from the Chartered Institution of Highways and Transportation (CIHT) document 'Guidelines for Planning for Public Transport in Development' indicates that ideally, a bus stop should be located within 400m from a new development.

4.4.3 There are a number of bus stops comfortably within 400m walk of the Site, including along Princess Street and, specifically, Oxford Road. A summary of buses calling along these roads is provided in **Table 4.2.** Unless specified, the services call along Oxford Road only:

Service	Route	Peak Frequency		
		Weekday	Saturdays	Sun/Hols
15	Flixton - Davyhulme - Urmston -Stretford - Firswood - Moss Side - University of Manchester - Manchester	20 mins	20 mins	Hourly
18	Manchester Royal Infirmary - Manchester Shudehill Interchange - Collyhurst - Middleton - Langley Bowness Road	10 mins	10 mins	15 mins
38	Farnworth - Little Hulton - Walkden - Irlams o' th' Height - Pendleton - Manchester -University of Manchester - Manchester Royal Infirmary	10 mins	10 mins	30 mins
41	Altrincham - Sale - Northern Moor - Northenden - West Didsbury - Withington - Fallowfield - Rusholme - University of Manchester - Manchester University of Salford - Pendleton - Eccles	10 mins	10 mins	20 mins
42/42A	Stockport - Heaton Mersey - East Didsbury - Didsbury - Withington -Fallowfield - Rusholme - University of Manchester - Manchester	20 mins	20 mins	30 mins
43	Manchester Airport - Woodhouse Park -Wythenshawe - Benchill - Northenden - West Didsbury - Withington - Fallowfield - Rusholme -University of Manchester - Manchester	10 mins	10 mins	30 mins
44	Manchester Airport - Moss Nook - Heald Green -Gatley - Cheadle Hulme - Cheadle - East Didsbury - Burnage - Fallowfield - Rusholme - University of Manchester - Manchester	Hourly	Hourly	-
50*	East Didsbury – Kingsway – Manchester - Salford Shopping Centre - Salford Quays	10 mins	10 mins	15 mins
85	Chorlton - Alexandra Park - Whalley Range - Brooks's Bar - Hulme - Manchester Metropolitan University - University of Manchester - Manchester	10 mins	10 mins	20 mins
86	Chorlton - Alexandra Park - Whalley Range - Brooks's Bar - Hulme - Manchester Metropolitan University - University of Manchester - Manchester	10 mins	10 mins	20 mins
111	Southern Cemetery - West Didsbury - Withington - Fallowfield - Moss Side - Manchester	10 mins	10 mins	20 mins
130*	Macclesfield - Wilmslow - Cheadle - East Didsbury - Manchester	30 mins	Hourly	Hourly
142	East Didsbury - Didsbury - Withington - Fallowfield - Rusholme - University of Manchester - Manchester	10 mins	10 mins	10 mins

Service	Route	Peak Frequency		
		Weekday	Saturdays	Sun/Hols
143	West Didsbury - Withington - Fallowfield - Rusholme - University of Manchester - Manchester	10 mins	10 mins	15 mins
145	Cheadle Hulme - Cheadle - East Didsbury - Fallowfield - Manchester	4 AM Services	-	-
147	Manchester Piccadilly Station - University of Manchester - Manchester Royal Infirmary - Royal Eye Hospital - St Mary's Hospital - Royal Manchester Children's Hospital	10 mins	-	-
173**	Stepping Hill Hospital — Stockport — Reddish — Longsight — Manchester	Hourly	Hourly	-
191	Hazel Grove - Stepping Hill - Heaviley - Stockport -Heaton Chapel - Levenshulme - Longsight -University of Manchester - Manchester	20 mins	-	-
197	Stockport - Heaton Moor - Green End - Burnage -Levenshulme - Longsight - Manchester	20 mins	20 mins	Hourly
250	intu Trafford Centre - Trafford Park - MediaCityUK - Salford Quays - Old Trafford - Hulme - Manchester	15 mins	15 mins	15 mins
263	Altrincham - Broadheath - Woodheys - Sale -Stretford - Gorse Hill - Old Trafford - Hulme -University of Manchester - Manchester	15 mins	15 mins	30 mins
X41	Altrincham - Broadheath - Sale - Sale Moor - Northern Moor - Northenden - West Didsbury - Withington - Fallowfield - Rusholme - University of Manchester - Manchester	30 mins	30 mins	Hourly
X57	Woodford - Bramhall - Cheadle Hulme - Cheadle - East Didsbury - Didsbury - Withington - Fallowfield - Rusholme - University of Manchester - Manchester	30 mins	30 mins	Hourly

* Service also calls along Princess Street
** Service calls along Princess Street only
Table 4.2 – A Summary of Bus Services along Oxford Road/Princess Street

4.4.4 In addition to the above services, the Number 3 Metroshuttle route (which is a free service), provides direct access to Piccadilly, Oxford Road and Deansgate railway stations. The service can be accessed along Hulme Street and Whitworth Street.

4.4.5 Users can also change along Number 3 Metroshuttle route in order to utilise the free Metroshuttle services 1 and 2, which provide access to Victoria and Salford Central railway stations. The frequencies are detailed in **Table 4.3**:

Metroshuttle Service		Peak Frequency		
		Weekday	Saturdays	Sun/Hols
1	Piccadilly – City Centre Circular	Every 6 mins	Every 6 mins	Every 10 mins
2	Victoria – Oxford Road (via Deansgate)	Every 10 mins	Every 10 mins	Every 10 mins
3	Piccadilly – Salford Central	Every 10 mins	Every 10 mins	-

Table 4.3 – Free Metroshuttle Services

4.4.6 The Site is exceptionally well served by bus. There are a number of frequent services accessible along Oxford Road, and it is envisaged that the quality of the bus corridor will only increase following the completion of the improvement works. Additional services are available along Princess Street, and the Site also benefits from free Metroshuttle services.

Rail

4.4.7 The closest Railway Station to the development is Manchester Oxford Road, located approximately 300m walk north west of the Proposed Development. **Table 4.4** shows the frequencies of regular trains that run from Manchester Oxford Road:

Destination	Service Frequency		
	Peak Weekday	Peak Saturday	Peak Sunday
Preston	3 per hour	2 per hour	2 per hour
Scarborough	1 per hour	1 per hour	1 per hour
Liverpool Lime Street	4 per hour	4 per hour	4 per hour
Hazel Grove	2 per hour	2 per hour	1 per hour
Manchester Airport	5 per hour	5 per hour	4 per hour
Edinburgh	2 per hour	2 per hour	2 per hour
Norwich	2 per hour	2 per hour	2 per hour
Llandudno Junction	1 per hour	1 per hour	1 per hour
Southport	2 per hour	2 per hour	1 per hour
Blackpool North	2 per hour	2 per hour	2 per hour

Table 4.4 – Summary of Rail Services calling at Manchester Oxford Road

4.4.8 In addition, users can also access services running from Manchester Piccadilly within 700m walk to the north east of the Site.

4.4.9 It is considered the Site is highly accessible via rail.

Metrolink (Light Rail)

4.4.10 There are Metrolink stations located at St Peter's Square and Piccadilly, both of which are approximately 600m - 700m walk from the Site.

4.4.11 TfGM is currently progressing a new Metrolink route through Manchester city centre known as the 'Second City Crossing' (2CC). As part of this project the St Peter's Square stop is being transformed, and at the time of writing, no services are currently calling at or running through the stop.

4.4.12 Following completion of the works, Metrolink services will provide access to a number of destinations across Greater Manchester including Altrincham, Ashton-under-Lyne, Bury, Didsbury, Eccles, Manchester Airport, MediaCityUK, Oldham and Rochdale.

4.4.13 All lines will be accessible from either St Peter's Square or Piccadilly stops and typically frequencies are 12 minutes with services starting at 06:00 and finishing at 00:30.

4.4.14 It is considered the Site is highly accessible by Metrolink (light rail).

4.5 Accessibility Summary

4.5.1 It is considered the Site is highly accessible by sustainable modes of transport. The surrounding area exhibits good levels of pedestrian and cycling infrastructure, and there are a number of public transport opportunities within acceptable walking distance of the Site.

5.0 Traffic Forecasting and Highway Impact

5.1 Introduction

5.1.1 It has been agreed through discussion with MCC Highways Officers that the likely traffic generation associated with the revised Plot 14 proposals would not significantly impact on the surrounding highway network, and that the robust assessment work previously undertaken by Curtins at the Phase 1B application would already account for changes arising from the revised proposals.

5.1.2 This was on the basis that an increase in MSCP provision from approximately 1,000 spaces to approximately 1,100 spaces does not necessarily result in increased trips to and from the Site in the AM and PM peak periods. The adjacent land uses generate the MSCP vehicular trips; not the MSCP itself as an attraction.

5.1.3 The revised Proposed Development incorporates an Energy Centre and 150 bedroom hotel. The trips associated with the Energy Centre (maintenance etc.) would be negligible, and the trips associated with a city centre hotel are generally dispersed throughout the course of a day and not concentrated within the peak hours.

5.1.4 In light of the above, and the robust nature of the Phase 1B TA, no further assessment of highway impact is considered necessary.

5.1.5 Notwithstanding this Curtins has undertaken a review of the TRICS database in order to understand the likely level of vehicle trips associated with a 150 bedroom hotel, and has completed a sensitivity test in order to quantify the highways impact based on a 10% pro-rata increase in MSCP provision.

5.1.6 The results of the TRICS assessment and sensitivity test have been detailed throughout this section in order to provide comfort regarding the levels of traffic associated with the revised development proposals.

5.2 TRICS Hotel Trips Analysis

5.2.1 In order to understand the likely number of peak hour trips associated with the proposed hotel element, the TRICS database has been interrogated.

5.2.2 TRICS is the industry recognised tool for calculating the anticipated future trip demand of a proposed development. The database contains multi-modal surveys of varying land uses in multiple destinations across the UK, including hotel and leisure land uses.

5.2.3 The TRICS search was undertaken for sites across England (excluding Greater London). Survey days were Monday – Friday, and various location and population filters ensured the sites were representative of the proposed development city centre location. The full TRICS outputs are contained within **Appendix C** to the rear of this report.

5.2.4 The TRICS trip rates and associated development trips for a 150 bedroom hotel are provided in **Table 5.1.** All trip rates are per 1 bedroom:

Hotel Use	TRICS Trip Rates			Hotel Development Trips		
	Arrivals	Departures	Total	Arrivals	Departures	Total
08:00 – 09:00	0.048	0.109	0.157	7	16	24
17:00 – 18:00	0.09	0.059	0.154	14	9	23

Table 5.1 – TRICS Hotel Outputs

5.2.5 The above figures demonstrate that the levels of traffic associated with a city centre hotel development are minor; equating to approximately 23 – 24 two-way trips throughout each peak period. This translates to an extra vehicle approximately once every two or three minutes, which is within the expected daily traffic variation associated with the MSCP and already captured in the approved Phase 1B TA.

5.2.6 Following a review of the TRICS data outlined above, it is not considered the development of a hotel will significantly impact on the Site's trip generation.

5.3 Initial Phase 1B Pro-rata Trip Generations, Traffic Assignment and Capacity Assessment

5.3.1 Initially, the proposed MSCP provided spaces for approximately 1,000 vehicles; which represented an increase of approximately 300 spaces when compared to the existing situation.

5.3.2 Therefore throughout the initial Phase 1B TA (Document Reference **TPMA1356/1B/TA**), traffic surveys of the existing car parking use were factored up to account for the increase in parking provision across the Site.

5.3.3 The initial Phase 1B pro-rata trip generation exercise constitutes a very robust assessment. All trips were assumed as being new to the network, and there was no discounting for pass-by or diverted trips. This methodology was agreed by the Highways Forecasting and Analytical Services (HFAS) unit; part of TfGM.

5.3.4 These pro-rata vehicle trips were then submitted to TfGM. As there are significant changes to the surrounding highway network proposed as part of the Bus Priority Package (BPP) scheme, TfGM was

commissioned by Curtins to undertake traffic modelling to provide future flows for the surrounding network; accounting for the completion of the proposed BPP works. TfGM also assigned the development traffic in accordance with the BPP traffic model.

5.3.5 The resultant traffic flows received by Curtins from TfGM were used to assess the capacity at the following junctions:

- Junction 1 – Oxford Road/Charles Street;
- Junction 2 – Charles Street/Princess Street;
- Junction 3 – Proposed MSCP Access; and
- Junction 4 – Brook Street/Grosvenor Street.

5.3.6 All four junctions were forecast to operate within their practical reserve capacities following the implementation of the BPP, the Proposed Development and the associated junction improvements.

5.3.7 Post application, Curtins worked with TfGM to provide a revised access design (**Drawing ICMA40-S278-3-002**). Throughout this process, TfGM required updated traffic counts to supplement the initial BPP model at the site access; which Curtins commissioned and provided to TfGM.

5.3.8 Curtins subsequently produced a revised junction model of the site access using LinSig. The results were approved by TfGM on the 29th June 2016, with Highways Officers confirming the junction will operate within capacity in all tested scenarios. The assessment outputs reproduced in **Table 5.2**:

Arm		BPP With Dev	
		DoS	MMQ
AM Peak			
1/1+1/2	Upper Brook St N Left Ahead	28.5 : 28.2%	2.2
1/3	Upper Brook St N Right	40.3%	3.1
2/1+2/2	Mancunian Way Right Left Ahead	46.8 : 46.8%	5.3
3/1	Upper Brook St S Ahead Left	68.9%	8.3
3/2	Upper Brook St S Right	26.7%	2.2
7/1	MSCP Access	41.9%	1.8
PM Peak			
1/1+1/2	Upper Brook St N Left Ahead	86.0 : 86.0%	11.3
1/3	Upper Brook St N Right	3.3%	0.3
2/1+2/2	Mancunian Way Right Left Ahead	25.2 : 25.2%	2.9
3/1	Upper Brook St S Ahead Left	56.6%	6.2
3/2	Upper Brook St S Right	27.2%	1.9
7/1	MSCP Access	86.9%	9.9

Table 5.2 – Phase 1B Post Submission Modelling: MSCP Access

5.4 Sensitivity Test – Site Access Capacity Assessment

5.4.1 In light of the above and considering the robust nature of the capacity assessments completed during the Phase 1B application, no further assessment of the surrounding highway impact is considered necessary.

5.4.2 Furthermore, the TRICS analysis for hotels demonstrates the alterations under the current proposals are likely to have an insignificant impact on the surrounding highway network.

5.4.3 Notwithstanding the above and in order to ensure completeness, Curtins has undertaken a sensitivity test at the site access. Further details are provided within the below subsections.

Assessment Methodology

5.4.4 In order to ensure the continued robust assessment of the site access junction, the same pro-rata trip generation methodology and traffic flows have been used within this sensitivity test as in the Phase 1B capacity assessments.

5.4.5 A proposed 10% increase in parking provision from approximately 1,000 to approximately 1,100 spaces equates to an additional 45 two-way trips for each peak period. These additional trips have therefore been added to the model summarised in **Table 5.2**, with the additional development traffic assigned in accordance with existing turning proportions.

5.4.6 The computer modelling software LinSig has been used to assess the performance of the access junction. LinSig results refer to the Degree of Saturation (DoS) and Mean Maximum Queue (MMQ) predicted in each lane of the junction. A DoS of 100% indicates that the lane in question is operating at its theoretical capacity (point of saturation), whilst a DoS of 90% or less indicates that the lane is operating within its Practical Reserve Capacity. The MMQ is the estimated mean number of PCUs which have added onto the back of the queue up to the time when the queue clears.

Revised Plot 14 (1,100 Space MSCP) Site Access Sensitivity Test

5.4.7 The results of the sensitivity test undertaken to account for the pro-rata increase in MSCP trips is summarised in **Table 5.3**:

Arm		BPP With Dev	
		DoS	MMQ
AM Peak			
1/1+1/2	Upper Brook St N Left Ahead	26.5 : 26.7%	2.2
1/3	Upper Brook St N Right	41.8%	3.3
2/1+2/2	Mancunian Way Right Left Ahead	48.2 : 48.2%	5.5

Arm		BPP With Dev	
		DoS	MMQ
AM Peak			
3/1	Upper Brook St S Ahead Left	70.8%	8.6
3/2	Upper Brook St S Right	28.4%	2.2
7/1	MSCP Access	46.6%	2.1
PM Peak			
1/1+1/2	Upper Brook St N Left Ahead	87.7 : 88.6%	12.3
1/3	Upper Brook St N Right	3.6%	0.3
2/1+2/2	Mancunian Way Right Left Ahead	25.8 : 25.8%	3.0
3/1	Upper Brook St S Ahead Left	59.5%	6.6
3/2	Upper Brook St S Right	27.9%	1.9
7/1	MSCP Access	88.3%	11.2

Table 5.3 – Updated MSCP Access Model (Revised Plot 14 – 1,100 space MSCP)

5.4.8 Full modelling outputs for the sensitivity test are provided in **Appendix D** to the rear of this report.

5.4.9 The above table demonstrates the proposed access would continue to operate within its Practical Reserve Capacity, despite the addition of 45 two-way trips across the AM and PM peak periods.

5.4.10 The results show a minor impact on DoS and MMQ; which is considered imperceptible when compared to the Phase 1B post submission modelling undertaken and approved by TfGM (as summarised in **Table 5.2**).

5.4.11 Development traffic will distribute across various routes as it egresses the site access junction. It is therefore considered the above table also provides comfort that the Prevised Plot 14 proposals' impact on the surrounding highway network would be negligible.

5.5 Summary

5.5.1 This section has demonstrated that the development traffic associated with the revised Plot 14 proposals can be accommodated without significant impact.

5.5.2 A review of TRICS data for city centre hotels suggests the actual increase in Plot 14 traffic compared to that approved in Phase 1B could be less than that associated with a 10% pro-rata increase in MSCP parking.

5.5.3 Furthermore, a robust capacity assessment has shown the proposed signalised site access could accommodate any potential increase in MSCP vehicular trips; as based on a 10% pro-rata increase in parking provision.

5.5.4 It is considered the impact on any subsequent junctions in the surrounding highway network would be negligible as traffic is distributed to the wider network.

6.0 Transport Planning Policy

6.1 Introduction

6.1.1 The principle of development has already been established by virtue of the existing Phase 1B consent granted in June. Throughout this process, the Proposed Development was subject to scrutiny from a planning policy perspective.

6.1.2 Notwithstanding this the following section sets out key local and national transport planning policies, and how the updated proposals relate to them.

6.2 National Planning Policy Framework

6.2.1 The NPPF sets out the current national transport planning policy and outlines the important role that transport policies have to play in facilitating sustainable development. From the outset, the Minister for Planning's Foreword lays the foundations for current policy thinking;

"The Purpose of planning is to help achieve sustainable development ….Development means growth. We must accommodate the new ways by which we will earn our living in a competitive world. We must house a rising population, which is living longer and wants to make new choices. We must respond to the changes that new technologies offer us. Our lives, and the places in which we live them, can be better, but they will certainly be worse if things stagnate."

6.2.2 Paragraph 14 states that at the heart of NPPF is a "presumption in favour of sustainable development, which should be seen as a golden thread running through both plan making and decision making." For decision making this means granting permission unless:

"…any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies."

6.2.3 Section 4 of the NPPF is entitled Promoting Sustainable Transport, and outlines the important role that transport policies have to play in facilitating sustainable development. The section states that:

"The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel".

6.2.4 The proposals are for the increase in car aprking provision, development of a 150 bedroom hotel and inclusion of an Energy Centre. The MSCP element ensures users have a choice of travel modes, whilst the existing and proposed infrastructure encourages uptake in sustainable modes.

6.2.5 There is good walking and cycling infrastructure adjacent to the Site, and there are excellent links to public transport facilities such as a major bus corridor along Oxford Road and train services from Manchester Oxford Road and Manchester Piccadilly. The proposed public realm works will enhance the attractiveness of sustainable travel to and across the site.

6.2.6 The Proposed Development accords with the principles of the NPPF.

6.3 National Planning Practice Guidance (NPPG)

6.3.1 In addition to the NPPF, a National Planning Practice Guidance (NPPG) document has also been developed by the government. Within this document there is a specific section that clarifies the over-arching principles on Travel Plans, Transport Assessments and Transport Statements.

6.3.2 The guidance on Transport Assessments and Statements re-iterates the circumstances in which either document would usually be required. It is clear that a Transport Assessment is appropriate for the Proposed Development, and appropriate capacity assessments have been agreed with MCC/TfGM and undertaken as part of this report. The NPPG has been considered in the production of this TAA.

6.3.3 The guidance on Travel Plans reinforces the requirement for a Travel Plan, the scope of the document, and need for monitoring to continue the strategy into the future. The NPPG has been considered in the production of the accompanying Framework Travel Plan Addendum.

6.4 Manchester City Council: Core Strategy

6.4.1 The MCC core strategy promotes similar principles to the NPPF. It contains three specific "Transport" policies, comprising:

- Policy T1 – Sustainable Transport;
- Policy T2 – Accessible areas of opportunity and need; and
- Policy T3 – Strategic Integration.

6.4.2 Policy T1 focuses on sustainable transport and access for all. The accessibility of the Site would encourage users of the Proposed Development to travel by sustainable modes. Furthermore the Site is to be fully permeable, improving the pedestrian and cycling environment and access for people who are disabled or mobility impaired. It is envisaged that the Brancaster Road link would form a key pedestrian and cycle route across the Site between Oxford Road and Princess Street.

6.4.3 Policy T2 of the MCC Core Strategy states:

"The Council will actively manage the pattern of development to ensure that new development…Within the City Centre, provides a level of car parking which reflects the highly accessible nature of the location, as well as the realistic requirements of the users of the development."

6.4.4 The proposed MSCP comprises approximately 1,100 spaces for public use. Nevertheless, it is envisaged the parking provision would be primarily utilised by residents, employees and visitors of the Site.

6.4.5 There are no parking standards for city centre residential developments contained within the MCC Core Strategy. **Table 6.1** summarises the relevant parking standards for retail and commercial developments:

Land Use	Maximum Number of Car Parking Spaces		Minimum Number of Spaces Required for:-		
	District Centres	Areas not within the City Centre or District Centres	Disabled people's parking as percentage of total (Citywide)		Cycles (Citywide)
			Up to 200 in total	Over 200 in total	
A1: Shops (Food Retail)	1 space per 16sqm	1 space per 14sqm	3 bays or 6% of total capacity whichever is greater	4 bays plus 4% of total capacity	1 space per 140sqm minimum of 2 spaces
A1: Shops (Non-food Retail)	1 space per 22sqm	1 space per 20sqm	3 bays or 6% of total capacity whichever is greater	4 bays plus 4% of total capacity	1 space per 200sqm minimum of 2 spaces
B1: Business (Stand alone offices)	1 space per 35sqm	1 space per 30sqm	Individual bays for each disabled employee plus 2 bays or 5% of total capacity whichever is greater	6 bays plus 2% of total capacity	1 space per 200sqm minimum of 2 spaces

Table 6.1 – MCC Parking Standards

6.4.6 In line with the above, the Phase 1B proposals allowed for a maximum of 1,366 – 1,519 car parking spaces; depending on the end uses of the proposed ground floor retail units. As previously stated, this maximum value does not account for the residential elements.

6.4.7 With the addition of a hotel use on site as part of Plot 14, it is considered appropriate to increase the available MSCP parking provision. Increasing form approximately 1,000 spaces to 1,100 spaces, the proposed MSCP provision remains within the MCC maximum standards whilst remaining at a level that actively encourages uptake of sustainable modes.

6.4.8 Provision for disabled users and cycles has been provided in line with the MCC parking standards.

6.4.9 Policy T3 is in relation to strategic integration of developments with the sustainable transport network. The Proposed Development would not prejudice the implementation of any of the strategic integration projects, and Curtins has liaised with MCC and TfGM to ensure integration with the works along Oxford Road/Brancaster Road/Charles Street.

6.4.10 It is envisaged that the proposals would improve connectivity across the Site for direct and non-direct users of the Proposed Development.

6.5 Greater Manchester Local Transport Plan 3

6.5.1 Greater Manchester published its third Local Transport Plan in April 2011, setting out the plans and spending priorities of Transport for Greater Manchester, the ten Greater Manchester Councils and other key partners in the short, medium and longer term.

6.5.2 The main aims of the LTP3 are as follows;

- *"To ensure that the transport network supports the Greater Manchester economy to improve the life chances of residents and the success of business;*
- *To ensure that carbon emissions from transport are reduced in line with UK Government targets in order to minimise the impact of climate change;*
- *To ensure that the transport system facilitates active, healthy lifestyles and a reduction in the number of casualties and that other adverse health impacts are minimised;*
- *To ensure that the design and maintenance of the transport network and provision of services supports sustainable neighbourhoods and public spaces and provides equality of transport opportunities; and*
- *To maximise value for money in the provision and maintenance of transport infrastructure and services."*

6.5.3 It is considered that the development proposals will not adversely impact on the surrounding transport network, and indeed will enhance opportunities for sustainable travel by integrating into existing opportunities for sustainable travel to the Site.

6.5.4 In terms of parking, the LTP3 states:

"We will seek to deliver a balanced approach to car parking that provides sufficient capacity to support economic growth whilst simultaneously restricting demand in order to encourage the greater use of sustainable transport."

6.5.5 The Proposed Development is in accordance with the general principles of the Greater Manchester LTP3.

6.6 Conclusions

It is considered that the Proposed Development is in line with national and local transport policies and guidance. The Site is located within an area which has a range of existing local facilities and an abundance of sustainable travel choices.

7.0 Summary and Conclusions

7.1 Summary

7.1.1 Curtins has been appointed to provide all traffic and transport advice in relation to the redevelopment of the former BBC site, Oxford Road, Manchester. The principle of the wider masterplan and development phasing was agreed by an Executive Committee held by MCC in July 2015.

7.1.2 This Transport Assessment Addendum (TAA) considers the proposed alterations to the permitted second phase of the agreed masterplan, known as Phase 1B. The proposals have been altered to include:

- A six storey, 150 bedroom hotel to be located on top of the MSCP approved on Plot 14 of the masterplan;
- An Energy Centre to serve the entire Circle Square masterplan;
- An additional floor of car parking (Floor 11) to be incorporated within the curtilage of the approved building, with no change to its scale or massing. This will result in a total car parking capacity of up to 1,100 spaces, a net uplift of 72 spaces to that approved under the existing consent;
- Associated changes to the ground floor layout to accommodate the Energy Centre and hotel servicing and lobby; and
- Minor amendments to the facades related to these changes and evolving detailed design of the MSCP building.

7.1.3 It is considered the revised development proposals revised on Plot 14 will have an imperceptible impact on highway safety.

7.1.4 Suitable drawings have been provided to demonstrate the retained access and vehicle manoeuvres.

7.1.5 It is considered the Site is highly accessible by sustainable modes of transport. The surrounding area exhibits good levels of pedestrian and cycling infrastructure, and there are a number of public transport opportunities within acceptable walking distance of the Site.

7.1.6 The trips associated with the Energy Centre (maintenance etc.) would be negligible, and the trips associated with a city centre hotel are generally dispersed throughout the course of a day and not concentrated within the peak hours.

7.1.7 The initial Phase 1B pro-rata trip generation exercise constitutes a very robust assessment. All trips were assumed as being new to the network, and there was no discounting for pass-by or diverted trips. Therefore, no further assessment of highway impact is considered necessary.

7.1.8 Notwithstanding this, by presenting a TRICS assessment for city centre hotel trips and a sensitivity test at the site access junction, it has been demonstrated that the development traffic associated with the current proposals can be accommodated within the surrounding highway network without significant impact.

7.1.9 The principle of development has already been established by virtue of the existing Phase 1B consent granted in June and, throughout this process, was subject to scrutiny from a planning policy perspective. Notwithstanding this an updated review of key local and national transport planning policies has confirmed the Proposed Development is in line with national and local transport policies and guidance.

7.2 Conclusions

7.2.1 From a traffic and transportation perspective there are no reasons why the revised development proposals should not be granted planning approval.

Plans

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Drg No:	Rev:
TPMA1407-001	/

Project:	CIRCLE SQUARE - MANCHESTER
Drg Title:	REGIONAL LOCATION PLAN
Drawn:	DD
Checked:	DJ
First issue:	17/08/16
Scale:	NTS

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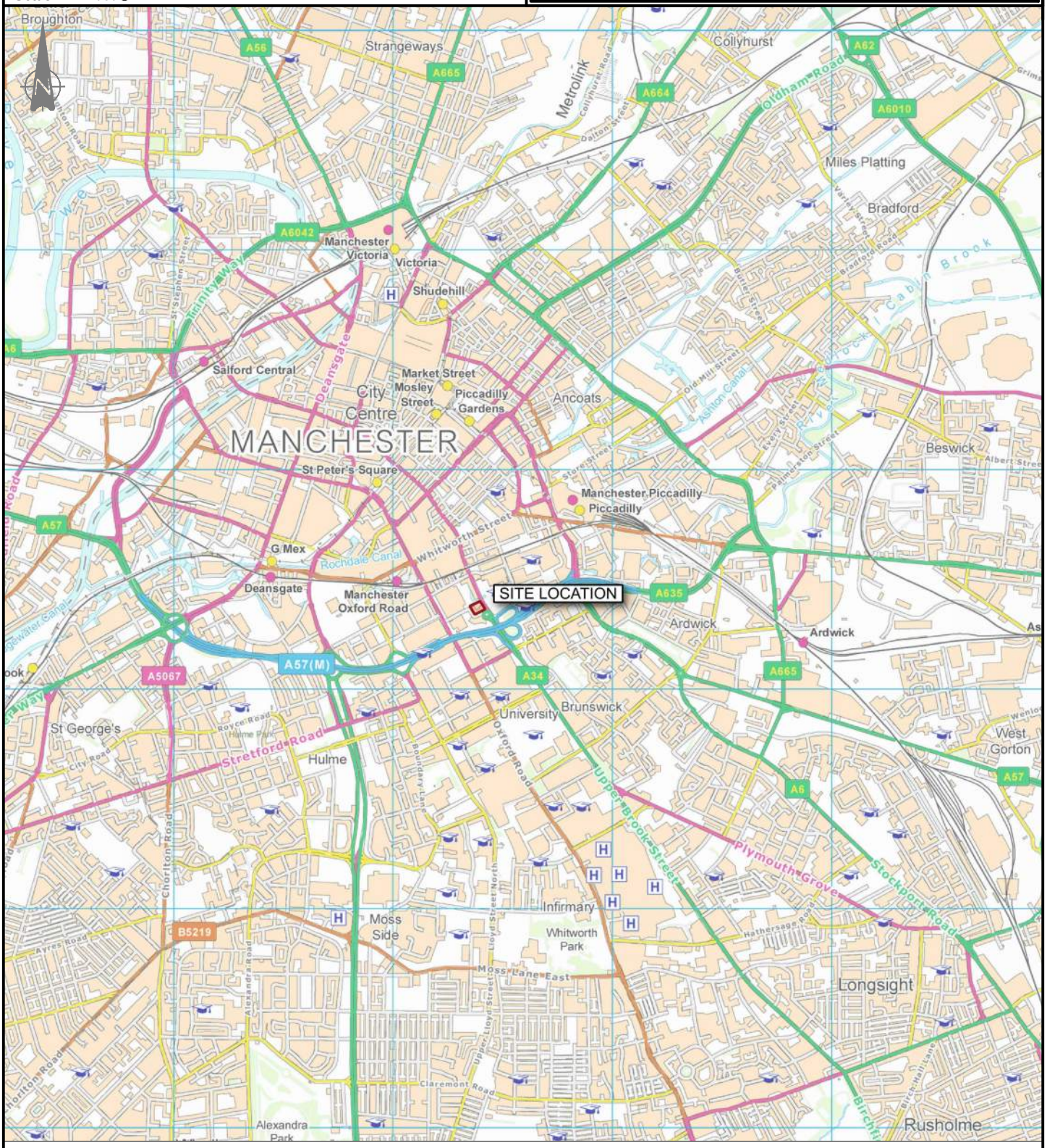

KEY:

Site

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Drg No:	Rev:
TPMA1407-002	/

Project:	CIRCLE SQUARE - MANCHESTER
Drg Title:	LOCAL LOCATION PLAN
Drawn:	DD
Checked:	DJ
First issue:	17/08/16
Scale:	NTS

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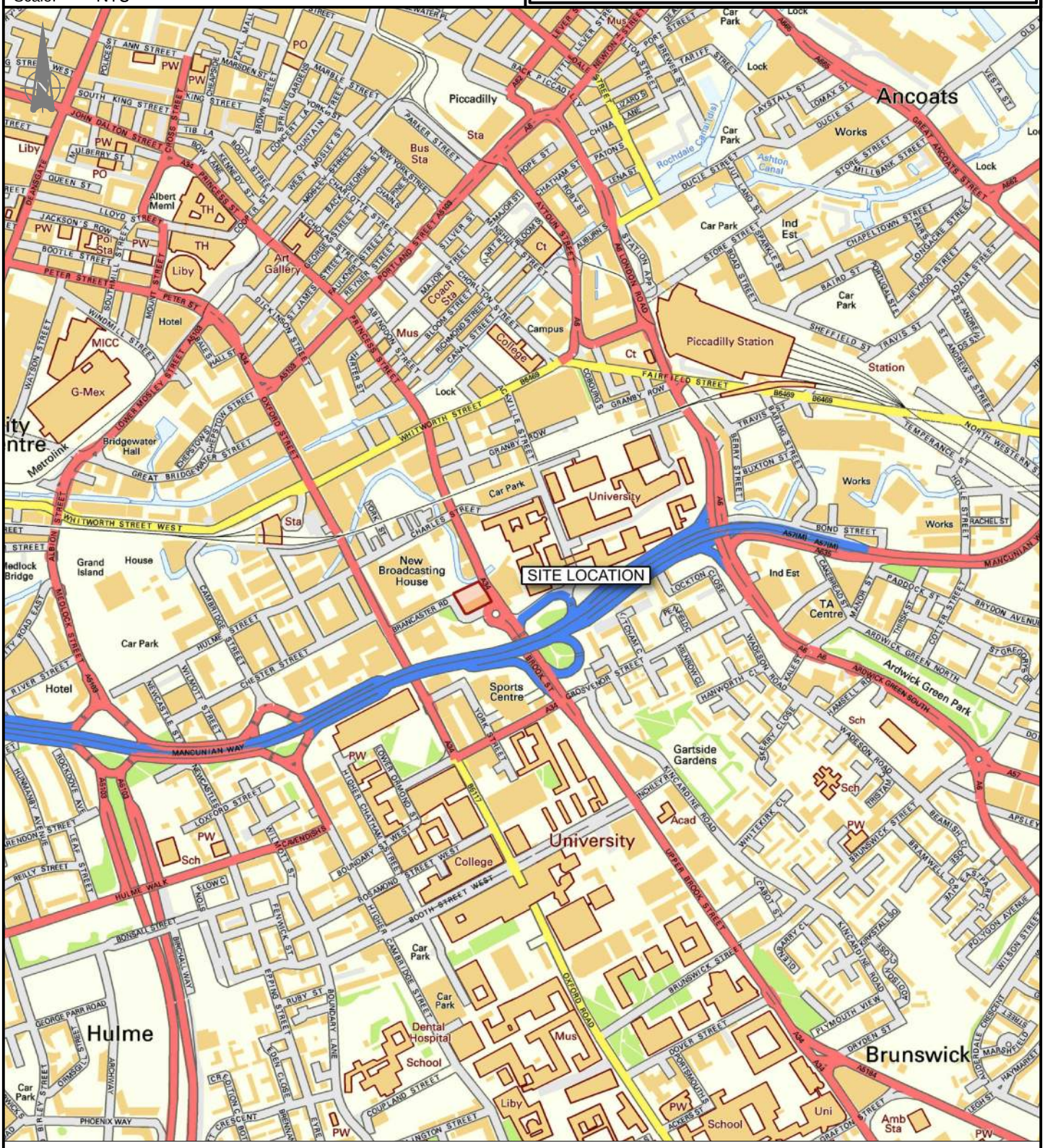

KEY: Site

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TPMA1407-003	/

Project:	CIRCLE SQUARE - MANCHESTER
Drg Title:	INDICATIVE PEDESTRIAN CATCHMENT
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First issue:	17/08/16
Scale:	NTS

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KEY:

Site

Walking Catchment:

- 500m
- 1000m
- 2000m

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TPMA1407-004	/

Project: CIRCLE SQUARE - MANCHESTER
Drg Title: INDICATIVE CYCLING CATCHMENT
Drawn: DD
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First issue: 17/08/16
Scale: NTS

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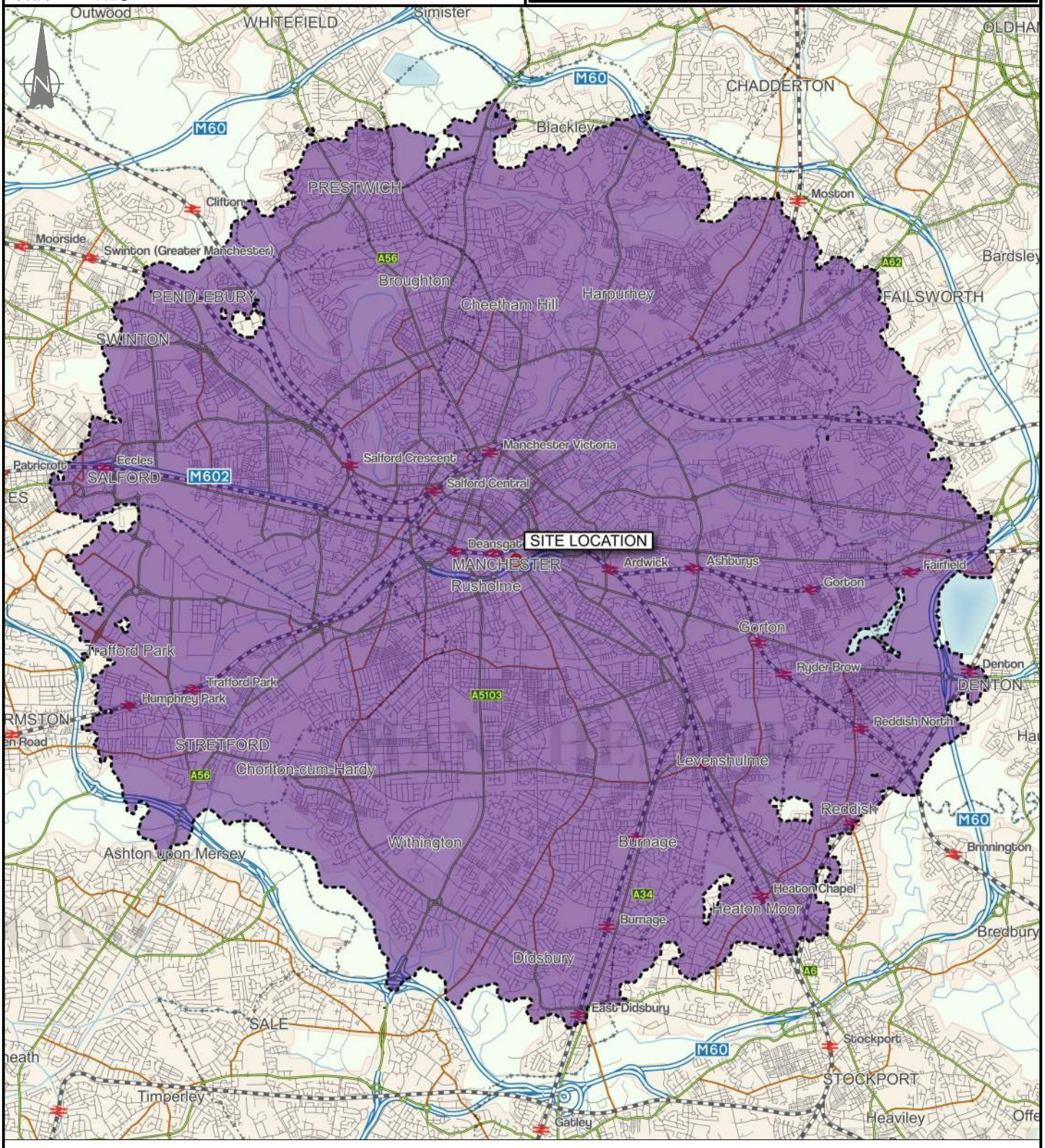

KEY:

Site

Cycle Catchment:

8000m

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Drg No:	Rev:
TPMA1407-005	/

Project:	CIRCLE SQUARE - MANCHESTER
Drg Title:	INDICATIVE PUBLIC TRANSPORT CATCHMENT
Drawn:	DD
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First issue:	17/08/16
Scale:	NTS

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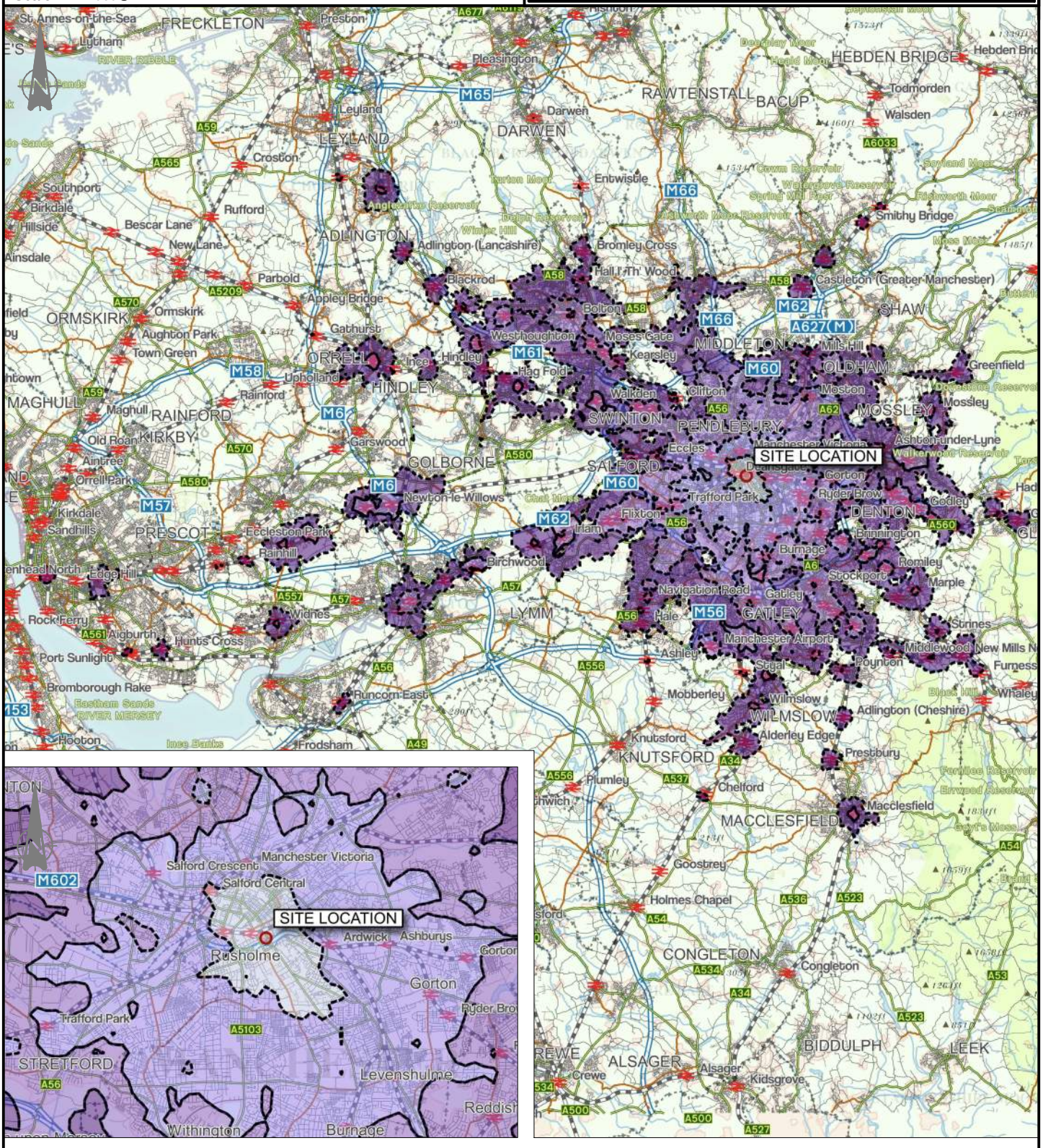

KEY:

Site

Public Transport Catchment:

- 15 minutes
- 30 minutes
- 45 minutes
- 60 minutes

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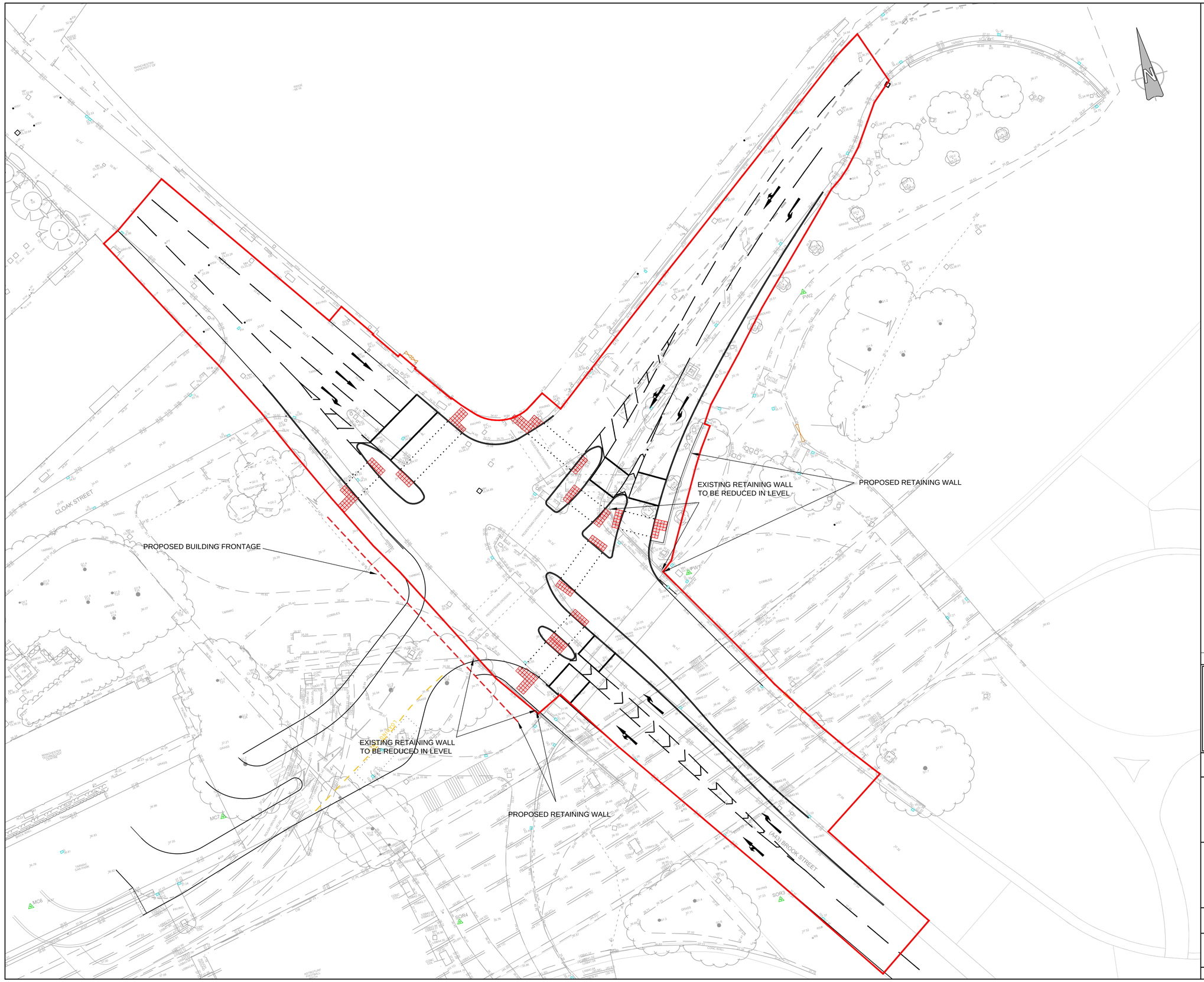
Drawings



NOTES:

SECTION 278 BOUNDARY

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Status: PRELIMINARY

Project: CIRCLE SQUARE MSCP ACCESS

Drg Title: GENERAL ARRANGEMENT

Scale:	Size:	First Issue:	Drawn:	Checked:
1:250	A1	20.05.2016	SK	HS

Drg No: ICMA0040-S278-3-002

Rev: /

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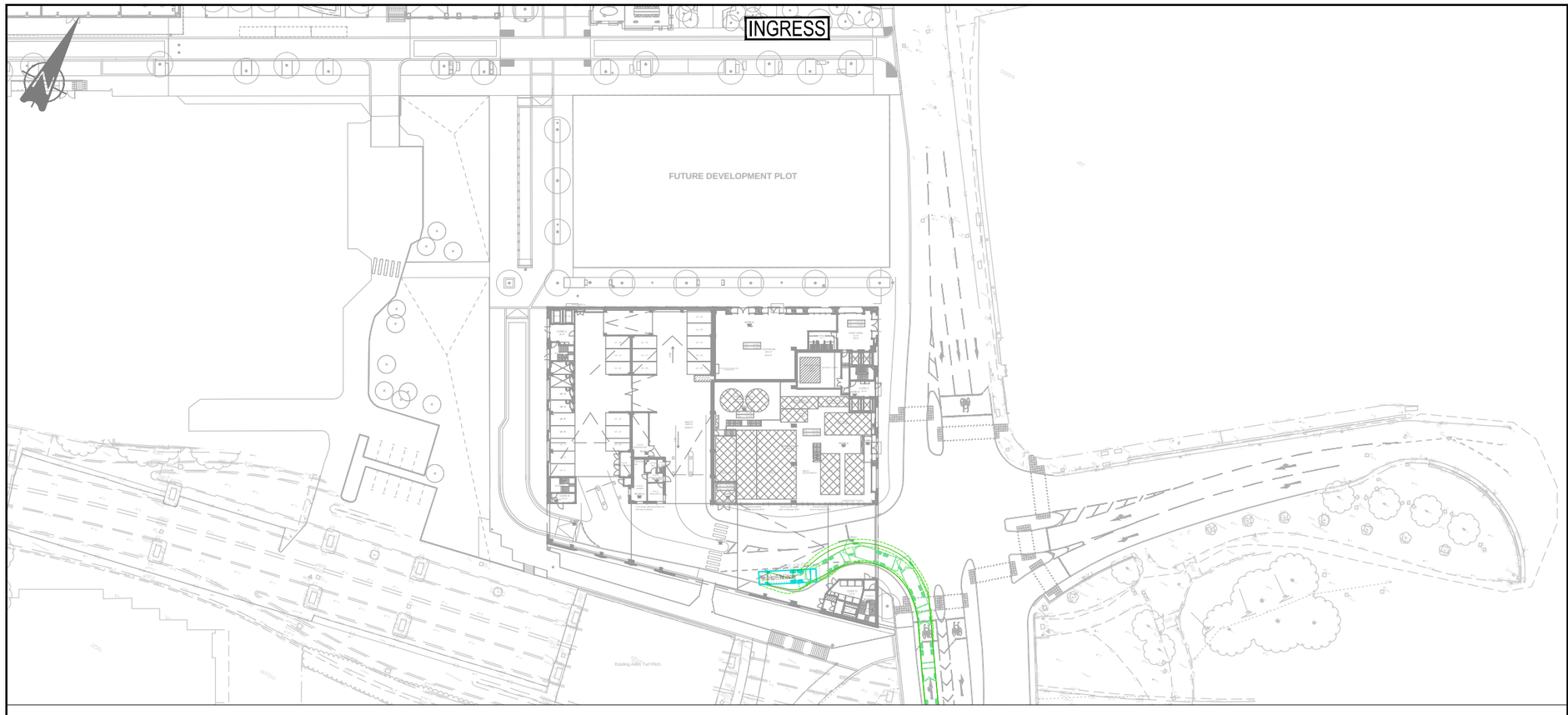

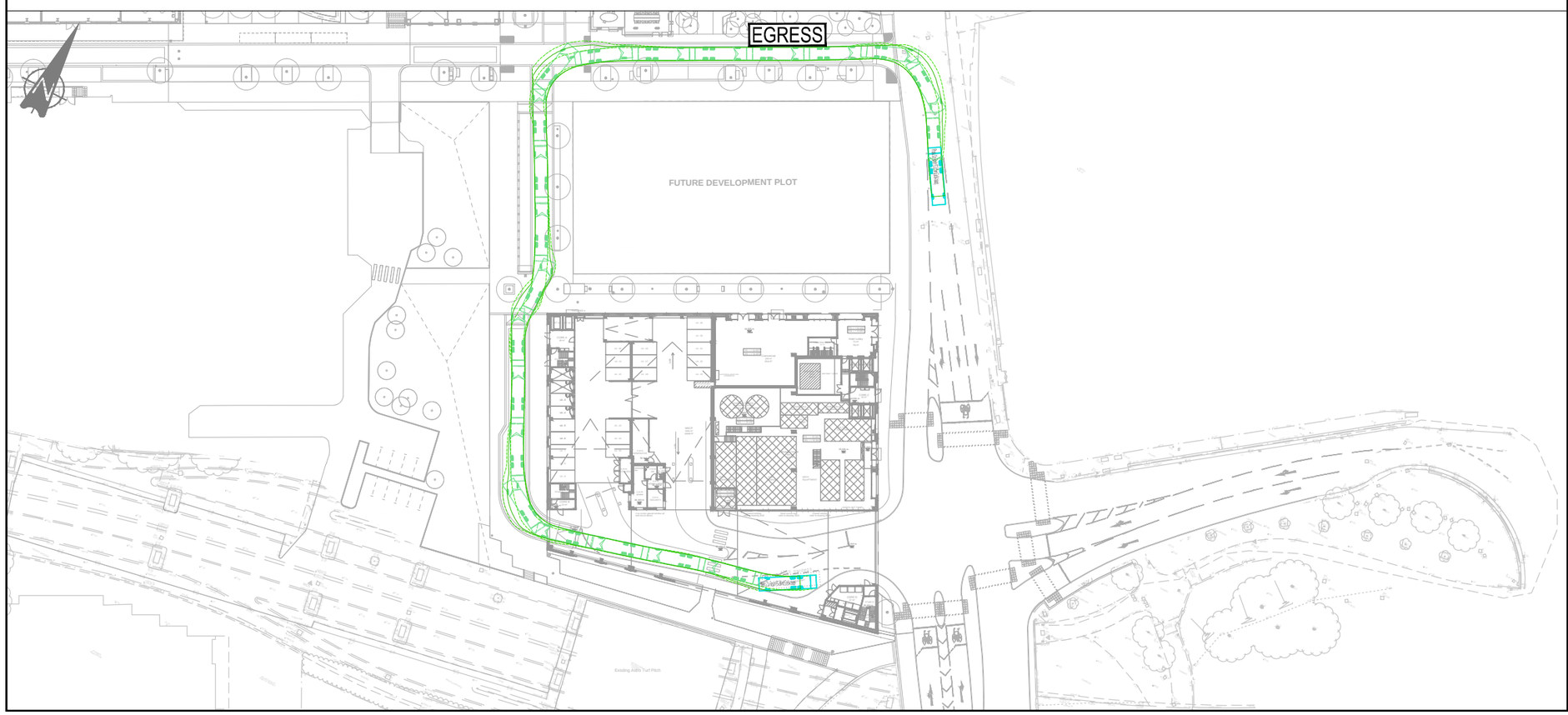

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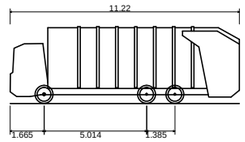

Phoenix 2 Duo Recycler (P2-15W with Elite 6x4 chassis)

Overall Length	11.220m
Overall Width	2.530m
Overall Body Height	3.756m
Min Body Ground Clearance	0.309m
Track Width	2.530m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	11.550m

Rev:	Description:	Date:	By:	Chkd:
A	Latest layout tracked	17/08/16	DD	AV

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Status: PRELIMINARY

Project: CIRCLE SQUARE MANCHESTER

Drg Title: SWEPT PATH ANALYSIS REFUSE VEHICLE

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1:1000	A3	19/10/15	MT	AV

Drg No: TPMA1407-100

Rev: A

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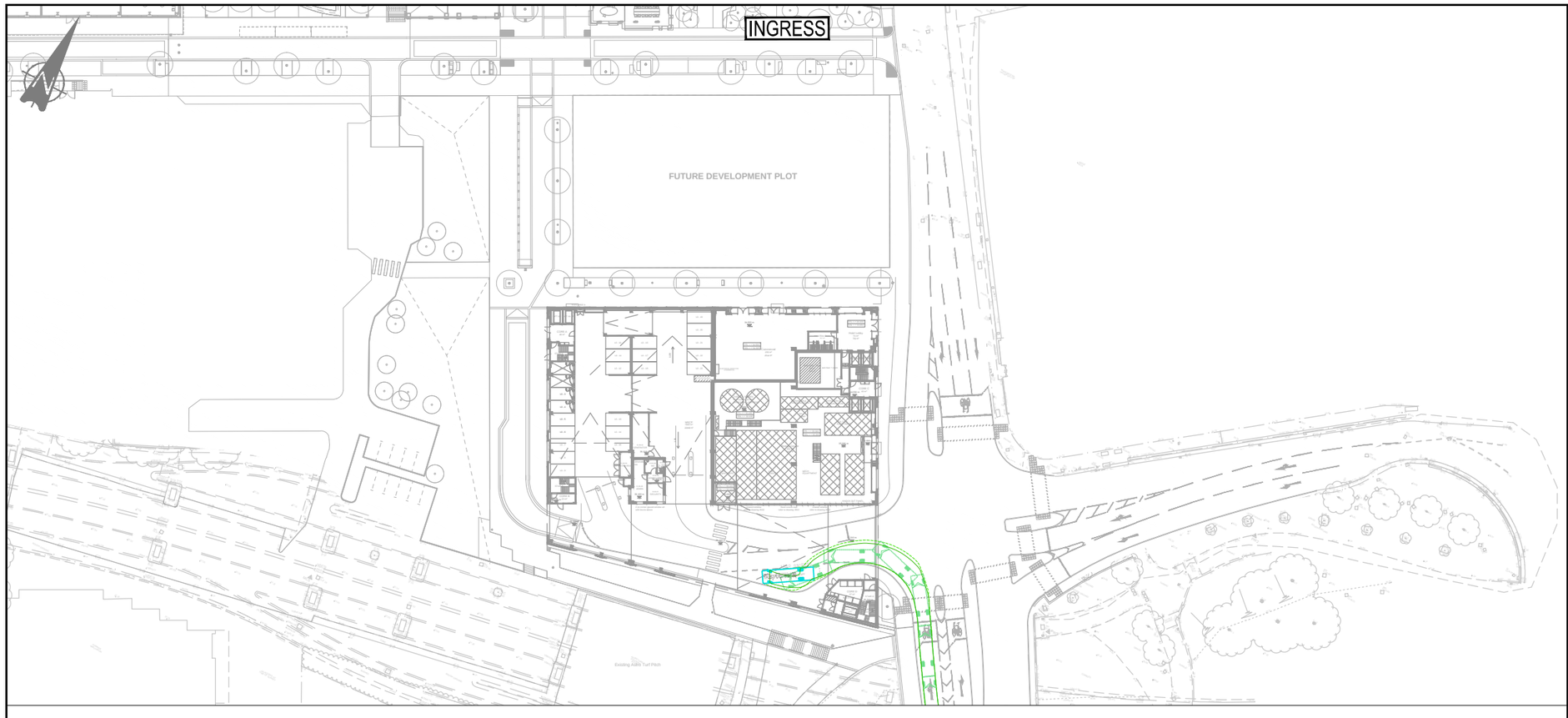

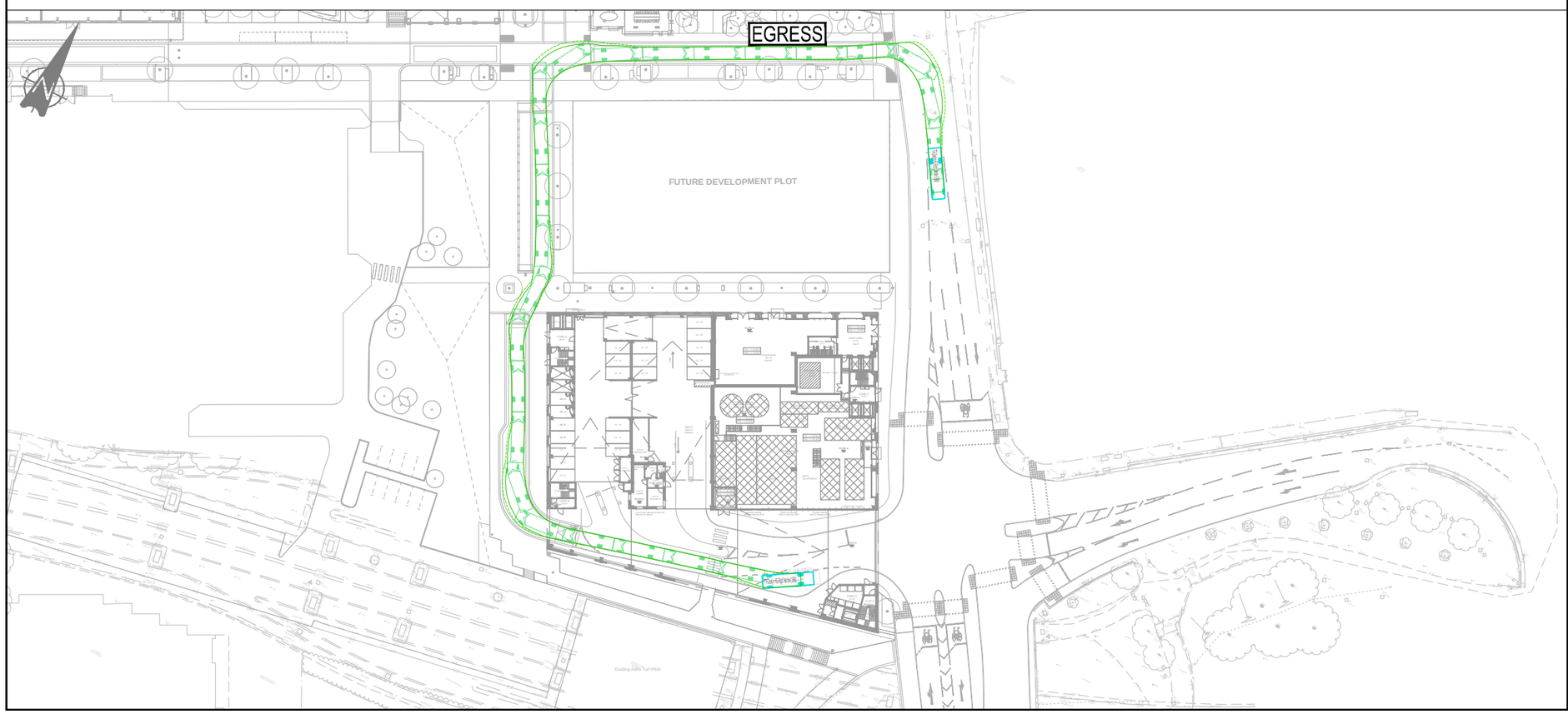

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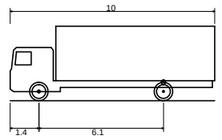

FTA Design HG Rigid Vehicle (1998)

Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to Lock Time	3.00s
Kerb to Kerb Turning Radius	11.000m

Rev:	Description:	Date:	By:	Chkd:
D	Latest layout tracked	17/08/16	DD	AV
C	Changes in the loading bay	24/11/15	DD	AV
B	Turning head added	13/11/15	DD	AV
A	Changes in the loading bay	11/11/15	DD	AV

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Status: PRELIMINARY

Project: CIRCLE SQUARE MANCHESTER

Drg Title: SWEPT PATH ANALYSIS 10m RIGID HGV

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1:1000	A3	10/11/15	DD	AV

Drg No: TPMA1407-102

Rev: D

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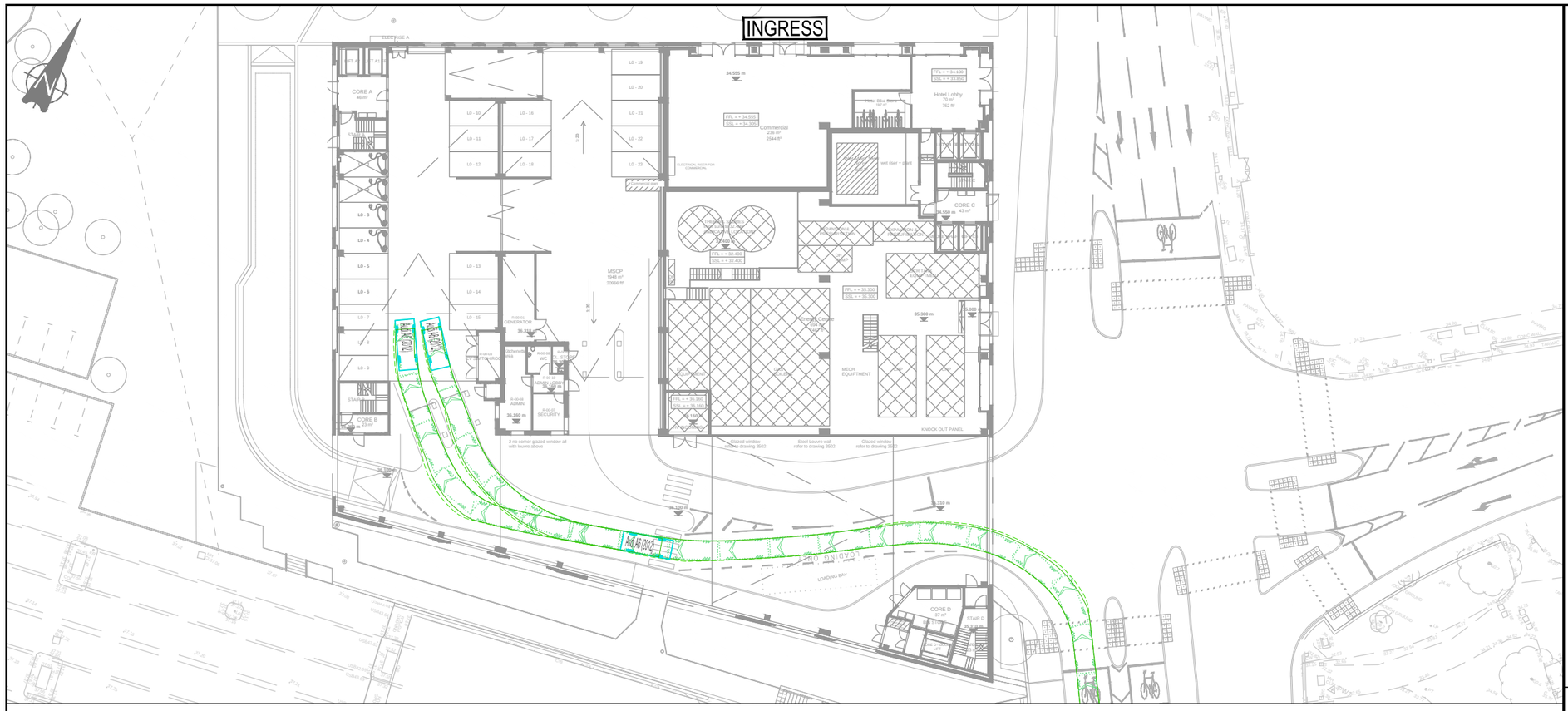

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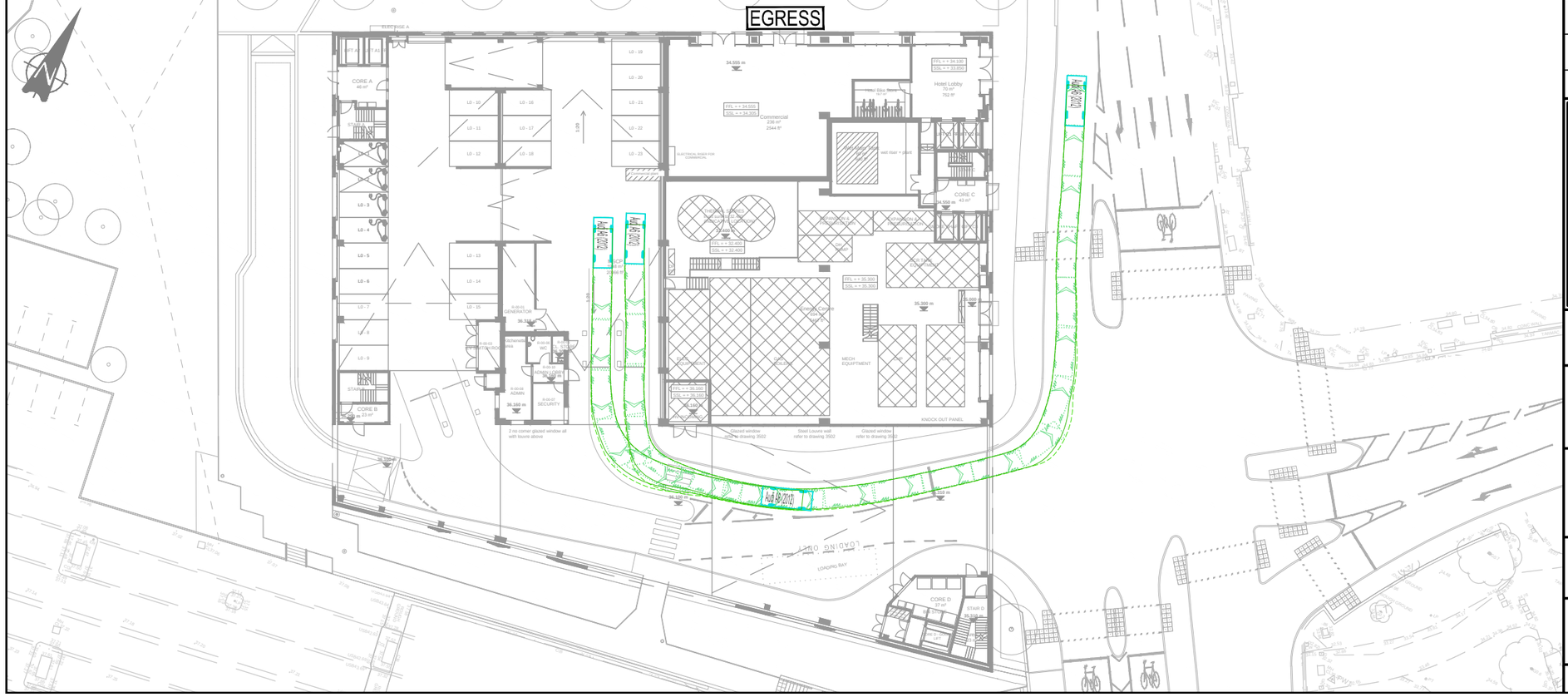

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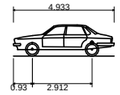

Audi A6 (2012)	
Overall Length	4.933m
Overall Width	1.874m
Overall Body Height	1.528m
Min Body Ground Clearance	0.313m
Max Track Width	1.852m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	5.950m

Rev:	Description:	Date:	By:	Chkd:
C	Latest layout tracked	17/08/16	DD	AV
B	Changes in MSCP and access layout	05/04/16	DD	AV
A	Changes in MSCP layout	23/11/15	DD	AV

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Status: PRELIMINARY

Project: CIRCLE SQUARE MANCHESTER

Drg Title: SWEPT PATH ANALYSIS LARGE CAR

Scale:	Size:	First Issue:	Drawn:	Checked:
1:500	A3	18/11/15	DD	AV

Drg No: TPMA1407-103

Rev: C

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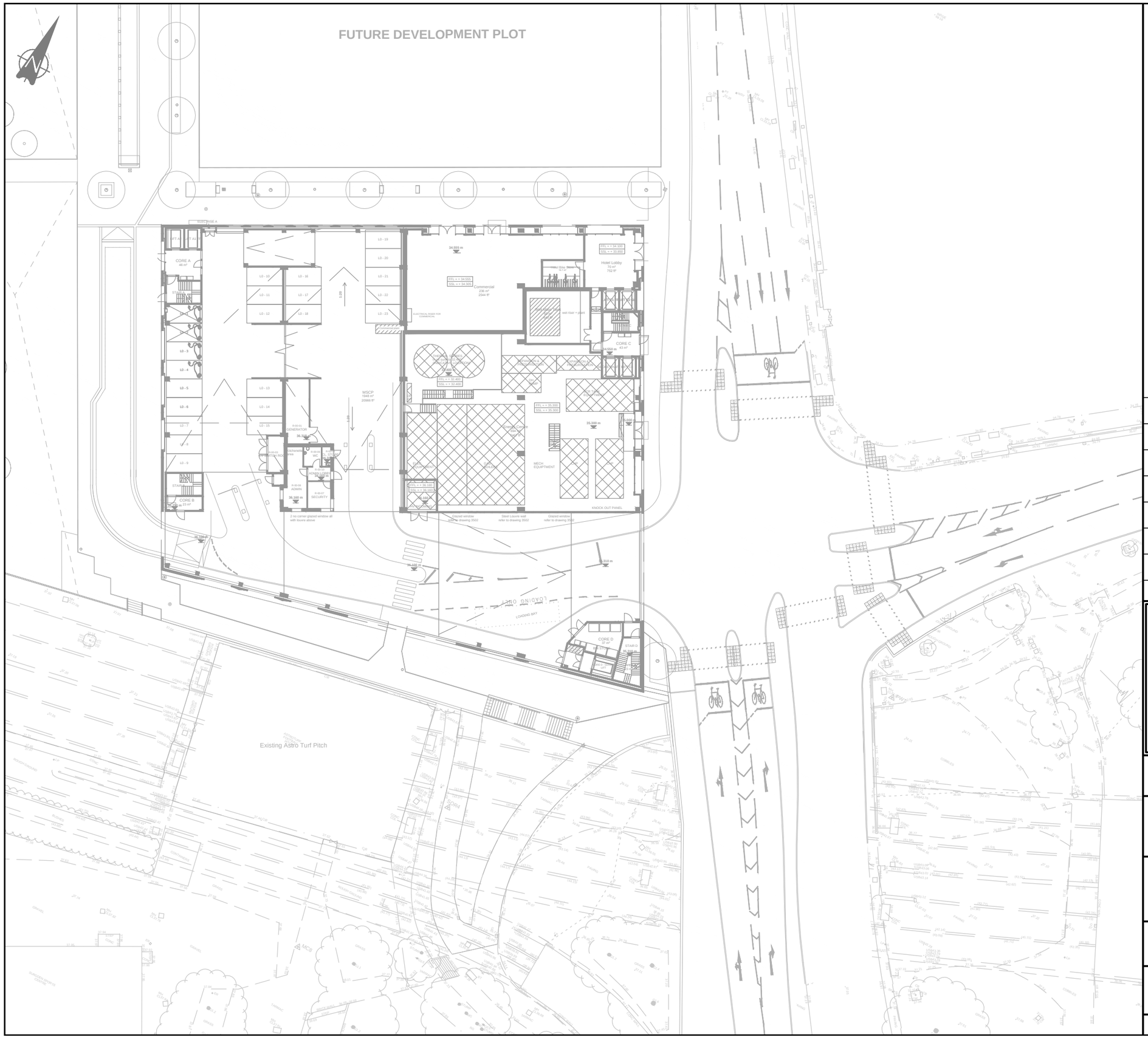

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Rev:	Description:	Date:	By:	Chkd:
G	Changes in Circle Square and access layout	17/08/16	DD	AV
F	Changes in access layout	21/04/16	DD	AV
E	Changes in MSCP and access layout	04/04/16	DD	AV
D	Changes in access layout	29/03/16	DD	AV
C	Changes in MSCP and access layout	24/03/16	DD	AV
B	Changes in access layout	15/01/16	DD	HS
A	Changes in MSCP layout	11/01/16	DD	AT

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Status: PRELIMINARY

Project: CIRCLE SQUARE MANCHESTER

Drg Title: GROUND FLOOR LAYOUT

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Drg No: TPMA1407-106

Rev: G

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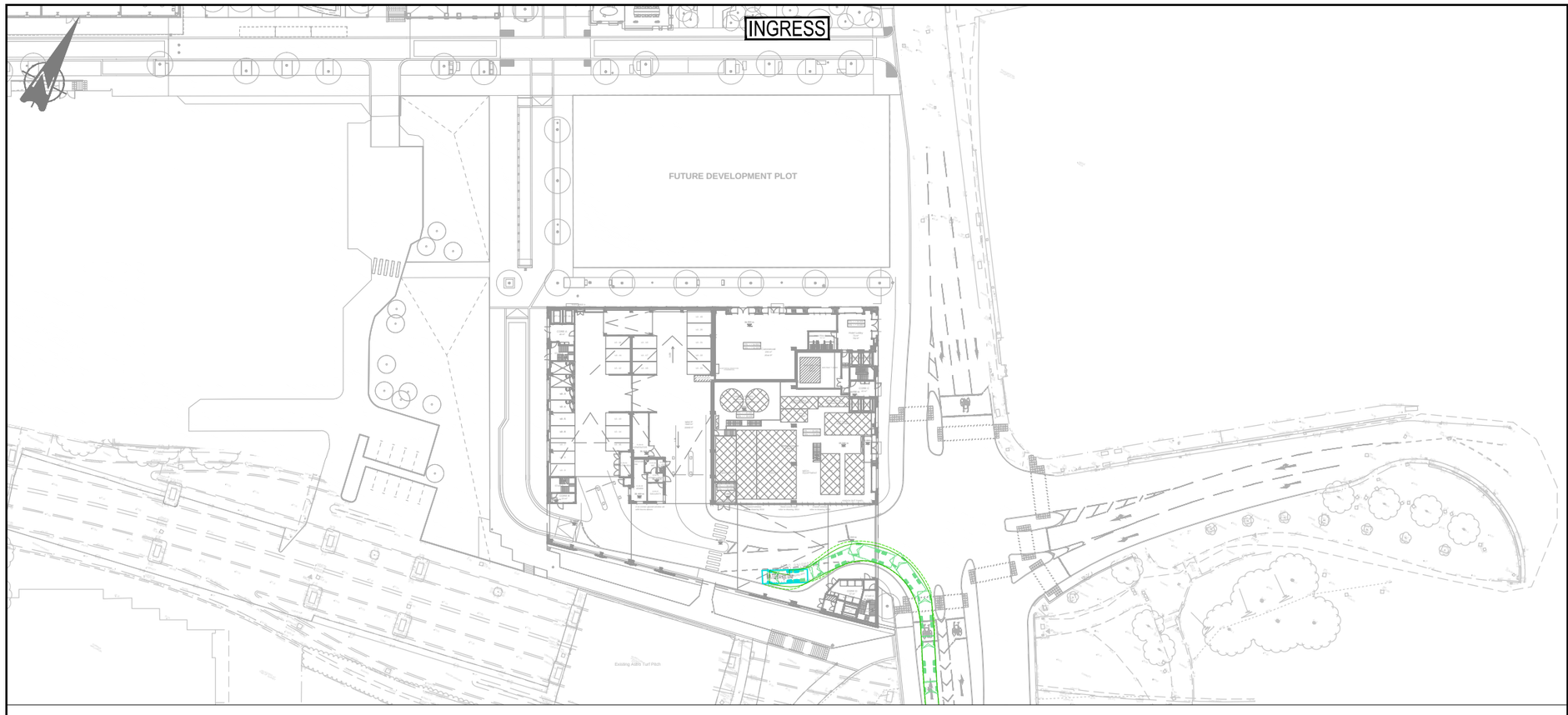

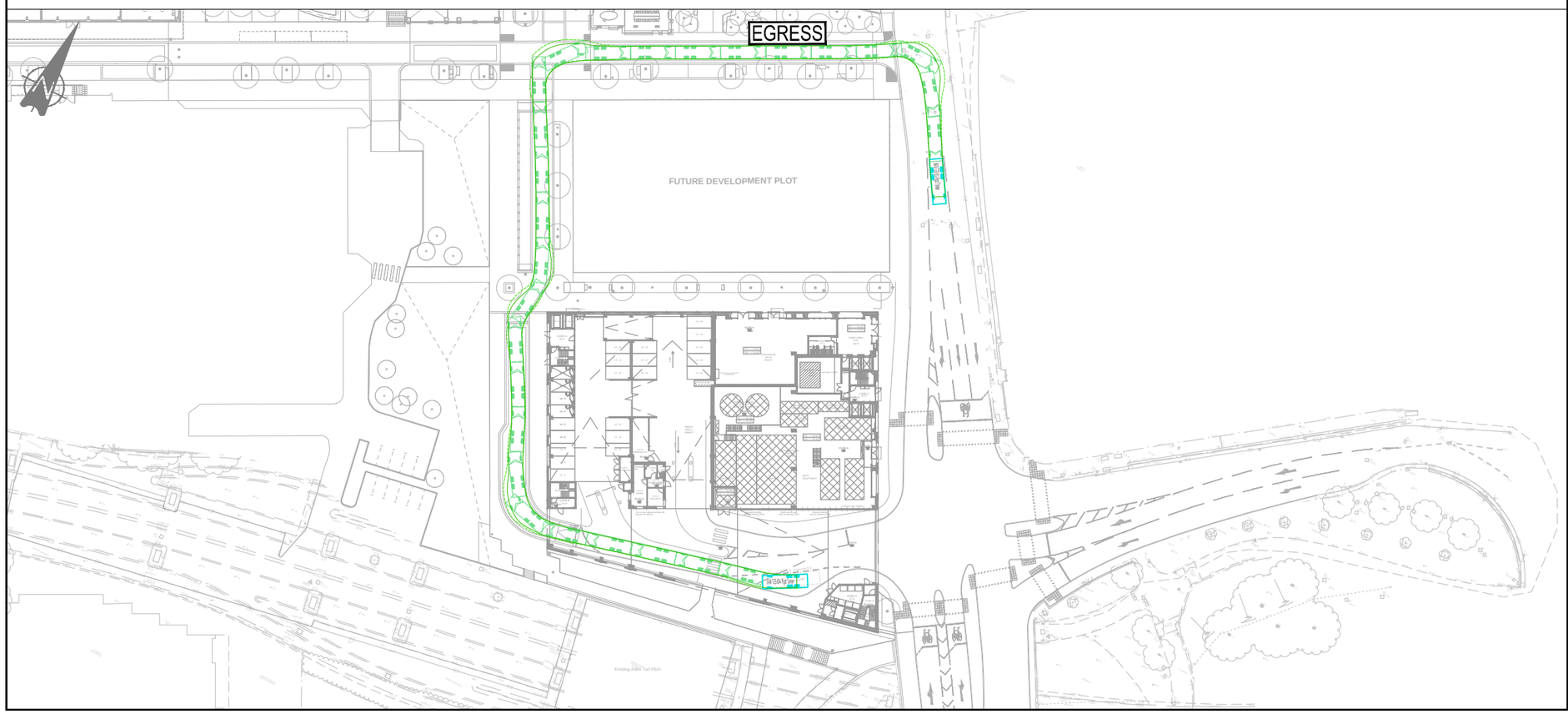

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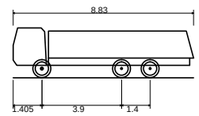

MAN TGS 6X4 Rigid Tanker	
Overall Length	8.830m
Overall Width	2.570m
Overall Body Height	2.435m
Min Body Ground Clearance	0.601m
Track Width	2.490m
Lock to Lock Time	6.00s
Kerb to Kerb Turning Radius	8.250m

Rev:	Description:	Date:	By:	Chkd:

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Status: PRELIMINARY

Project: CIRCLE SQUARE MANCHESTER

Drg Title: SWEPT PATH ANALYSIS 8.83m RIGID TANKER

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Drg No: TPMA1407-107

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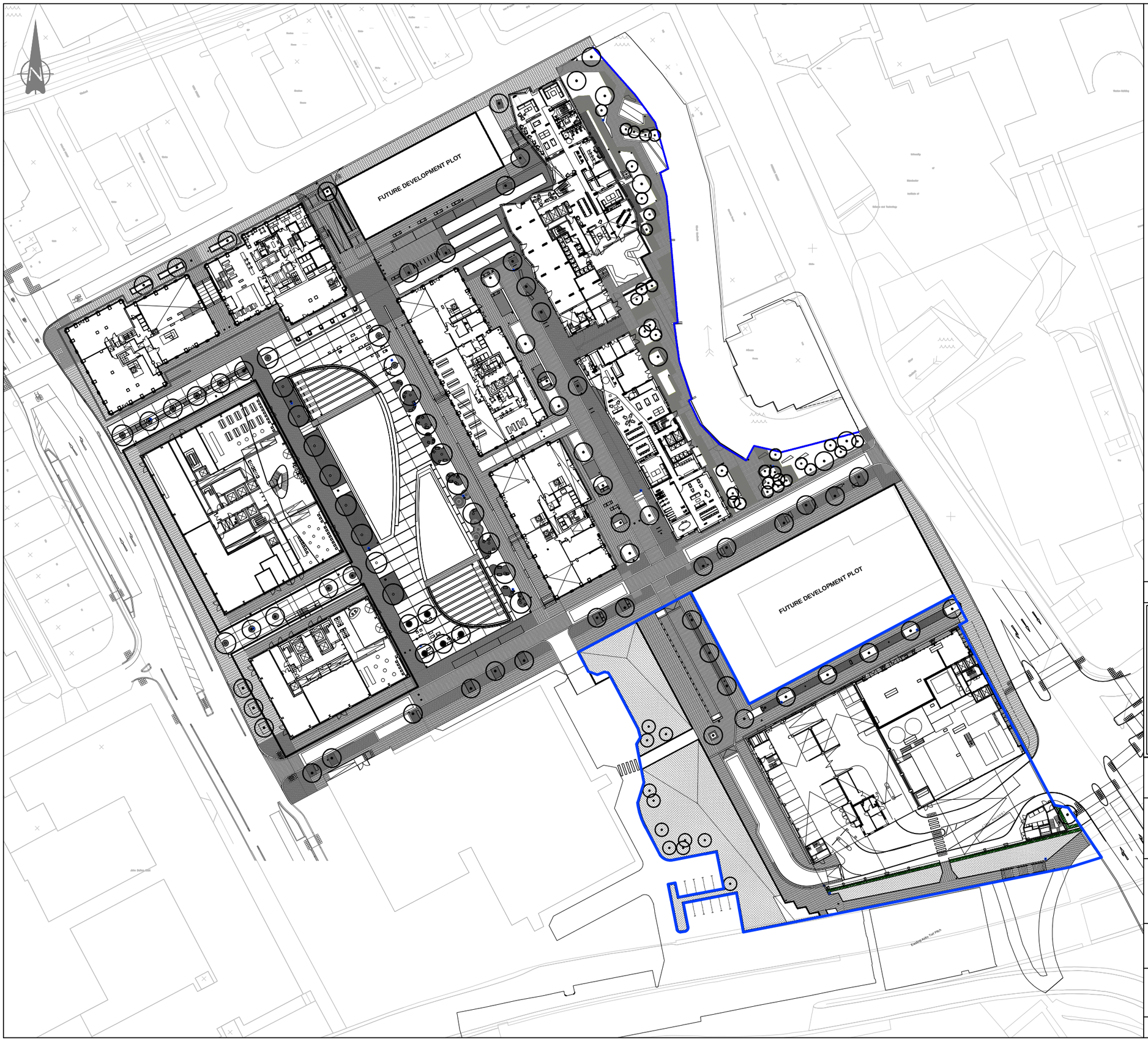
Appendix A – Illustrative Masterplan



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Status: PRELIMINARY

Project: CIRCLE SQUARE MANCHESTER

Drg Title: WIDER MASTERPLAN

Scale:	Size:	First Issue:	Drawn:	Checked:
1:1000	A3	19/08/16	DD	DJ

Drg No: TPMA1407-SK-005

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Appendix B – Made Stopping-up Order

TOWN AND COUNTRY PLANNING ACT 1990

THE STOPPING UP OF HIGHWAY (NORTH WEST) (NO.39) ORDER 2016

The Secretary of State makes this Order in exercise of powers under section 247 of the Town and Country Planning Act 1990 ("the Act").

1. The Secretary of State authorises the stopping up of the highway described in the Schedule to this Order and shown on the plan, in order to enable development to be carried out in accordance with the planning permission granted under Part III of the Act by Manchester City Council under reference 111028/FO/2016/C1.

2. Where immediately before the date of this Order there is any apparatus of statutory undertakers under, in, on, over, along or across any highway authorised to be stopped up pursuant to this Order then, subject to section 261(4) of the Act, those undertakers shall have the same rights as respects that apparatus after that highway is stopped up as they had immediately beforehand.

3. In this Order

"the plan" means the plan numbered NATTRAN/NW/S247/2244, marked "Highway at Manchester in the City of Manchester", signed by authority of the Secretary of State and deposited at the Department for Transport, Deposit Document Service, F Floor, Ashdown House, St Leonards-on-Sea, Hastings, East Sussex TN37 7GA.

4. This Order shall come into force on the date on which notice that it has been made is first published in accordance with section 252(10) of the Act, and may be cited as the Stopping Up of Highway (North West) (No.39) Order 2016 .

Signed by authority of
the Secretary of State
1 July 2016

DAVE CANDLISH
An Official in the
National Transport Casework Team
Department for Transport

THE SCHEDULE

Description of highway to be stopped up

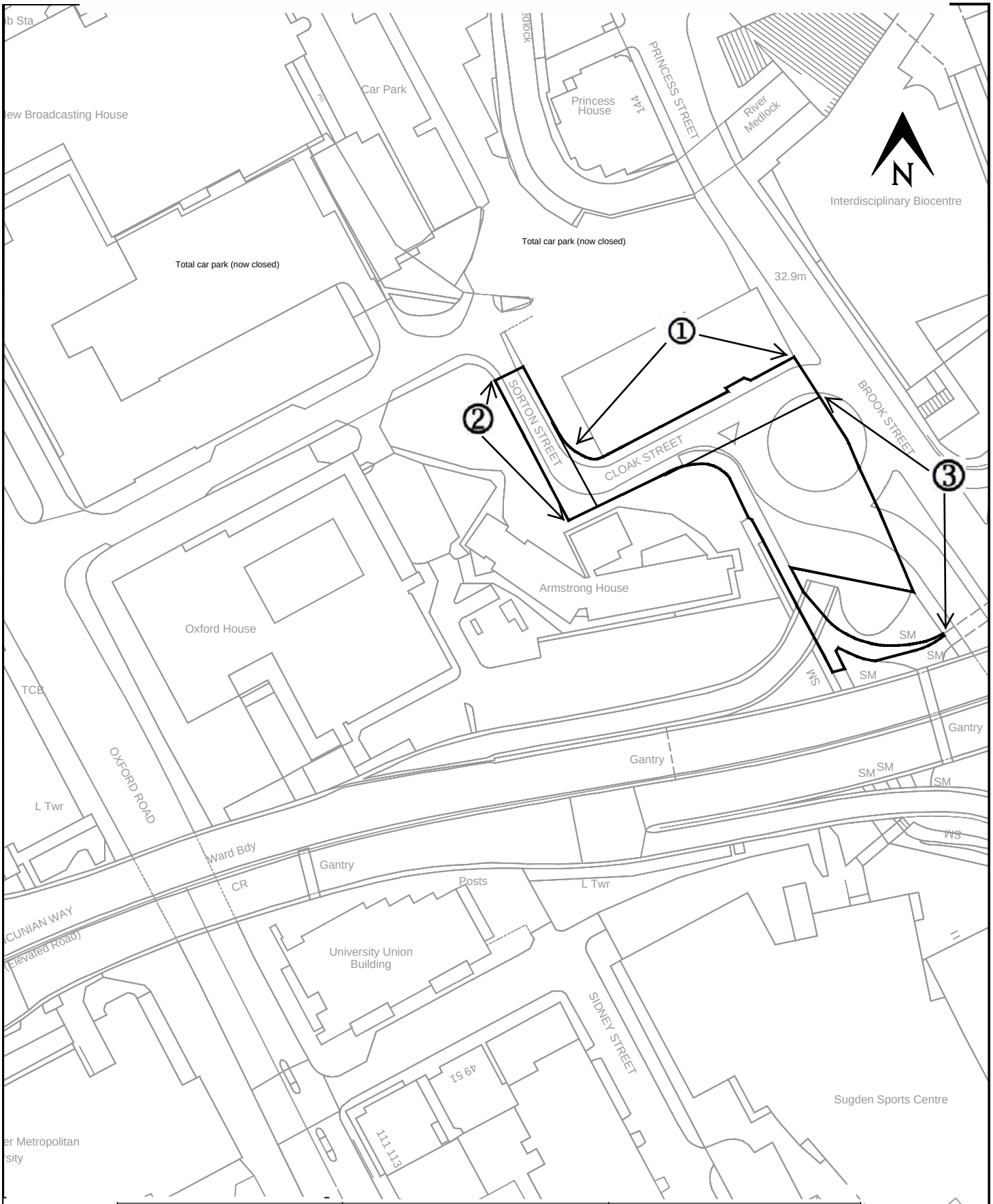
The highway to be stopped up is at Manchester in the City of Manchester, shown edged black on the plan as:

1. The whole of Cloak Street comprising footway and carriageway from its junction with Brook Street to its junction with Sorton Street. (marked 1 on the plan)

2. A length of Sorton Street commencing from its junction with Cloak Street extending in a north westerly direction for a distance of 38.4 metres. (marked 2 on the plan)

3. An irregular shaped western part width of Brook Street comprising footway and carriageway historically associated with the roundabout at Brook Street. Commencing from its junction with Cloak Street and extending south easterly for a maximum distance of 66.8 metres, with a maximum width of 38.2 metres. (marked 3 on the plan)

HIGHWAY AT MANCHESTER IN THE CITY OF MANCHESTER



Scale 1:1250 at A4 Highway to be stopped up	National Transport Casework Team Department for Transport Plan No: NATTRAN/NW/S247/2244	Signed by Authority of the Secretary of State on.. 1 July 2016 Signature..... DAVE CANDLISH An Official in the National Transport Casework Team Department for Transport

BEFORE THE MAGISTRATES' COURT

WEDNESDAY 27TH April 2016
SITTING AT THE COURT HOUSE, CROWN SQUARE, MANCHESTER

SECTION 116 and Twelfth Schedule
of the Highways Act 1980.

WHEREAS application has been made this day by the Council of the City of Manchester the Highway Authority for the length of highway referred to in the Schedule hereto, for an Order under Section 116 of the Highways Act 1980, authorising the stopping up of the said length of highway, such length of highway being shown edged black on the plan attached hereto, on the ground that the said length of highway is unnecessary.

SCHEDULE

The full length of the elevated spur to the Mancunian Way comprising carriage way and verge commencing at a distance of 29 metres east of the eastern boundary of Oxford Road and extending in an easterly direction for 138 metres with a width of up to 8.9 metres.

AND the Court being satisfied that the applicants have given the requisite Notices under Section 116 and the Twelfth Schedule of the Highways Act 1980.

AND the Court being satisfied that the said length of highway is unnecessary doth by Order hereby authorise the stopping-up thereof.

Mrs. M.J.A Cash JP
~~DISTRICT JUDGE~~
(MAGISTRATES' COURT)
CHAIRMAN OF THE COURT

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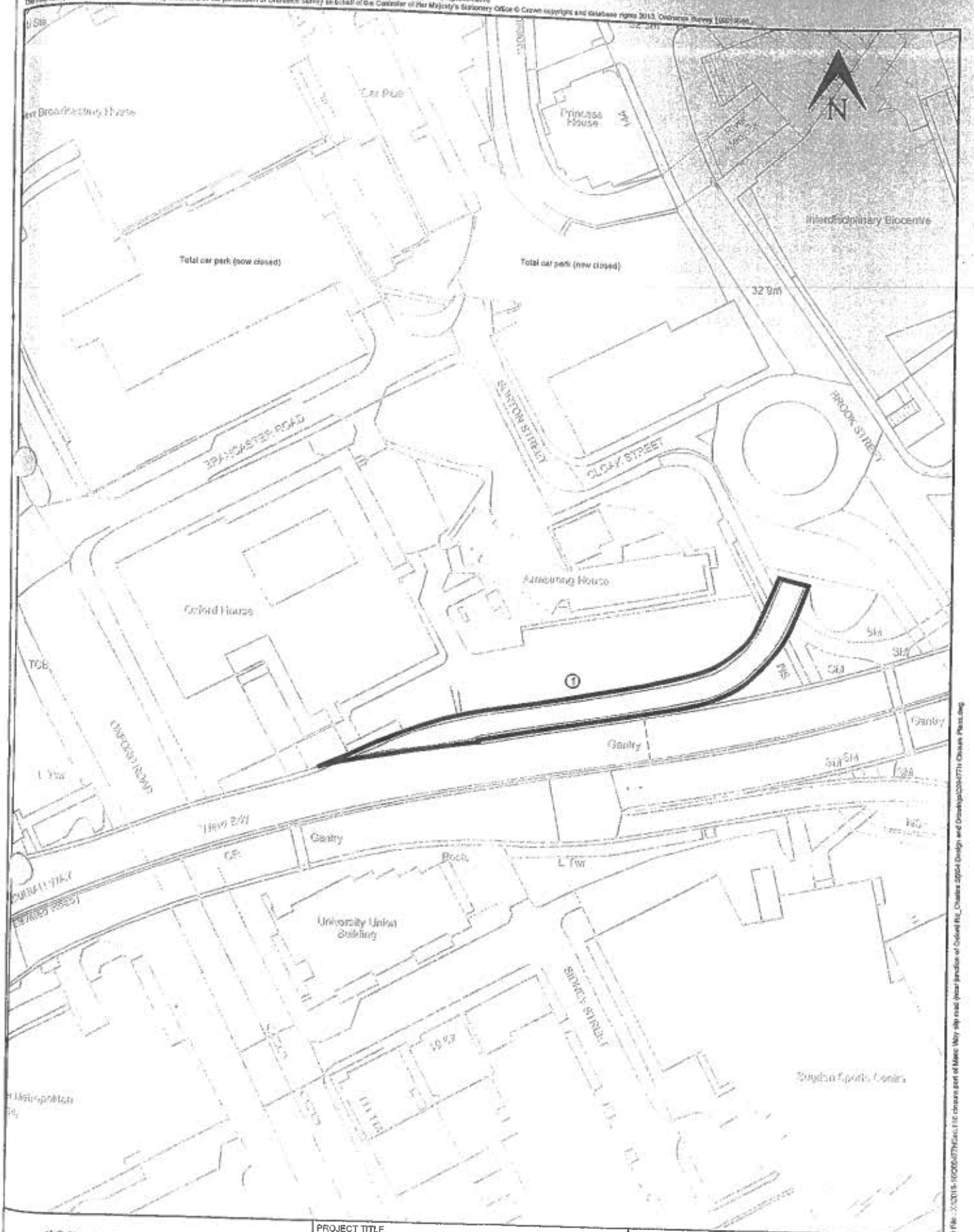


MANCHESTER CITY COUNCIL

Capital Programmes & Property
Growth & Neighbourhoods Directorate
PO Box 532
Town Hall
Manchester M60 2LA

PROJECT TITLE	DRAWING TITLE
Mancunian Way Spur, City Centre Redevelopment of former BBC Headquarters Site, Oxford Road	Proposed Stopping up of Highway under Section 116 of the Highways Act 1980 [signature] JP

SIZE	SCALE	DATE	DRAWN	CHECKED	APPROVED	DRAWING NUMBER	REV
A4	1:1250	24.11.2015	MT	CB	CB	209477H/001	A

0 10 mm

Appendix C – TRICS Outputs

Calculation Reference: AUDIT-148301-160810-0852

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 06 - HOTEL, FOOD & DRINK
Category : A - HOTELS
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
09	NORTH		
	TV	TEES VALLEY	1 days
10	WALES		
	CF	CARDIFF	1 days
	NW	NEWPORT	1 days
11	SCOTLAND		
	HI	HIGHLAND	1 days

Filtering Stage 2 selection:

Parameter:	Number of bedrooms
Actual Range:	55 to 213 (units:)
Range Selected by User:	4 to 380 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 27/09/15

Selected survey days:

Monday	1 days
Tuesday	1 days
Wednesday	1 days
Thursday	2 days
Friday	1 days

Selected survey types:

Manual count	6 days
Directional ATC Count	0 days

Selected Locations:

Town Centre	6

Selected Location Sub Categories:

Commercial Zone	2
Built-Up Zone	2
High Street	2

Filtering Stage 3 selection:

Use Class:

A3	1 days
C1	4 days

Population within 1 mile:

15,001 to 20,000	1 days
25,001 to 50,000	5 days

Filtering Stage 3 selection (Cont.):

Population within 5 miles:

50,001 to 75,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	3 days

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	3 days

Travel Plan:

No	6 days

LIST OF SITES relevant to selection parameters

1 CF-06-A-04 TRAVELODGE CARDIFF
THE FRIARY

CARDIFF
Town Centre
Built-Up Zone
Total Number of bedrooms: 96
Survey date: MONDAY 16/07/12 Survey Type: MANUAL

2 DS-06-A-02 JURY'S INN DERBYSHIRE
KING STREET

DERBY
Town Centre
Commercial Zone
Total Number of bedrooms: 213
Survey date: TUESDAY 19/07/11 Survey Type: MANUAL

3 EX-06-A-01 TRAVELODGE ESSEX
CHICHESTER ROAD

SOUTHEND-ON-SEA
Town Centre
Built-Up Zone
Total Number of bedrooms: 55
Survey date: WEDNESDAY 23/10/13 Survey Type: MANUAL

4 HI-06-A-04 HOTEL HIGHLAND
ACADEMY STREET

INVERNESS
Town Centre
High Street
Total Number of bedrooms: 84
Survey date: FRIDAY 13/05/11 Survey Type: MANUAL

5 NW-06-A-01 TRAVELODGE NEWPORT
BRIDGE STREET

NEWPORT
Town Centre
High Street
Total Number of bedrooms: 62
Survey date: THURSDAY 14/10/10 Survey Type: MANUAL

6 TV-06-A-04 THISTLE TEES VALLEY
FRY STREET

MIDDLESBROUGH
Town Centre
Commercial Zone
Total Number of bedrooms: 132
Survey date: THURSDAY 03/10/13 Survey Type: MANUAL

TRIP RATE for Land Use 06 - HOTEL, FOOD & DRINK/A - HOTELS
VEHICLES
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	6	107	0.067	6	107	0.083	6	107	0.150
08:00 - 09:00	6	107	0.048	6	107	0.109	6	107	0.157
09:00 - 10:00	6	107	0.095	6	107	0.079	6	107	0.174
10:00 - 11:00	6	107	0.062	6	107	0.040	6	107	0.102
11:00 - 12:00	6	107	0.030	6	107	0.056	6	107	0.086
12:00 - 13:00	6	107	0.042	6	107	0.037	6	107	0.079
13:00 - 14:00	6	107	0.061	6	107	0.047	6	107	0.108
14:00 - 15:00	6	107	0.037	6	107	0.055	6	107	0.092
15:00 - 16:00	6	107	0.053	6	107	0.064	6	107	0.117
16:00 - 17:00	6	107	0.070	6	107	0.053	6	107	0.123
17:00 - 18:00	6	107	0.095	6	107	0.059	6	107	0.154
18:00 - 19:00	6	107	0.100	6	107	0.048	6	107	0.148
19:00 - 20:00	6	107	0.065	6	107	0.045	6	107	0.110
20:00 - 21:00	6	107	0.040	6	107	0.037	6	107	0.077
21:00 - 22:00	6	107	0.040	6	107	0.019	6	107	0.059
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.905			0.831			1.736

Parameter summary

Trip rate parameter range selected:	55 - 213 (units:)
Survey date date range:	01/01/08 - 27/09/15
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

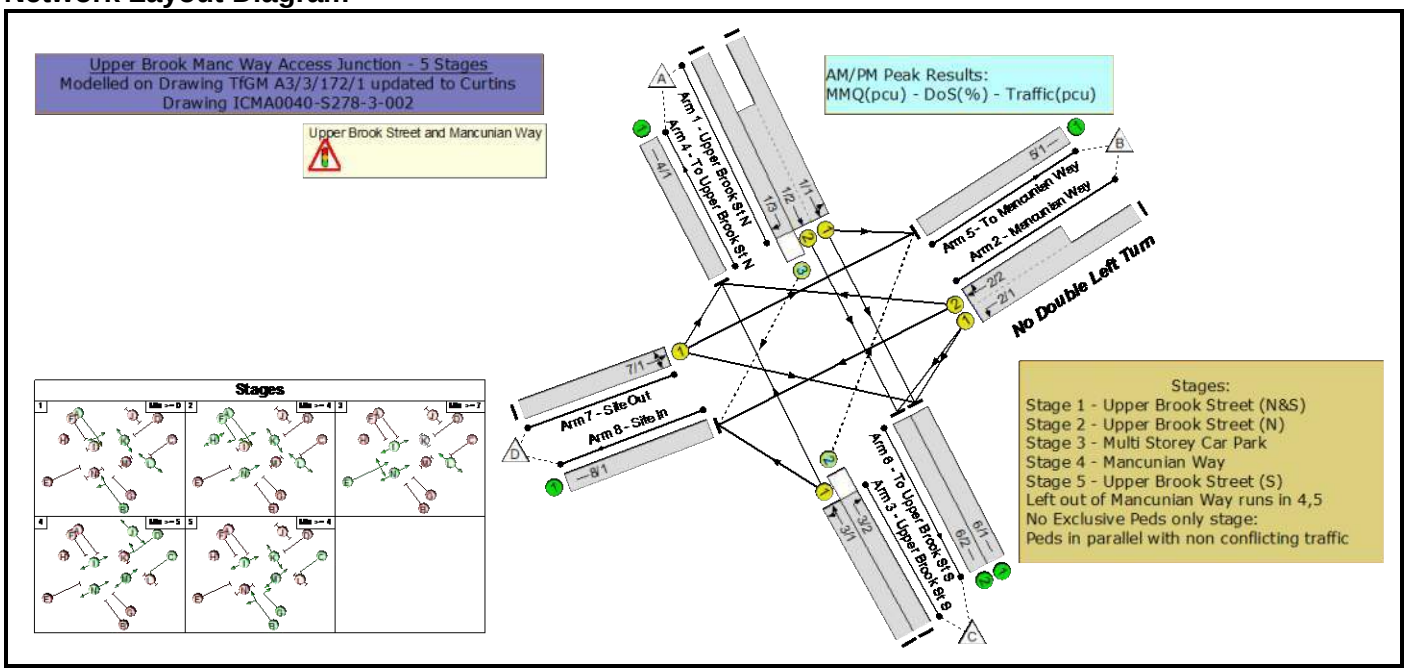
Appendix D – Capacity Assessment Outputs

Full Input Data And Results

User and Project Details

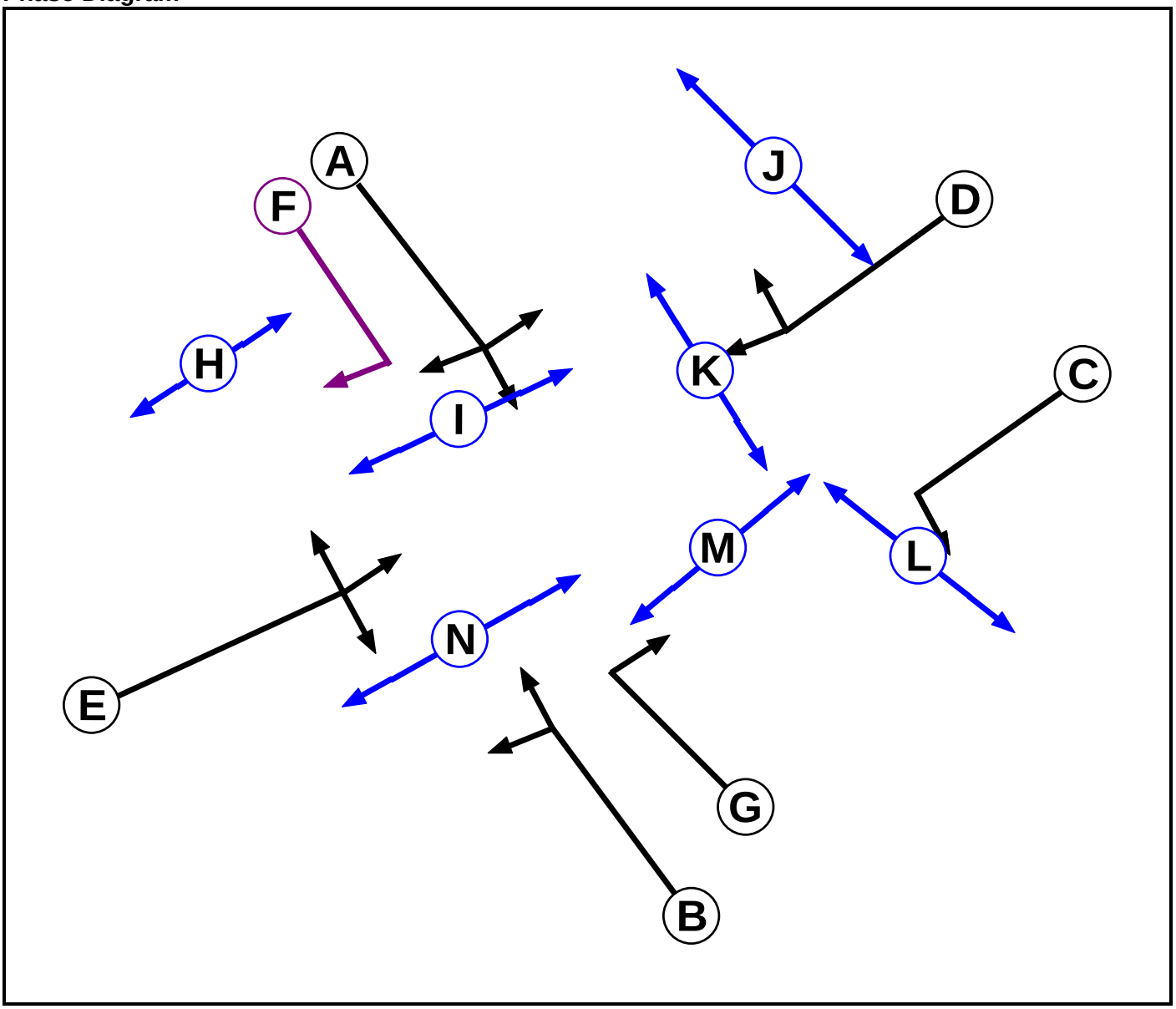
Project:	**TPMA1356 Circle Square**
Title:	**Upper Brook Street at Mancunian Way**
Location:	Circle Square MSCP Access to A34 Brook St, Manchester City Centre M1 7HL
File name:	J3-T2-TfGM-UB-MW-MSCP Brook St together.lsg3x
Author:	GlanvilleJB
Company:	Curtins
Address:	Transport Planning
Notes:	Model updated to include TfGM GMTU survey of 19.05.2016 flows with MSCP flows added and Curtins Drawing ICMA0040-S278-3-002 of 20.05.2016.

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Ind. Arrow	A	4	4
G	Traffic		7	7
H	Pedestrian		5	5
I	Pedestrian		5	5
J	Pedestrian		5	5
K	Pedestrian		5	5
L	Pedestrian		5	5
M	Pedestrian		5	5
N	Pedestrian		5	5

Phase Intergreens Matrix

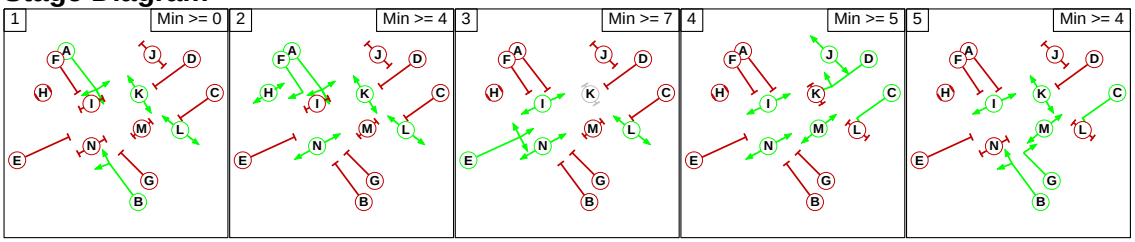
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A		-	7	6	5	-	5	-	5	7	-	-	8	-
B	-		-	5	6	3	-	9	-	-	-	-	-	5
C	5	-		-	5	-	-	-	-	-	-	5	-	-
D	5	5	-		6	6	5	9	-	-	5	-	-	-
E	6	5	7	5		5	6	8	-	9	-	-	8	-
F	-	5	-	5	5		-	-	5	-	-	-	-	-
G	5	-	-	5	5	-		-	-	9	-	-	-	5
H	-	5	-	5	5	-	-		-	-	-	-	-	-
I	10	-	-	-	-	10	-	-		-	-	-	-	-
J	8	-	-	-	8	-	8	-	-		-	-	-	-
K	-	-	-	6	-	-	-	-	-	-		-	-	-
L	-	-	6	-	-	-	-	-	-	-	-		-	-
M	8	-	-	-	8	-	-	-	-	-	-	-		-
N	-	10	-	-	-	-	10	-	-	-	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A B K L
2	A F H K L N
3	E I L N
4	C D I J M N
5	B C G I K M

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
3	4	L	Losing	1	1
4	5	D	Losing	6	6
4	5	J	Losing	2	2
4	5	N	Losing	1	1
5	1	C	Losing	5	5
5	1	G	Losing	5	5
5	1	M	Losing	2	2

Prohibited Stage Change

From Stage	To Stage 1	2	3	4	5
1		9	6	8	8
2	10		5	8	10
3	10	10		9	10
4	10	10	8		11
5	10	10	8	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Upper Brook Street and Mancunian Way											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/3 (Upper Brook St N)	8/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00
3/2 (Upper Brook St S)	5/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
				1/2	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: Upper Brook Street and Mancunian Way

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Upper Brook St N)	U	A	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 5 Left	15.00
											Arm 6 Ahead	Inf
1/2 (Upper Brook St N)	U	A	2	3	4.0	Geom	-	3.20	0.00	N	Arm 6 Ahead	Inf
1/3 (Upper Brook St N)	O	A F	2	3	60.0	Geom	-	2.80	0.00	N	Arm 8 Right	20.00
2/1 (Mancunian Way)	U	C	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Left	20.00
2/2 (Mancunian Way)	U	D	2	3	9.0	Geom	-	4.00	0.00	Y	Arm 4 Right	20.00
											Arm 8 Ahead	Inf
3/1 (Upper Brook St S)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 4 Ahead	Inf
											Arm 8 Left	15.00
3/2 (Upper Brook St S)	O	G	2	3	60.0	Geom	-	3.60	0.00	N	Arm 5 Right	20.00
4/1 (To Upper Brook St N)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (To Mancunian Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (To Upper Brook St S)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (To Upper Brook St S)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Site Out)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Left	12.50
											Arm 5 Ahead	Inf
											Arm 6 Right	18.00
8/1 (Site In)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Junction: Upper Brook Street and Mancunian Way										
Lane	Custom Occupancy per Flow Group (PCU)									
	T2-AM	T2-PM	T3-AM	T3-PM	AV-T2-AM	AV-T2-PM	TfGM-T2-AM	TfGM-T2-PM	Phase C -T2-AM	Phase C -T2-PM
1/2 (Upper Brook St N Lane 2)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'T2-AM'	08:00	09:00	01:00	
2: 'T2-PM'	17:00	18:00	01:00	
3: 'T3-AM'	08:00	09:00	01:00	
4: 'T3-PM'	17:00	18:00	01:00	
5: 'AV-T2-AM'	08:00	09:00	01:00	
6: 'AV-T2-PM'	17:00	18:00	01:00	
7: 'TfGM-T2-AM'	08:00	09:00	01:00	
8: 'TfGM-T2-PM'	17:00	18:00	01:00	
9: 'Phase C -T2-AM'	08:00	09:00	01:00	
10: 'Phase C -T2-PM'	17:00	18:00	01:00	

Scenario 1: 'TfGM-T2-AM' (FG9: 'Phase C -T2-AM', Plan 2: 'Network Control Plan 3')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	8	228	176	412
	B	43	0	384	68	495
	C	302	124	0	122	548
	D	79	2	8	0	89
	Tot.	424	134	620	366	1544

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: TfGM-T2-AM
Junction: Upper Brook Street and Mancunian Way	
1/1 (with short)	236(In) 113(Out)
1/2 (short)	123
1/3	176
2/1 (with short)	495(In) 384(Out)
2/2 (short)	111
3/1	424
3/2	124
4/1	424
5/1	134
6/1	305
6/2	315
7/1	89
8/1	366

Full Input Data And Results

Lane Saturation Flows

Junction: Upper Brook Street and Mancunian Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Upper Brook St N)	3.20	0.00	Y	Arm 5 Left	15.00	7.1 %	1921	1921
				Arm 6 Ahead	Inf	92.9 %		
1/2 (Upper Brook St N)	3.20	0.00	N	Arm 6 Ahead	Inf	100.0 %	2075	2075
1/3 (Upper Brook St N)	2.80	0.00	N	Arm 8 Right	20.00	100.0 %	1893	1893
2/1 (Mancunian Way)	4.00	0.00	Y	Arm 6 Left	20.00	100.0 %	1874	1874
2/2 (Mancunian Way)	4.00	0.00	Y	Arm 4 Right	20.00	38.7 %	1958	1958
				Arm 8 Ahead	Inf	61.3 %		
3/1 (Upper Brook St S)	4.00	0.00	Y	Arm 4 Ahead	Inf	71.2 %	1959	1959
				Arm 8 Left	15.00	28.8 %		
3/2 (Upper Brook St S)	3.60	0.00	N	Arm 5 Right	20.00	100.0 %	1967	1967
4/1 (To Upper Brook St N Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (To Mancunian Way Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (To Upper Brook St S Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (To Upper Brook St S Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Site Out)	3.00	0.00	Y	Arm 4 Left	12.50	88.8 %	1719	1719
				Arm 5 Ahead	Inf	2.2 %		
				Arm 6 Right	18.00	9.0 %		
8/1 (Site In Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'TfGM-T2-PM' (FG10: 'Phase C -T2-PM', Plan 2: 'Network Control Plan 3')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	15	756	15	786
	B	9	0	179	4	192
	C	209	87	0	89	385
	D	185	73	103	0	361
	Tot.	403	175	1038	108	1724

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: TfGM-T2-PM
Junction: Upper Brook Street and Mancunian Way	
1/1 (with short)	771(In) 371(Out)
1/2 (short)	400
1/3	15
2/1 (with short)	192(In) 179(Out)
2/2 (short)	13
3/1	298
3/2	87
4/1	403
5/1	175
6/1	548
6/2	490
7/1	361
8/1	108

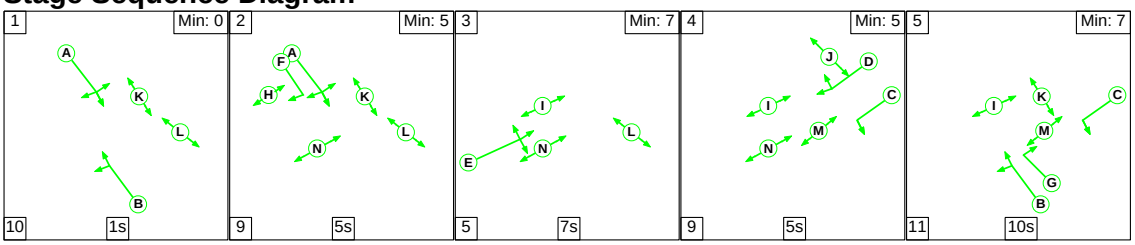
Full Input Data And Results

Lane Saturation Flows

Junction: Upper Brook Street and Mancunian Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Upper Brook St N)	3.20	0.00	Y	Arm 5 Left	15.00	4.0 %	1927	1927
				Arm 6 Ahead	Inf	96.0 %		
1/2 (Upper Brook St N)	3.20	0.00	N	Arm 6 Ahead	Inf	100.0 %	2075	2075
1/3 (Upper Brook St N)	2.80	0.00	N	Arm 8 Right	20.00	100.0 %	1893	1893
2/1 (Mancunian Way)	4.00	0.00	Y	Arm 6 Left	20.00	100.0 %	1874	1874
2/2 (Mancunian Way)	4.00	0.00	Y	Arm 4 Right	20.00	69.2 %	1916	1916
				Arm 8 Ahead	Inf	30.8 %		
3/1 (Upper Brook St S)	4.00	0.00	Y	Arm 4 Ahead	Inf	70.1 %	1957	1957
				Arm 8 Left	15.00	29.9 %		
3/2 (Upper Brook St S)	3.60	0.00	N	Arm 5 Right	20.00	100.0 %	1967	1967
4/1 (To Upper Brook St N Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (To Mancunian Way Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (To Upper Brook St S Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (To Upper Brook St S Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Site Out)	3.00	0.00	Y	Arm 4 Left	12.50	51.2 %	1765	1765
				Arm 5 Ahead	Inf	20.2 %		
				Arm 6 Right	18.00	28.5 %		
8/1 (Site In Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'TfGM-T2-AM' (FG9: 'Phase C -T2-AM', Plan 2: 'Network Control Plan 3')

Stage Sequence Diagram

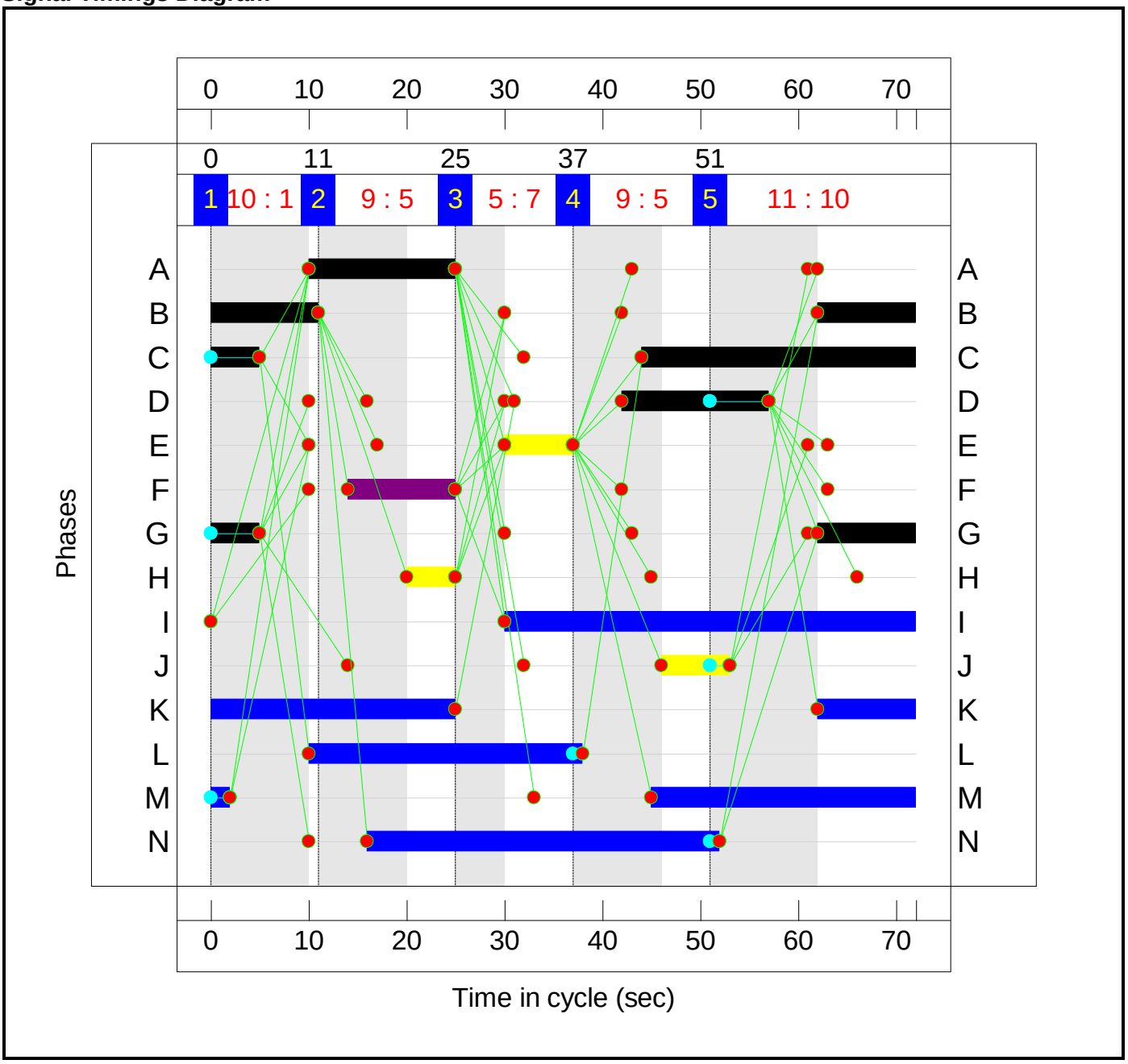


Stage Timings

Stage	1	2	3	4	5
Duration	1	5	7	5	10
Change Point	0	11	25	37	51

Full Input Data And Results

Signal Timings Diagram

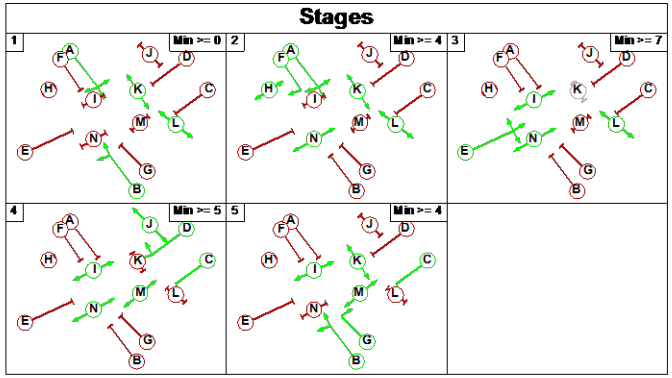


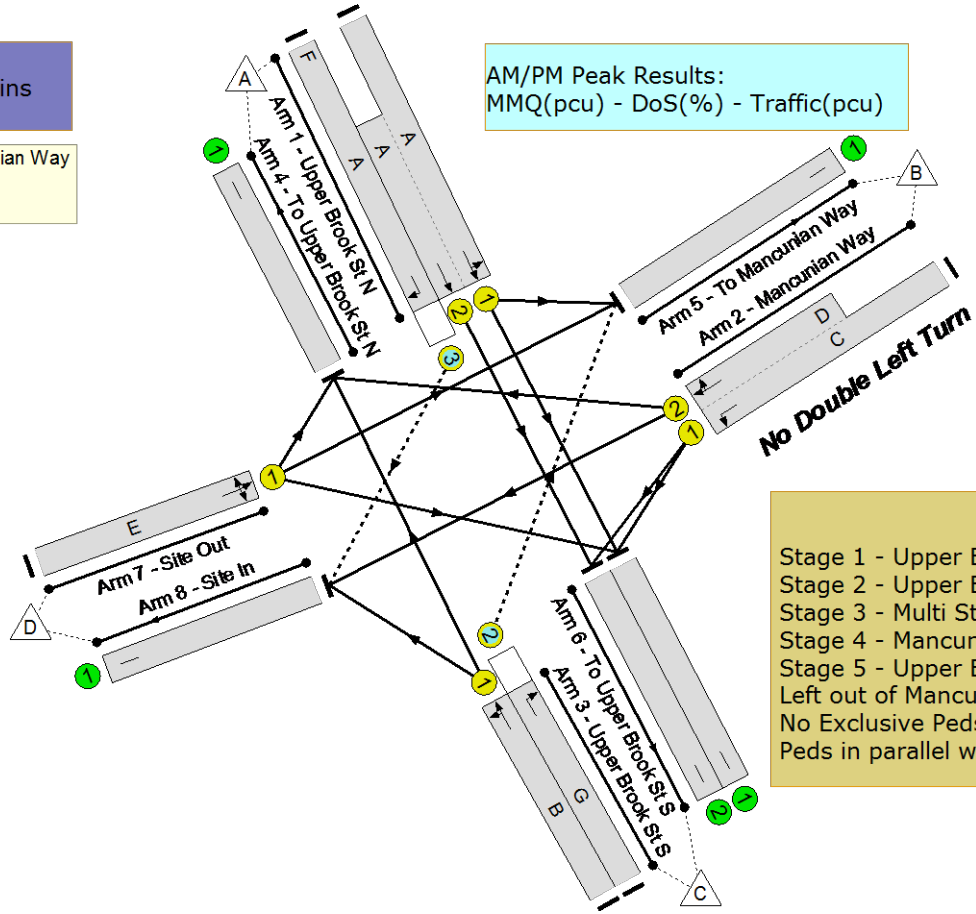
Full Input Data And Results

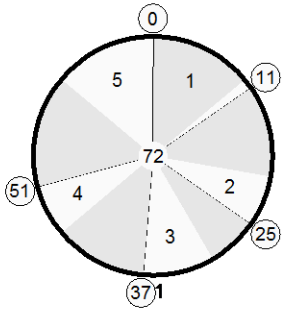
Network Layout Diagram

Upper Brook Manc Way Access Junction - 5 Stages
Modelled on Drawing TfGM A3/3/172/1 updated to Curtins
Drawing ICMA0040-S278-3-002

Upper Brook Street and Mancunian Way
PRC: 27.1 %
Total Traffic Delay: 11.8 pcuHr







Stages:
Stage 1 - Upper Brook Street (N&S)
Stage 2 - Upper Brook Street (N)
Stage 3 - Multi Storey Car Park
Stage 4 - Mancunian Way
Stage 5 - Upper Brook Street (S)
Left out of Mancunian Way runs in 4,5
No Exclusive Peds only stage:
Peds in parallel with non conflicting traffic

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Upper Brook Street at Mancunian Way	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.8%**
Upper Brook Street and Mancunian Way	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.8%**
1/1+1/2	Upper Brook St N Left Ahead	U	N/A	N/A	A		1	15	-	236	1921:2075	427+461	26.5 : 26.7%
1/3	Upper Brook St N Right	O	N/A	N/A	A	F	1	15	11	176	1893	421	41.8%
2/1+2/2	Mancunian Way Right Left Ahead	U	N/A	N/A	C D		1	33:15	-	495	1874:1958	797+230	48.2 : 48.2%
3/1	Upper Brook St S Ahead Left	U	N/A	N/A	B		1	21	-	424	1959	599	70.8%
3/2	Upper Brook St S Right	O	N/A	N/A	G		1	15	-	124	1967	437	28.4%
4/1	To Upper Brook St N	U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
5/1	To Mancunian Way	U	N/A	N/A	-		-	-	-	134	Inf	Inf	0.0%
6/1	To Upper Brook St S	U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
6/2	To Upper Brook St S	U	N/A	N/A	-		-	-	-	315	Inf	Inf	0.0%
7/1	Site Out Left Ahead Right	U	N/A	N/A	E		1	7	-	89	1719	191	46.6%
8/1	Site In	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%

Full Input Data And Results

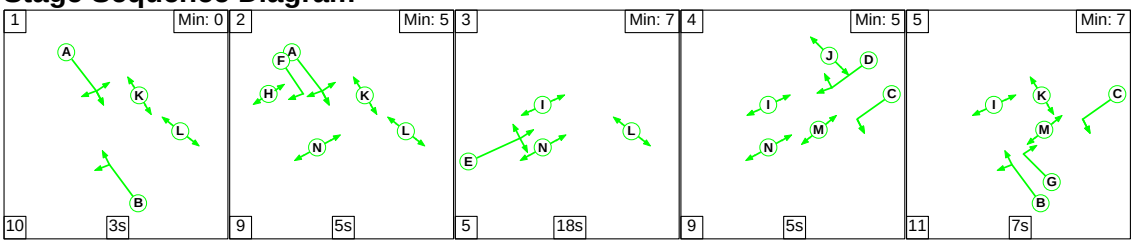
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Upper Brook Street at Mancunian Way	**-**	**-**	**27**	**265**	**8**	**8.9**	**2.8**	**0.0**	**11.8**	**-**	**-**	**-**	**-**
Upper Brook Street and Mancunian Way	**-**	**-**	**27**	**265**	**8**	**8.9**	**2.8**	**0.0**	**11.8**	**-**	**-**	**-**	**-**
1/1+1/2	236	236	-	-	-	1.5	0.2	-	1.7	25.9	2.0	0.2	2.2
1/3	176	176	27	144	5	1.2	0.4	0.0	1.6	32.1	3.0	0.4	3.3
2/1+2/2	495	495	-	-	-	2.1	0.5	-	2.5	18.3	5.0	0.5	5.5
3/1	424	424	-	-	-	2.6	1.2	-	3.8	32.3	7.4	1.2	8.6
3/2	124	124	0	121	3	0.8	0.2	0.0	1.0	29.0	2.0	0.2	2.2
4/1	424	424	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	134	134	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	315	315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	89	89	-	-	-	0.7	0.4	-	1.2	47.5	1.7	0.4	2.1
8/1	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 27.1 Total Delay for Signalled Lanes (pcuHr): 11.78 Cycle Time (s): 72
PRC Over All Lanes (%): 27.1 Total Delay Over All Lanes(pcuHr): 11.78

Full Input Data And Results

Scenario 2: 'TfGM-T2-PM' (FG10: 'Phase C -T2-PM', Plan 2: 'Network Control Plan 3')

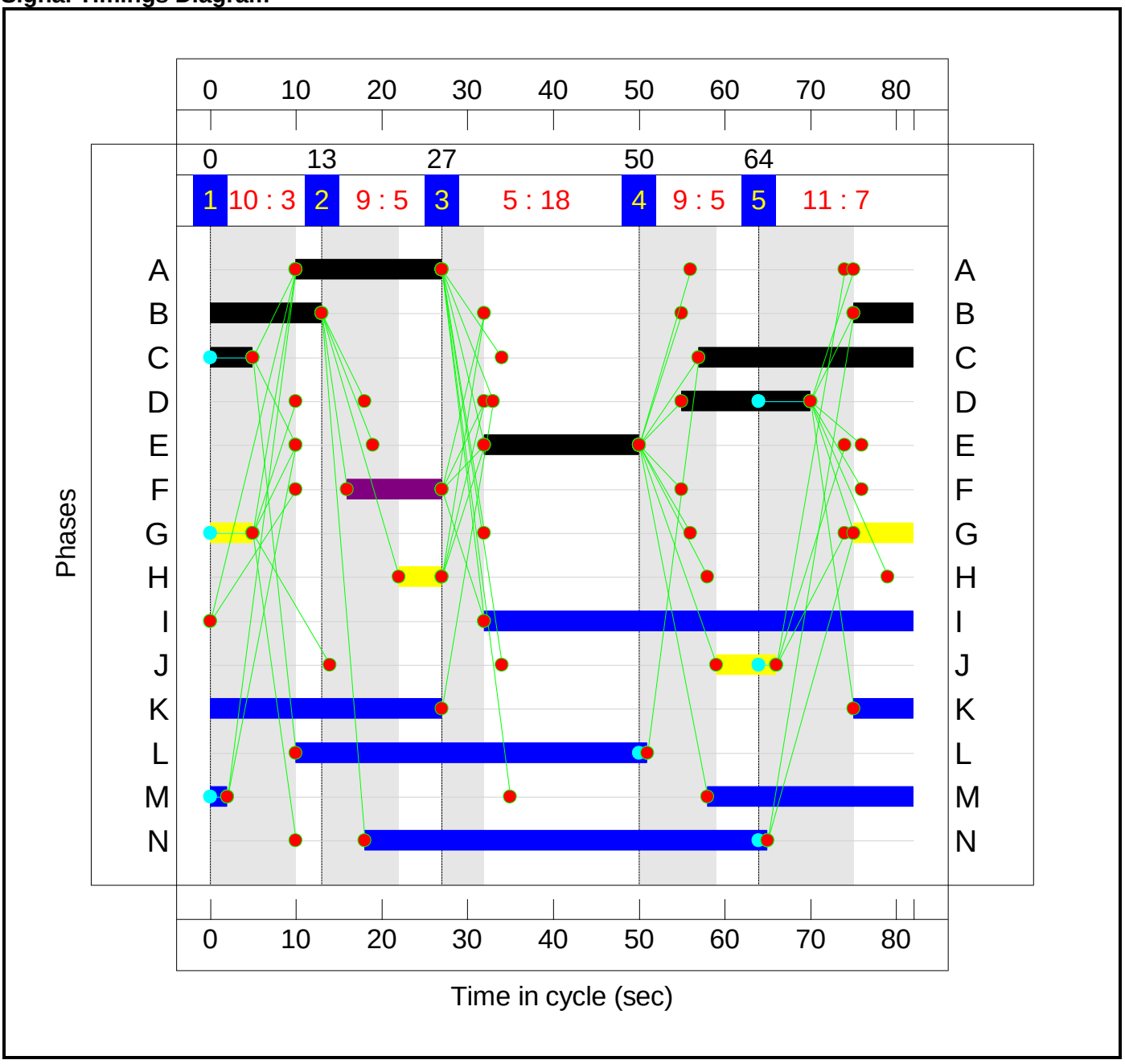
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	3	5	18	5	7
Change Point	0	13	27	50	64

Signal Timings Diagram

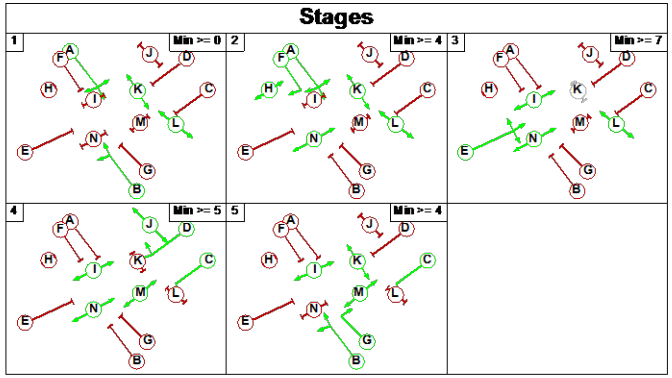


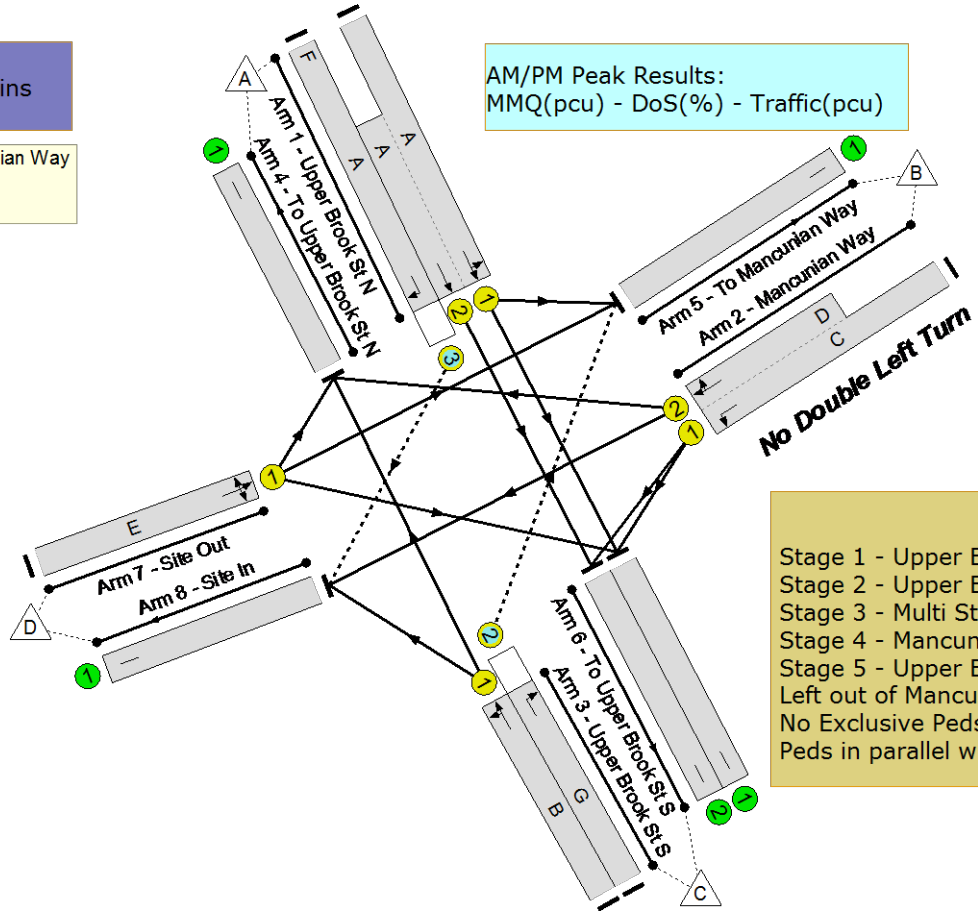
Full Input Data And Results

Network Layout Diagram

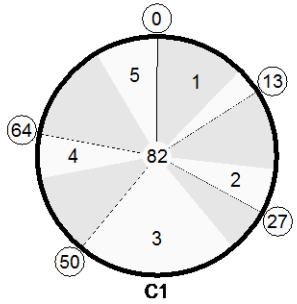
Upper Brook Manc Way Access Junction - 5 Stages
Modelled on Drawing TfGM A3/3/172/1 updated to Curtins
Drawing ICMA0040-S278-3-002

Upper Brook Street and Mancunian Way
PRC: 1.6 %
Total Traffic Delay: 21.6 pcuHr





AM/PM Peak Results:
MMQ(pcu) - DoS(%) - Traffic(pcu)



Stages:
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Stage 2 - Upper Brook Street (N)
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Stage 4 - Mancunian Way
Stage 5 - Upper Brook Street (S)
Left out of Mancunian Way runs in 4,5
No Exclusive Peds only stage:
Peds in parallel with non conflicting traffic

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Upper Brook Street at Mancunian Way	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.6%**
Upper Brook Street and Mancunian Way	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.6%**
1/1+1/2	Upper Brook St N Left Ahead	U	N/A	N/A	A		1	17	-	771	1927:2075	423+452	87.7 : 88.6%
1/3	Upper Brook St N Right	O	N/A	N/A	A	F	1	17	11	15	1893	416	3.6%
2/1+2/2	Mancunian Way Right Left Ahead	U	N/A	N/A	C D		1	30:15	-	192	1874:1916	694+50	25.8 : 25.8%
3/1	Upper Brook St S Ahead Left	U	N/A	N/A	B		1	20	-	298	1957	501	59.5%
3/2	Upper Brook St S Right	O	N/A	N/A	G		1	12	-	87	1967	312	27.9%
4/1	To Upper Brook St N	U	N/A	N/A	-		-	-	-	403	Inf	Inf	0.0%
5/1	To Mancunian Way	U	N/A	N/A	-		-	-	-	175	Inf	Inf	0.0%
6/1	To Upper Brook St S	U	N/A	N/A	-		-	-	-	548	Inf	Inf	0.0%
6/2	To Upper Brook St S	U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
7/1	Site Out Left Ahead Right	U	N/A	N/A	E		1	18	-	361	1765	409	88.3%
8/1	Site In	U	N/A	N/A	-		-	-	-	108	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Upper Brook Street at Mancunian Way	**-**	**-**	**12**	**87**	**2**	**13.7**	**7.9**	**0.0**	**21.6**	**-**	**-**	**-**	**-**
Upper Brook Street and Mancunian Way	**-**	**-**	**12**	**87**	**2**	**13.7**	**7.9**	**0.0**	**21.6**	**-**	**-**	**-**	**-**
1/1+1/2	771	771	-	-	-	6.6	3.5	-	10.1	47.2	8.8	3.5	12.3
1/3	15	15	12	2	0	0.1	0.0	0.0	0.1	29.9	0.3	0.0	0.3
2/1+2/2	192	192	-	-	-	1.0	0.2	-	1.1	21.4	2.8	0.2	3.0
3/1	298	298	-	-	-	2.2	0.7	-	2.9	35.6	5.9	0.7	6.6
3/2	87	87	0	85	2	0.7	0.2	0.0	0.9	38.4	1.7	0.2	1.9
4/1	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	175	175	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	548	548	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	361	361	-	-	-	3.1	3.3	-	6.4	63.4	7.9	3.3	11.2
8/1	108	108	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 1.6 Total Delay for Signalled Lanes (pcuHr): 21.61 Cycle Time (s): 82
PRC Over All Lanes (%): 1.6 Total Delay Over All Lanes(pcuHr): 21.61

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