

Appendix 1

Introduction

A1

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC

APPENDIX 1 INTRODUCTION

TII
Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Ms. Mairi Henderson
McCutcheon Halley
6 Joyce House
Barrack Square
Ballincollig
Co. Cork

**McCutcheon Halley
Received**
Date: 11 JUN 2018
Project: 3650
Action: Client Drive

Dáta | Date: 07 June 2018 Ár dTag | Our Ref.: TII18-101855

RE: **EIAR Scoping Request for Castletreasure Residential Development**

Project Description: Intended Strategic Housing Development application for 435 dwelling units and crèche at Carr's Hill, Douglas in the townland of Castletreasure about 1km south of Douglas village, Cork.

Dear Ms. Henderson,

Transport Infrastructure Ireland (TII) acknowledges receipt of your EIAR Scoping request in respect of the above proposed project.

National Strategic Outcome 2 of the National Planning Framework includes the objective to maintain the strategic capacity and safety of the national roads network. It is also an investment priority of the National Development Plan, 2018 – 2027, to ensure that the extensive transport networks which have been greatly enhanced over the last two decades, are maintained to a high level to ensure quality levels of service, accessibility and connectivity to transport users.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice TII's statutory right to make any observations, requests for further information, objections or appeals following the examination of any valid application referred.

The approach to be adopted by TII in making such submissions or comments will seek to uphold official policy and guidance as outlined in the DHPLG Spatial Planning and National Roads Guidelines for Planning Authorities (2012). Regard should also be had to other relevant guidance and circulars available at www.tii.ie.

In this instance, the proposed development is a residential housing scheme and crèche. The easternmost access of the proposed development is directly onto this road approximately 0.5km from the Carrigaline Road (R609) junction with the N28. With respect to EIAR Scoping issues, the recommendations indicated below provide only general guidance for the preparation of EIAR, which may affect the National Roads Network. The developer should have regard, *inter alia*, to the following;

1. Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes.

The site the subject of the EIAR is located contiguous with lands the subject of the M28 Cork to Ringaskiddy Project Motorway Scheme lodged by Cork County Council under An Bord Pleanála ref. PL04.MA0014 and due for decision 6th July 2018. The proposal shall be designed so as not to prejudice this scheme.

The Environmental Assessment should therefore have regard to Environmental Assessment Statements/Reports and conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area.

Próiseidiam Bliú sonraí pearsanta a sholáthraítear dó i gcomhréir lena Fhógra ar Chosaint Sonraí atá ar fáil ag www.tii.ie.
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Bonneagar Iompair Éireann
Ionad Gnó Chearta na Páirce
Sáile Átha Cliath 8 Transport Infrastructure Ireland
Parkgate Business Centre
Parkgate Street
Dublin 8 info@tii.ie www.tii.ie +353 (0)1 646 3600 +353 (0)1 646 3601

2. As established in the Spatial Planning and National Roads Guidelines, it is in the public interest that the national road network continues to serve its intended strategic purpose. The developer should ensure regard to TII Traffic and Transport Assessment Guidelines (2014) and take account of the following:
 - a) The EIAR should demonstrate that the development can proceed complementary to safeguarding the capacity, safety and operational efficiency of the N28 and potential future motorway scheme, including at the R609 interchange junction.

In this regard the traffic and transportation analysis must include capacity analysis of the cumulative impact of the roads scheme at both construction and operation phases on the N28 mainline and its interchange with permitted and planned development.

 - b) The EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network in order to demonstrate that the development can proceed complementary to safeguarding the capacity, safety and operational efficiency of that network.
3. Environmental Impact Assessment shall include provision for travel planning / mobility management planning in the interests of protecting national roads capacity in the interests of sustainable travel policy.
4. Assessments, design and construction and maintenance standards and guidance are available at [TII Publications](#). In particular, the developer is advised to address the requirements for Road Safety Audit (RSA) and Road Safety Impact Assessment (RSIA).
[TII Publications](#) has replaced the NRA Design Manual for Roads and Bridges (DMRB) and the NRA Manual of Contract Documents for Road Works (MCDRW).
5. The developer should assess visual impacts from existing national roads and future roads schemes.
6. The developer, in conducting Environmental Impact Assessment, should have regard to TII Environment Guidelines that deal with assessment and mitigation measures for varied environmental factors and occurrences. In particular;
 - a) TII's Environmental Assessment and Construction Guidelines, including the *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (National Roads Authority, 2006),
 - b) The EIAR should consider the Environmental Noise Regulations 2006 (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority as well as the *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (1st Rev., National Roads Authority, 2004)).

The developer is advised that any additional works/structures required as a result of the Assessment should be funded by the developer. TII will entertain no future claims in respect of impacts (e.g. noise visual and air), due to the presence of the existing road or any new road scheme.

Having regard to the foregoing, should you require clarification of any elements of the foregoing, contact should be made to TII, Land Use Planning Unit.

Yours sincerely,


Tara Spáin
Head of Land Use Planning

TII
Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Ms. Mairi Henderson
McCutcheon Halley
6 Joyce House
Barrack Square
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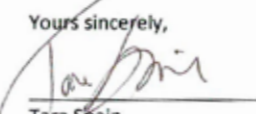
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Having regard to the foregoing, should you require clarification of any elements of the foregoing, contact should be made to TII, Land Use Planning Unit.

Yours sincerely,

Tara Spáin
Head of Land Use Planning



Health Service Executive (HSE) - South
South Lee Environmental Health Department
Fr. Matthew Quay
Cork

Ms. Mari Henderson
McCutcheon Halley
6 Joyce House
Ballincollig
Co. Cork
P31 YX97

13th June 2018

Re: Castletreasure Residential Development - Scoping.

Dear Madam,

I refer to the Environmental Impact Report for the proposed residential development of 435 units at Castletreasure, Carr's Hill, Co. Cork.

The HSE has no comments regarding the scoping report. We look forward to receiving and assessing the Environmental Impact Statement in due course.

The Environmental Health Department of the HSE South will comment on the following areas:

Public Consultation, Human Beings, Traffic, Noise and Vibration, Water Quality, Dust, Waste Management and Pest Control

If you have any further queries in relation to any aspect of this report please contact Declan Hamilton, Principal Environmental Health Officer, HSE South, Floor 3, Impact Building, Fr. Matthew Quay, Cork.

Yours Sincerely,

Declan Hamilton
Principal Environmental Health Officer

To: Mairi Henderson <MHenderson@mhplanning.ie>
Subject: Proposed Castletreasure Residential Development

Mairi

I refer to your letter dated 18th May 2018

IFI would ask that the proposed development is designed and constructed in a manner that ensures there be no interference with, draining, or culverting of the onsite stream or watercourse, its banks or bankside vegetation to facilitate this development without the prior approval of IFI. The proposed bridge crossing should be of span design with no instream works. All site runoff must control so as not to enter waters. Prior to any site works a fenced (with silt fencing) off buffer zone of 10m minimum from all watercourses should be established inside of which no construction activity or storage of any soils or other construction materials can occur.

Michael Mc Partland
Senior Fisheries Environmental Officer.

Iascach Intíre Éireann
Inland Fisheries Ireland

Tel + 353 (0)26 412 21/2
Fax + 353 (0)26 412 23
Email michael.mcpartland@fisheriesireland.ie
Web www.fisheriesireland.ie

Sunnyside House, Macroom, Co. Cork, Ireland. P12 X602

Help Protect Ireland's Inland Fisheries

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D'fhéadfaí go bhfuil an ríomhphost seo agus ceangaltáin ar bith atá in éineacht leis faoi rún agus iad beartaithe d'úsáid an duine a bhfuil a s(h)eoladh air amháin. Dearcthaí nó tuairimí ar bith atá curtha in iúl ann, baineann siad leis an údar amháin, agus ní chaithfidh go n-aontaíonn Iascaigh Intíre Éireann leo. Mura tusa faighteoir beartaithe an ríomhphoist seo, ná déan rud ar bith mar gheall ar an méid atá ann, ná é a chóipeáil ná é a thaispeáint do dhuine ar bith eile. Déan teagmháil leis an seoltóir, le do thoil, má chreideann tú go bhfuair tú an ríomhphost seo trí earráid.

From: Michael McPartland <Michael.McPartland@fisheriesireland.ie>
Sent: Thursday 5 July 2018 15:43
To: Mairi Henderson
Subject: RE: Proposed Castletreasure Residential Development

Mairi

Thanks.

To clarify site runoff contaminated with solids or other contaminants should not be allowed to discharge to the adjacent stream during the construction phase.

Michael Mc Partland
 Senior Fisheries Environmental Officer.

 Iascach Iníre Éireann
 Inland Fisheries Ireland

Tel + 353 (0)26 412 21/2
 Fax + 353 (0)26 412 23
 Email michael.mcpartland@fisheriesireland.ie
 Web www.fisheriesireland.ie

Sunnyside House, Macroom, Co. Cork, Ireland. P12 X602

 Help Protect Ireland's Inland Fisheries

From: Mairi Henderson [mailto:MHenderson@mhplanning.ie]
Sent: 18 June 2018 15:52
To: Michael McPartland
Cc: Pdraig McElwain; John Fallon; Tim Finn; Tom Halley; Orla O'Sullivan; Katherine Kelleher; Aidan McLernon
Subject: RE: Proposed Castletreasure Residential Development

Michael

Thanks again for your comments regarding the proposed residential development at Castletreasure, which will be incorporated into the planning of the proposed development. Following discussion with the design team, I would be grateful if you could clarify your comment that 'All site runoff must control so as not to enter waters'.

As part of the Development, it is intended to install surface water management systems specific to both the construction and post-construction phases. With respect to the latter, and depending on topography, it is intended that surface water from sub-catchments within the Development will discharge via single outfall points on either the Moneygurney Stream, or the Douglas Stream. It is intended that the surface water management plan will comprise the following:

- 1) source control measures in accordance with SUDS where possible.

- 2) piped surface water conveyance to an attenuation facility which is designed to limit the rate of discharge to that of the pre-development greenfield rate. The attenuation facility will include an isolator row to facilitate sediment removal and to promote infiltration and groundwater recharge.
- 3) attenuated surface water to pass through a hydrocarbon interceptor incorporating a further silt trap.
- 4) piped conveyance from the interceptor to the outfall structure.
- 5) outfall structures to be set-back from the existing stream banks and constructed to prevent scouring and erosion.

With respect to the construction phase, run-off from working areas will be intercepted, with in-line or end-of-line filtering measures installed to provide treatment prior to discharge. To facilitate control, it is intended to discharge run-off at single outfall points on the Moneygurney Stream or the Douglas Stream. These outfall points may be those constructed for the post-construction phase.

I would be grateful if you would provide clarification on the above by return.

With respect your other comments:

- There will be no interference with, draining, or culverting of onsite stream or watercourses. Works to banks or bankside vegetation will be agreed with IFI in advance, it is proposed that interference with banks or bankside vegetation will be kept to the absolute minimum necessary to facilitate installation of footbridges and outfalls.
- The vehicular access bridge will span over the Moneygurney Stream and will not entail instream works.
- Fenced-off buffer zones along watercourses will be maintained during the construction phase.

If you wish to discuss any of the above issues, I can request either Pdraig McElwain or John Fallon of JB Barry & Partners to contact you directly.

Regards,

Màiri

 Mairi Henderson
 Senior Planning & Housing
 Consultant [McCutcheon Halley](#)
 Mob. +353 (0)87 228 8397

From: Michael McPartland [mailto:Michael.McPartland@fisheriesireland.ie]
Sent: Friday 15 June 2018 17:21



Appendix 2

Project Description

A2

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC

APPENDIX 2.1 SCHEDULE OF FLOOR AREAS

Residential Uses - Houses

House Type	Storeys	Bed	Area m ²	No. of Units				Units	Cumulative Area m ²
				Terraced	End-Terrace	Semi-Det	Detached		
A1	2	4	135.15			10		10	1351.5
A2	2	4	135.15			10		10	1351.5
A3	2	4	124.48			4		4	497.92
B1	2	3	114.85		11	101		112	12863.2
B2	2	3	114.85	36				36	4134.6
B3	2	3	116		8	3		11	1276
B4	2	3	104.16			8		8	833.28
C1	3	4	151.6		11	2		13	1970.8
D1	3	4	142.3		12			12	1707.6
D2	3	4	142.3	18				18	2561.4
Total No. Houses				54	42	138	0	234	28,547.80
Percentage Mix				23.08%	17.95%	58.97%	0.00%	100.00%	

Residential Uses - Corner Apartments

House Type	Storeys	Bed	Area m ²	Total No. Units	Cumulative Area m ²
Apt E1	1	2	85.20	1	85.2
Apt E2	1	2	75.70	1	75.7
Apt E3	1	2	85.20	1	85.2
Apt E4	1	2	75.70	1	75.7
Apt E5	1	2	85.20	1	85.2
Apt E6	1	2	75.70	1	85.2
Apt E7	1	2	76.30	1	76.3
Apt E8	1	1	46.70	1	46.7
Apt E9	1	2	87.40	1	87.4
Apt E10	1	2	76.30	1	76.3
Apt E11	1	1	46.70	1	46.7
Apt E12	1	2	79.70	1	79.7
Apt E13	1	2	75.00	1	75.0
Apt E14	1	1	46.70	1	46.7
Apt E15	1	1	46.50	1	46.5
Total No. Apartments				15	1,073.5

Residential Uses - Duplex Apartments

House Type	Storeys	Bed	Area m ²	Total No. Units	Cumulative Area m ²
Apt F1	2	3	111.15	35	3,890.3
Apt F2	1	2	85.00	35	2,975.0
Apt F3	2	3	111.55	4	446.2
Apt F4	1	2	89.30	4	357.2
Total No. Apartments				78	7,668.7

Residential Uses - Apartment Blocks A

House Type	Storeys	Bed	Area m ²	Total No. Units	Cumulative Area m ²
Apt - G1	1	1	59.00	1	59.0
Apt - G2	1	2	74.00	1	74.0
Apt - G3	1	1	50.80	1	50.8
Apt - G4	1	1	48.20	1	48.2
Apt - G5	1	1	48.00	1	48.0
Apt - G6	1	1	48.00	1	48.0
Apt - G7	1	1	48.10	1	48.1
Apt - G8	1	1	52.70	1	52.7
Apt - G9	1	2	74.60	1	74.6
Apt - G10	1	2	73.60	1	73.6
Apt - G11	1	2	74.00	1	74.0
Apt - G12	1	2	79.20	1	79.2
Apt - G13	1	1	48.40	1	48.4
Apt - G14	1	1	48.40	1	48.4
Apt - G15	1	1	48.40	1	48.4
Apt - G16	1	2	74.60	1	74.6
Apt - G17	1	2	74.60	1	74.6
Apt - G18	1	1	48.40	1	48.4
Apt - G19	1	2	73.60	1	73.6
Apt - G20	1	2	74.00	1	74.0
Apt - G21	1	2	79.20	1	79.2
Apt - G22	1	1	48.40	1	48.4
Apt - G23	1	1	48.40	1	48.4
Apt - G24	1	1	48.40	1	48.4

Apt - G25	1	2	74.60	1	74.6
Apt - G26	1	2	74.50	1	74.5
Apt - G27	1	1	48.40	1	48.4
Apt - G28	1	2	73.60	1	73.6
Apt - G29	1	2	74.00	1	74.0
Apt - G30	1	1	50.80	1	50.8
Apt - G31	1	1	48.20	1	48.2
Apt - G32	1	1	48.00	1	48.0
Apt - G33	1	1	48.00	1	48.0
Apt - G34	1	1	48.20	1	48.1
Apt - G35	1	1	52.70	1	52.7
Apt - G36	1	2	74.60	1	74.6
Apt - G37	1	1	48.40	1	48.4
Apt - G38	1	2	73.60	1	73.6
Apt - G39	1	2	74.00	1	74.0
Apt - G40	1	1	50.80	1	50.8
Apt - G41	1	1	48.20	1	48.2
Apt - G42	1	1	48.00	1	48.0
Apt - G43	1	1	48.00	1	48.0
Apt - G44	1	1	48.10	1	48.1
Apt - G45	1	1	52.70	1	52.7
Apt - G46	1	2	74.60	1	74.6
Apt - G47	1	1	48.40	1	48.4
Total No. Apartments - Block A				47	2,775.3

Residential Uses - Apartment Blocks B

House Type	Storeys	Bed	Area m ^w	Total No. Units	Cumulative Area m ²
Apt - G48	1	2	78.10	1	78.1
Apt - G49	1	2	75.00	1	75.0
Apt - G50	1	1	48.40	1	48.4
Apt - G51	1	1	48.40	1	48.4
Apt - G52	1	2	78.70	1	78.7
Apt - G53	1	1	59.30	1	59.3
Apt - G54	1	1	61.20	1	61.2
Apt - G55	1	2	75.00	1	75.0
Apt - G56	1	1	48.40	1	48.4
Apt - G57	1	1	48.40	1	48.4
Apt - G58	1	2	78.70	1	78.7
Apt - G59	1	2	85.50	1	85.5
Apt - G60	1	2	78.10	1	78.1
Apt - G61	1	2	75.00	1	75.0
Apt - G62	1	1	48.40	1	48.4
Apt - G63	1	1	48.40	1	48.4
Apt - G64	1	2	78.70	1	78.7
Apt - G65	1	2	85.50	1	85.5
Apt - G66	1	2	78.10	1	78.1
Apt - G67	1	2	75.00	1	75.0
Apt - G68	1	1	48.40	1	48.4

Apt - G69	1	1	48.40	1	48.4
Apt - G70	1	2	78.70	1	78.7
Apt - G71	1	2	85.50	1	85.5
Apt - G72	1	2	78.10	1	78.1
Apt - G73	1	2	75.00	1	75.0
Apt - G74	1	1	48.40	1	48.4
Apt - G75	1	1	48.40	1	48.4
Apt - G76	1	2	78.70	1	78.7
Apt - G77	1	2	85.50	1	85.5
Total No. Apartments - Block B				30	-

Residential Uses - Apartment Blocks C

House Type	Storeys	Bed	Area m ²	Total No. Units	Cumulative Area m ²
Apt - G78	1	2	80.30	1	80.3
Apt - G79	1	2	78.70	1	78.7
Apt - G80	1	1	48.40	1	48.4
Apt - G81	1	1	48.40	1	48.4
Apt - G82	1	2	75.00	1	75.0
Apt - G83	1	1	59.90	1	59.9
Apt - G84	1	2	80.30	1	80.3
Apt - G85	1	2	78.70	1	78.7
Apt - G86	1	1	48.40	1	48.4
Apt - G87	1	1	48.40	1	48.4
Apt - G88	1	2	75.00	1	75.0
Apt - G89	1	1	59.90	1	59.9
Apt - G90	1	2	85.50	1	85.5
Apt - G91	1	2	78.70	1	78.7
Apt - G92	1	1	48.40	1	48.4
Apt - G93	1	1	48.40	1	48.4
Apt - G94	1	2	75.00	1	75.0
Apt - G95	1	2	78.10	1	78.1
Apt - G96	1	2	85.50	1	85.5
Apt - G97	1	2	78.70	1	78.7
Apt - G98	1	1	48.40	1	48.4
Apt - G99	1	1	48.40	1	48.4
Apt - G100	1	2	75.00	1	75.0
Apt - G101	1	2	78.10	1	78.1
Total No. Apartments - Block C				24	-

Residential Uses - Apartment Blocks D

House Type	Storeys	Bed	Area m ²	Total No. Units	Cumulative Area m ²
Apt - G102	1	2	84.30	1	84.3
Apt - G103	1	2	82.70	1	82.7
Apt - G104	1	1	48.40	1	48.4
Apt - G105	1	1	48.40	1	48.4
Apt - G106	1	1	48.40	1	48.4
Apt - G107	1	2	76.90	1	76.9
Apt - G108	1	2	77.90	1	77.9
Apt - G109	1	1	49.90	1	49.9
Apt - G110	1	1	49.90	1	49.9
Apt - G111	1	2	84.30	1	84.3
Apt - G112	1	2	82.70	1	82.7
Apt - G113	1	1	48.40	1	48.4
Apt - G114	1	1	48.40	1	48.4
Apt - G115	1	1	48.40	1	48.4
Apt - G116	1	2	76.90	1	76.9
Apt - G117	1	2	77.90	1	77.9
Apt - G118	1	1	49.90	1	49.9
Apt - G119	1	1	49.90	1	49.9
Apt - G120	1	2	84.30	1	84.3
Apt - G121	1	2	82.70	1	82.7
Apt - G122	1	1	48.40	1	48.4
Apt - G123	1	1	48.40	1	48.4
Apt - G124	1	1	48.40	1	48.4

Apt - G125	1	2	76.90	1	76.9
Apt - G126	1	2	77.60	1	77.6
Apt - G127	1	2	68.70	1	68.7
Apt - G128	1	1	49.90	1	49.9
Apt - G129	1	2	84.30	1	84.3
Apt - G130	1	2	82.70	1	82.7
Apt - G131	1	1	48.40	1	48.4
Apt - G132	1	1	48.40	1	48.4
Apt - G133	1	1	48.40	1	48.4
Apt - G134	1	2	76.90	1	76.9
Apt - G135	1	2	77.90	1	77.9
Apt - G136	1	2	68.70	1	68.7
Apt - G137	1	1	49.90	1	49.9
Apt - G138	1	2	84.30	1	84.3
Apt - G139	1	2	82.70	1	82.7
Apt - G140	1	1	48.40	1	48.4
Apt - G141	1	1	48.40	1	48.4
Apt - G142	1	1	48.40	1	48.4
Apt - G143	1	2	76.90	1	76.9
Apt - G144	1	2	77.90	1	77.9
Apt - G145	1	2	68.70	1	68.7
Total No. Apartments - Block D				44	-
Total No. Apartments Block A, B, C, D				145	2,775.3

Residential Uses - Apartment

House Type	Storeys	Bed	Area m ²	Total No. Units	Nett Area m ²
Apartments	-		-	238	11,517.5
Total No. Apartments				238	11,517.5

Residential Uses - Apartment

House Type	Storeys	Area m2 (floor plate, gross)	Units	Gross Bldgs Area m2
Apt E	3	-	15	1,258.0
Apt F	3	-	78	7,668.7
Block A	5	673	47	3,367.0
Block B	4	492	30	1,967.2
Block C	5	492	24	2,459.0
Block D	5	696	44	3,479.5
Basement	1	920.8	-	920.8
Total Apartment Buildings				21,120.2

Non Residential Uses - Crèche

Non-Residential Uses	Area (sq.m)
Creche Building	642.0
Total	642

Total Residential & Non Residential Use Development Areas

Total Development Area	Area (sq.m)
Total Housing Development	28,547.80
Total Apartment Development	21,120.15
Total Non-Commercial Development	642.00
Total	50,309.95

Residential Housing Mix

Housing Mix		
Unit Type	No. Units	Percentage %
3-Bed Dwelling House	167	71.37
4-Bed Dwelling House	67	28.63
Total	234	100.00%

Residential Apartment Mix

Apartment Mix		
Unit Type	No. Units	Percentage %
1-Bed Apartment Unit	76	31.93
2-Bed Apartment/Duplex Unit	123	51.68
3-Bed Apartment/Duplex Unit	39	16.39
Total	238	100.00%

Overall Residential Housing Mix

Overall Residential Mix		
Unit Type	No. Units	Percentage %
1-Bed Unit	76	16.1%
2-Bed Unit	123	26.1%
3-Bed Unit	206	43.6%
4-Bed Unit	67	14.2%
Total	472	100.00%

Site Densities

Density	
Total Site Area (hectares)	Katherine
Undevelopable Areas: Woodland/ Protected Tree lines, Wayleaves, Greenway Links, Creche, Steep Slopes	
Total Excluded Area (hectares)	8.61
Total Developable Area (hectares)	13.29
Density (Units / Hectare)	35.52
Density (Units / Acre)	87.76

Character Area Density

Character Area	Dev. Area	No. of Units	Nett Density
Village Neighbourhood	5.53	151	27.3
Western Woodland	1.75	56	32.0
Valley Floor	2.00	57	28.5
Parkland	3.50	161	46.0
Vicarage Apartments	0.51	47	92.2
Total	13.29	472	35.52

Plot Ratio

Total Development Area	Nett Developable Area
50309.95	13.29
Plot Ratio	0.38

Site Coverage

Development Footprint	Area	Net Developable Area
Housing	14,273.90	13.29
Apartments	6,784.25	
Creche	330.00	
Total	21388.15	13.29
Site Coverage	0.16	

Parking Provision

Housing @ 2 spaces per dwelling	477
Apartments Type E & F	145
Apartments Type G	151
Total - dwellings	773
Creche	11
Total Parking Provision	784



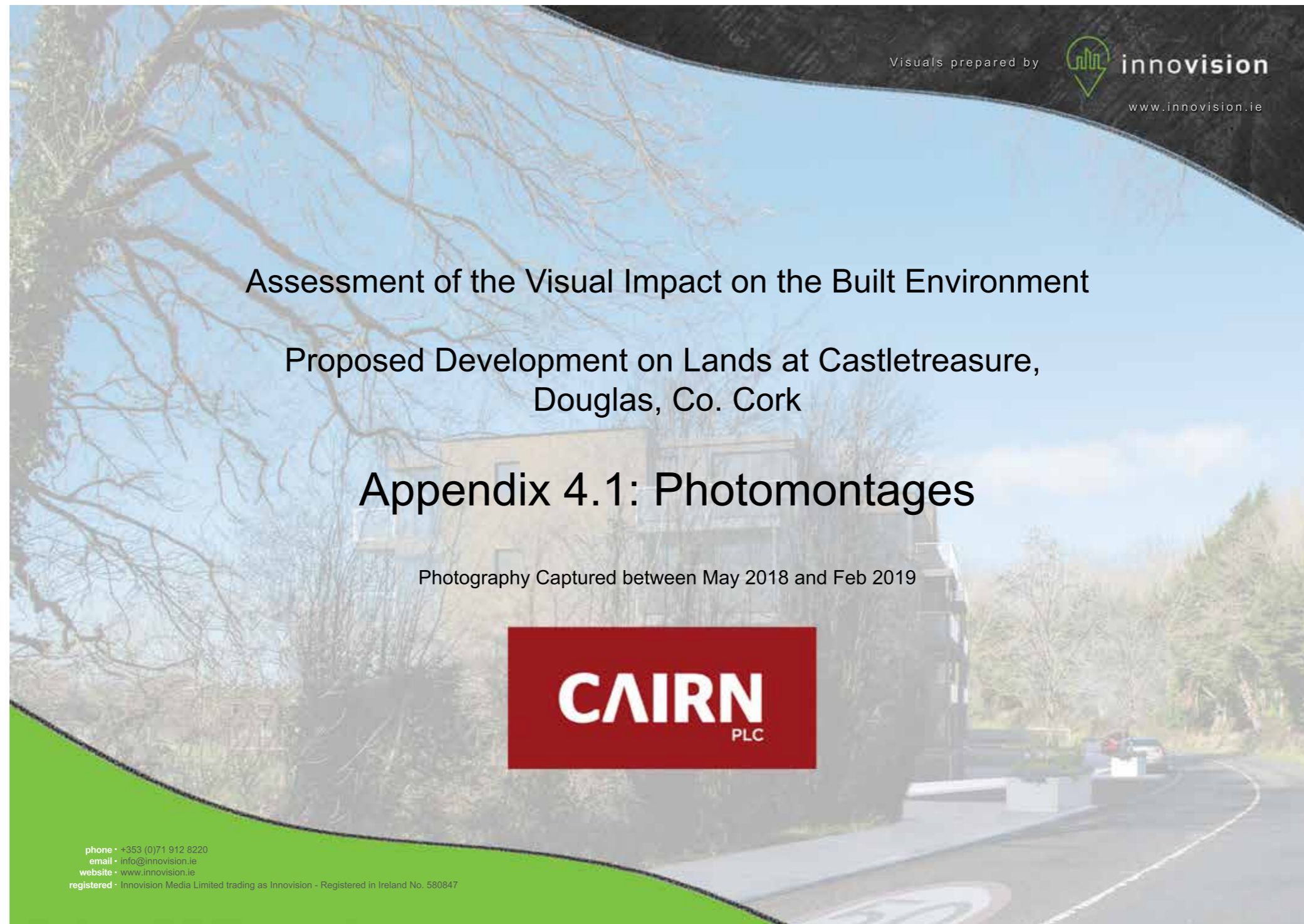
Appendix 4

Landscape and Visual Impact Assessment

A4

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC

APPENDIX 4 LANDSCAPE AND VISUAL IMPACT ASSESSMENT**Appendix 4.1 Booklet of Photomontages**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Viewpoint Location Map



Proposed Residential Development at Castletreasure, Douglas, Cork

View from Templegrove Housing Estate

VRP No. 1

EXISTING VIEW



<p>Viewpoint Location & Capture Information Location (ITM): 570299.81, 568278.69 Camera Level (Metres Above Ordnance Datum): 42.4 Date & Time: 23/05/2018, 11:14am</p>	<p>Visibility Information Distance to site boundary (km): 0.01 Visibility Status: Partially Screened Direction of View: SE</p>	<p>Camera Information Camera: Canon 5D Mark III Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm</p>	<p>Visuals prepared by  Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 8220</p>
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Templegrove Housing Estate

VRP No. 1



Viewpoint Location & Capture Information
 Location (ITM): 570299.81, 568278.69
 Camera Level (Metres Above Ordnance Datum): 42.4
 Date & Time: 23/05/2018, 11:14am

Visibility Information
 Distance to site boundary (km): 0.01
 Visibility Status: Partially Screened
 Direction of View: SE

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Templegrove Housing Estate

VRP No. 2

EXISTING VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570458.69, 568218.63
 Camera Level (Metres Above Ordnance Datum): 48.3
 Date & Time: 23/05/2018, 11:27am

Visibility Information
 Distance to site boundary (km): 0.03
 Visibility Status: Open Visibility
 Direction of View: E

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

Visuals prepared by
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Templegrove Housing Estate

VRP No. 2

PHOTOMONTAGE VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570458.69, 568218.63
 Camera Level (Metres Above Ordnance Datum): 48.3
 Date & Time: 23/05/2018, 11:27am

Visibility Information
 Distance to site boundary (km): 0.03
 Visibility Status: Open Visibility
 Direction of View: E

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

Visuals prepared by

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road outside Darraglynn Nursing Home

VRP No. 3



Viewpoint Location & Capture Information
 Location (ITM): 570656.06, 568442.56
 Camera Level (Metres Above Ordnance Datum): 53.0
 Date & Time: 23/05/2018, 10:16am

Visibility Information
 Distance to site boundary (km): 0.02
 Visibility Status: Open Views
 Direction of View: SSW

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road outside Darraglynn Nursing Home

VRP No. 3



PHOTOMONTAGE VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570656.06, 568442.56
 Camera Level (Metres Above Ordnance Datum): 53.0
 Date & Time: 23/05/2018, 10:16am

Visibility Information
 Distance to site boundary (km): 0.02
 Visibility Status: Open Views
 Direction of View: SSW

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

Visuals prepared by

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road

VRP No. 4

EXISTING VIEW



<p>Viewpoint Location & Capture Information Location (ITM): 570743.62, 568308.69 Camera Level (Metres Above Ordnance Datum): 57.7 Date & Time: 23/05/2018, 10:20am</p>	<p>Visibility Information Distance to site boundary (km): 0.02 Visibility Status: Open Views Direction of View: S</p>	<p>Camera Information Camera: Canon 5D Mark III Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm</p>	<p>Visuals prepared by  Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 8220</p>
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road

VRP No. 4



Viewpoint Location & Capture Information
 Location (ITM): 570743.62, 568308.69
 Camera Level (Metres Above Ordnance Datum): 57.7
 Date & Time: 23/05/2018, 10:20am

Visibility Information
 Distance to site boundary (km): 0.02
 Visibility Status: Open Views
 Direction of View: S

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road (South of proposal)

VRP No. 5

EXISTING VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570997.81, 567960.06
 Camera Level (Metres Above Ordnance Datum): 70.7
 Date & Time: 23/05/2018, 10:36am

Visibility Information
 Distance to site boundary (km): 0.01
 Visibility Status: Fully Screened
 Direction of View: NW

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road (South of proposal)

VRP No. 5



REDLINE VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570997.81, 567960.06
 Camera Level (Metres Above Ordnance Datum): 70.7
 Date & Time: 23/05/2018, 10:36am

Visibility Information
 Distance to site boundary (km): 0.01
 Visibility Status: Fully Screened
 Direction of View: NW

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

Visuals prepared by
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Maryborough Ridge

VRP No. 6

EXISTING VIEW



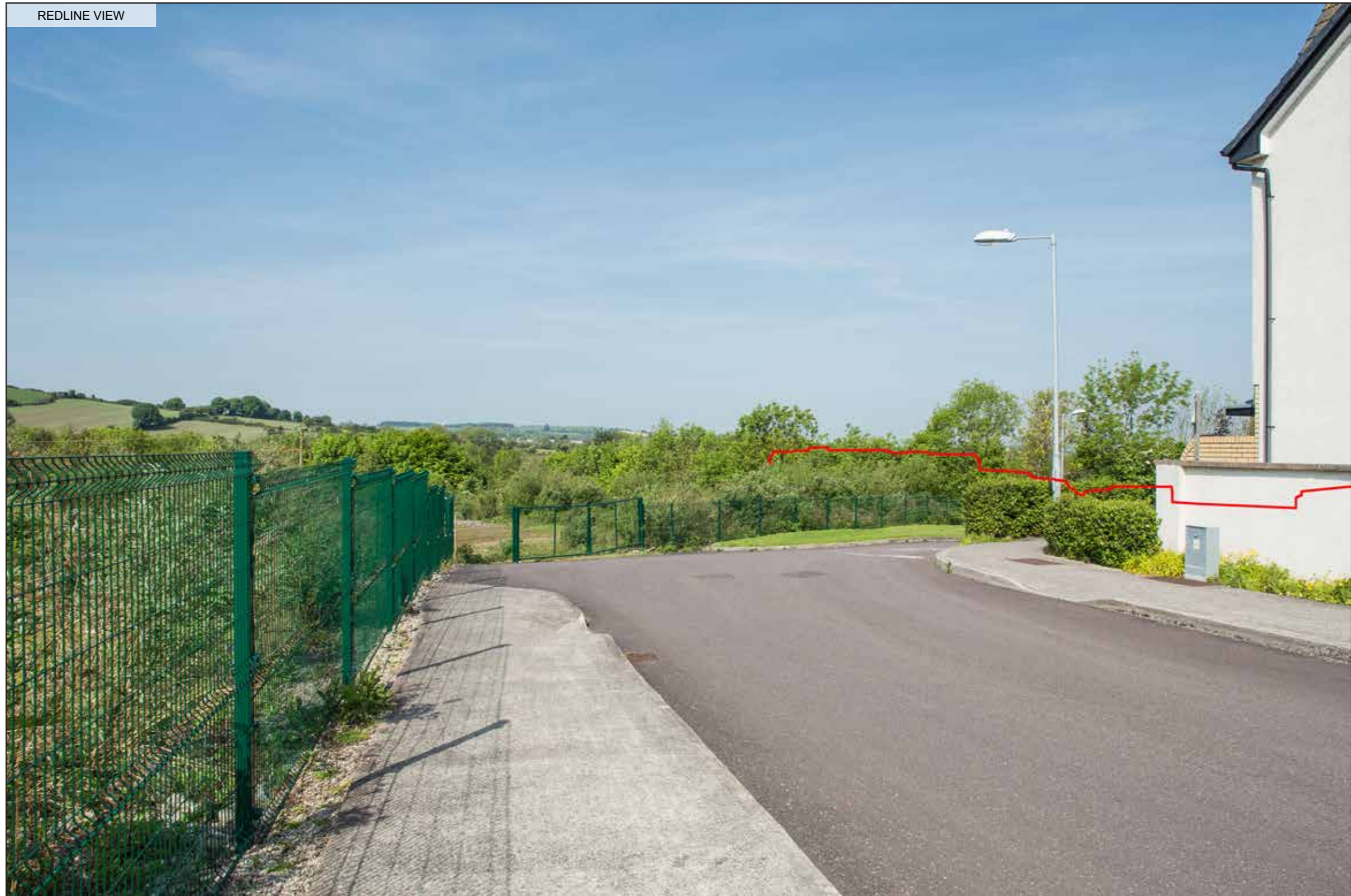
<p>Viewpoint Location & Capture Information Location (ITM): 571259.63, 567901.06 Camera Level (Metres Above Ordnance Datum): 93.5 Date & Time: 23/05/2018, 9:56am</p>	<p>Visibility Information Distance to site boundary (km): 0.27 Visibility Status: Fully Screened Direction of View: W</p>	<p>Camera Information Camera: Canon 5D Mark III Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm</p>	<p>Visuals prepared by  Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 8220</p>
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Maryborough Ridge

VRP No. 6



REDLINE VIEW



Viewpoint Location & Capture Information
 Location (ITM): 571259.63, 567901.06
 Camera Level (Metres Above Ordnance Datum): 93.5
 Date & Time: 23/05/2018, 9:56am

Visibility Information
 Distance to site boundary (km): 0.27
 Visibility Status: Fully Screened
 Direction of View: W

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from N28 / R609

VRP No. 7

EXISTING VIEW



<p>Viewpoint Location & Capture Information Location (ITM): 571063.94, 567767.56 Camera Level (Metres Above Ordnance Datum): 83.4 Date & Time: 23/05/2018, 10:45am</p>	<p>Visibility Information Distance to site boundary (km): 0.2 Visibility Status: Partially Screened Direction of View: NW</p>	<p>Camera Information Camera: Canon 5D Mark III Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm</p>	<p>Visuals prepared by  Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 8220</p>
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from N28 / R609

VRP No. 7



Viewpoint Location & Capture Information
 Location (ITM): 571063.94, 567767.56
 Camera Level (Metres Above Ordnance Datum): 83.4
 Date & Time: 23/05/2018, 10:45am

Visibility Information
 Distance to site boundary (km): 0.2
 Visibility Status: Partially Screened
 Direction of View: NW

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Housing Estate at Donnybrook Hill

VRP No. 8

EXISTING VIEW



<p>Viewpoint Location & Capture Information Location (ITM): 570015.06, 567719.19 Camera Level (Metres Above Ordnance Datum): 81.7 Date & Time: 23/05/2018, 12:06pm</p>	<p>Visibility Information Distance to site boundary (km): 0.29 Visibility Status: Partially Screened Direction of View: NE</p>	<p>Camera Information Camera: Canon 5D Mark III Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm</p>	<p>Visuals prepared by  Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 8220</p>
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Housing Estate at Donnybrook Hill

VRP No. 8



Viewpoint Location & Capture Information
 Location (ITM): 570015.06, 567719.19
 Camera Level (Metres Above Ordnance Datum): 81.7
 Date & Time: 23/05/2018, 12:06pm

Visibility Information
 Distance to site boundary (km): 0.29
 Visibility Status: Partially Screened
 Direction of View: NE

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Housing Estate at Donnybrook Hill

VRP No. 9

EXISTING VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570111.38, 568174.63
 Camera Level (Metres Above Ordnance Datum): 48.0
 Date & Time: 23/05/2018, 12:29pm

Visibility Information
 Distance to site boundary (km): 0.07
 Visibility Status: Fully Screened
 Direction of View: E

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Housing Estate at Donnybrook Hill

VRP No. 9



Viewpoint Location & Capture Information
 Location (ITM): 570111.38, 568174.63
 Camera Level (Metres Above Ordnance Datum): 48.0
 Date & Time: 23/05/2018, 12:29pm

Visibility Information
 Distance to site boundary (km): 0.07
 Visibility Status: Fully Screened
 Direction of View: E

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Grange Park

VRP No. 10

EXISTING VIEW



Viewpoint Location & Capture Information
 Location (ITM): 569555.56, 568670.00
 Camera Level (Metres Above Ordnance Datum): 41.1
 Date & Time: 23/05/2018, 12:47pm

Visibility Information
 Distance to site boundary (km): 0.75
 Visibility Status: Open Views
 Direction of View: SE

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Grange Park

VRP No. 10



Viewpoint Location & Capture Information
 Location (ITM): 569555.56, 568670.00
 Camera Level (Metres Above Ordnance Datum): 41.1
 Date & Time: 23/05/2018, 12:47pm

Visibility Information
 Distance to site boundary (km): 0.75
 Visibility Status: Open Views
 Direction of View: SE

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Maryborough Hill

VRP No. 11

EXISTING VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570470.69, 568793.94
 Camera Level (Metres Above Ordnance Datum): 73.1
 Date & Time: 23/05/2018, 9:16am

Visibility Information
 Distance to site boundary (km): 0.37
 Visibility Status: Open Views
 Direction of View: S

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Maryborough Hill

VRP No. 11



Viewpoint Location & Capture Information
 Location (ITM): 570470.69, 568793.94
 Camera Level (Metres Above Ordnance Datum): 73.1
 Date & Time: 23/05/2018, 9:16am

Visibility Information
 Distance to site boundary (km): 0.37
 Visibility Status: Open Views
 Direction of View: S

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road

VRP No. 12

EXISTING VIEW



<p>Viewpoint Location & Capture Information Location (ITM): 570895.56, 568141.90 Camera Level (Metres Above Ordnance Datum): 64.0 Date & Time: 18/02/2019, 11:37am</p>	<p>Visibility Information Distance to site boundary (km): 0.01 Visibility Status: Open Views Direction of View: NW</p>	<p>Camera Information Camera: Canon 5D Mark III Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm</p>	<p>Visuals prepared by  Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 8220</p>
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Proposed Residential Development at Castletreasure, Douglas, Cork

View from Carrigaline Road

VRP No. 12



PHOTOMONTAGE VIEW



Viewpoint Location & Capture Information
 Location (ITM): 570895.56, 568141.90
 Camera Level (Metres Above Ordnance Datum): 64.0
 Date & Time: 18/02/2019, 11:37am

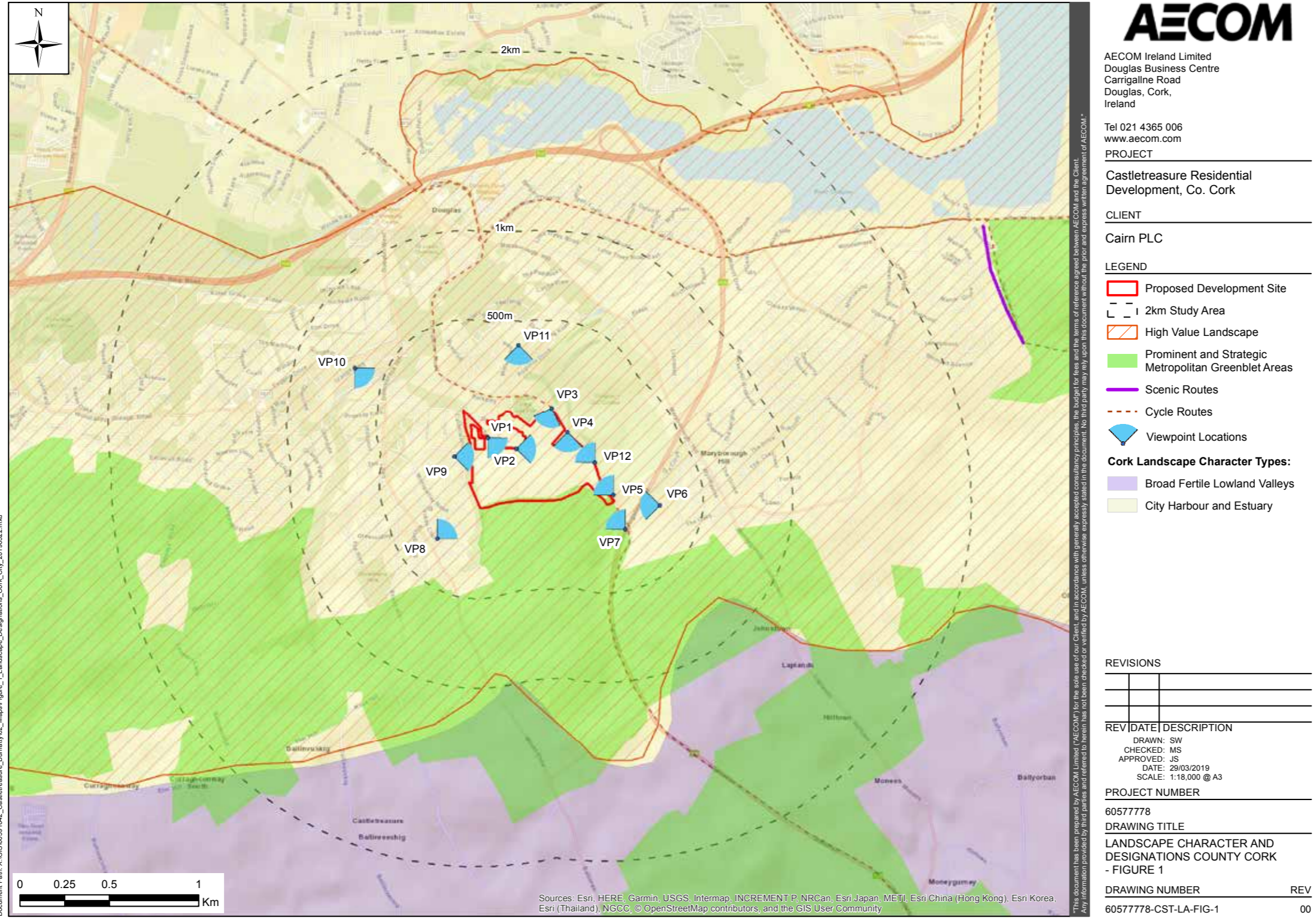
Visibility Information
 Distance to site boundary (km): 0.01
 Visibility Status: Open Views
 Direction of View: NW

Camera Information
 Camera: Canon 5D Mark III
 Lens: Canon TS-E 24mm f/3.5L
 Focal Length: 24mm

Visuals prepared by

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Appendix 4.2



AECOM Ireland Limited
Douglas Business Centre
Carrigaline Road
Douglas, Cork,
Ireland

Tel 021 4365 006
www.aecom.com

PROJECT

Castletreasure Residential
Development, Co. Cork

CLIENT

Cairn PLC

LEGEND

- Proposed Development Site
- 2km Study Area
- High Value Landscape
- Prominent and Strategic Metropolitan Greenbelt Areas
- Scenic Routes
- Cycle Routes
- ▶ Viewpoint Locations

Cork Landscape Character Types:

- Broad Fertile Lowland Valleys
- City Harbour and Estuary

REVISIONS

REV	DATE	DESCRIPTION

REV | DATE | DESCRIPTION

DRAWN: SW
CHECKED: MS
APPROVED: JS
DATE: 29/03/2019
SCALE: 1:18,000 @ A3

PROJECT NUMBER

60577778

DRAWING TITLE

LANDSCAPE CHARACTER AND
DESIGNATIONS COUNTY CORK
- FIGURE 1

DRAWING NUMBER

60577778-CST-LA-FIG-1

REV

00

Figure 1- Landscape Designations County Cork 60577778-CST-LA-FIG-1

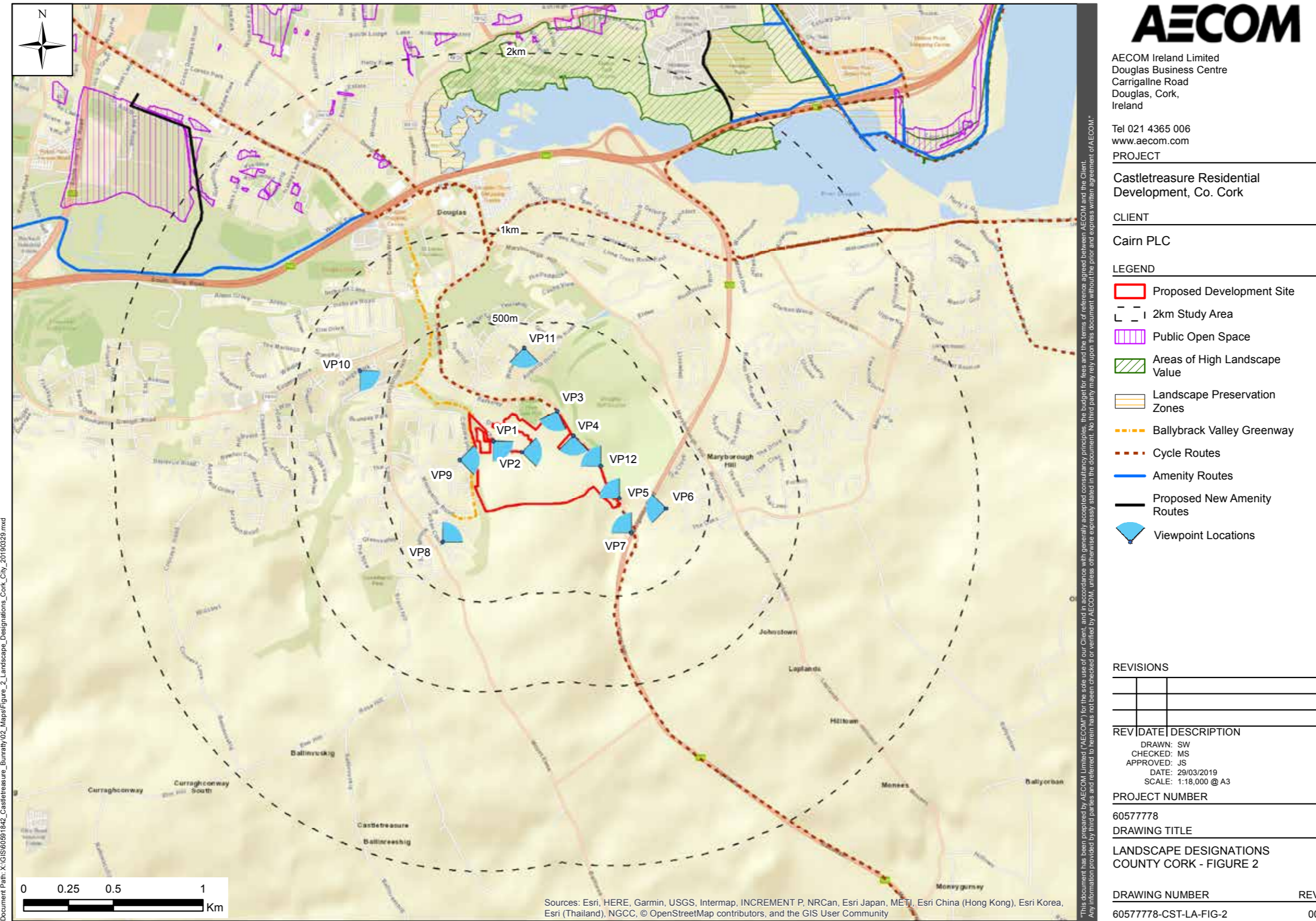


Figure 2 - Landscape Designations Cork City 60577778-CST-LA-FIG-2



Appendix 5A

Material Assets (Traffic & Transport)

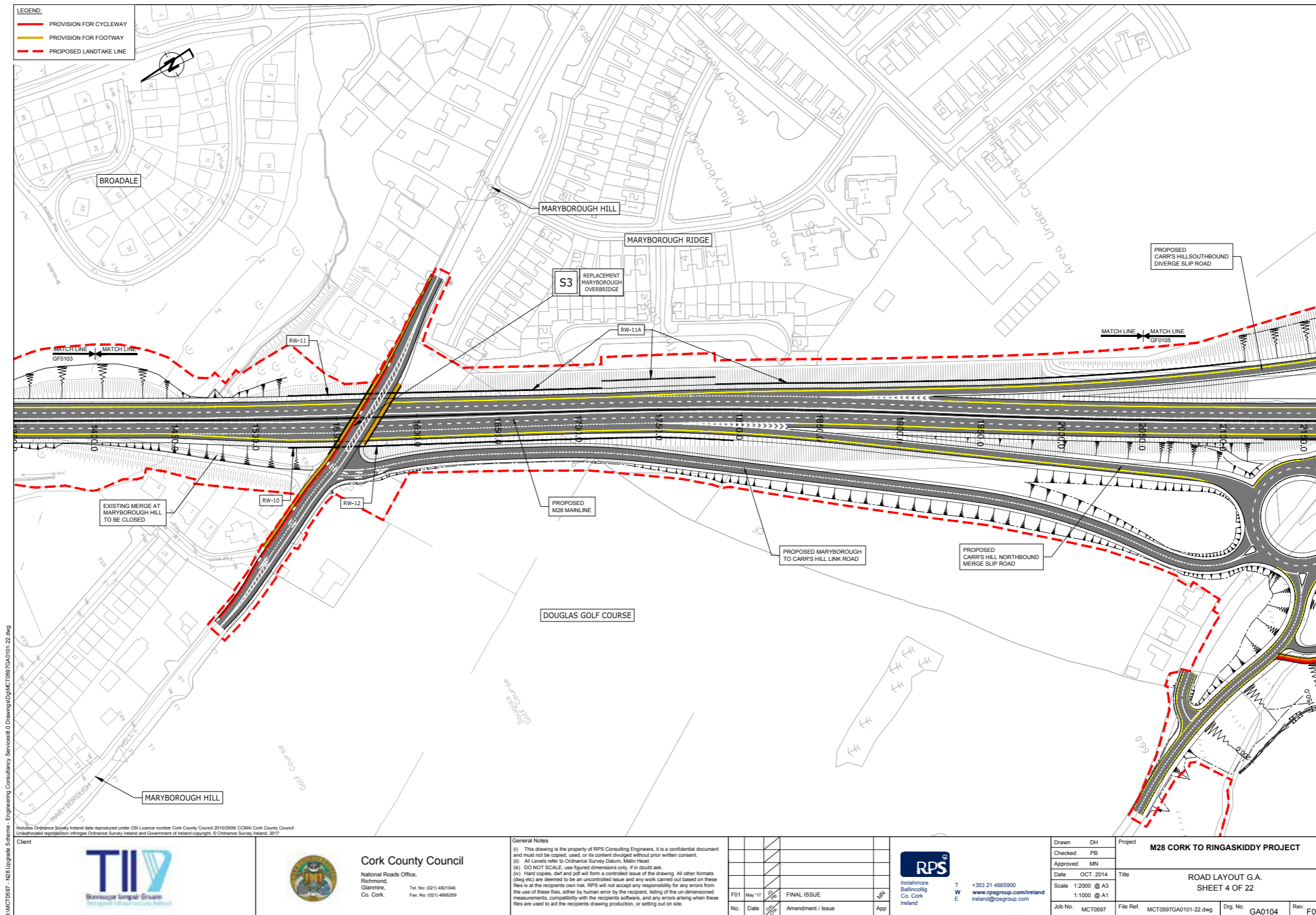
A5A

Environmental Impact Assessment Report (EIAR)

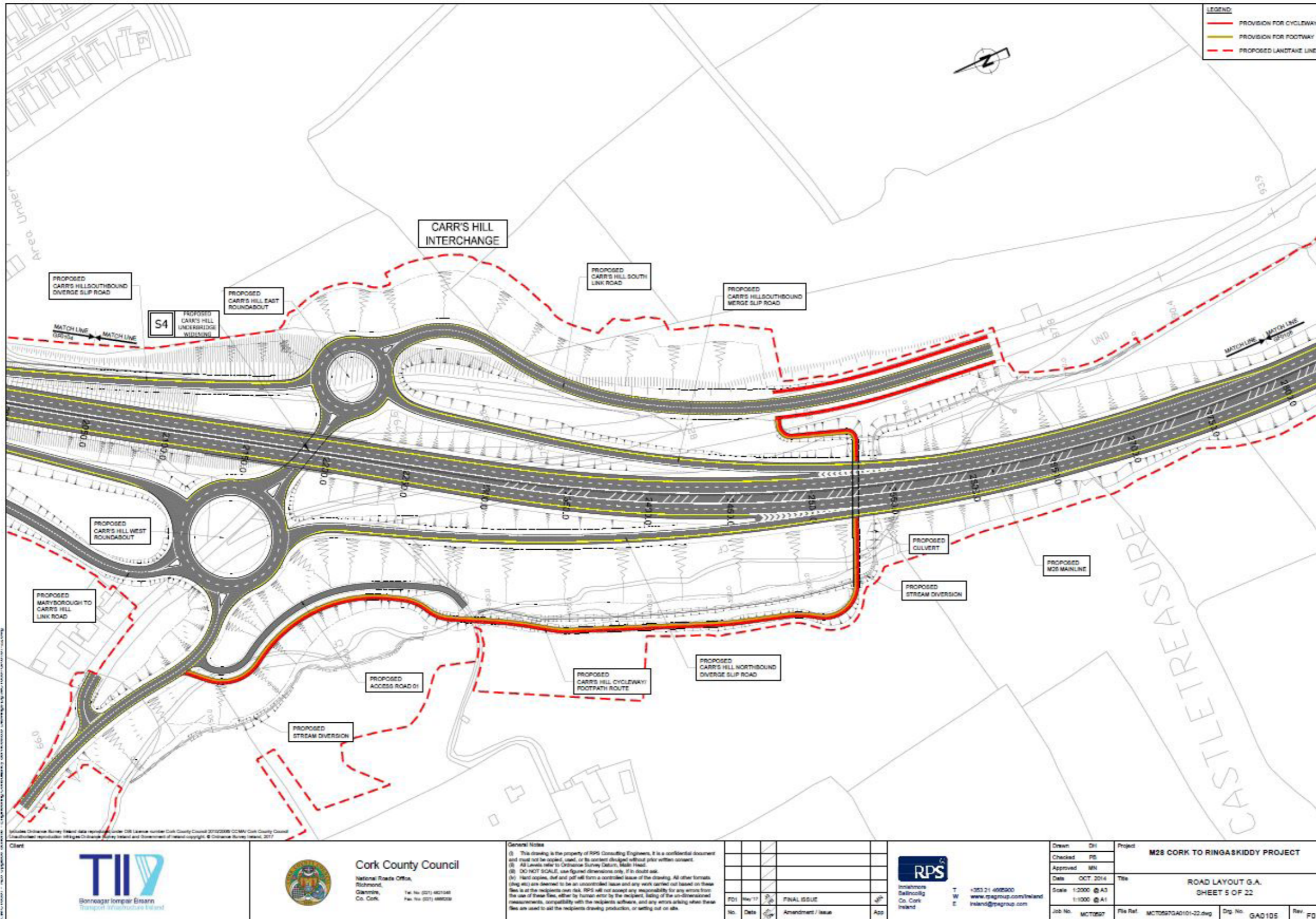
CAIRN
PLC

APPENDIX 5A MATERIAL ASSETS (TRAFFIC & TRANSPORT)

Appendix 5A.1.1



Appendix 5A.1.2



Client



TII
Bonnagar Ionagar Easann
Transport Infrastructure Ireland

Cork County Council



National Roads Office,
Richmond,
Cork, Co. Cork.
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No.	Date	Amendment / Issue	App
FD1	May 17	FINAL ISSUE	App

RPS

Inchmaree
Ballinacree
Co. Cork
Ireland

T: +353 21 4959500
W: www.rpsgroup.com/ireland
E: ireland@rpsgroup.com

Drawn: DH	Project: M28 CORK TO RINGASKIDDY PROJECT
Checked: RB	
Approved: MN	
Date: OCT 2014	Title: ROAD LAYOUT G.A. SHEET 5 OF 22
Scale: 1:2000 @ A3 1:1000 @ A1	
Job No: MCT0567	File Ref: MCT0567GAD101-22.dwg Dwg No: GAD105 Rev: FD1

Appendix 5A.2.1



BIM QUALITY SHEET NO.: PIM-JBB-00-XX-TP-Z-0003

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NOTES

Rev	Suit	Description	Drawn	Chkd	Date

Client

CAIRN HOMES PROPERTIES LTD.

Clients Representative



Project: CAIRN HOMES DEVELOPMENT CASTLETREASURE

Drawing Title: ACCESS 1 LAYOUT

Drawn by: AON Date: 14/02/19
Checked by: TF Date: 14/02/19
Approved by: TF Date: 14/02/19
Internal Project REF: JBB-18203

Scales: PLANNING
Sheet: 1:20@A1; 1:40@A3

Drawing No: 18203-JBB-00-ZZ-DR-T-0127 Revision: P01.01 Suitability Code: S1

File Name: P:\Barry\Project Files\18 Projects\18203-Cairn Homes Development\00 - Work in Progress\03 - Transport\02 - Drawings\18203-JBB-00-ZZ-DR-T-0127-01-28-01-01.dwg

Appendix 5A.2.2



File Name: P:\Barry\Project Files\18203-Cairn Homes Development\00 - Work in Progress\03 - Transport\02 - Drawings\18203-00-ZZ-DR-0125-0125-0125.dwg

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NOTES

Rev	Sub	Description	Drawn	Chkd	Date

Client

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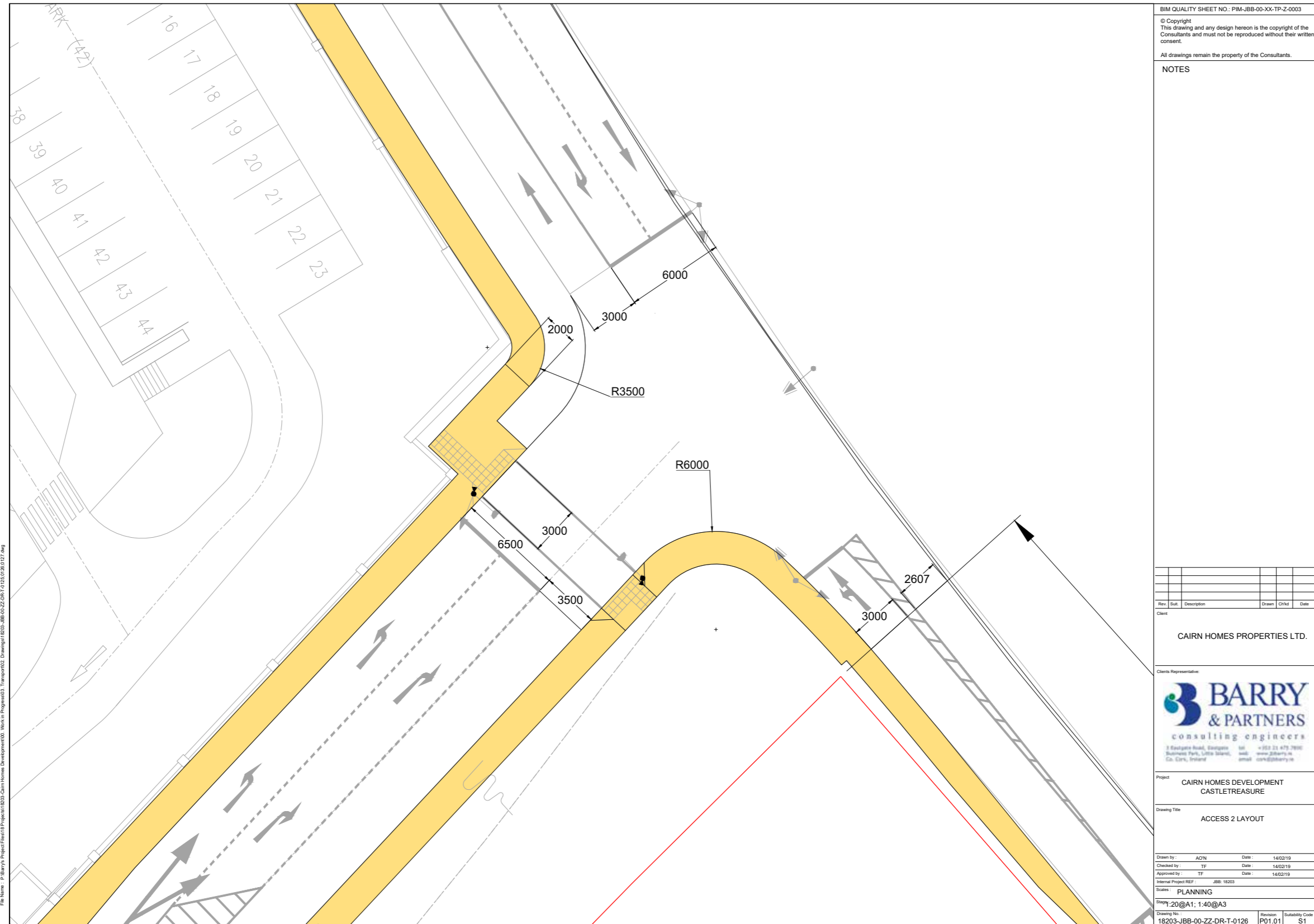
3 BARRY & PARTNERS consulting engineers
 2 Keadymore Road, Douglas, Co. Cork, Ireland | Tel: +353 (0) 475 7890 | www.barry.ie | email: info@barry.ie

Project CAIRN HOMES DEVELOPMENT CASTLETREASURE

Drawing Title ACCESS 3 LAYOUT

Drawn by: AON	Date: 14/02/19
Checked by: TF	Date: 14/02/19
Approved by: TF	Date: 14/02/19
Internal Project REF: JBB-18203	
Scales: PLANNING	
Printing: 20@A1; 1:40@A3	
Drawing No: 18203-JBB-00-ZZ-DR-T-0125	Revision: P01.01
	Subsidiary Code: S1

Appendix 5A.2.3



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Rev	Sub	Description	Drawn	Chkd	Date

Client

CAIRN HOMES PROPERTIES LTD.

Client Representative



Project
 CAIRN HOMES DEVELOPMENT
 CASTLETREASURE

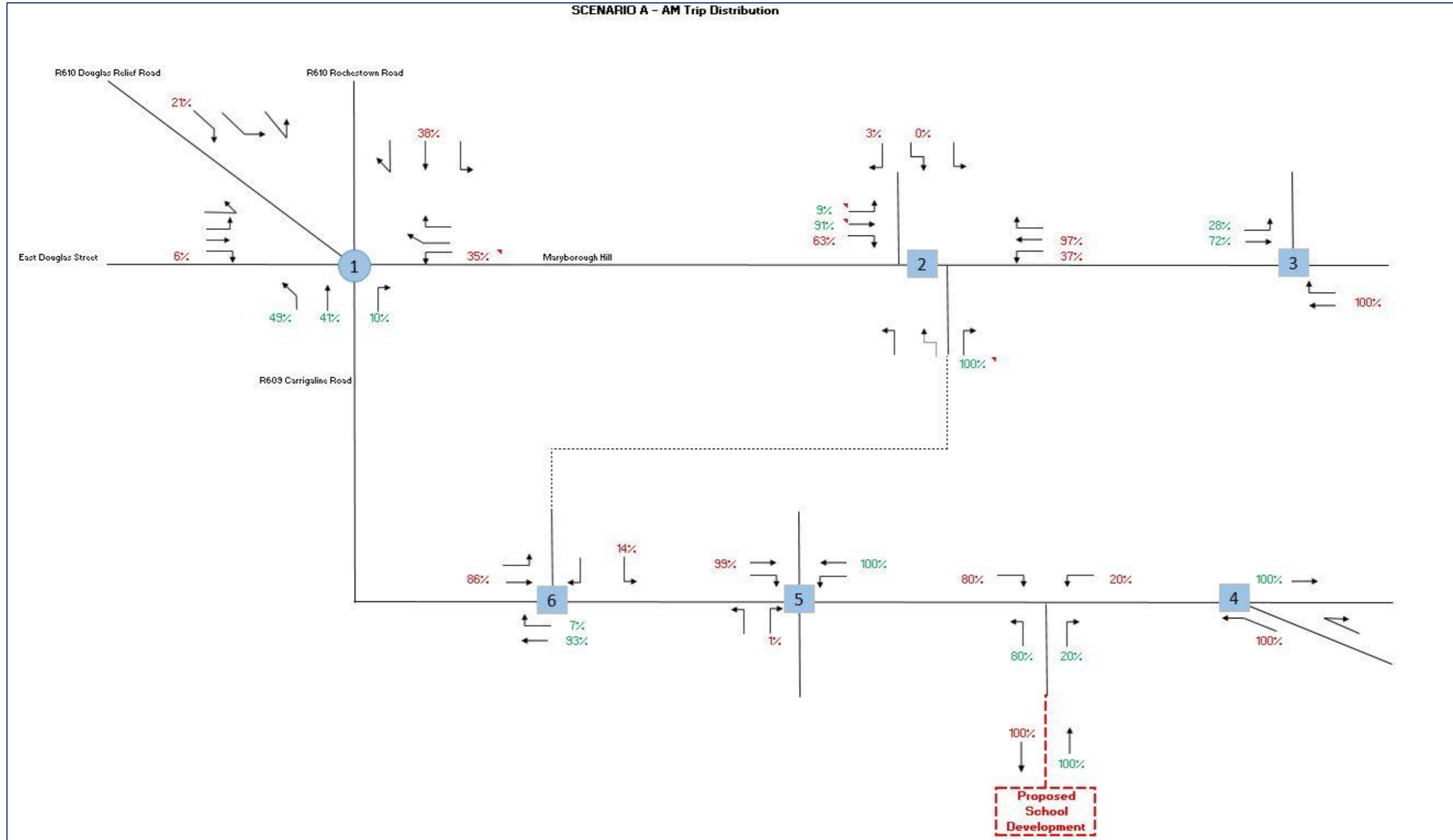
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 ACCESS 2 LAYOUT

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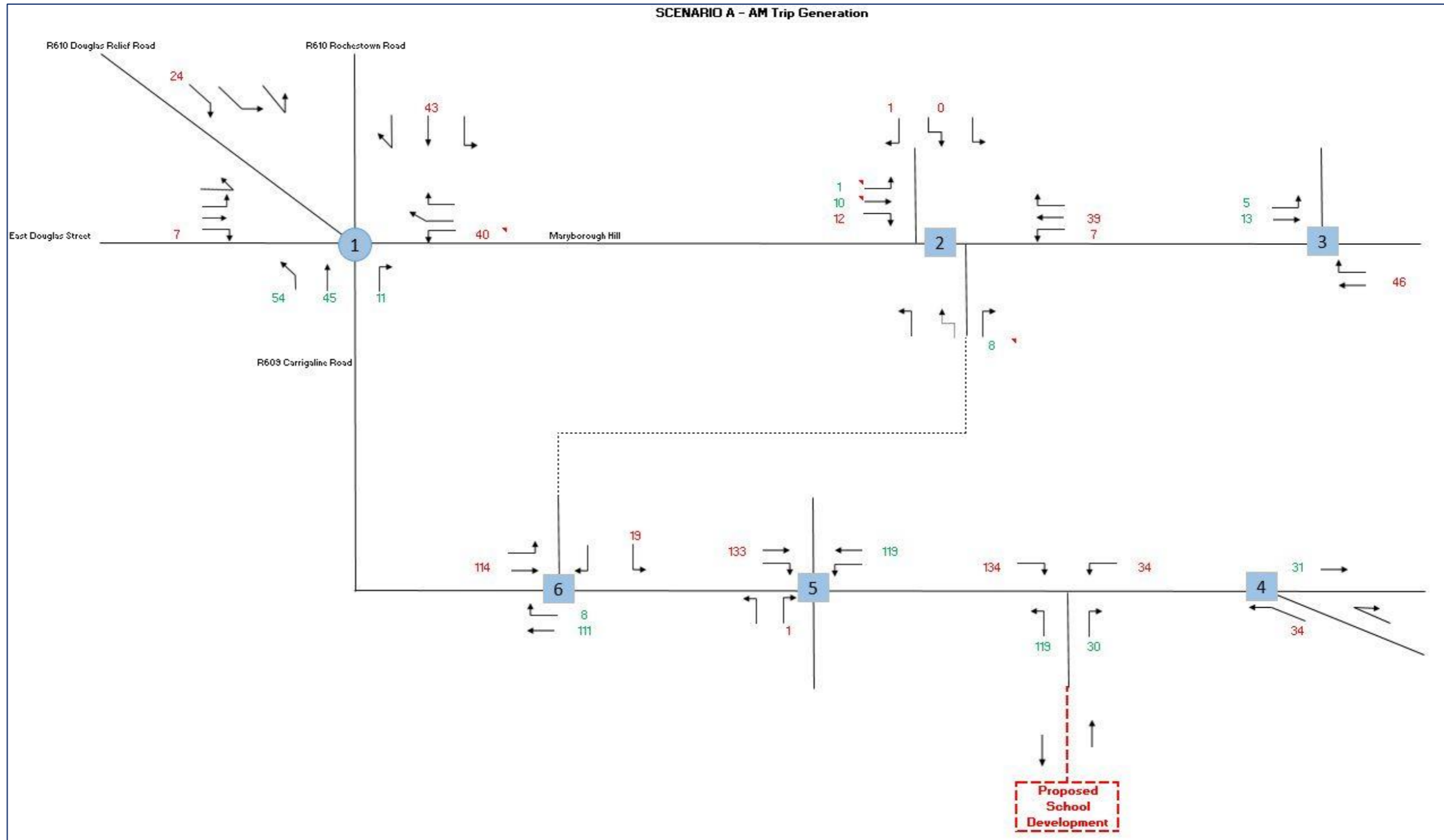
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Drawing No:	Revision	Subsidiary Code
18203-JBB-00-ZZ-DR-T-0126	PD1.01	S1

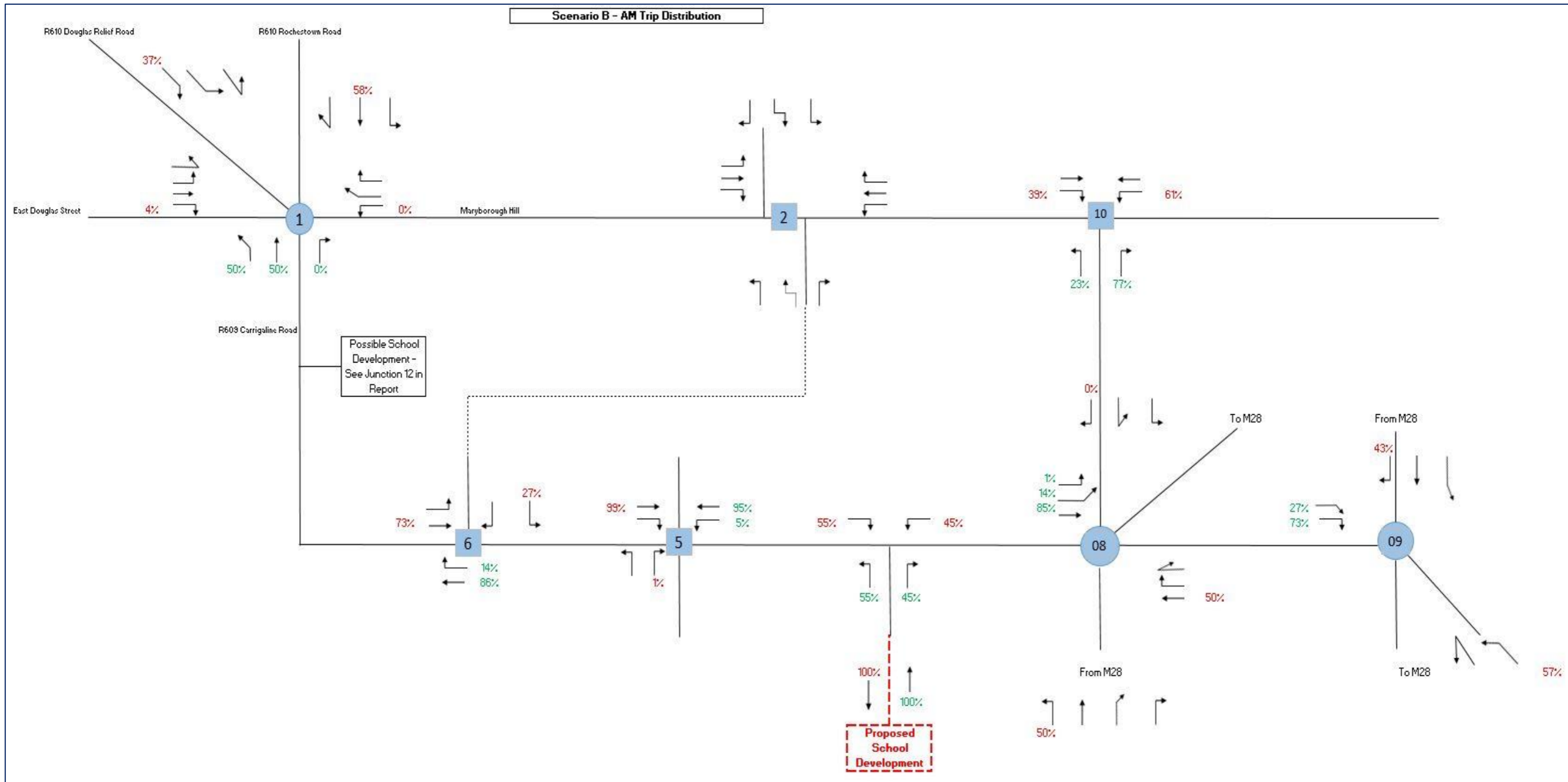
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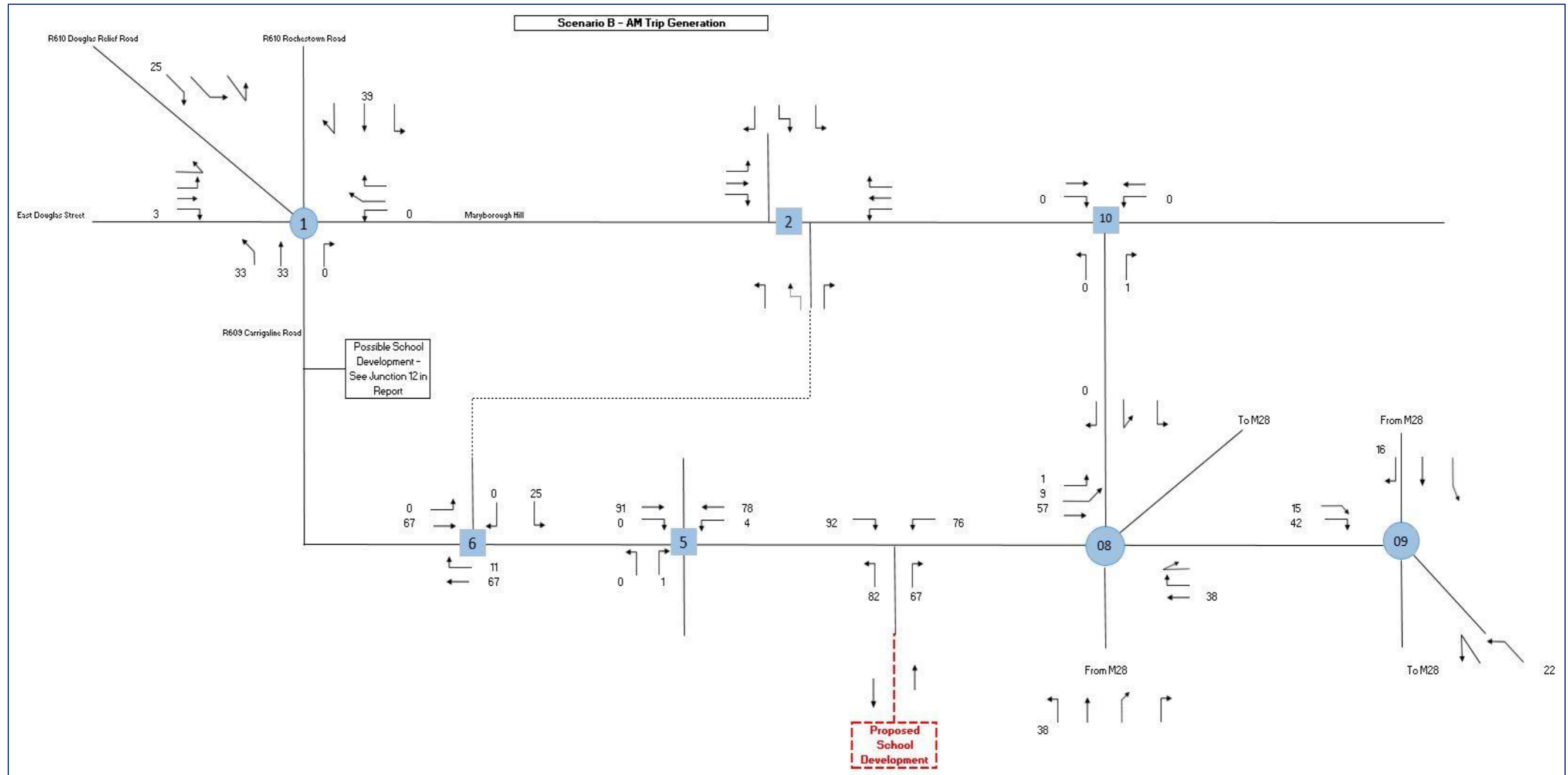
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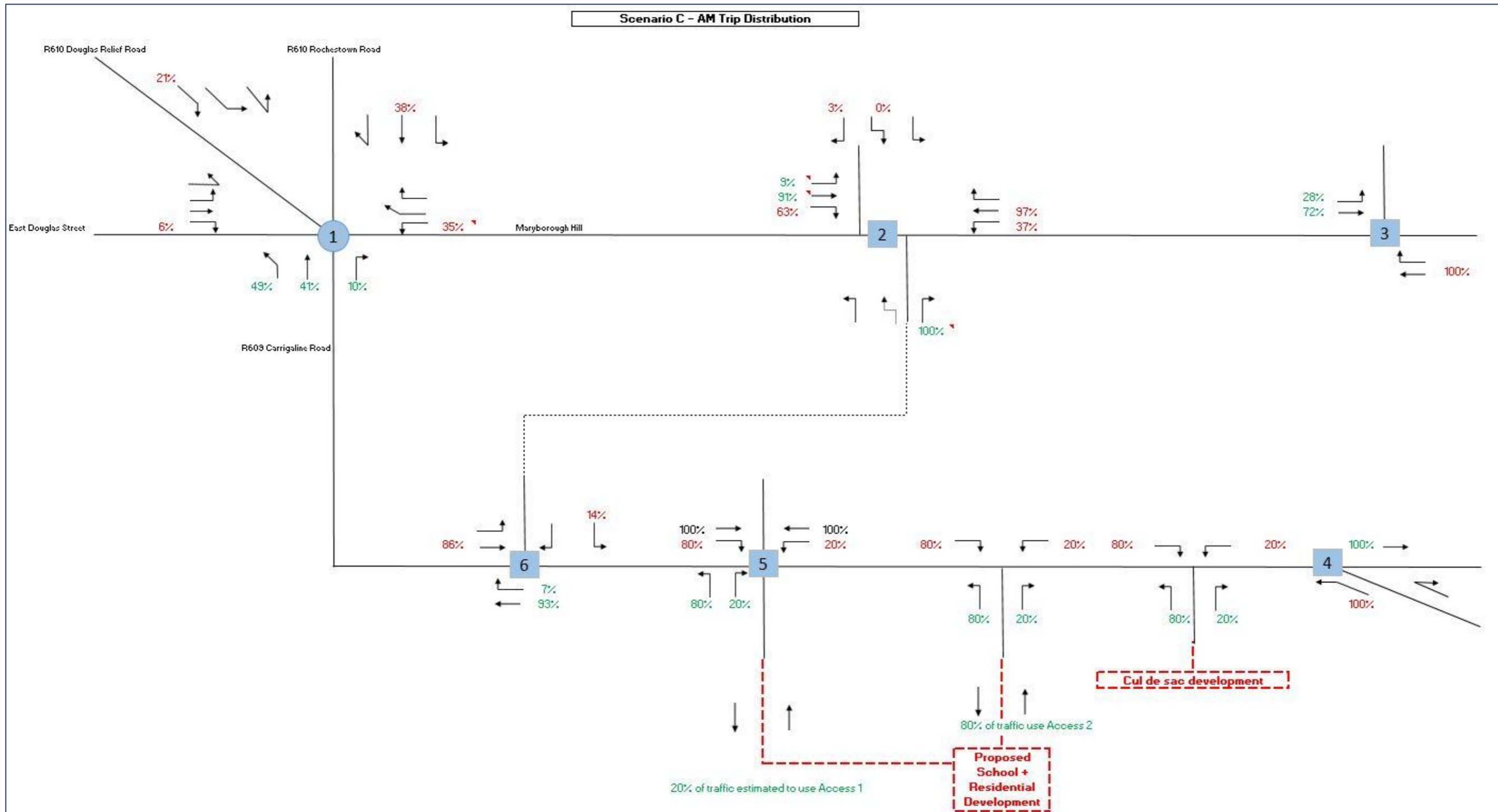
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Appendix 5A.3.4



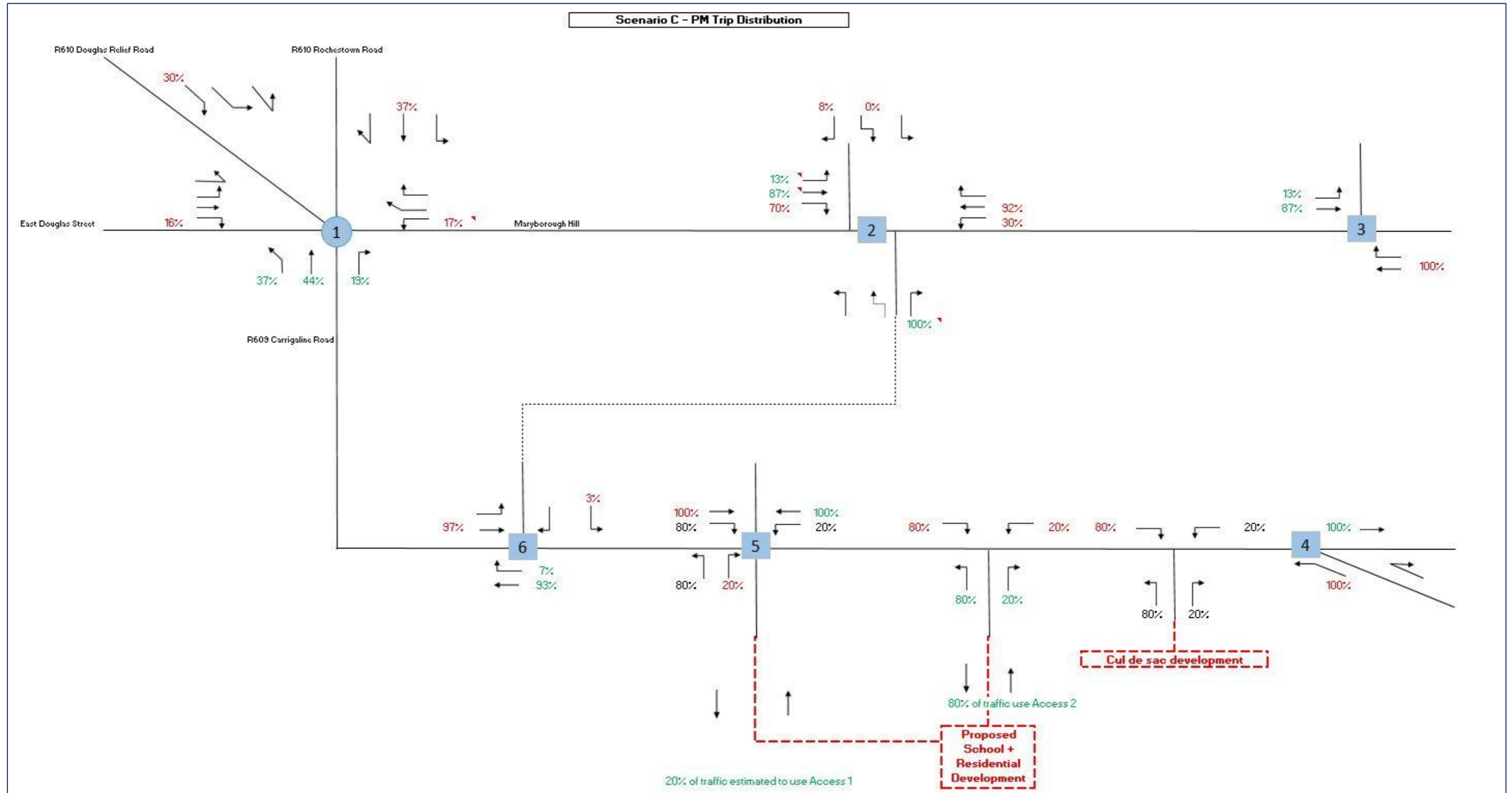
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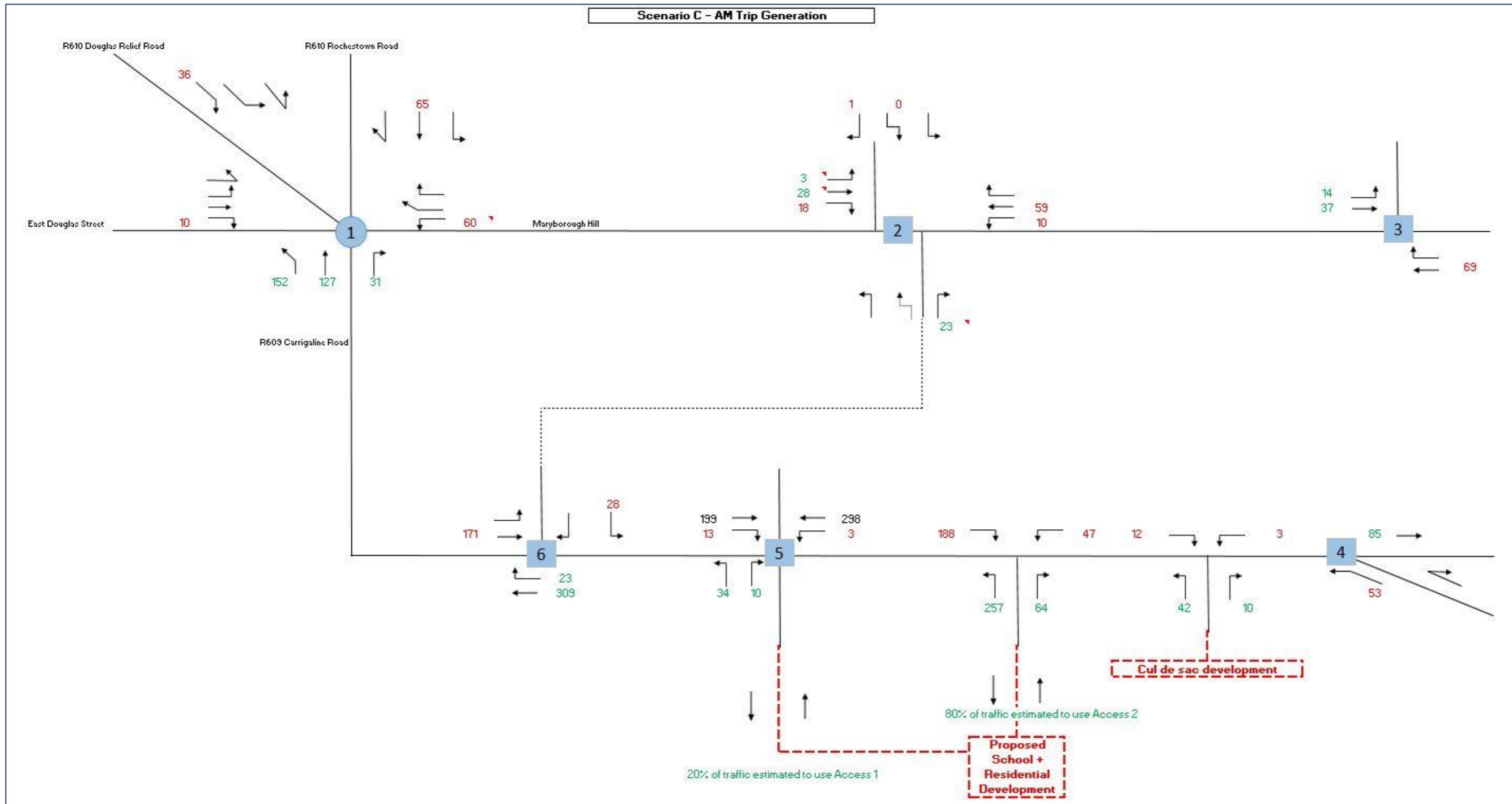
Assumptions:

- Junction 1: Assumed 35% traffic does not include left turning traffic from Junction 2. It's assumed traffic from Maryborough Woods area accessing the school, would travel via junction 6
- Junction 2: It's anticipated eastbound traffic will continue straight ahead or turn left. Traffic leaving school/site would access Maryborough Woods via junction 6 if required.
- Junction 2: It's assumed 100% northbound traffic from school/development coming through Maryborough Woods will turn right.
- Access 2: Assumed that 80% of left turning traffic exiting the proposed development will not turn left at Junction 5
- Access 1: Assumed Right turning traffic exiting access 1 will not turn right into access 2.

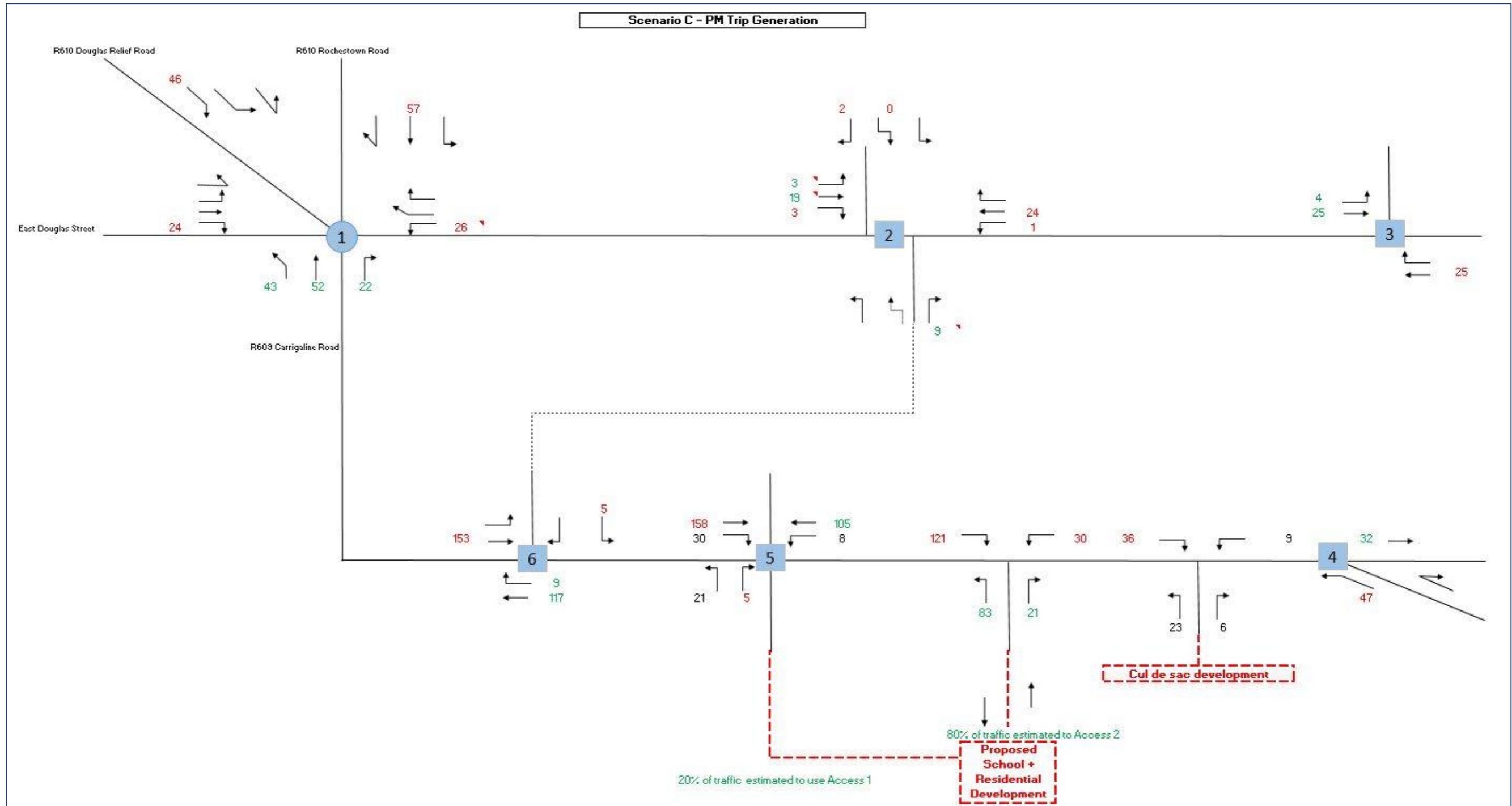
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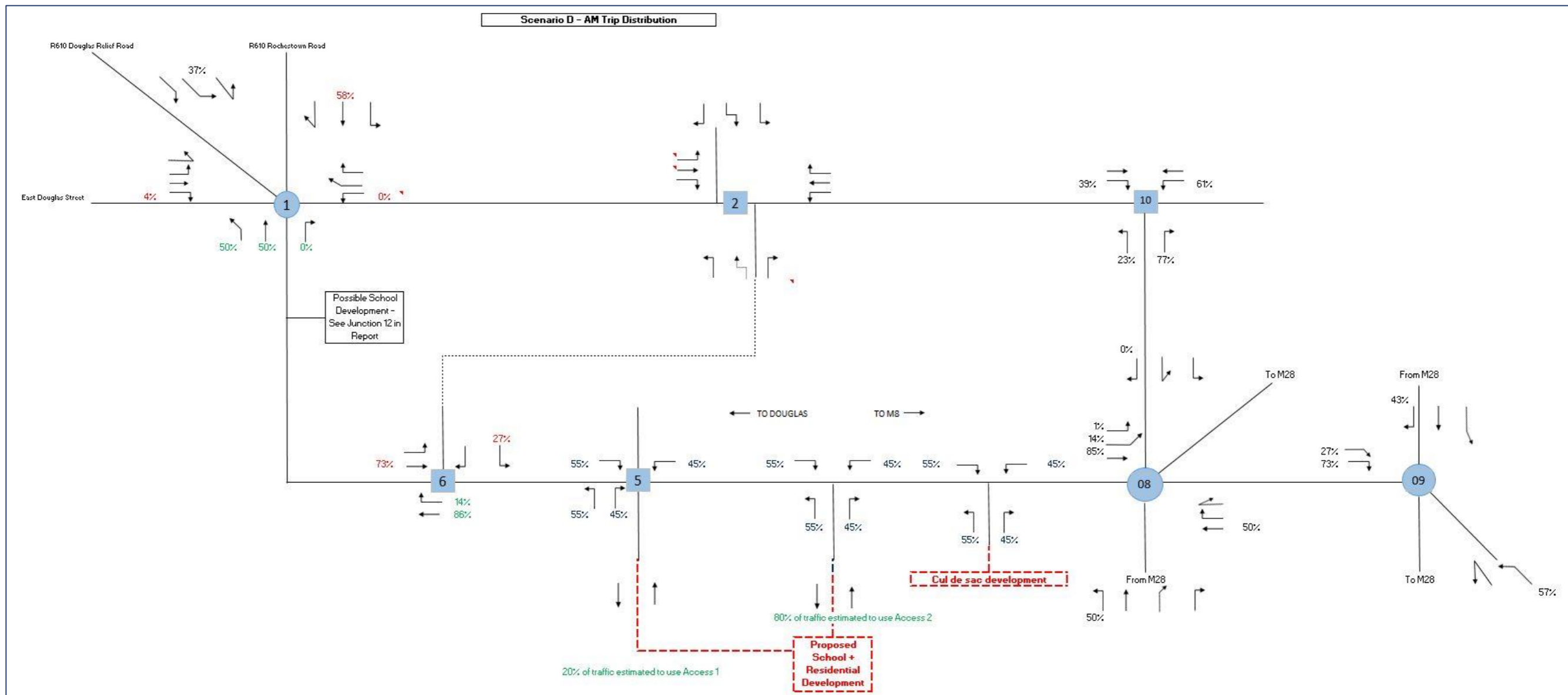
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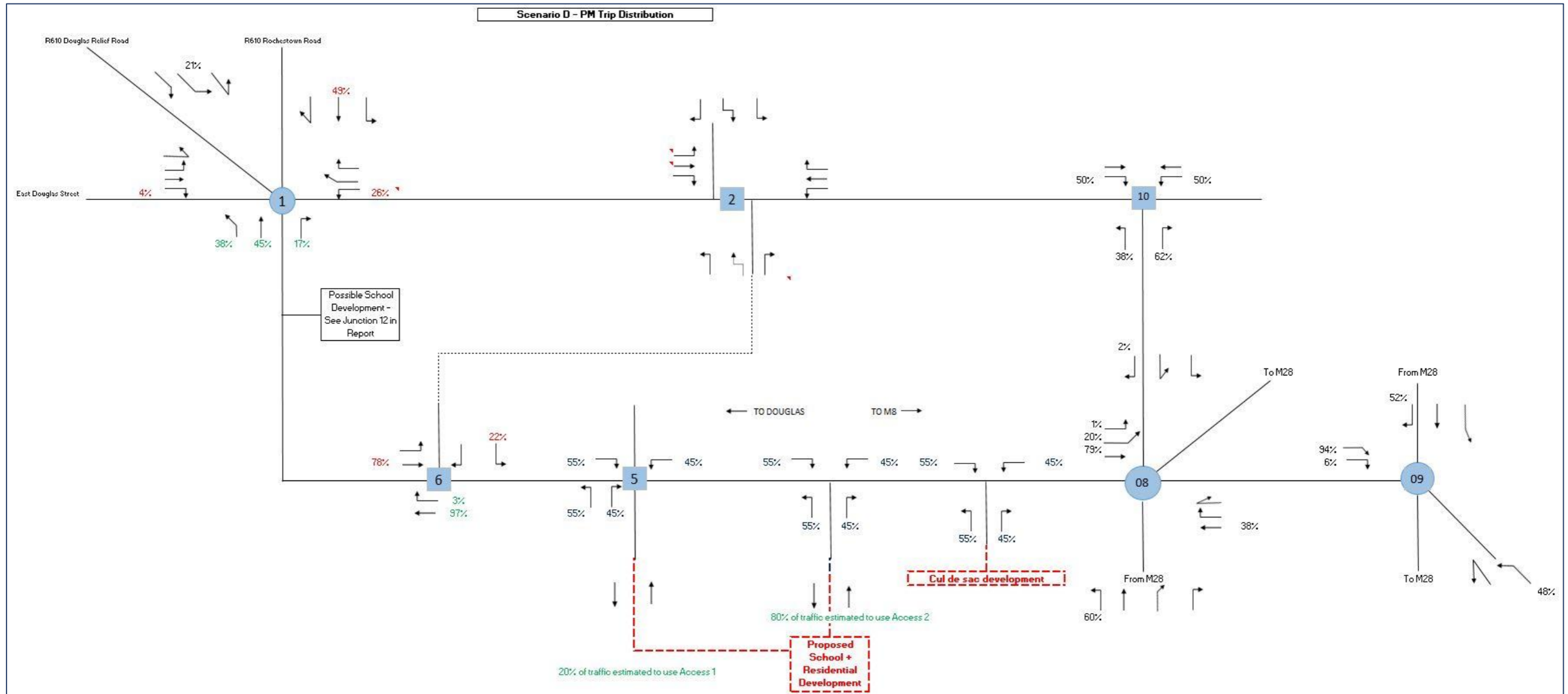
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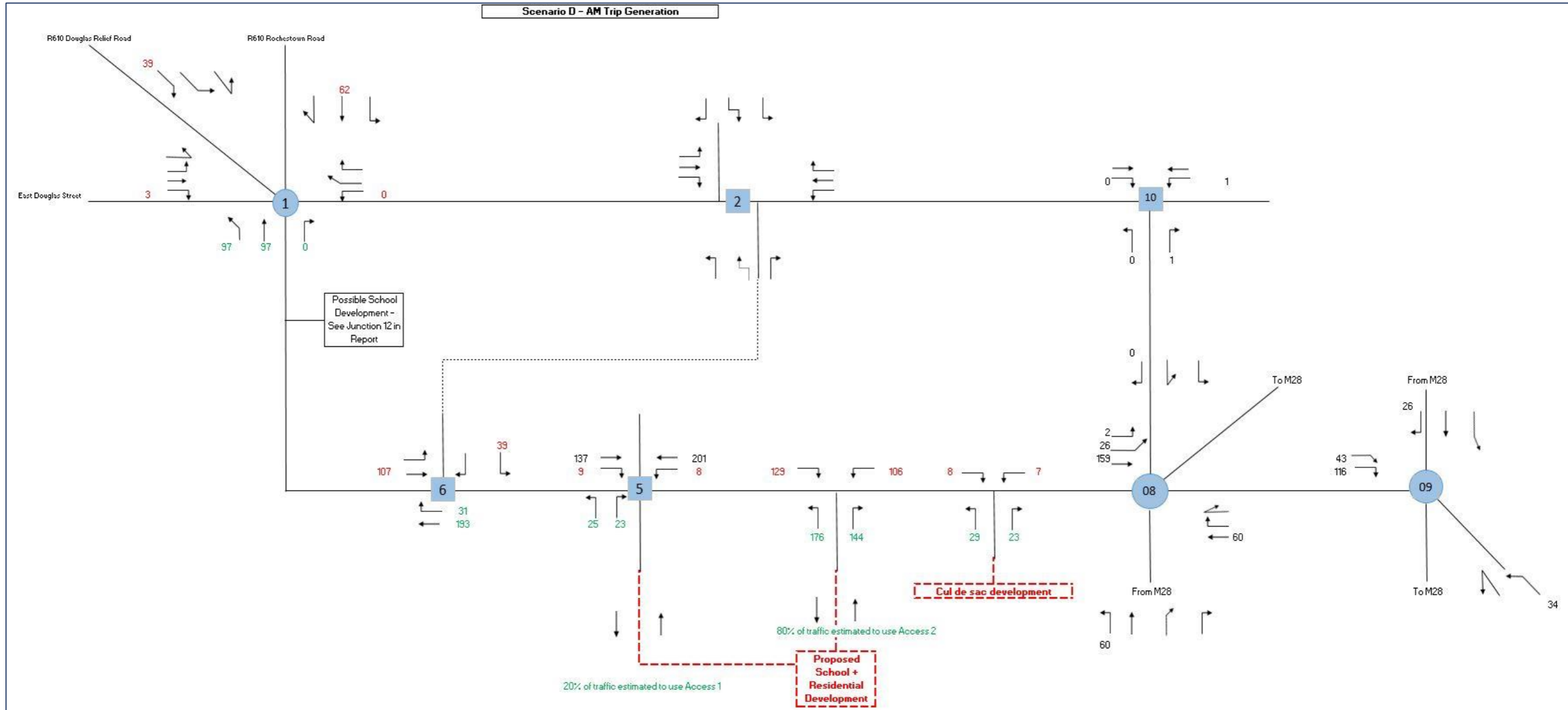
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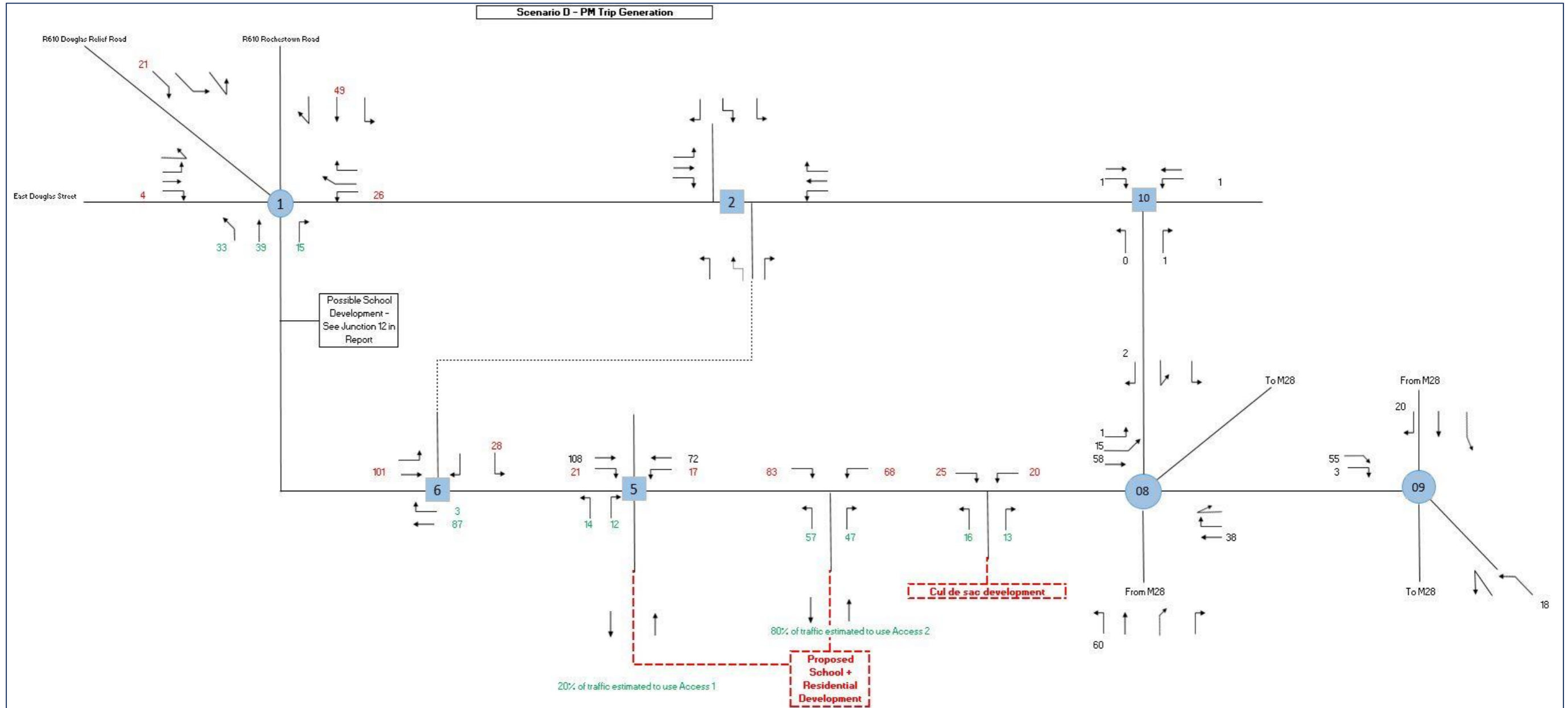
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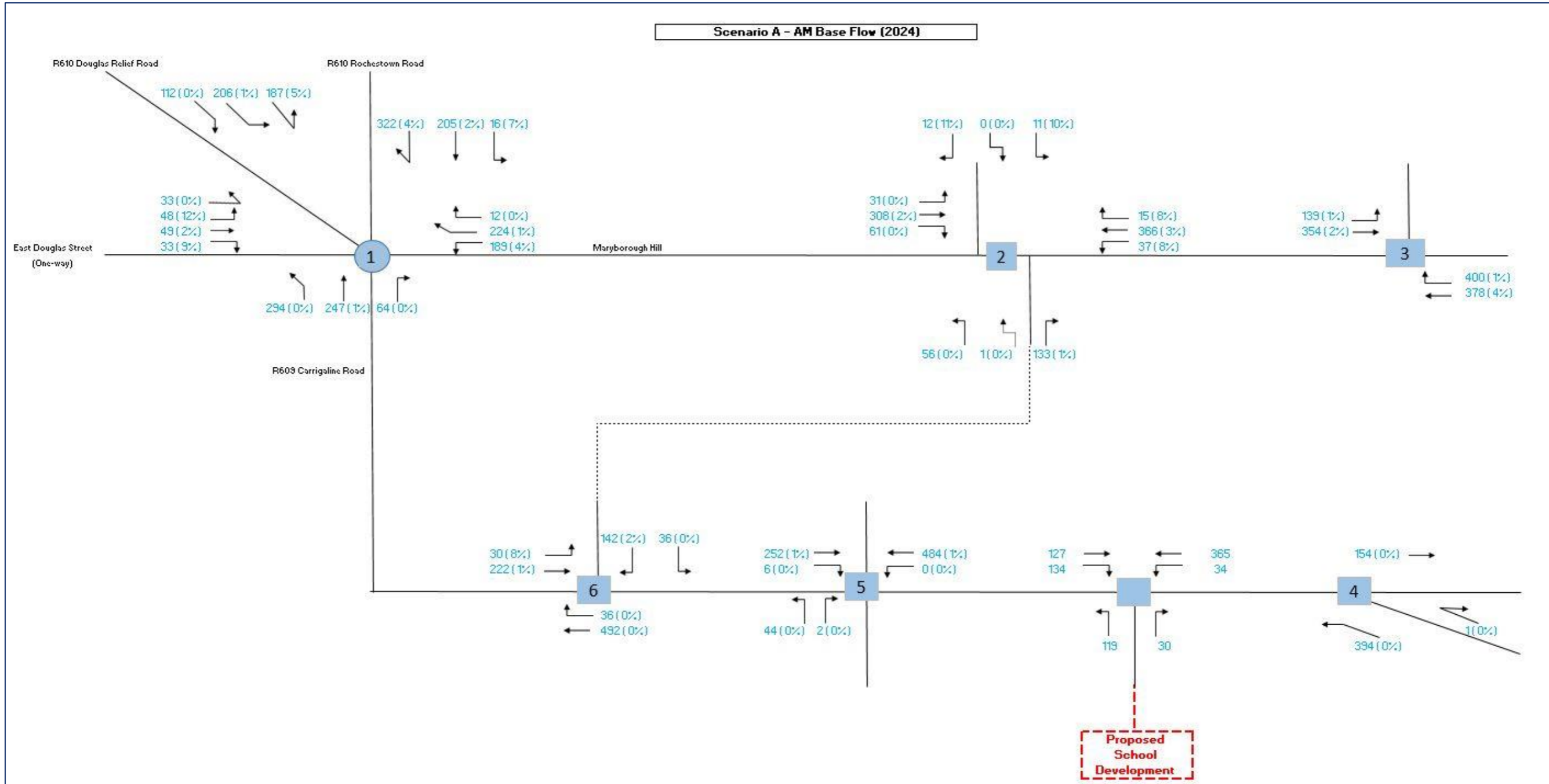
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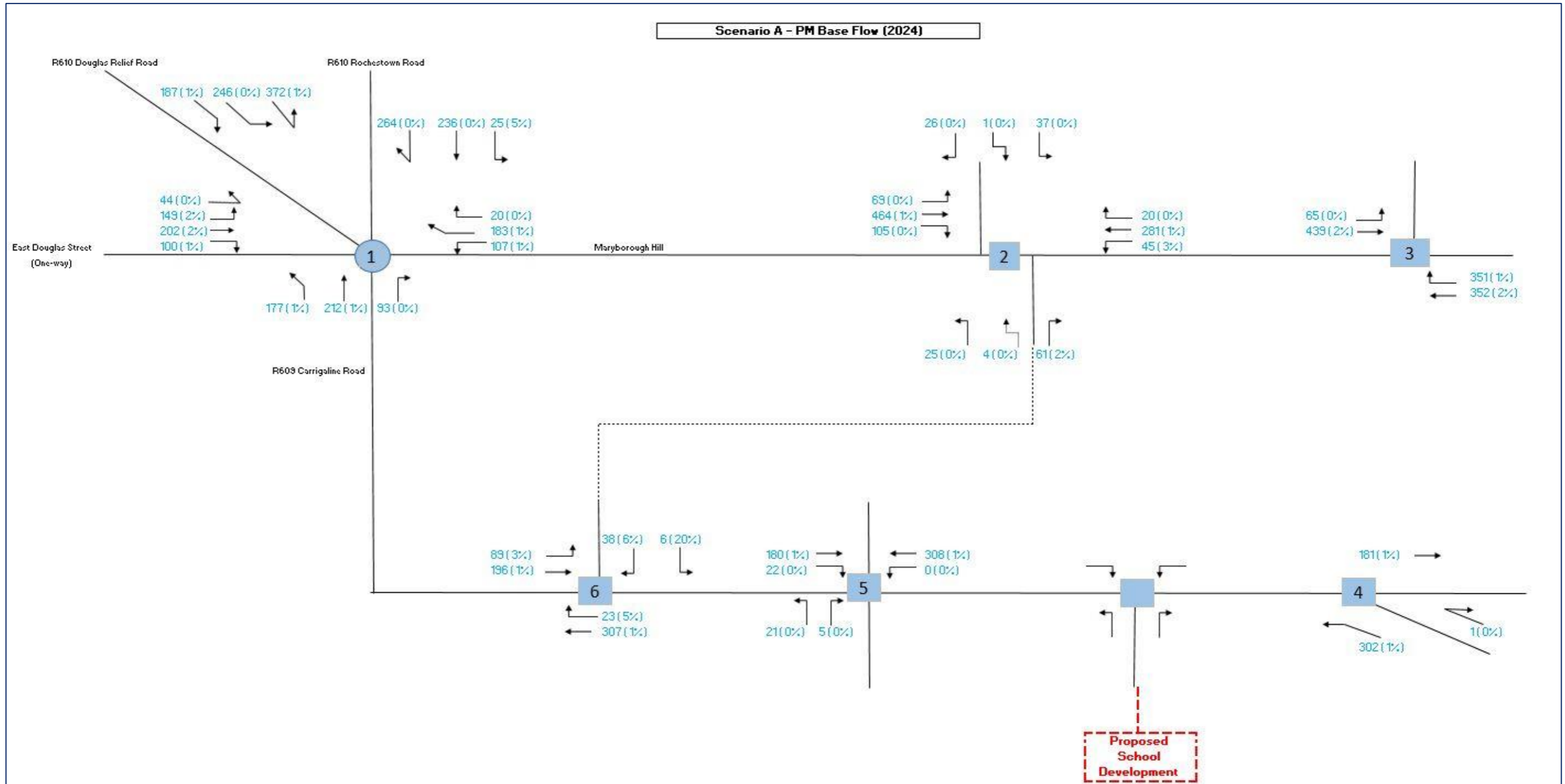
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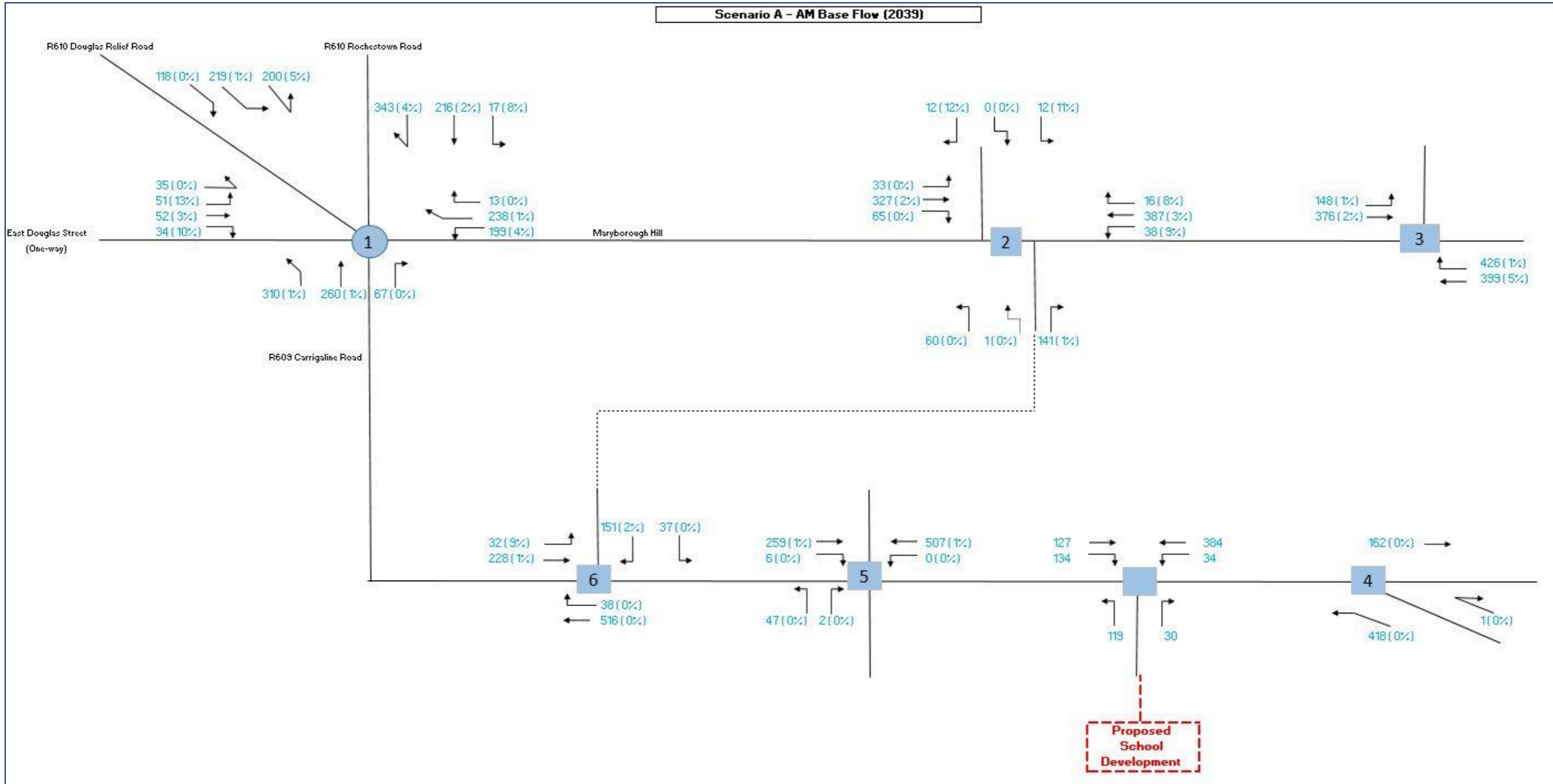
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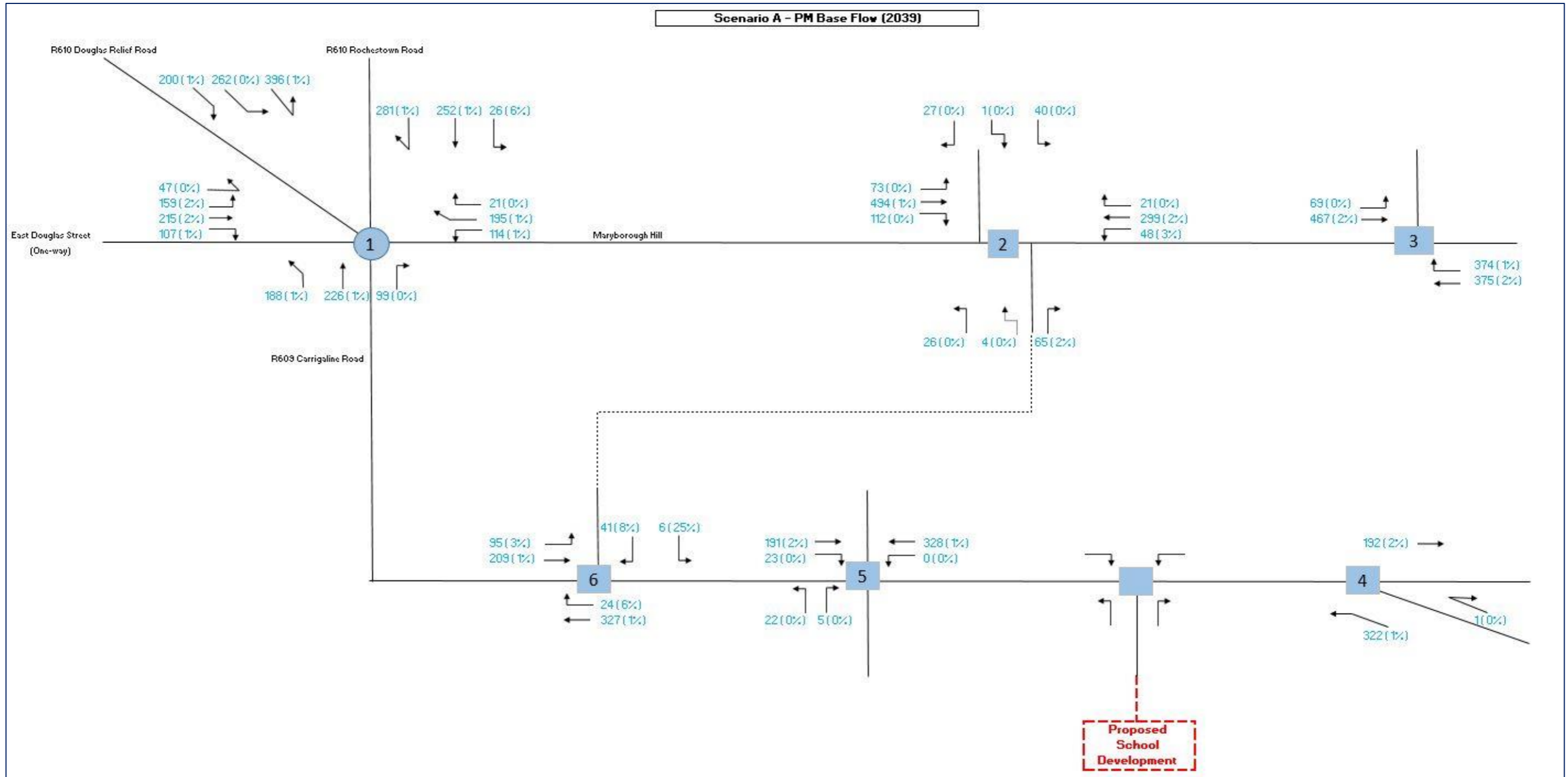
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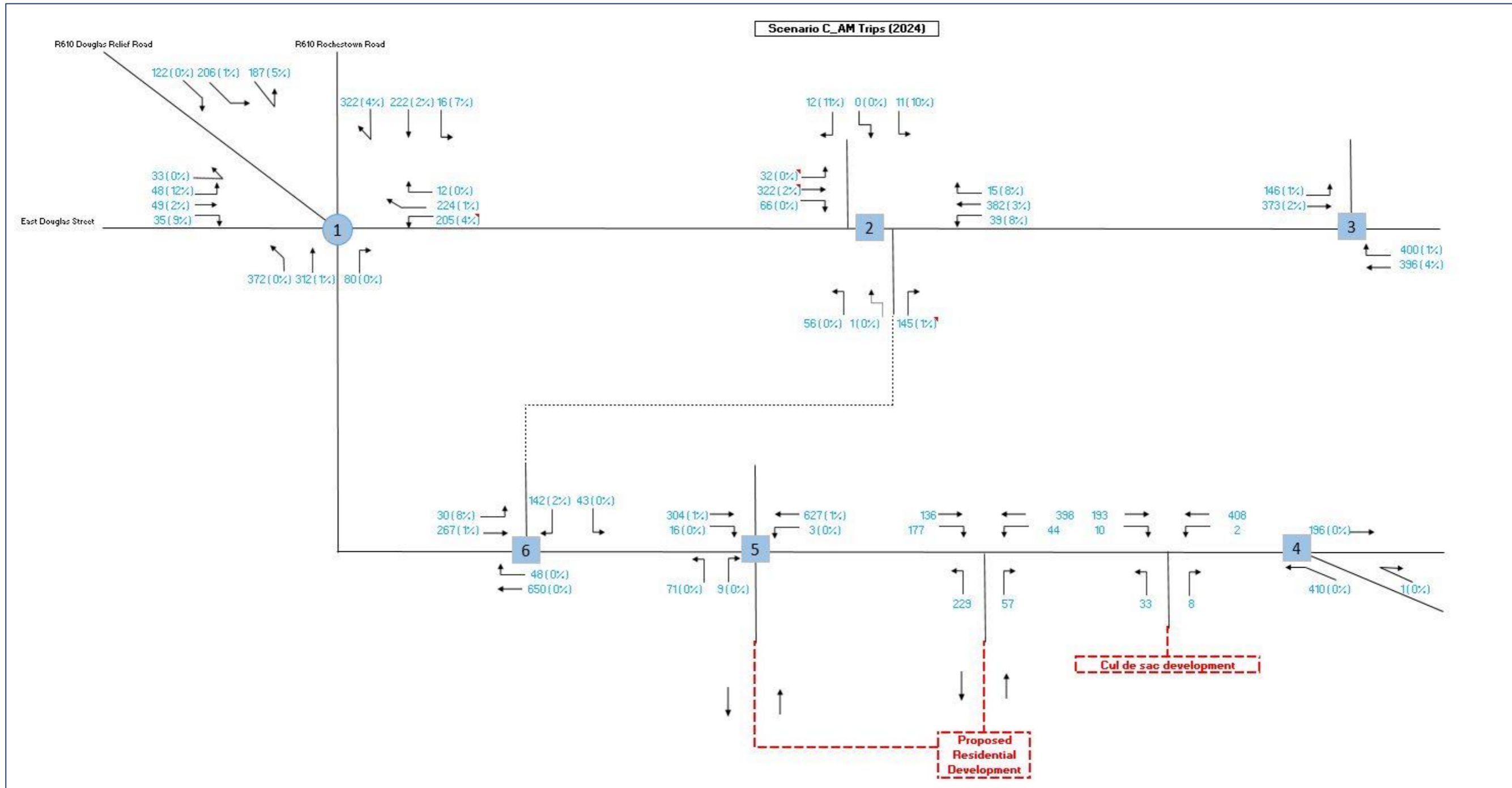
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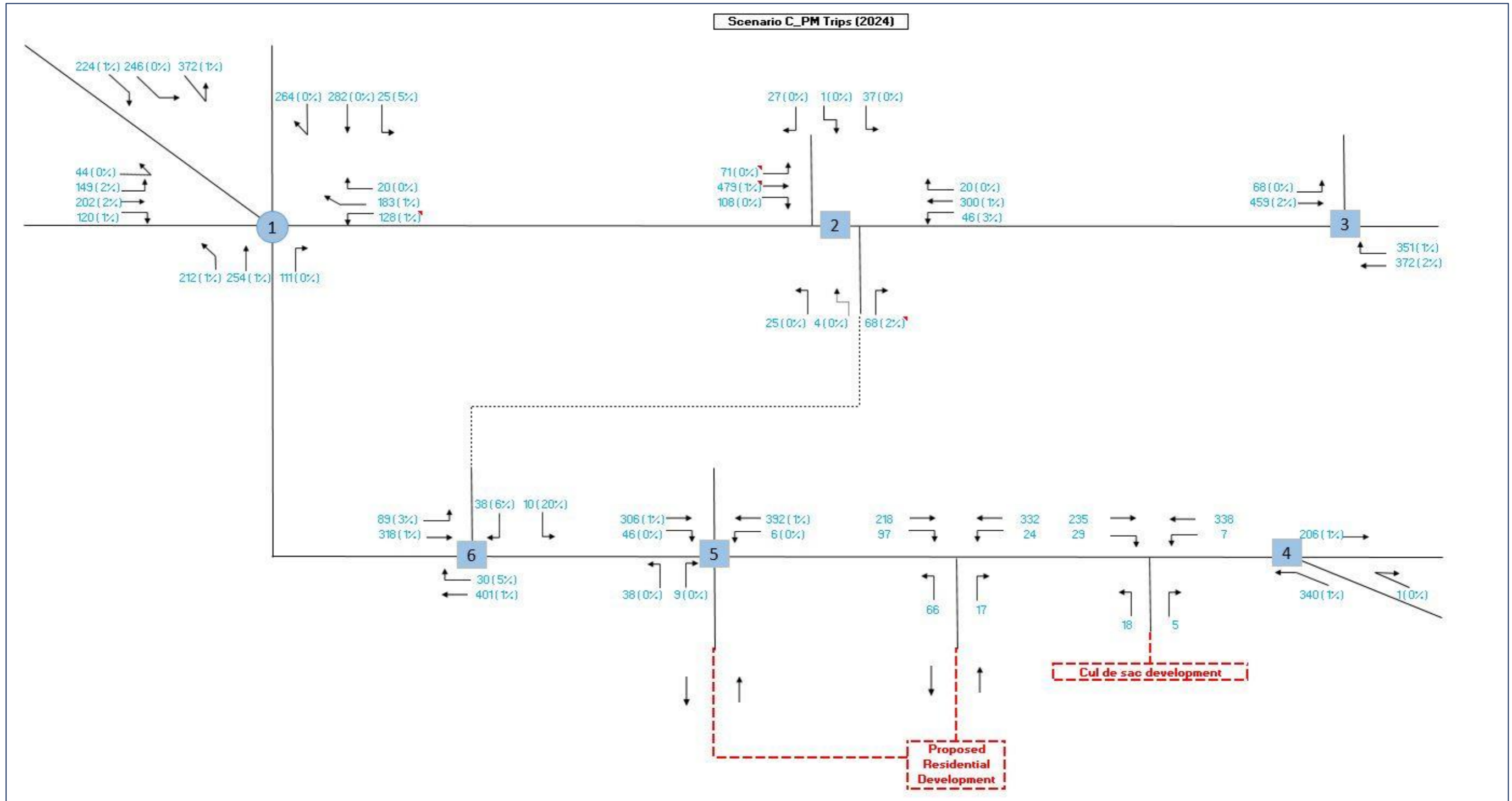
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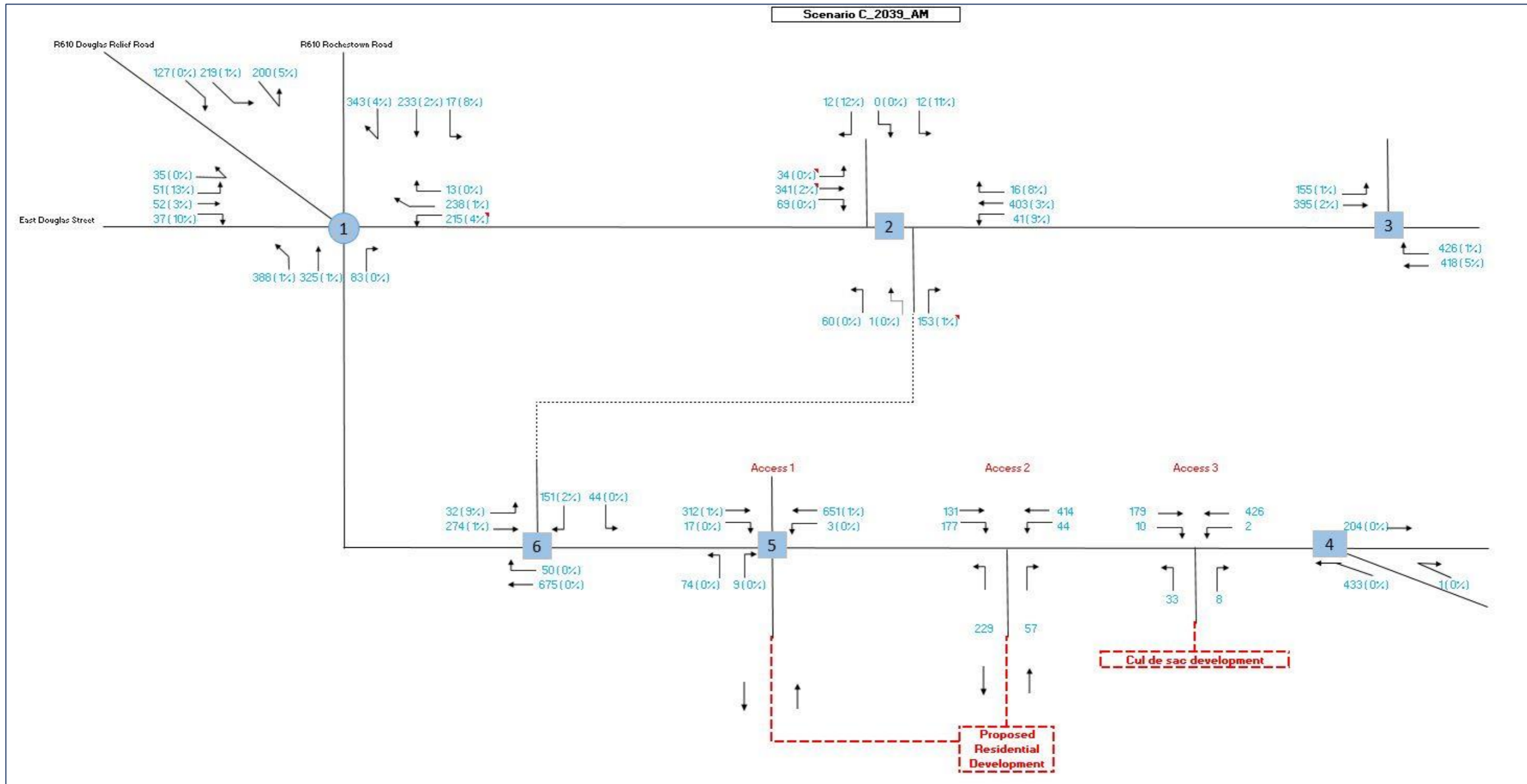
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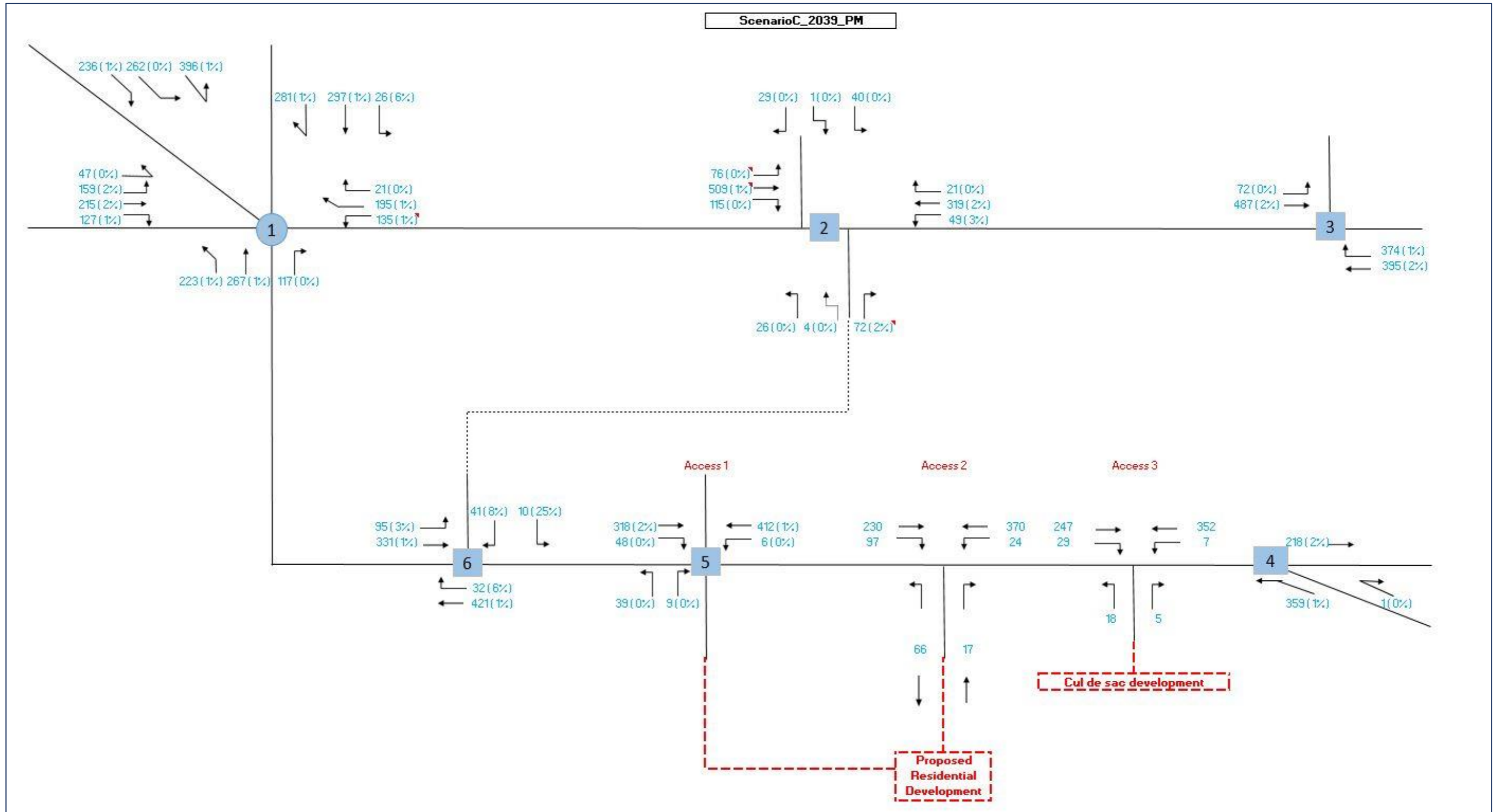
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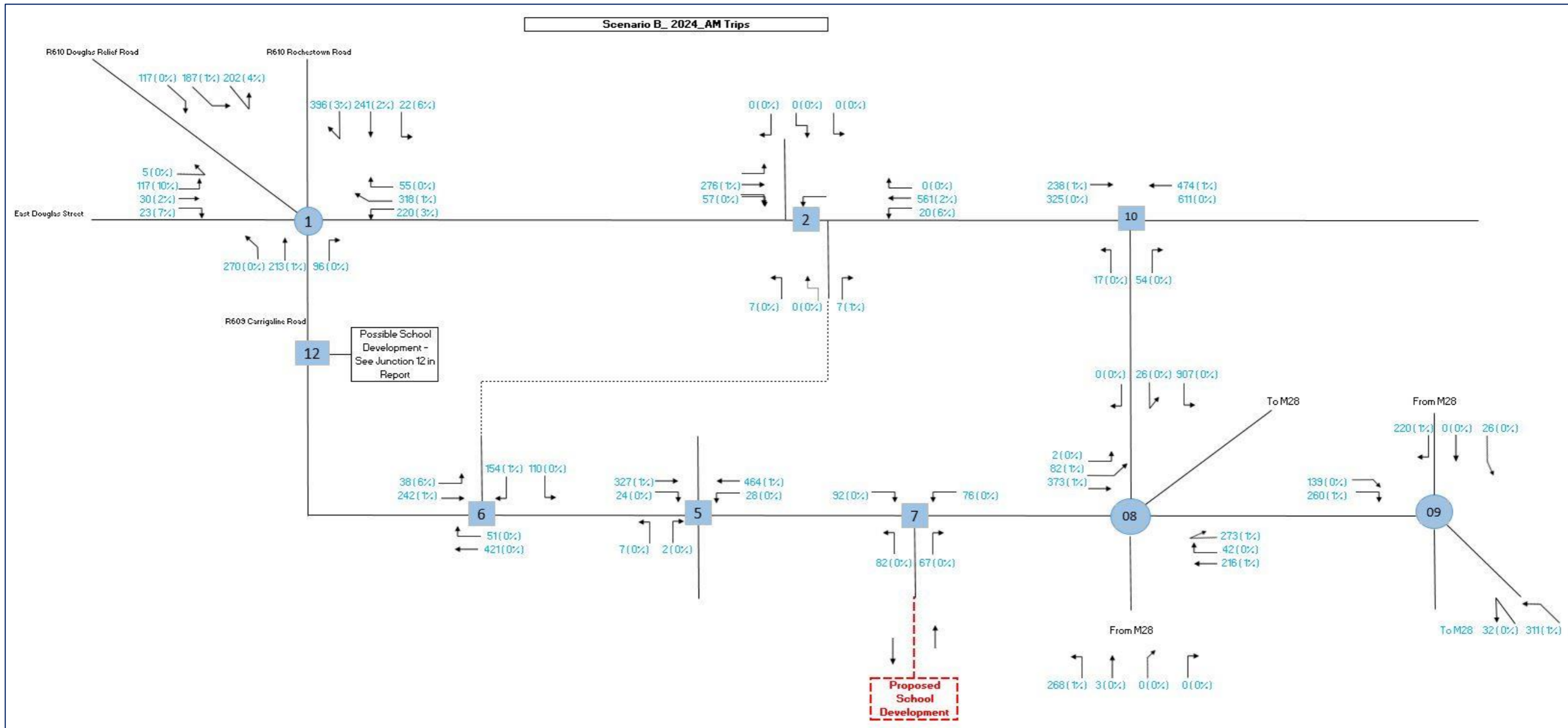
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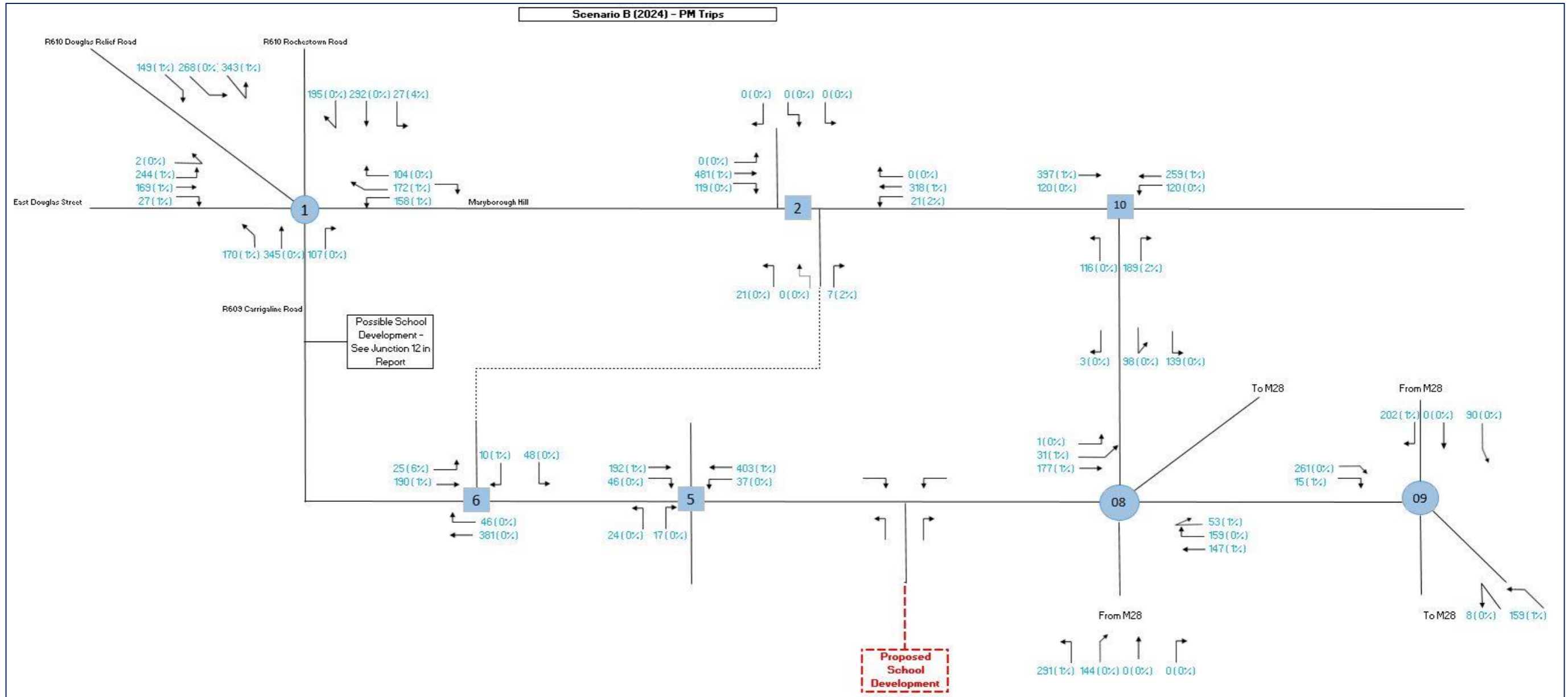
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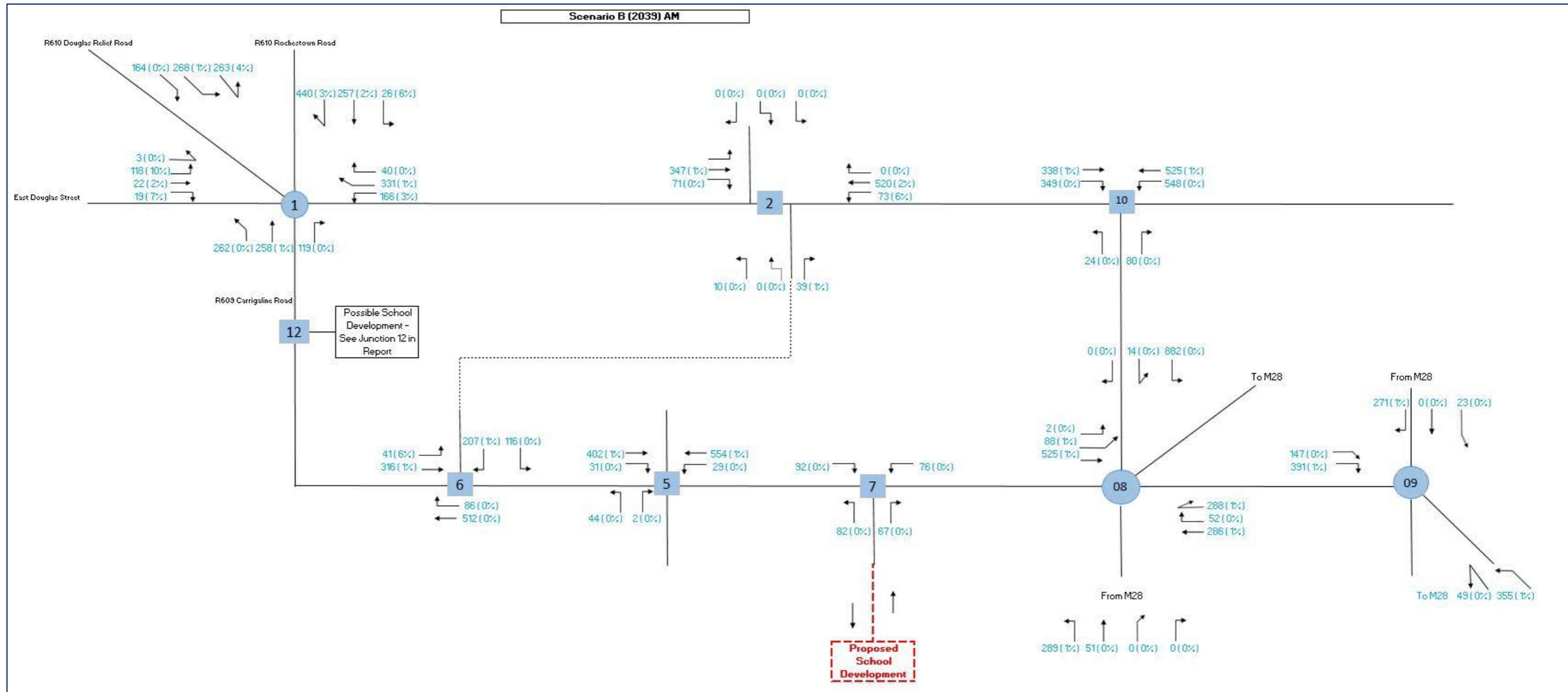
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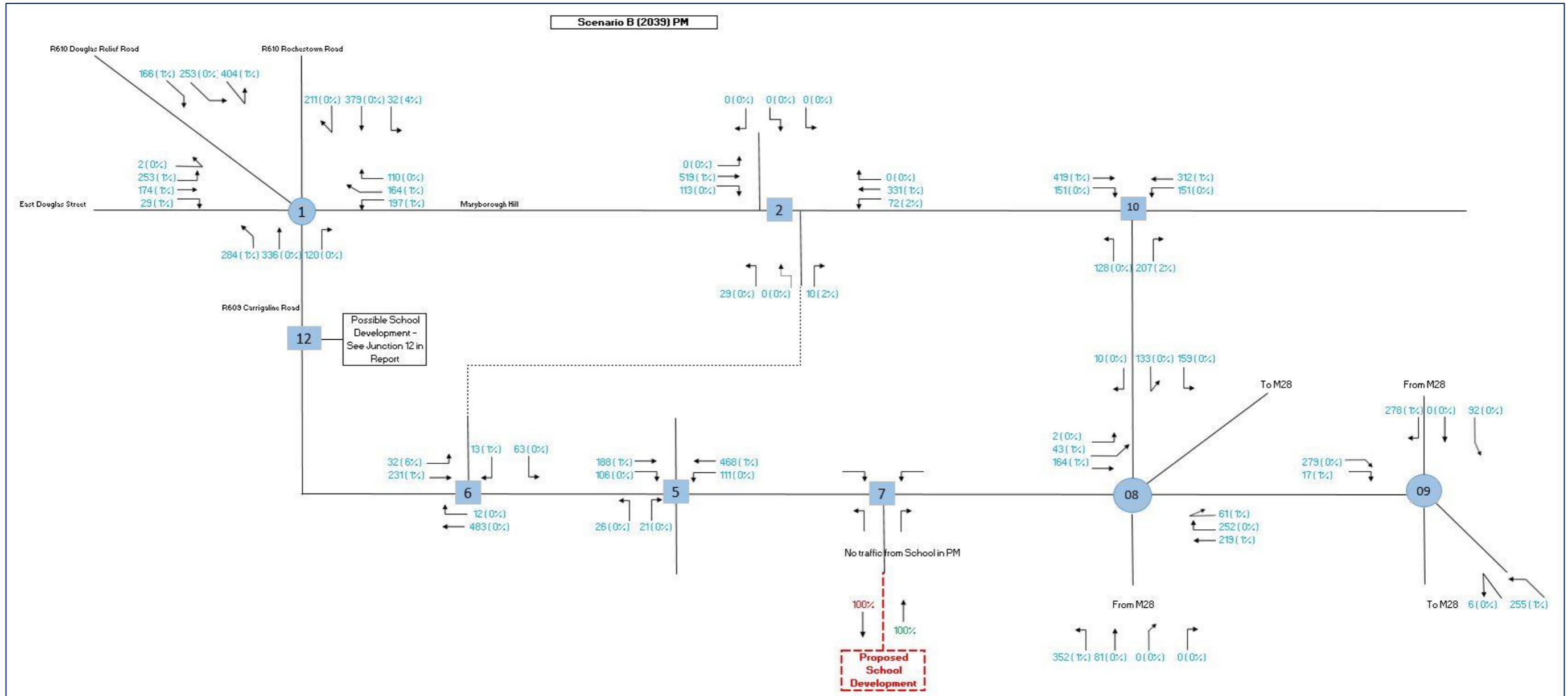
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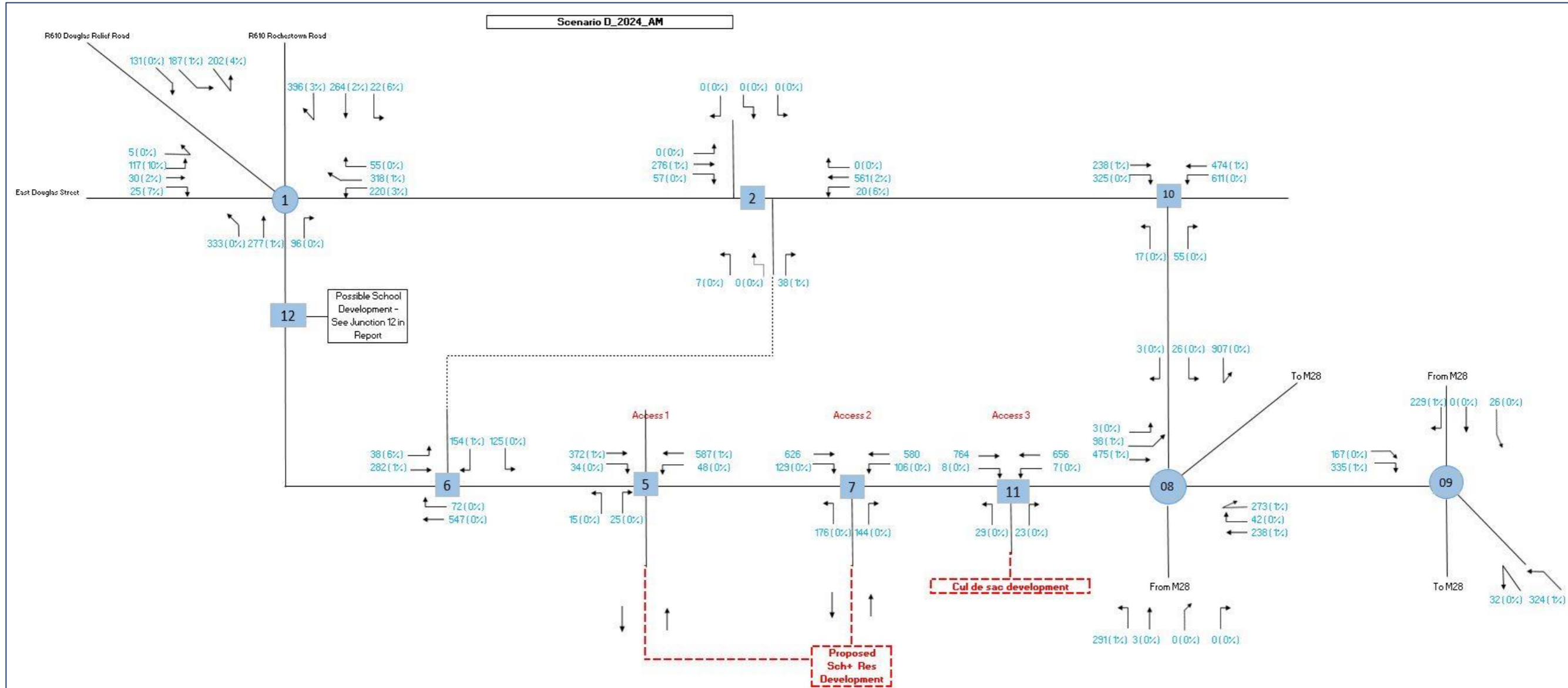
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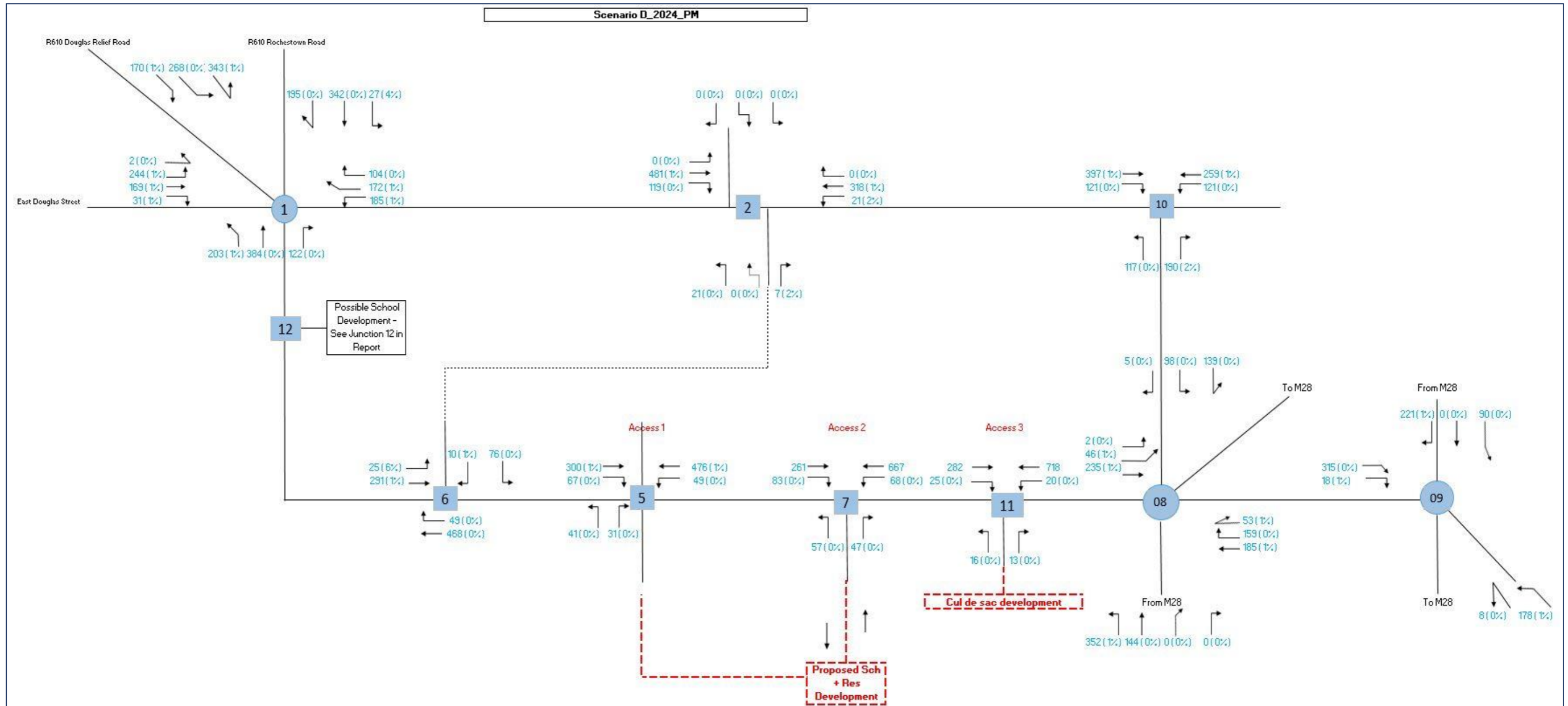
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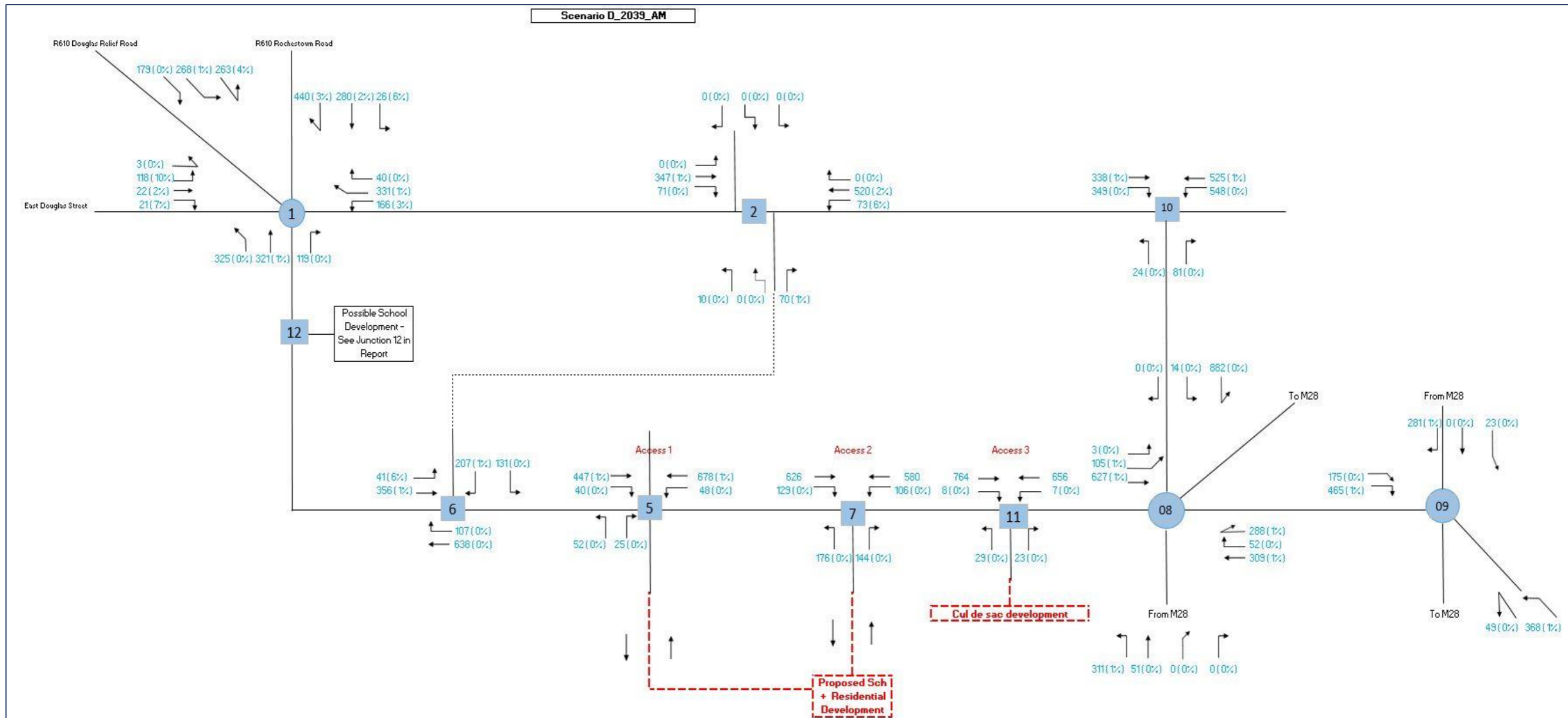
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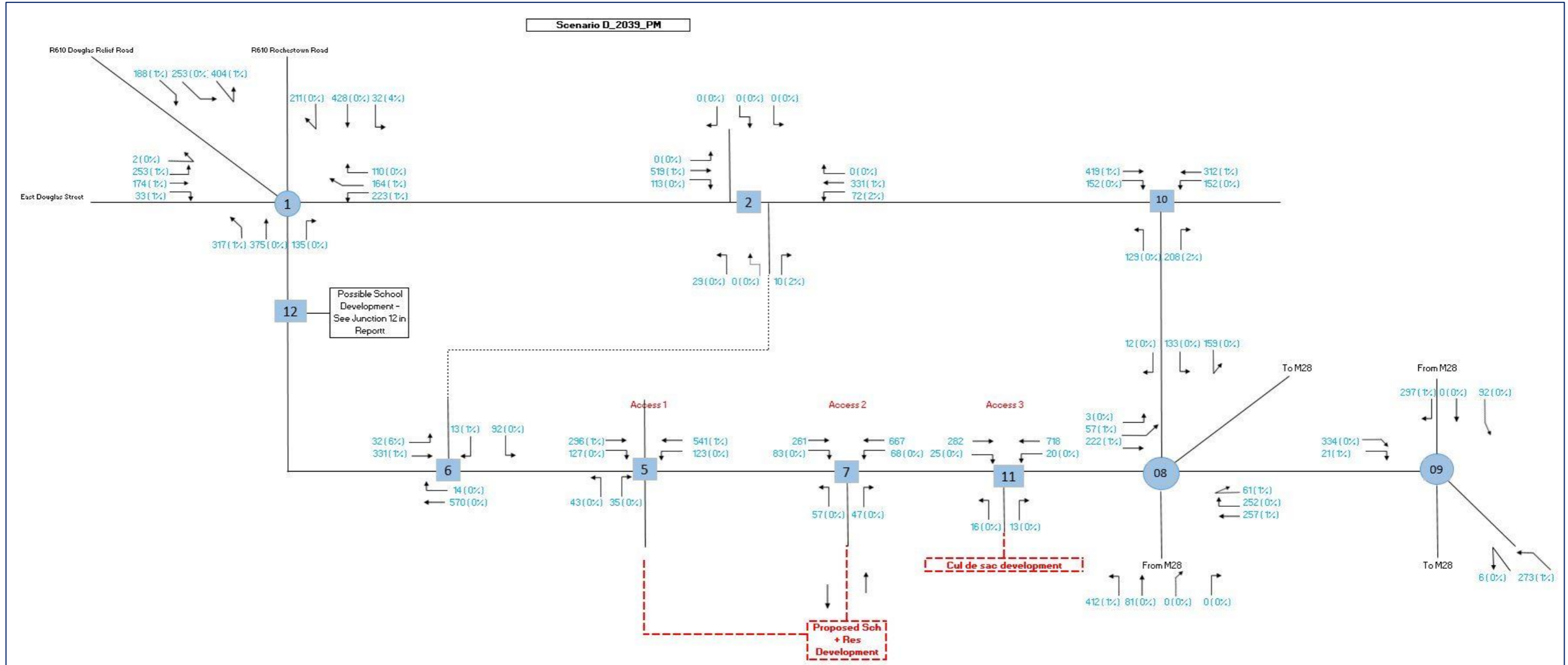
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Appendix 5A.3.27



Appendix 5A.3.28



Appendix 5A.4.1

Existing Road Network												
2024 (Opening Year)												
Link Section (See Diagrammatic Layout)	Base	Base + Development	% Change	Base	Base + Development	% Change	Road Type as per TA 79/99	60% Capacity as per TA 79/99	Total Capacity of Link (veh/hr)	Base	Base + Development	% Change
	2-way (veh/hr) Traffic (AM) Scenario A	2-way (veh/hr) Traffic (AM) Scenario C	% Change due to Development	2-way (veh/hr) Traffic (PM) Scenario A	2-way (veh/hr) Traffic (PM) Scenario C	% Change due to Development				Scenario A - Without Development Do Minimum (AADT)	Scenario C - With Development Do Something (AADT)	% Change due to Development
1. Entrance: R609 between Jct 4 and 5	643	752	17%	487	608	25%	UAP2	1260.00	1764.00	7384	8883	20%
2. R609 between Jct 1 and 6	989	1189	20%	872	1054	21%	UAP2	1260.00	1764.00	12149	14642	21%
3. R610 Douglas Relief Road	1333	1421	7%	1429	1533	7%	UAP2	1650.00	2310.00	18007	19258	7%
4. Maryborough Hill between Jct 1 and 2	770	874	14%	923	969	5%	UAP2	1470.00	2058.00	11029	12013	9%
5. Maryborough Hill between Jct 2 and 3	871	906	4%	882	1010	15%	UAP2	1470.00	2058.00	11433	12488	9%
6. R610 Rochestown Road	1037	1107	7%	1278	1351	6%	UAP2	1260.00	1764.00	15079	16011	6%
7. Maryborough Woods	239	282	18%	199	208	5%	UAP2	1470.00	2058.00	2860	3203	12%

2039 (Design Year)												
Link Section (See Diagrammatic Layout)	Base	Base + Development	% Change	Base	Base + Development	% Change	Road Type as per TA 79/99	Capacity as per TA 79/99	Total Capacity of Link (veh/hr)	Base	Base + Development	% Change
	2-way (veh/hr) Traffic (AM) Scenario A	2-way (veh/hr) Traffic (AM) Scenario C	% Change due to Development	2-way (veh/hr) Traffic (PM) Scenario A	2-way Traffic (veh/hr) (PM) Scenario C	% Change due to Development				Scenario A - Without Development Do Minimum (AADT)	Scenario C - With Development Do Something (AADT)	% Change due to Development
1. Entrance: R609 between Jct 4 and 5	675	783	16%	514	631	23%	UAP2	1260.00	1764.00	7769	9236	19%
2. R609 between Jct 1 and 6	1066	1237	16%	921	1100	19%	UAP2	1260.00	1764.00	12973	15255	18%
3. R610 Douglas Relief Road	1463	1537	5%	1569	1609	3%	UAP2	1650.00	2310.00	19767	20513	4%
4. Maryborough Hill between Jct 1 and 2	795	872	10%	982	1005	2%	UAP2	1470.00	2058.00	11574	12231	6%
5. Maryborough Hill between Jct 2 and 3	922	958	4%	940	965	3%	UAP2	1470.00	2058.00	12143	12542	3%
6. R610 Rochestown Road	1100	1169	6%	1361	1418	4%	UAP2	1260.00	1764.00	16029	16852	5%
7. Maryborough Woods	282	292	4%	209	218	4%	UAP2	1470.00	2058.00	3209	3333	4%

Future Road Network												
2024 (Opening Year)												
Link Section (See Diagrammatic Layout)	Base	Base + Development	% Change	Base	Base + Development	% Change	Road Type as per TA 79/99	60% Capacity as per TA 79/99	Total Capacity of Link (veh/hr)	Base	Base + Development	% Change
	2-way (veh/hr) Traffic (AM) Scenario B	2-way (veh/hr) Traffic (AM) Scenario D	% Change due to Development	2-way (veh/hr) Traffic (PM) Scenario B	2-way (veh/hr) Traffic (PM) Scenario D	% Change due to Development				Scenario B Without Development Do Minimum (AADT)	Scenario D With Development Do Something (AADT)	% Change due to Development
1. Entrance: R609 between Jct 8 and 6	962	1120	16%	723	882	22%	UAP2	1260.00	1764.00	11011	13079	19%
2. R609 between Jct 1 and 6	1117	1254	12%	1031	1190	15%	UAP2	1260.00	1764.00	14018	15947	14%
3. R610 Douglas Relief Road	1654	1719	4%	1444	1490	3%	UAP2	1650.00	2310.00	20225	20951	4%
4. Maryborough Hill between Jct 1 and 2	1015	1015	0%	1080	1098	2%	UAP2	1470.00	2058.00	13659	13775	1%
5. Maryborough Hill between Jct 2 and 10	1066	1066	0%	955	956	0%	UAP2	1470.00	2058.00	13192	13198	0%
6. R610 Rochestown Road	1378	1449	5%	1723	1798	4%	UAP2	1260.00	1764.00	20196	21148	5%
7. Maryborough Woods	245	260	6%	165	178	8%	UAP2	1470.00	2058.00	2681	2864	7%
8. Carrs Hill Underbridge	1023	1128	10%	729	786	8%	UAP1	1590.00	2226.00	11453	12514	9%
9. Maryborough to Carrs Hill Link Road	1102	1107	0%	604	613	1%	UAP1	1590.00	2226.00	11171	11262	1%

2039 (Design Year)												
Link Section (See Diagrammatic Layout)	Base	Base + Development	% Change	Base	Base + Development	% Change	Road Type as per TA 79/99	60% Capacity as per TA 79/99	Total Capacity of Link (veh/hr)	Base	Base + Development	% Change
	2-way (veh/hr) Traffic (AM) Scenario B	2-way (veh/hr) Traffic (AM) Scenario D	% Change due to Development	2-way (veh/hr) Traffic (PM) Scenario B	2-way (veh/hr) Traffic (PM) Scenario D	% Change due to Development				Scenario B Without Development Do Minimum (AADT)	Scenario D With Development Do Something (AADT)	% Change due to Development
1. Entrance: R609 between Jct 8 and 6	1190	1349	13%	875	1036	18%	UAP2	1260.00	1764.00	13497	15584	15%
2. R609 between Jct 1 and 6	1276	1413	11%	1261	1420	13%	UAP2	1260.00	1764.00	16549	18478	12%
3. R610 Douglas Relief Road	1916	1982	3%	1649	1694	3%	UAP2	1650.00	2310.00	23276	24002	3%
4. Maryborough Hill between Jct 1 and 2	1067	1067	0%	1135	1153	2%	UAP2	1470.00	2058.00	14357	14472	1%
5. Maryborough Hill between Jct 2 and 10	1232	1232	0%	1080	1080	0%	UAP2	1470.00	2058.00	15093	15093	0%
6. R610 Rochestown Road	1549	1620	5%	1916	1991	4%	UAP2	1260.00	1764.00	22568	23520	4%
7. Maryborough Woods	355	369	4%	191	205	7%	UAP2	1470.00	2058.00	3576	3758	5%
8. Carrs Hill Underbridge	1123	1228	9%	913	1001	10%	UAP1	1590.00	2226.00	13298	14559	9%
9. Maryborough to Carrs Hill Link Road	1111	1113	0%	709	712	0%	UAP1	1590.00	2226.00	11906	11939	0%



Appendix 5B

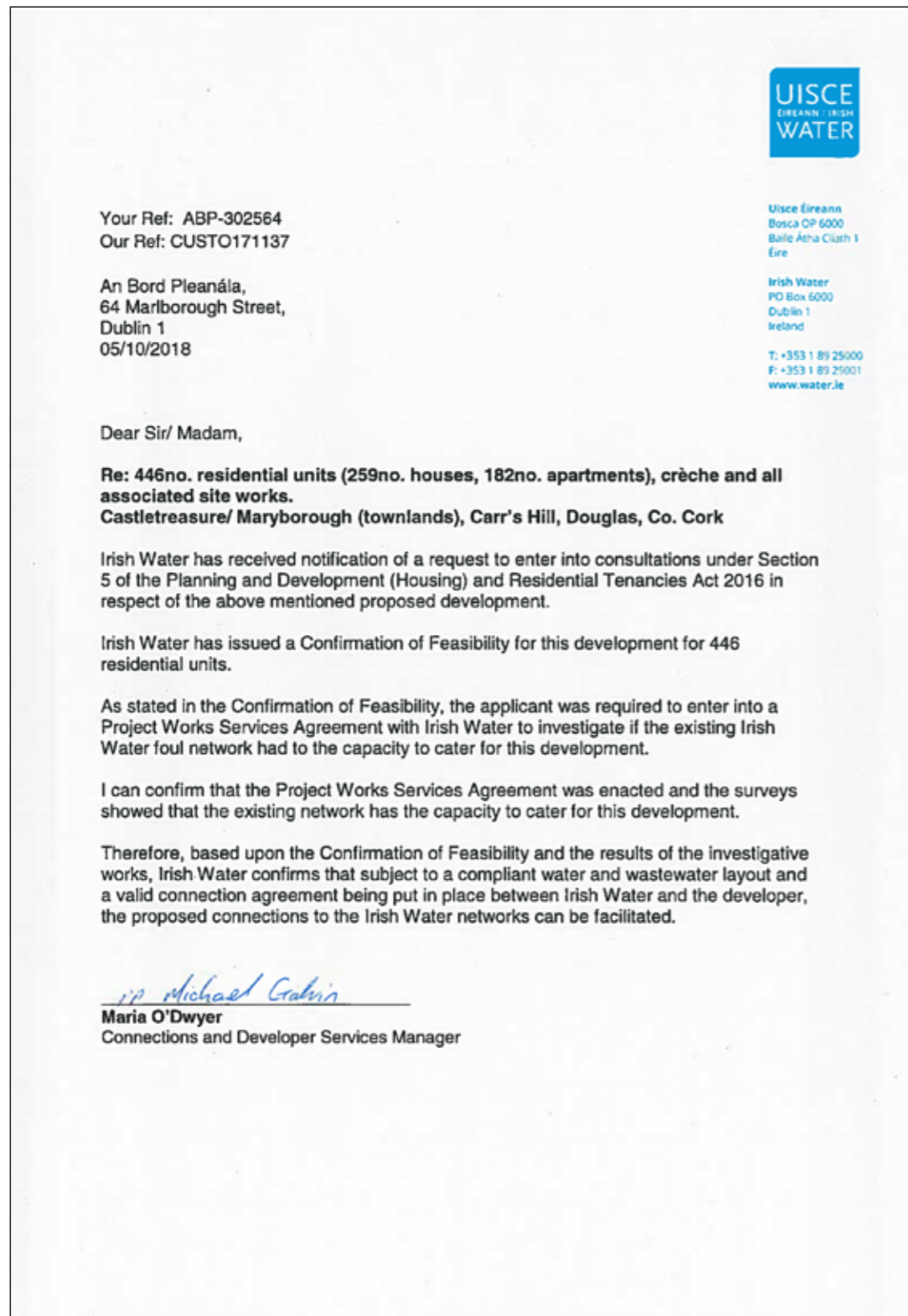
Material Assets - Infrastructure

A5B

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC

APPENDIX 5B



Appendix 8

Biodiverstiy

A8

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC



CAIRN
PLC

APPENDIX 8 BIODIVERSITY

Appendix 8.1 Biodiversity Survey Schedule

Date	Field Survey	Times (24 hrs)	Weather Conditions	Ecologist
03.05.18	Habitats & Flora Survey. Bird Transect Survey 1; Mammal Walkover; Other Taxa Casual Observations; Deployment of Passive Bat Detector P1 & Mammal Trail Camera C1.	c. 11.00 - 17.00 c. 10.20 - 13.35	Dry; 8/8 Cloud Cover; F1 Wind; Good Visibility.	Michelle O'Neill Katherine Kelleher
09.05.18	Bird Point Count Survey 1; Mammal Walkover; Other Taxa Casual Observations; Collection of Passive Bat Detector P1 & Mammal Trail Camera C1; Deployment of Passive Bat Detector P2 & Mammal Trail Camera C2.	c. 10.00 - 12.20	Rain; 8/8 Cloud Cover; F1-2 Wind; Good Visibility.	Katherine Kelleher
11.05.18	Mammal Walkover; Other Taxa Casual Observations; Collection of Passive Bat Detector P2 & Mammal Trail Camera C2; Deployment of Passive Bat Detectors P3 & P4 and Mammal Trail Cameras C3 & C4.	c. 11.05 - 13.55	Dry; 8/8 Cloud Cover; F1 Wind; Good Visibility.	Katherine Kelleher
14.05.18	Collection of Passive Bat Detectors P3 & P4 and Mammal Trail Cameras C3 & C4.	c. 13.50 - 14.25	n/a	Katherine Kelleher
24.05.18	Aquatic Ecology Survey.	c. 12.00 - 16.30	Dry; 2/8 Cloud Cover; F2 Wind; Good Visibility.	Ross Macklin
25.05.18	Aquatic Ecology Survey.	c. 08.00 - 16.00	Dry; 3/8 Cloud Cover; F2 Wind; Good Visibility.	Ross Macklin
13.07.18	Bird Transect Survey 2; Mammal Walkover; Other Taxa Casual Observations; Deployment of Passive Bat Detectors P5 & P6 and Mammal Trail Cameras C5 & C6.	c. 09.45 - 12.45	Dry; 7/8 Cloud Cover; F0-1 Wind; Good Visibility.	Katherine Kelleher
20.07.18	Bird Point Count Survey 2; Collection of Passive Bat Detector P6 & Mammal Trail Camera C6.	c. 07.45 - 08.20	Dry; 8/8 Cloud Cover; F1 Wind; Good Visibility.	Katherine Kelleher
22.07.18	Other Taxa Casual Observations; Collection of Passive Bat Detector P5 & Mammal Trail Camera C5.	c. 16.55 - 17.25	Mostly Dry, some Light Mist; 8/8 Cloud Cover; F1 Wind; Good Visibility.	Katherine Kelleher
15.08.18	Active Bat Survey.	c. 21.05 - 23.10	Dry; 8/8 Cloud Cover; F2-3 Wind; Good Visibility; 17-16°C.	Katherine Kelleher Isobel Abbott

Camera	Dates Running	Nights Running	Location
Camera 1	03.05 - 09.05	6	IW 70457 68364
Camera 2	09.05 - 11.05	2	IW 70616 68117
Camera 3	11.05 - 14.05	3	IW 70421 68002
Camera 4	11.05 - 14.05	3	IW 70249 68054
Camera 5	13.07 - 22.07	9	IW 70879 68085
Camera 6	13.07 - 20.07	7	IW 71031 67902

Passive Bat Detector	Dates Deployed	Nights Analysed	Location
Passive 1	03.05 - 09.05	2 nights	IW 70460 68361
Passive 2	09.05 - 11.05	2 nights	IW 70620 68116
Passive 3	11.05 - 14.05	2 nights	IW 70410 68003
Passive 4	11.05 - 14.05	2 nights	IW 70252 68058
Passive 5	13.07 - 22.07	2 nights	IW 70887 68082
Passive 6	13.07 - 20.07	2 nights	IW 71015 67895

Appendix 8.2 Biodiversity Evaluation Scheme¹.

Biodiversity Evaluation Criteria

International Importance:

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level*) of the following:
 - Species of bird listed in Annex I and/or referred to in Article 4(2) of the Birds Directive and/or;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
- Major salmon river fisheries.

National Importance:

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level*) of the following:
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing 'viable areas'^{**} of the habitat types listed in Annex I of the Habitats Directive.
- Major trout river fisheries.
- Commercially important coarse fisheries.
- Waterbodies with major amenity fishery value.
- Waterbodies with significant populations of recruiting sea trout and Atlantic salmon.

¹ amended after Triturus Environmental 2016 (unpub.), NRA 2009 and Nairn & Fossitt 2004

Biodiversity Evaluation Criteria

County Importance:

- Area of Special Amenity[^].
- Area subject to a Tree Preservation Order[^].
- Area of High Amenity[^], or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level*) of the following:
 - Species of bird listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas** of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP) if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
- Small waterbodies with known salmonid populations or with good potential salmonid habitat.
- Large waterbodies with some coarse fisheries value.
- A regularly occurring substantial population of a nationally important species including lamprey, salmonids and European eel. Waters containing good resident salmonid stocks. Where coarse fish species are present supporting a known angling fishery they can be included here.
- Wild salmonid populations near urban centres would be of regional importance as they are important water quality indicators and very important for urban biodiversity and as food items for otter. Thus, they are considered of higher than local value in this context.

Local Importance (higher value):

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP if this has been prepared.
- Resident or regularly occurring populations (assessed to be important at the Local level*) of the following:
 - Species of bird listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality.
- Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
- Waterbodies with unpolluted 'High' water quality status (Q4-5, Q5).
- Small waterbodies with some coarse fisheries value or some potential salmonid habitat. Smaller rivers and streams containing lamprey habitat may also be included here^{^^}.

Local Importance (lower value):

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife.
- Sites or features containing non-native species that are of some importance in maintaining habitat links.
- Waterbodies with no current fisheries value, no significant potential fisheries value, poor fisheries habitat. Common and widespread species such as three-spined stickleback present often indicative of a degraded riverine habitat.
- No significant population of any species of fish of conservation value i.e. salmonids, European eel and lamprey species.

* A general suggestion is that 1% of the national population of such species qualifies as an internationally or nationally or county or locally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

** A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

^ It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.


^^Note that salmonid habitats in urban and peri-urban areas may be considered of higher than local value as they are very important indicators of riverine water quality and biodiversity in urban areas. They also are indicative watercourses of Q3 and above and are thus at higher risk in urban areas pressurised from development and warrant higher protection.


Appendix 8.3 Salmonid Habitat Classification².

Holding	Nursery	Spawning	Habitat Class
High quality holding habitat defined by deep pool sequences with well oxygenated water, mature riparian cover and natural river profile. Adult salmonids will likely be visible when water clarity is good.	High quality nursery habitat exhibits substantial areas of faster glide and riffle habitat often accompanied by beds of floating river vegetation in pristine water. The site should also retain a natural river profile with good riparian cover with juvenile salmonids visible when walking the channel.	High quality spawning habitat should have good to high quality water (i.e. Q4 or Q4-5). The river should exhibit natural holding pool habitat and glide tailing with well sorted clean and un-bedded gravels. Modifications to the channel should be absent in the survey area. Siltation levels should be light or only present as natural patches in pool slacks (but more likely to have a higher sand content). Siltation should never be moderate to heavy (i.e. visible on gravel surfaces with silt plumes underfoot).	1 (High Quality)
Good quality holding habitat retains deep pool and scour habitat with moderate levels of riparian cover and a semi-natural river profile. Some adult salmonids should be visible during spawning migrations and good water clarity.	Good quality nursery habitat should have good to moderate quality water (at worst EPA Q3-4). It should have good tracts of riffle and glide habitat and a natural to semi-natural river profile. Siltation levels should be slight but not heavy. The channel should also exhibit cover but not at the expense of excluding light entry to the channel which is important for instream primary production and the sustenance of salmonid populations.	Good quality spawning habitat should have good to moderate quality water (at worst EPA Q3-4). The river should have a natural or semi-natural profile. It should exhibit holding pool habitat and glide tailing with well sorted clean and un-bedded gravels. Siltation levels should can be light but never moderate to heavy (i.e. not visible on gravel surfaces with no silt plumes underfoot).	2 (Good Quality)
Moderate quality holding habitat exhibits pockets of deeper water capable of supporting some adult salmonids but lower than those classes described above. Extensive pool sequences absent.	Moderate quality nursery habitat should habitat typically occurs in semi-natural channels where modifications are visible (e.g. channel straightening, deepening etc.). These channels often have smaller pockets of well oxygenated riffle and glide water. Often the channel beds are strewn with blanket algae and sedimentation is visible reducing the overall viability of nursery habitat. Heavily canopied sections of channel with very low light levels are also lower quality nursery areas.	Moderate quality spawning habitat should exhibit pockets of spawning habitat but not extensive areas of natural habitat as would be represented by classes 1 & 2 above. Moderate quality spawning areas are often in modified reaches of channel (e.g. artificially straightened) and exhibit moderate levels of siltation, nutrient enrichment etc. Substrate classes may also be indicative of higher energy boulder and cobble with limited gravel and thus poor for spawning.	3 (Moderate Quality)
No holding habitat visible. Impacted, shallow watercourses.	Heavily modified channel with no significant nursery habitat.	Limited coarse substrata, absence of adjoining holding pools. Heavy siltation and heavily modified channel reaches.	4 (Poor)

² Amended after Kennedy 1984; Triturus Environmental 2016 (unpub.)
 Lower Scores indicate superior habitat. Habitat Scores that fall between respective classes based on site observations (to allow for better target separation) are denoted 0.5 (e.g. habitat class 1-2 - i.e. good to high quality = 1.5)


Appendix 8.4 Japanese Knotweed Fallopia japonica Management Details.

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This document has been amended or otherwise reviewed since its last formal issue (shown by the issue status and date in the header above) as follows:


This document has been issued and amended as follows:

Revision	Date	Issued for/Revision details	Revised by
Rev 001	04/09/2018	For Approval	Ellen Cross
Rev 002	28/01/2019	For Approval	Stephen Donnelly

ALL REVIEWS CARRIED OUT MUST BE DATED.

Required approvals

	Name	Role	Signature	Date
Checked by	Jamie Wright	Project Manager	J. Wright	10/09/18
Reviewed by	Ciaran O'Neill	Senior Project Manager	C. O'Neill	11/09/18
Reviewed by	Stephen Donnelly	Project Manager	S. Donnelly	28/01/19

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Terms of this report

The following should be read before reliance is placed on any of this report.

All work carried out in preparing this report has used, and is based upon, ATG Services (Ireland) Ltd.'s professional knowledge and understanding of the current legislation on the disposal of waste from sites.

Changes in the same may cause the recommendations and conclusions set out in this report to be incorrect. In giving the recommendations and conclusions ATG Services (Ireland) Ltd have considered the pending waste and disposal legislation and regulations which it is aware of. Following completion of this report, ATG Services (Ireland) Ltd cannot be held liable for any changes which do occur to the legislation which may affect the recommendations and conclusions given.

This report represents the professional opinion of experienced Remediation and Waste disposal professionals. Notwithstanding anything to the contrary contained in this report at our appointment, ATG Services (Ireland) Ltd shall not be construed as owing any greater duty than the use of reasonable skill and care in accordance with the normal standards of its profession.

This report and the warranty in Appendix 3 may not be relied upon by any party who is not ATG Services (Ireland) Ltd's client. ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise to any party who is not a client of ATG Services (Ireland) Ltd.

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1. Introduction

Daibhi Mac Domhnaill of Cairn Homes contacted ATG Group, to carry out the eradication of Japanese Knotweed (JKW) at a development site in Castletreasure, Carrs Hill, Cork. ATG mobilised to site on the 23rd July 2018 to begin the JKW eradication works.

Japanese knotweed is an upright, shrub-like herbaceous perennial plant widely considered the most invasive alien plant found in Britain today. Introduced in the 1850s as an ornamental plant, it has spread throughout the UK and Europe. During late spring the rhizome system of Japanese knotweed starts to produce new shoots, which on emergence appear like asparagus. The shoots grow particularly rapidly, becoming more bamboo-like and fleshy green red tinged in colour, and may reach 2 meters by the end of May and exceed 3 meters by the end of August. Mature leaves are light green and heart shaped; in late August the plant produces clusters of small cream sterile flowers. Japanese Knotweed dies back after the first frosts each year, leaving only dead brown hollow canes as an above ground indication of its presence underground. The rhizome network, a type of modified root system, can extend to a depth of up to 3 meters underground.

As JKW propagates via its root (rhizome), in order to adequately eradicate JKW, one must ensure the rhizomes are no longer active, irrespective of the condition of the surface growth. ATG considered this the case and if left unattended, the JKW would continue to grow unabated. Given the time scales for treatment and expenses, it was recommended that the most cost effective and rapid means of removing the knotweed was to utilize the Eraginate process.


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Fig 1: Map depicting the locations of the Japanese Knotweed that were eradicated by ATG during their works.

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2. Initial Site Set-up

Initial site set-up was carried out on arrival to the site and involved the establishment of a work area as well as the provision of a storage area for the skip. The main contractor was responsible for the provision of the following:

- Site Health and Safety Instructions;
- Water supply for vehicle cleaning;
- Necessary site drawings;
- Site services Drawings


2.1 Provision of Access and Protection

The access/egress route to the areas of contamination were clearly marked for the purposes of all vehicular traffic entering and leaving the site. The temporary storage and loading areas were identified as appropriate and agreed with the client. Fencing was erected and located around the site to restrict access.

2.3 Inspection of Site

All areas of the site including access/egress route, zone of contamination, adjoining site boundary were inspected by our Project Manager with key site personnel (including sub-contractor personnel) for the purposes of highlighting existing services and site hazards.



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3. Eradication Works


The Eradicate process comprised of the following:

- The first operation was to carry out a pre-treatment spraying operation of the JKW.
- Following the pre-treatment spray a quarantine/lay down and treatment area was established on site. This comprised of a sufficiently large area to hold the excavated JKW impacted soils. A cleaning station was established at the entrance to the quarantine area so that any pedestrians entering or leaving the area could wash and scrub their footwear with herbicidal formulae to ensure that no JKW was spread throughout any other area of the site.
- All other vegetation surrounding the JKW was then removed. This was carried out using an excavator and riddle bucket. This was done in such a fashion as not to cause any disruption to the JKW but rather expose it, for eradication.
- The above ground vegetation was removed using an excavator and riddle bucket. The JKW vegetation was transferred to lined skips for disposal.
- A controlled excavation of the soils that were impacted with JKW roots, rhizomes and crowns was carried out. A specialist supervisor determined the extent of the excavation to ensure all roots, rhizomes and crowns were removed.
- Excavated soils were stockpiled and handpicked to remove any visible roots, rhizomes or crowns. An Allu bucket was used to mechanically process the rhizome material from the soils. Any remaining rhizome fractions were treated with herbicides. The processed soils were replaced within the excavations as agreed with the main contractor.



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- During treatment operations, all spray protocols were followed including handling requirements, operators PPE, environmental protection, spray drift and protection of other site operatives and visitors.
- All plant remained in the quarantined area for the duration of the works. If any plant needed to be removed, the wheels/tracks were jet washed with approved herbicides prior to removal off site. This ensured that no JKW was spread to any other area of the site.
- Upon completion, the treatment area was de-mobilised and the site handed back to the client.


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4. Resources

4.1 Plant and Equipment

The following plant and equipment was used:


Plant Description	Quantity	Operation / Process
22 tonne tracked excavator with suitable buckets	1	Excavation of JKW impacted material
Fuel Bowser (accompanied by spill kit)	1	Storage of diesel for plant
Skip	1	Disposal of JKW impacted material
Trimmers/shears	1	Cut down surrounding vegetation
Spraying equipment	1	Pre-treatment herbicidal application to JKW vegetation
Allu Bucket	1	Used during Eraginate process
Riddle Bucket	1	Sifts soils to remove plant matter
Pressure washer	1	Used to wash any JKW material off the plant used on site
210L plastic barrel	1	To store the herbicidal mix during the treatment process
2000g polythene	1	Used to set JKW impacted soils on to prevent cross contamination of JKW free areas

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5. Health and Safety

A Health & Safety policy was included in this project and staff were responsible for complying with the site specific Health and Safety requirements as required by the client.

PPE	Site Personnel	Visitors
Wellingtons	X	X
High Vis Vest / Jacket	X	X
Gloves (EN 388)	X	
Hard Hat (EN 497)	X	X
Type 3 or 4 coveralls	X	
Eye Protection (BS EN 166-F)		
Ear Protection		
Face mask (FP3 III)		

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6. Conclusions

ATG successfully completed the JKW eradication works on the 8th August 2018 and the site was handed back to the client. During the excavation works, all the JKW vegetation, root, crown and rhizome material, associated with the predetermined areas was identified and carefully removed. The sporadic plant of JKW was also eradicated. The JKW free soils were replaced within the excavations as agreed with the main contractor.

The operation to remove and prevent further spreading of the JKW on this site has been executed with the greatest of care and with the best method for this site, under the project circumstances.



Unit 33, Loughanhill Industrial Estate
Coleraine, Co. Derry, BT52 2NR
T +44 (0) 28 7034 3787
info@atg-group.co.uk
www.atg-group.co.uk

Head Office – Coleraine
Offices in Lisburn, Dublin,
Edinburgh, Peterborough, Nairobi

Appendix 1: Site Photographs



Unit 33, Loughanhill Industrial Estate
Coleraine, Co. Derry, BT52 2NR
T +44 (0) 28 7034 3787
info@atg-group.co.uk
www.atg-group.co.uk

Head Office – Coleraine
Offices in Lisburn, Dublin,
Edinburgh, Peterborough, Nairobi





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info@atg-group.co.uk
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Edinburgh, Peterborough, Nairobi


Appendix 2: Waste Disposal Documents

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ATG Services Ltd (part of the ATG Group)
Unit 33, Loughanhill Industrial Estate
Coleraine, Co Derry BT52 2NR

T +44 (0) 2870 343787 T +44 (0) 2892 669677
info@atg-group.co.uk www.atg-group.co.uk



Duty of Care: Controlled Waste Transfer Note - ROI

Waste Management (Registration of brokers and dealers) Regulations 2008 Ref No: 05

<p>Section A - Description of the Waste</p> <ol style="list-style-type: none"> Please describe the waste being transferred Where did the waste come from (this should show where the waste was produced if known or where you collected it from): What is the European Waste Catalogue (EWC) Code: How is the waste contained? <input type="radio"/> Loose <input type="checkbox"/> Bags <input type="checkbox"/> Skip <input type="checkbox"/> Drum <input type="checkbox"/> Containers <input type="checkbox"/> <input type="checkbox"/> Other Please describe: What is the quantity of waste (number of bags, containers; size of containers, weight of bags etc). 	<p>Section B - Current Holder of the Waste (Transferor)</p> <ol style="list-style-type: none"> Full Name (Block Capitals) Name and Address of the Company Which of the following are you (x1 or more boxes) <input type="checkbox"/> Producer of the Waste <input type="checkbox"/> Holder of Waste Authorisation <input type="checkbox"/> Waste Authorisation Number <input type="checkbox"/> Importer of the Waste <input type="checkbox"/> Registered Waste Carrier <input type="checkbox"/> Waste Broker or Dealer <input type="checkbox"/> Registration Number 						
<p>Section C - Person Receiving the Waste (Transferee)</p> <ol style="list-style-type: none"> Full Name (Block Capitals) Name and Address of the Company Which of the following are you (x1 or more boxes) <input checked="" type="checkbox"/> Holder of the Waste Authority <input type="checkbox"/> Waste Authorisation Number <input type="checkbox"/> Issued by <input type="checkbox"/> Importer of the Waste <input type="checkbox"/> Registered Waste Carrier <input type="checkbox"/> Waste Broker or Dealer <input type="checkbox"/> Registration Number 	<p>Section D - Waste Hierarchy Declaration</p> <p>I confirm that I have fulfilled my duty to apply the waste Hierarchy as a priority order as required by the Waste Management (Registration of Brokers and Dealers) Regulations 2008</p> <p>or</p> <p>I confirm that I have departed from the Waste Hierarchy priority order to achieve the best overall environmental outcome, due to the following:</p>						
<p>Section E - Place of Transfer</p> <ol style="list-style-type: none"> Address of place of transfer/collection point: Date of Transfer: Time(s) of transfer (for multiple consignment, give 'between' date): Name, address and registration number of broker or dealer who arranged this waste transfer (if applicable) 							
<p>I confirm that the information provided is true and correct.</p> <p>Section F - Signatures</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <p>Transferee Signed</p> </td> <td style="width: 50%; border: none;"> <p>Transferor Signed</p> </td> </tr> <tr> <td style="border: none;"> <p>Full Name (Block Capitals)</p> </td> <td style="border: none;"> <p>Full Name (Block Capitals)</p> </td> </tr> <tr> <td style="border: none;"> <p>Representing:</p> </td> <td style="border: none;"> <p>Representing:</p> </td> </tr> </table>		<p>Transferee Signed</p>	<p>Transferor Signed</p>	<p>Full Name (Block Capitals)</p>	<p>Full Name (Block Capitals)</p>	<p>Representing:</p>	<p>Representing:</p>
<p>Transferee Signed</p>	<p>Transferor Signed</p>						
<p>Full Name (Block Capitals)</p>	<p>Full Name (Block Capitals)</p>						
<p>Representing:</p>	<p>Representing:</p>						

J. RYAN HAULAGE LTD.
 STRINGFIELD, BALLYWILLIAM, ENNISCORTHY, Co. WEXFORD
 Tel: (045) 842380 • (051) 424715 • Fax: (045) 877957 • (051) 424949 • Mobile: 087 267 9347 • 088 267 9347
 E-Mail: admin@jryangroup.ie • www.jryanhaulage.ie

TIPPER & PLANT HIRE • EXCAVATION & DEMOLITION
 SUPPLIERS OF SAND, GRAVEL, TOP SOIL

DATE: 7/8/2018 LORRY NO: 10036957
 404994 TIME IN: 12:00 TIME OUT: 12:15
 FROM: ATG Carrigrohane Rd Douglas Co. Cork TO: Debris waste Facility
 QUANTITY: skip Collected DRIVER: [Signature]

<input type="checkbox"/> Clean excavated material (17 05 04) Topsoil Subsoil Clay Gravel	<input type="checkbox"/> Mechanically treated (contaminated) (19 12 07) Wood - bushes, trees, stumps etc.
<input type="checkbox"/> Construction / demolition waste (17 05 03) Contaminated soil	<input type="checkbox"/> Municipal (household) waste (20 02 01) Mixed waste
<input type="checkbox"/> Construction / demolition material (17 01 01) Clean Concrete	<input type="checkbox"/> Municipal (household) waste (20 02 07) Bulky waste
<input type="checkbox"/> Construction / demolition waste (17 03 02) Tarmacadam	<input type="checkbox"/> Construction / demolition material (17 02 01) Wood - boards, beams, sheets etc.
<input type="checkbox"/> Other (specify and EWID): <u>Various kind used.</u>	<input type="checkbox"/> Mechanically treated (19 12 12) Mechanically separated waste

Received in good condition, Signed: [Signature]

EOK TRANSPORT LTD. 00233 RECEIPT
 Clongeel, Newmarket, Co. Cork.
 Tel.: (087) 2895056
 Email: eoktransport20@gmail.com

Date: 26.7.18

Received from: ATC Group
 Address: old carrigrohane rd Chem loc CL 000255
 the sum of: 17x10. CC 2908

Signed: [Signature] € :



Unit 33, Loughanhill Industrial Estate
Coleraine, Co. Derry, BT52 2NR
T +44 (0) 28 7034 3787
info@atg-group.co.uk
www.atg-group.co.uk

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Offices in Lisburn, Dublin,
Edinburgh, Peterborough, Nairobi

Appendix 3: Warranty of Works



Unit 33, Loughanhill Industrial Estate
Coleraine, Co. Derry, BT52 2NR
T +44 (0) 28 7034 3787
info@atg-group.co.uk
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Warranty of Works

- 1.) ATG Services (Ireland) Ltd (“ATG”) will design carry out and complete such Treatment of Japanese knotweed as ATG sees fit (subject to clause 5 below) to see that the eradication will be successful in the areas in which ATG will carry out Treatment works and will monitor these areas as a watching brief service and as further described in ATG’s appointment, provided that the programme of application as advised by ATG is adhered to (“the Treatment”). In carrying out any services and the Treatment, ATG Services (Ireland) Ltd shall not be construed as owing any greater duty than the use of reasonable skill and care in accordance with the normal standards of its profession.
- 2.) If there is any evidence that the Treatment has not been successful despite the above, ATG undertakes to take such reasonable further steps as shall be necessary, to eradicate the Japanese knotweed.
- 3.) If the Client requires greater insurance cover than the above, it must in its own interests arrange such cover.
- 4.) On completion of the Treatment, ATG will write to the Client and to the Beneficiary confirming that the control has been successful in those areas, which have been previously identified and treated in accordance with ATG’s method statement.
- 5.) ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for the emergence of any Japanese knotweed that has been introduced during the period of the Treatment or the period of this Warranty by the actions of a third party.





Unit 33, Loughanhill Industrial Estate
Coleraine, Co. Derry, BT52 2NR
T +44 (0) 28 7034 3787
info@atg-group.co.uk
www.atg-group.co.uk

Head Office – Coleraine
Offices in Lisburn, Dublin,
Edinburgh, Peterborough, Nairobi

6.) This Warranty does not confer any rights other than expressly set out above and does not cover any claims for consequential loss or damage. ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any special, indirect or consequential loss.

7.) If Japanese knotweed regrows in the site area treated by ATG, then ATG undertakes to re-treat the site area using any reasonable methods, provided that the cause of the regrowth is not due to the actions of a third party.

8.) ATG Services (Ireland) Ltd confirms that it has taken out professional indemnity insurance with a limit of indemnity of not less than £2,000,000 (two million pounds) for any one claim or series of claims arising from the same originating or underlying cause. ATG will maintain such insurance at all times until three years after the completion of the Treatment provided such insurance is available in the United Kingdom on commercially reasonable rates and terms. When reasonably requested, ATG will provide documentary evidence that the insurance required under this Warranty is being maintained.

9.) During the period of the Treatment certain factors could affect timing and effectiveness or eradication methodology. These include; Force Majeure; fire; lightning; explosion; flood; riot and civil commotion; manufacture or transportation of any of the goods or materials require for the treatment, or any persons engaged in the preparation of the design of the Treatment; exceptionally adverse weather conditions; and any other man made factors whatsoever. ATG will take reasonable steps to modify its eradication methodology to mitigate the effects of the foregoing where these are identified by ATG.

10.) ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for Japanese Knotweed brought to the site after the Treatment has been completed, or present in an area outside of the original stands treated.



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11.) Subject to the terms set out above, this Warranty shall remain valid for a period of three years from completion of the Treatment.

Warranty Conditions

The warranty is conditional on the following:

- Eradication is carried out 100% under ATG’s control and to detailed ATG methodology.
- A detailed site survey to identify and map at a suitable scale consistent with the site to show all knotweed infestations, and any trees or shrubs of ecological value that should be protected from the eradication treatment works. Such survey to identify any potential watercourses or other factors that would affect methodology.
- Complete Health and Safety audit of site.
- Historical record of all ground works over the last twenty four months.
- Agreement with Client that the plan accurately reflects the extent of all knotweed on site, and agreement of course of action for any boundary issues with adjacent landowners. Plan to form basis of site control document. This to be used in conjunction with proposed site development plan.
- All proposed works on site during the eradication period to be notified to ATG prior to commencement. This to include all proposed site activity and any local authority and utility works. It is the sole responsibility of the Client to keep ATG informed of any potential disturbance of the site in any way whatsoever.





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- Site security to be the sole responsibility of the Client and should be consistent with any recommendations made by ATG.
- All fly tipping subsequent to contract and GPS map being agreed with Client to be disposed of at discretion of ATG in approved manner at additional cost to Client. Disposal to be organised at cost by ATG and to be charged as incurred.
- ATG to approve source and importation of any topsoil onto site and to agree any significant change in ground levels to be carried out post site treatment.
- If the performance of any part of the Treatment is prevented, restricted or delayed by reason of any cause beyond the reasonable control of ATG (including (without limitation) fire, flood, rain, wind, sleet, hail and other Act of God, industrial action including strike and lock out, riots, war, armed conflict, trade sanctions, contamination, disease and epidemic, interruption or failure of a utility service, failure of computer or other machinery, and change in law or regulatory requirements) ATG shall be excused from such performance to the extent of such prevention, restriction or delay, provided that ATG shall use commercially reasonable endeavours to avoid or remove such causes of non-performance or to find an alternative manner or means of performance.
- ATG to monitor site for a period of one year post treatment during the knotweed growing season and after that time as appropriate or as notified by Client.



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Appendix 4: Insurance





To Whom It May Concern

Date: 25th April 2018

Our Client: ATG Services (Ireland) Ltd, ATG Environmental (NI) Ltd & ATG Services (Scotland) Ltd

We act as Insurance Brokers for the above-named client and are pleased to confirm that the following insurance cover is currently in force:

Business Description: Environmental Consultancy, Waste Management Remediation & Consultancy

Employers' Liability Insurance

Insurance Company	Citynet
Policy Number	GC115918U
Renewal Date	28 th April 2018 – 27 th January 2019
Limit of Indemnity	£10,000,000 any one loss

Public/Products Liability Insurance

Insurance Company	Citynet
Policy Number	GC115918U
Renewal Date	28 th April 2018 – 27 th January 2019
Limit of Indemnity	£5,000,000 any one occurrence and in the aggregate in respect of Products Liability

** We confirm that the above policy is silent with regards to working on licensed premises **

Professional Indemnity Insurance

Insurance Company	Wimsure on behalf of certain underwriters at Lloyds
Policy Number	WIMPI1838006
Renewal Date	28 th January 2018 to 27 th January 2019
Limit of Indemnity	£5,000,000 any one claim costs and expenses in addition but in the aggregate in respect of Pollution, Asbestos and /or Toxic Mould

Willis and Company (Insurance Brokers) Ltd. Chartered Insurance Broker. Authorised and regulated by the Financial Conduct Authority.
 Newsletter Building, 55–59 Donegall Street, Belfast BT1 2FH
 T: +44 (0)28 9032 9042
 F: +44 (0)28 9023 2362
 E: info@willisinsurance.co.uk
 W: www.willisinsurance.co.uk



Engineering – Hired in Plant

Insurance Company	HSB Engineering
Policy Number	H21178287
Renewal Date	28 th January 2018 – 27 th January 2019
Limit of Indemnity	£150,000 Hired in Plant £60,000 Own Plant

Working in Confined Spaces Endorsement

Approximately 1% turnover is undertaken in confined spaces

Endorsements applicable to Public and Products Liability

The schedule of insurance details...

Notwithstanding anything contained herein to the contrary the Underwriters will indemnify the Assured against their liability to pay Damages (including claimants' costs, fees and expenses) and Defence Costs and Criminal Prosecution Defence Costs under Sections B & C of this policy arising from the existence of or exposure to non-HSE (Health and Safety Executive) licensed asbestos and HSE licensed asbestos and any other material that contains such asbestos occurring on or after the retroactive date but only in respect of claims first made against the assured during the period of insurance and notified in accordance with the provisions contained within the policy.

Provided always that;

1. Should the assured notify the underwriters during the period of insurance of any specific event or circumstance which underwriters accept may give rise to a claim or claims which form the subject of indemnity by this endorsement then acceptance of such notification means that underwriters will deal with such claim or claims as if they had first been made against the assured during the period of insurance.
2. The underwriters will not indemnify the assured for any claims arising from the existence of or exposure to non HSE licensed asbestos and HSE licensed asbestos and any other material that contains such asbestos where the assured were aware of the circumstance or event which gave rise to the claim before the effective date of this endorsement;
3. The underwriters will indemnify the assured in connection with:
 - a) Their handling, removal stripping out demolition storage, transportation or disposal of non HSE licensed asbestos including all non HSE licensed asbestos containing materials and
 - b) By bona fide subcontractors of both non HSE licensed asbestos and HSE licensed asbestos including any other material that contains such asbestos and
 - c) Upon accidental discovery of HSE licensed asbestos and any other material that contains such asbestos provided that upon becoming aware all work on the area is immediately halted and access restricted until the discovery is tested and confirmed then sub-contracted to licensed asbestos removal contractors

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4. In respect of any liability which arises from any requirement to clean up or remove non HSE licensed asbestos and HSE licensed asbestos and any other material that contains such asbestos from any building and/or structure:
 - a) Such liability arises solely in consequence of a sudden specific and identifiable fire explosion impact or collapse;
And
 - b) The building and/or structure that is subject to the clean up or removal is not owned, leased or hired by or under hire purchase or loan to the assured
5. The underwriters will not indemnify the assured for any claims in respect of the diminution in the value of property or loss of or potential loss of rental income or any other consequential losses (including business interruption) howsoever arising;
6. The underwriter's liability to pay damages (including claimants costs, fees and expenses) and defence costs and criminal prosecution defence costs shall not exceed the sum of £1,000,000 and shall be the underwriter's total liability in respect of any one period of insurance.
7. The excess applicable to this endorsement shall be £5,000 each and every claimant including bodily injury

Employers Liability, Public Liability and Pollution Liability

- a) all work must be carried out in accordance with the Control of Asbestos Regulations 2012 and any similar legislation or regulation
- b) all work must be carried out in accordance with any HSE approved codes of practice and guidance notes relating to asbestos in so far as they apply
- c) Respiratory Protective Equipment (RPE) is only used that is marked with a CE symbol and that any respirator not so marked is not used
- d) The selection use and maintenance of RPE follows both the manufacturers recommendations and HSE guidance where applicable
- e) In accordance with the Control of Asbestos Regulations 2012 and any similar legislation or regulation all persons employed by the assured to be engaged with materials containing such asbestos:
 1. Must be medically examined and approved. The medical examination is to be undertaken prior to the commencement of such works with the assured and renewed at such intervals as defined by the regulations
 2. Such medical questionnaires as are deemed by the regulations shall be retained within the assured's records covering the duration of their working time with the assured

Copies of such records shall be retained by the assured in line with current legislation

All policies are subject to Insurers policy terms, conditions and exclusions.

This letter is provided as a courtesy to our client as a matter of information only and confers no rights on the holder. Our duties in relation to this insurance are to our client and we accept no duty of care or responsibility to you or any other third party and any liability to you or any third party are excluded.

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 T: +44 (0)28 9032 9042
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 E: info@willisinsurance.co.uk
 W: www.willisinsurance.co.uk



This letter does not amend, extend or alter the coverage afforded by the policies, nor does it purport to set out all of the policy terms, conditions and exclusions. The policy terms, conditions, limits and exclusions may alter after the date of this document or the insurance may terminate or be cancelled, and the limits shown may be reduced by claims paid.

We have no obligation to advise you of any changes which may be made to the policies or to advise you of their cancellation or termination.

Yours sincerely

Mary McCourt

Mary McCourt CII
Account Handler

T: +44 (0)28 9032 9042
 DL: +44 (0) 28 9089 1977
 E: mmccourt@willisinsurance.co.uk
 W: www.willisinsurance.co.uk

Willis and Company (Insurance Brokers) Ltd. Chartered Insurance Broker. Authorised and regulated by the Financial Conduct Authority.
 Newsletter Building, 55-59 Donegall Street, Belfast BT1 2FH
 T: +44 (0)28 9032 9042
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 E: info@willisinsurance.co.uk
 W: www.willisinsurance.co.uk





Appendix 10

Air Quality and Climate

A10

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC

APPENDIX 10 AIR QUALITY AND CLIMATE

10.1 APPENDIX

Ambient Air Quality Standards

National standards for ambient air pollutants in Ireland have generally ensued from Council Directives enacted in the EU (& previously the EC & EEC) (see Table 10.1). The initial interest in ambient air pollution legislation in the EU dates from the early 1980s and was in response to the most serious pollutant problems at that time which was the issue of acid rain. As a result of this sulphur dioxide, and later nitrogen dioxide, were both the focus of EU legislation. Linked to the acid rain problem was urban smog associated with fuel burning for space heating purposes. Also apparent at this time were the problems caused by leaded petrol and EU legislation was introduced to deal with this problem in the early 1980s.

In recent years the EU has focused on defining a basis strategy across the EU in relation to ambient air quality. In 1996, a Framework Directive, Council Directive 96/62/EC, on ambient air quality assessment and management was enacted. The aims of the Directive are fourfold. Firstly, the Directive's aim is to establish objectives for ambient air quality designed to avoid harmful effects to health. Secondly, the Directive aims to assess ambient air quality on the basis of common methods and criteria throughout the EU. Additionally, it is aimed to make information on air quality available to the public via alert thresholds and fourthly, it aims to maintain air quality where it is good and improve it in other cases.

As part of these measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The

first of these directives to be enacted, Council Directive 1999/30/EC, has been passed into Irish Law as S.I. No 271 of 2002 (Air Quality Standards Regulations 2002), and has set limit values which came into operation on 17th June 2002. Council Directive 1999/30/EC, as relating to limit values for sulphur dioxide, nitrogen dioxide, lead and particulate matter, is detailed in Table 10.1. The Air Quality Standards Regulations 2002 detail margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance varies from 60% for lead, to 30% for 24-hour limit value for PM₁₀, 40% for the hourly and annual limit value for NO₂ and 26% for hourly SO₂ limit values. The margin of tolerance commenced from June 2002, and started to reduce from 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by the attainment date. A second daughter directive, EU Council Directive 2000/69/EC, has published limit values for both carbon monoxide and benzene in ambient air. This has also been passed into Irish Law under the Air Quality Standards Regulations 2002.

The most recent EU Council Directive on ambient air quality was published on the 11/06/08 which has been transposed into Irish Law as S.I. 180 of 2011. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive and its subsequent daughter directives. Provisions were also made for the inclusion of new ambient limit values relating to PM_{2.5}. The margins of tolerance specific to each pollutant were also slightly adjusted from previous directives. In regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. In addition, new ambient standards for PM_{2.5} are included in Directive 2008/50/EC. The approach for PM_{2.5} was to establish a target value of 25 µg/m³, as an annual average (to be attained everywhere by 2010) and a limit value of 25 µg/m³, as an annual average (to be attained everywhere by 2015), coupled with a target to reduce human exposure generally to PM_{2.5} between 2010 and 2020. This exposure reduction target will range from 0% (for PM_{2.5} concentrations of less than 8.5 µg/m³ to 20% of the average exposure indicator (AEI) for concentrations of between 18 - 22 µg/m³). Where the AEI is currently greater than 22 µg/m³ all appropriate measures should be employed to reduce this level to 18 µg/m³ by 2020. The AEI is based on measurements taken in urban background locations averaged over a three year period from 2008 - 2010 and again from 2018-2020. Additionally, an exposure concentration obligation of 20 µg/m³ was set to be complied with by 2015 again based on the AEI.

Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions. The Alert Threshold is defined in Council Directive 96/62/EC as "a level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken as laid down in Directive 96/62/EC". These steps include undertaking to ensure that the necessary steps are taken to inform the public (e.g. by means of radio, television and the press).

The Margin of Tolerance is defined in Council Directive 96/62/EC as a concentration which is higher than the limit value when legislation comes into force. It decreases to meet the limit value by the attainment date. The

Upper Assessment Threshold is defined in Council Directive 96/62/EC as a concentration above which high quality measurement is mandatory. Data from measurement may be supplemented by information from other sources, including air quality modelling.

An annual average limit for both NO_x (NO and NO₂) is applicable for the protection of vegetation in highly rural areas away from major sources of NO_x such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. Annex VI of EU Directive 1999/30/EC identifies that monitoring to demonstrate compliance with the NO_x limit for the protection of vegetation should be carried out distances greater than:

- 5 km from the nearest motorway or dual carriageway
- 5 km from the nearest major industrial installation
- 20 km from a major urban conurbation

As a guideline, a monitoring station should be indicative of approximately 1000 km² of surrounding area.

Under the terms of EU Framework Directive on Ambient Air Quality (96/62/EC), geographical areas within member states have been classified in terms of zones. The zones have been defined in order to meet the criteria for air quality monitoring, assessment and management as described in the Framework Directive and Daughter Directives. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 23 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The Zones were defined based on among other things, population and existing ambient air quality.

EU Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (S.I. No. 33 of 1999). The act has designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in the State. Other commonly referenced ambient air quality standards include the World Health Organisation. The WHO guidelines differ from air quality standards in that they are primarily set to protect public health from the effects of air pollution. Air quality standards, however, are air quality guidelines recommended by governments, for which additional factors, such as socio-economic factors, may be considered.

Air Dispersion Modelling

The inputs to the DMRB model consist of information on road layouts, receptor locations, annual average daily traffic movements, annual average traffic speeds and background concentrations (UK Highways Agency, 2007). Using this input data the model predicts ambient ground level concentrations at the worst-case sensitive receptor using generic meteorological data.

The DMRB has recently undergone an extensive validation exercise (UK DEFRA, 2001) as part of the UK's Review and Assessment Process to designate areas as Air Quality Management Areas (AQMAs). The validation exercise was carried out at 12 monitoring sites within the UK DEFRA's national air quality monitoring network. The validation exercise was carried out for NO_x, NO₂ and PM₁₀, and included urban background and kerbside/roadside locations, "open" and "confined" settings and a variety of geographical locations (UK DEFRA 2001).

In relation to NO₂, the model generally over-predicts concentrations, with a greater degree of over-prediction at "open" site locations. The performance of the model with respect to NO₂ mirrors that of NO_x showing that the over-prediction is due to NO_x calculations rather than the NO_x:NO₂ conversion. Within most urban situations, the model overestimates annual mean NO₂ concentrations by between 0 to 40% at confined locations and by 20 to 60% at open locations. The performance is considered comparable with that of sophisticated dispersion models when applied to situations where specific local validation corrections have not been carried out.

The model also tends to over-predict PM₁₀. Within most urban situations, the model will over-estimate annual mean PM₁₀ concentrations by between 20 to 40%. The performance is comparable to more sophisticated models, which, if not validated locally, can be expected to predict concentrations within the range of ±50%.

Thus, the validation exercise has confirmed that the model is a useful screening tool for the Second Stage Review and Assessment, for which a conservative approach is applicable (UK DEFRA, 2001).

10.2 APPENDIX

Transport Infrastructure Ireland Significance Criteria

Magnitude of Change	Annual Mean NO ₂ / PM ₁₀	No. days with PM ₁₀ concentration > 50 µg/m ³	Annual Mean PM _{2.5}
Large	Increase / decrease ≥4 µg/m ³	Increase / decrease >4 days	Increase / decrease ≥2.5 µg/m ³
Medium	Increase / decrease 2 - <4 µg/m ³	Increase / decrease 3 or 4 days	Increase / decrease 1.25 - <2.5 µg/m ³
Small	Increase / decrease 0.4 - <2 µg/m ³	Increase / decrease 1 or 2 days	Increase / decrease 0.25 - <1.25 µg/m ³
Imperceptible	Increase / decrease <0.4 µg/m ³	Increase / decrease <1 day	Increase / decrease <0.25 µg/m ³

Table 1 Definition of Impact Magnitude for Changes in Ambient Pollutant Concentrations

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration ^{Note 1}		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value With Scheme (≥40 µg/m ³ of NO ₂ or PM ₁₀) (≥25 µg/m ³ of PM _{2.5})	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value With Scheme (36 - <40 µg/m ³ of NO ₂ or PM ₁₀) (22.5 - <25 µg/m ³ of PM _{2.5})	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value With Scheme (30 - <36 µg/m ³ of NO ₂ or PM ₁₀) (18.75 - <22.5 µg/m ³ of PM _{2.5})	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value With Scheme (<30 µg/m ³ of NO ₂ or PM ₁₀) (<18.75 µg/m ³ of PM _{2.5})	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value With Scheme (≥40 µg/m ³ of NO ₂ or PM ₁₀) (≥25 µg/m ³ of PM _{2.5})	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value With Scheme (36 - <40 µg/m ³ of NO ₂ or PM ₁₀) (22.5 - <25 µg/m ³ of PM _{2.5})	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value With Scheme (30 - <36 µg/m ³ of NO ₂ or PM ₁₀) (18.75 - <22.5 µg/m ³ of PM _{2.5})	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value With Scheme (<30 µg/m ³ of NO ₂ or PM ₁₀) (<18.75 µg/m ³ of PM _{2.5})	Negligible	Negligible	Slight Beneficial

^{Note 1} Well Below Standard = <75% of limit value.

Table 2 Air Quality Impact Significance Criteria For Annual Mean Nitrogen Dioxide and PM10 and PM2.5 Concentrations at a Receptor

Absolute Concentration in Relation to Objective / Limit Value	Change in Concentration ^{Note 1}		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value With Scheme (≥35 days)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value With Scheme (32 - <35 days)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value With Scheme (26 - <32 days)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value With Scheme (<26 days)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value With Scheme (≥35 days)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value With Scheme (32 - <35 days)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value With Scheme (26 - <32 days)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value With Scheme (<26 days)	Negligible	Negligible	Slight Beneficial

^{Note 1} Where the Impact Magnitude is Imperceptible, then the Impact Description is Negligible

Table 3 Air Quality Impact Significance Criteria For Changes to Number of Days with PM10 Concentration Greater than 50 µg/m3 at a Receptor

10.3 APPENDIX

Dust Minimisation Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK (IAQM (2014), The Scottish Office (1996), UK Office of Deputy Prime Minister (2002) and BRE (2003)) and the USA (USEPA (1997)).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 10.1 for the windrose for Cork Airport). As the prevailing wind is predominantly north-westerly to south-westerly, any sensitive receptors to the east of the site are at potential risk of wind-blown dust soiling impacts. However, the greatest potential for dust soiling is within 50m of the site boundary and as the majority of receptors to the east are greater than 50m from the site boundary the potential for dust soiling is reduced greatly. The best practice measures outlined in this plan will also further reduce the potential for dust soiling impacts. The use of hoarding around site compounds located close to sensitive receptors (within 50m) and the dampening of storage piles will further reduce the potential for dust nuisance.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (UK Office of Deputy Prime Minister (2002), BRE (2003)). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

Site Roads / Haulage Routes

Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK Office of Deputy Prime Minister, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Access gates to the site shall be located back from sensitive receptors as far as is feasible. In this instance, site access gates will be circa. 8m from the corner of Templegrove Apartments, as illustrated figure 2.4 (Chapter 2: Project Description).
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved

areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;

- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

Land Clearing / Earth Moving

Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Chapter 6 (Land and Soils) details proposals for mitigation of temporary storage of overburden material for Phase 1 of the proposed development.
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK Office of Deputy Prime Minister, 2002);
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;

- At the main site traffic exits, a wheel wash facility shall be installed. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
- The specification of effective measures to deal with any complaints received.



Appendix 11

Cultural Heritage

A11

Environmental Impact Assessment Report (EIAR)

CAIRN
PLC

APPENDIX 11.1 CULTURAL HERITAGE**Appendix 11.1: Photographic Record****Field 1**

Plate 11.11.1 Aerial view of Field 1 and north stream (both at centre), looking north



Plate 11.2 Southern end of Field 1, looking northwest

Field 2



Plate 11.3 Aerial view of Field 2, looking north



Plate 11.4 View of north stream and overgrowth at north end of Field 1

Field 3



Plate 11.5 Aerial view of band of trees flanking west stream, looking southwest



Plate 11.6 View of west stream from south within Field 3 area



Plate 11.7 West stream and Field 3 area, looking north

Field 4



Plate 11.8 Aerial view of Field 4 (at centre), looking west



Plate 11.9 View across Field 4, looking northwest

Field 5



Plate 11.10 Aerial view of Field 5 (green area at right of centre), looking northwest



Plate 11.11 Aerial view of Field 5 (green area at bottom left of frame), looking southwest

Field 6



Plate 11.12 Aerial view of Field 6 (at centre), looking west



Plate 11.13 View across Field 6 from northwest corner, looking southeast

Field 7



Plate 11.14 Aerial view of Field 7 (at centre), looking southwest



Plate 11.15 Mound of construction material at north end of Field 7, looking west



Plate 11.16 Central portion of Field 7 stripped of topsoil, looking north

Field 8



Plate 11.17 Aerial view of Field 8, looking to the northwest



Plate 11.18 Aerial view of disturbed ground in northwest corner of Field 8, looking southeast



Plate 11.19 View across Field 8, looking north

Field 9



Plate 11.20 Aerial view of Field 9, looking southeast



Plate 11.21 View across Field 9, looking north

Field 10



Plate 11.22 Aerial view of Field 10 (at centre), looking south



Plate 11.23 View across Field 10, looking south

Field 11



Plate 11.24 Aerial view of overgrown Field 11 and north stream, looking south



Plate 11.25 Aerial view of south end of Field 11 (at centre), looking south



Plate 11.26 View of northern area of Field 11, looking northeast

Field 12



Plate 11.27 Aerial view of Field 12 (at centre), looking southwest



Plate 11.28 General view across Field 12, looking west

Field 13



Plate 11.29 Aerial view of Field 13, looking south



Plate 11.30 Aerial view of overgrown quarry in southeast corner of Field 13, looking south



Plate 11.31 Overgrown quarry at southeast corner of Field 13, looking east



Plate 11.32 General view across Field 13, looking west