Stafford Borough Local Plan 2020 - 2040: Preferred Options Responses

Agents, Developers and Landowners - Part 7

Consultation Period: 24 October - 12 December 2022

Published: February 2023

Stafford BOROUGH COUNCIL

Reference ID Code	Name / Organisation	Parts	Page Number
122	Stoford Properties Ltd, Redhill Business Park	A - K	1

From: Jo Russell [redacted]
Sent: 12 December 2022 11:40
To: Strategic Planning Consultations
Subject: Preferred Options Response - North of Redhill Business Park, JLL - Stoford email 1
Attachments: Enclosure No.2.pdf; Response Form - Land north of Stafford Business Park - Stoford.docx; Stoford Properties Limited - Land north of Redhill BP Stafford - Representations to Preferred Options (FINAL).docx; Enclosure No.1.pdf

Good morning

Please find attached representations prepared by JLL, on behalf of Stoford Properties Ltd. The representations are made with regards of land north of Redhill Business Park, Stafford.

This email is one of 7 emails.

The representations comprise

1. Completed response form
2. Representations prepared by JLL
3. Enclosures 1,2,3:
   Enclosure 1: Letter of support from landowner
   Enclosure 2: Red edged site plan of land being promoted
   Enclosure 3: Development Prospectus

Jo Russell MRTPI | Planning Director

T [redacted]
M [redacted]
E [redacted]
W www.stoford.com

STOFORD

Registered in England No. 7848231 | Stoford Properties Ltd
Registered Office: [redacted]

Contact Details

Full name (required): Jo Russell

Email (required): [redacted]

Tick the box that is relevant to you (required):

- ☐ Statutory Bodies and Stakeholders
- ✓ Agents and Developers
- ☐ Residents and General Public
- ☐ Prefer not to say

Organisation or Company Name (if applicable): Stoford Properties Ltd

Tick the box that is relevant to you:
(*This is a non-mandatory question but helps us understand the demographic of our respondents.)*

[redacted]

Do you want to be added to our Local Plan consultation database to be notified about future local plan updates?

[redacted]

Contents

The Local Plan Preferred Options includes the topics listed below.

Each topic has a series of standard questions in order for you to provide a response. You do not have to respond to each of the topics or answer all of the questions. The page numbers below relate to the page the topic starts in this consultation form.

- **Vision and Objectives** - page 5
- **Development Strategy and Climate Change Response** - page 6
- **Meecebrook Garden Community** - page 9
- **Site Allocation Policies** - page 10
- **Economy Policies** - page 14
- **Housing Policies** - page 16
- **Design and Infrastructure Policies** - page 18
- **Environment Policies** - page 19
- **Connections** - page 20
- **Evidence Base** - page 21
- **General Comments** - page 22

All of the local plan documents and the Local Plan 2020-2040: Preferred Options document are available here: https://www.staffordbc.gov.uk/local-plan

Vision and Objectives

Q1. There are eight objectives for the local plan to achieve the vision of:

"A prosperous and attractive borough with strong communities."

Of the following objectives which 3 are the most important to you?

Please make your choice from the list of objectives below. (Maximum of 3 to be selected)

Local Plan Preferred Options document reference: Page 12

- ☐ Contribute to Stafford Borough being net zero carbon by ensuring that development mitigates and adapts to climate change and is future proof.
- ☐ To develop a high value, high skill, innovative and sustainable economy.
- ☐ To strengthen our town centres through a quality environment and flexible mix of uses.
- ☐ To deliver sustainable economic and housing growth to provide income and jobs.
- ☐ To deliver infrastructure led growth supported by accessible services and facilities.
- ☐ To provide an attractive place to live and work and support strong communities that promote health and wellbeing.
- ☐ To increase and enhance green and blue infrastructure in the borough and to enable greater access to it while improving the natural environment and biodiversity.
- ☐ To secure high-quality design.

Development Strategy and Climate Change Response

Q2. The development strategy and climate change response chapter includes the policies below.

Do you agree with each of the policies in this chapter?

Select Yes or No for each of the policies and then use the box below each policy to add additional comments.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: Pages 19 to 40

Policy 1. Development strategy (which includes the total number of houses and amount of employment land to be allocated and the Stafford and Stone settlement strategies)

No

Policy 1 Comments:

Please see attached representations to Policy 1, prepared by JLL for Stoford Properties Ltd in respect of land north of Redhill Business Park, Stafford

Policy 2. Settlement Hierarchy (Tier 1: Stafford, Tier 2: Stone, Tier 3: Meecebrook, Tier 4: Larger settlements, Tier 5: Smaller settlements)

No

Policy 2 Comments:

Please see attached representations to Policy 2, prepared by JLL for Stoford Properties Ltd in respect of land north of Redhill Business Park, Stafford

Policy 3. Development in the open countryside - general principles

Yes / No

Policy 3 Comments:

Policy 4. Climate change development requirements

Yes / No

Policy 4 Comments:

Policy 5. Green Belt

Yes / No

Policy 5 Comments

Policy 6. Neighbourhood plans

Yes / No

Policy 6 Comments:

Meecebrook Garden Community

Q3. The local plan proposes a new garden community called Meecebrook close to Cold Meece and Yarnfield. This new community is proposed to deliver housing, employment allocations, community facilities, including new schools, sport provision and health care facilities, retail and transport provision, which includes a new railway station on the West Coast Main Line, and high quality transport routes.

Do you agree with the proposed new garden community?

No

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: Pages 41 to 45

Comments:

Please see attached representations to Policy 7, prepared by JLL for Stoford Properties Ltd in respect of land north of Redhill Business Park, Stafford

Site Allocation Policies

Q4. The Stafford Borough Local Plan 2020 - 2040 proposes allocations for both housing and employment to meet the established identified need.

The site allocation policies chapter includes the policies below for housing and employment allocations.

Do you agree with the proposed allocations?

Select Yes or No for each of the following policies and then use the box below each policy to add additional comments.

Explain your reasoning and add any evidence to justify your response. Please provide details of alternative locations for housing and employment growth if you consider this is appropriate.

Ensure any comments relate to the policy comment box you are completing.

If you do want to submit a new site for consideration through the local plan process, we are still accepting sites through the Call for Site process, details are available here: https://www.staffordbc.gov.uk/call-sites-including-brownfield-land-consultation

Local Plan Preferred Options document reference: Pages 47 to 56 and appendix 2.

Policy 9. North of Stafford

Policy 9 Comments:

Policy 10. West of Stafford

Policy 10 Comments:

Policy 11. Stafford Station Gateway

Policy 11 Comments:

Policy 12. Other housing and employment land allocations.
(*In your response, please specify which particular site you are referring to, if relevant*.)

No

Policy 12 Comments:

Please see attached representations to Policy 12, prepared by JLL for Stoford Properties Ltd in respect of land north of Redhill Business Park, Stafford

Q5. The Stafford Borough Local Plan 2020 - 2040 proposes to allocate land for Local Green Space and Countryside Enhancement Areas throughout the borough.

The policies which relate to these proposals are listed below.

Do you agree with the proposed allocations?

Select yes or no for each of the policies and then use the box below each policy to add additional comments.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: Pages 56 to 59 and appendix 2.

Policy 13. Local Green Space
(In your response, please specify which particular site you are referring to, if relevant)

Yes / No

Policy 13 Comments:

Policy 14. Penk and Sow Countryside Enhancement Area (Stafford Town)

Yes / No

Policy 14 Comments:

Policy 15. Stone Countryside Enhancement Area

Yes / No

Policy 15 Comments:

Economy Policies

The Economy Policies chapter contains policies that seek to protect employment land and support economic growth within the Borough.

Q6. The local plan seeks to protect previously allocated and designated industrial land and support home working and small-scale employment uses.

The relevant policies are: 16, 17 and 18.

Do you agree with these policies?

Select Yes or No and then use the box to add additional comments. If referring to a specific policy, please include the policy number.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: pages 61 to 65

Comments:

Q7. The Stafford Borough Plan proposes policies around the town centres uses, agriculture and forestry development, tourism development and canals.

The relevant policies are: 19, 20, 21 and 22.

Do you agree with these policies?

Yes / No

Select Yes or No and then use the box below to add additional comments. If referring to a specific policy, please include the policy number.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: pages 65 to 71

Comments:

Housing Policies

The Housing Policies chapter contains policies that seek to provide for identified need across the borough and support houseowners.

Q8. The local plan proposed a policy (Policy 23) on affordable housing.

Do you agree with this policy?

Yes / No

Select yes or no and then use the box below to add additional comments.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: pages 74 to 76

Comments:

Q9. The local plan proposes a policy (Policy 30) to help meet identified local need for pitches for Gypsies and Travellers. There are 2 new proposed sites; one near Hopton and the other near Weston.

Do you agree with this policy?

Yes / No

Select yes or no and then use the box below to add additional comments. In your response, please specify which particular site you are referring to, if relevant.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: pages 84 to 86

Comments:

Q10. The local plan proposes policies around homes for life, rural exception sites, new rural dwellings, replacement dwellings, extension of dwellings, residential subdivision and conversion, housing mix and density, residential amenity and extension to the curtilage of a dwelling.

The relevant policies are: 24, 26, 27, 28, 29, 21, 31, 32 and 33.

Do you agree with these policies?

Yes / No

Select yes or no and then use the box below to add additional comments. If referring to a specific policy, please include the policy number.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: pages 73 to 89

Comments:

Design and Infrastructure Policies

Q11. The design and infrastructure chapter contains policies on urban design general principles, architectural and landscape design, infrastructure to support new development, electronic communications, protecting community facilities and renewable and low carbon energy.

The relevant policies are: 34, 25, 36, 37, 38, 39 and 40.

Do you agree with these policies?

Yes / No

Select yes or no and then use the box below to add additional comments. If referring to a specific policy, please include the policy number.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: Pages 91 to 99.

Comments:

Environment Policies

Q12. The environment policies chapter contains policies on the historic environment, flood risk, sustainable drainage, landscapes, Cannock Chase Area of Outstanding Natural Beauty (AONB), Green and blue infrastructure network, biodiversity, Special Areas of Conservation (SAC), Trees, Pollution and Air Quality.

The relevant policies are: 31, 42, 43, 44, 45, 46, 47, 48, 49, 50 and 51.

Do you agree with these policies?

Yes / No

Select yes or no and then use the box below to add additional comments. If referring to a specific policy, please include the policy number.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: Pages 101 to 119.

Comments:

Connections

Q13. The connections policies chapter contains policies on transport and parking standards.

The relevant policies are: 52 and 53

Do you agree with these policies?

Yes / No

Select yes or no and then use the box below to add additional comments. If referring to a specific policy, please include the policy number.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Local Plan Preferred Options document reference: Pages 121 to 124.

Comments:

Evidence Base

To support the Local Plan 2020-2040 an evidence base has been produced.

The evidence base is available to view on our website here:
www.staffordbc.gov.uk/new-lp-2020-2040-evidence-base

Q14. Have we considered all relevant studies and reports as part of our local plan?

Yes / No

Select yes or no and then use the box below to add additional comments.

Explain your reasoning and add any evidence to justify your response.

Ensure any comments relate to the policy comment box you are completing.

Comments:

Q15. Do you think there is any further evidence required?

Yes / No

Select yes or no and then use the box below to add additional comments.

If you think additional evidence is needed, please state what you think should be added and explain your reasoning.

Ensure any comments relate to the policy comment box you are completing.

Comments:

General Comments

If you have any further comments to make on the Local Plan Preferred Options document and evidence base, please use the box below.

If you need further space to add comments, please add pages to the end of the consultation form and reference which question you are answering.

Thank you for taking the time to complete this consultation form.

Completed forms can be submitted by email to:
strategicplanningconsultations@staffordbc.gov.uk

Or returned via post to: Strategic Planning and Placemaking, Stafford Borough Council, Civic Centre, Riverside, Stafford, ST16 3AQ

The consultation closes at 12 noon on Monday 12 December 2022, comments received after this date may not be considered.

Stoford Properties Limited

Land North of Redhill Business Park, Stafford

Representations to the Stafford Borough Local Plan 2020 – 2040 Preferred Options

Introduction

1. These representations are made on behalf of Stoford Properties (Stoford). Stoford have an agreement with the Hidderley family, who are the sole owners of land north of Redhill Business Park, Stafford, to promote and develop their landholding for employment uses, particularly for industrial and warehouse units. A copy of a letter from Robert Hidderley to the Borough Council, dated 7 December 2022, confirming the availability of the land for development is provided in **Enclosure No. 1**.

2. The extent of the land being prompted is edged red on the attached plan (**Enclosure No.2**). The land covers an area of 58.54 hectares (gross). A large part of the site – the southern half – is allocated by the Preferred Options. This is site CRE 02 which has an area of 31.15 hectares (gross).

3. Stoford supports the allocation of CRE 02, but argues that the allocation should be extended by 27.39 hectares (gross) to cover the whole site being promoted.

4. The justification for the extension of CRE 02 is principally provided in JLL's response to Policy 12 – Other Housing and Employment Land Allocations. However, responses are made also in respect of: -

   - Policy 1 – Development Strategy
   - Policy 2 – Settlement Hierarchy
   - Policy 7 – Meecebrook Site Allocation

5. These are dealt in turn below.

Response to Policy 1 – Development Strategy

Context

6. Policy 1 Part A states that provision will be made for at least 80 hectares of new employment land over the plan period – 2020 to 2040. Paragraph 1.5 explains that this is based on the EHDNA's core projection for employment growth in the Borough over the plan period plus a 50% uplift – i.e. 78.56 hectares.

7. The Plan identifies approximately 150 hectares of new employment land for the plan period. This supply includes existing land commitments as at 31 March 2020 (90.32 hectares), existing allocations awaiting planning permission (18.2 hectares), new allocations (CREO 02

– 31.15 hectares – and SEI 01 – 5.6 hectares), and an allocation of 15 hectares at Meecebrook Garden Community and 1.56 hectares at Stafford Gateway (Table 2).

8. The surplus is justified in part by the Housing and Employment Land Numbers Topic Paper (Preferred Options Stage). This questions the labour demand model as an accurate and reliable method for projecting employment land needs. It considers this projection is supressed and that other indicators – e.g. market signals – suggest a strong demand for industrial land, particularly to serve the warehouse sector, leaving potentially a much greater requirement for employment land than 80 hectares. For these reasons, the Topic Paper (in Box 2) states that it is the intention of the Council to update the EHDNA to test forecast employment land requirements.

Summary of Response

9. JLL agrees with the overall prognosis of the Topic Paper. The projected requirement of 80 hectares for the plan period is wholly insufficient. A substantially larger requirement would best represent current market conditions and provide the quantity and quality of land needed for Stafford to fulfil its objective of delivering sustainable economic growth and fostering inward investment. For this reason, JLL supports a full scale reassessment of the need for employment land for the Borough.

10. JLL recommends that the scope for this reassessment should include the following factors:-

- Methodology, particularly the use of different models.
- The most recent data on land completions within the Borough and reconsideration of this method as a preferred model.
- Market signals, with particular respect to the continuing growth of the big box warehouse sector.
- Absorption of identified supply.
- Increasingly supportive guidance from Central Government in accommodating the freight and logistics sectors through the development plan-making process.
- Regional evidence (i.e. the West Midlands Strategic Employment Sites Study 2021) pointing to an urgent need for more strategic sites to be identified and the key locations for them to be situated (including Stafford and Stone).

11. These factors are explored in greater detail in turn below.

Specific Factors

Methodology

12. The Topic Paper questions the use of labour demand projections for determining future employment land needs. It considers there are question marks about its reliability.

13. Specifically, it considers that the link between labour and employment floor space for both industrial and warehouse sectors may not be necessarily the principal determining factor. Instead, productivity improvements in these sectors are more likely to be driven by automation and improving efficiency and scale (paragraphs 2.6 and 2.7).

14. Moreover, the Topic Paper (paragraph 2.8) identifies a stronger relationship between growth in GVA and growth in floor space. It notes that whilst there was a significant decline in employment in manufacturing in the Borough over the last 20 years, there has been growth in GVA and a corresponding increase in net completions of industrial land. Similarly, there has been high growth in GVA in the warehouse sector, high land completions, but a much more modest growth in job numbers.

Land Completions

15. For these reasons, paragraph 2.13 of the Topic Paper suggests that the past trend for completions in the industrial and warehouse sectors, coupled with market signals, are a better predictor of future land needs than the labour demand projections. We would agree with this.

16. In paragraph 2.14, the Topic Paper then suggests that it is unrealistic that past trends in take up will be replicated going forward. Further reasoning on this is given in paragraphs 4.30 to 4.40. These refer to the EHDNA, with reference to the restructuring of the economy towards business services and the potential for recycling old industrial land. It also refers to past trends data from 2002 to 2019 being influenced by high rates of completions pre-2008, which may not be replicable.

17. Since the EHDNA was produced (January 2020), the market for both industrial and warehouse buildings has changed dramatically, with demand outstripping supply. This is considered in greater detail below, but referenced also in the Topic Paper in paragraphs 4.33 to 4.38. Essentially, the growth in the economy, as far as it is has affected the development of employment land, has not been in the business services sector but in the industrial and warehouse sectors.

18. An obvious local example of this is the development by Stoford Properties of the Pets at Home warehouse of 670,000 sq ft (60,000 sq m) on a site of 29 hectares on land directly north of Redhill Business Park, Stafford. This large warehouse is close to being completed and will be operational from January 2023. Pets at Home's requirement could not be satisfied on existing commitments or allocations or vacant units within the Borough.

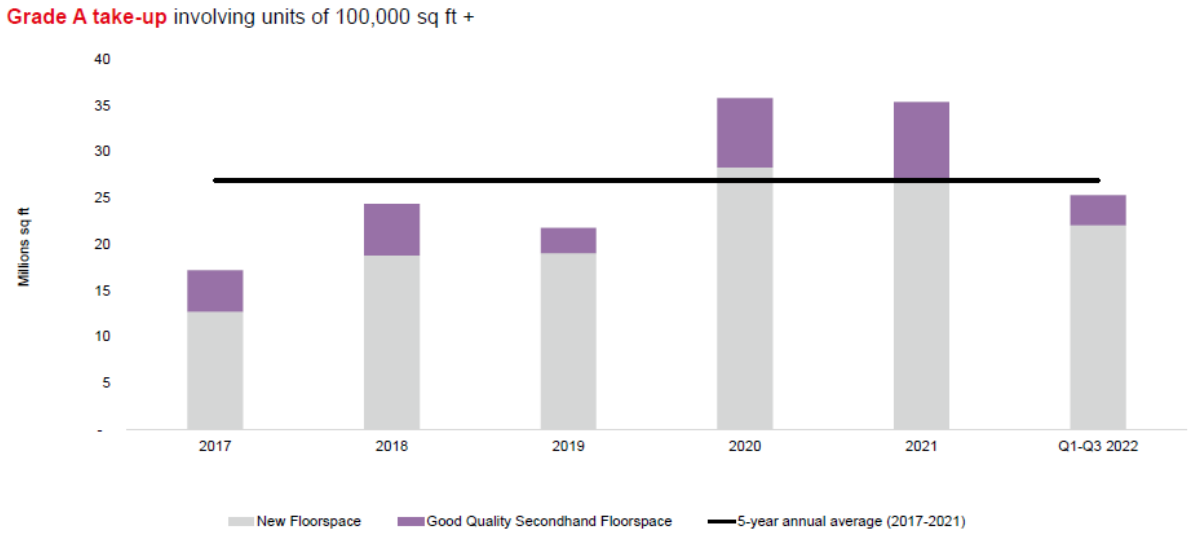
19. This site, as it is not yet completed, is not included as forming part of the 2020 – 2022 completions in Table 2 of the Preferred Options. Instead, it is included within the existing commitments of 108.52 hectares (as detailed in Appendix 7 – 20/33137/FUL). Once completed, the existing commitments will reduce to just under 80 hectares and net completions will increase to at least 23.5 hectares (i.e. 29 - 5.5 = 23.5) over the three years from 2020 to 2023.

20. The EHDNA's projection based on the past trend completions methodology – which projected a gross requirement of 181.32 hectares for the plan period – was based on an analysis of take up in the Borough over the period from 2002/2003 to 2018/2019. Gross take-up per annum over this period equated to 8.24 hectares per annum, with net take up (taking into account annual average losses of 2.41 hectares per annum) running at 5.83 hectares per annum. This rate is less than the likely net rate over the last three years (2020 – 2023) – i.e. 7.83 hectares per annum (23.5 divided by 3).

21. It is to be noted also that the EHDNA referenced a gross take up of 10.98 hectares per annum experienced over the last five years of the monitoring period (2002/2003 to 2018/2019). This is higher than the overall gross annual average over the whole monitoring period (8.24 hectares per annum) and seems to refute the point made in the Topic Paper that the past trends data was overly influenced by higher rates of employment completions pre-2008.

Market Signals

22. The strength of the market for industrial and warehouse sectors, particularly the big box sector (i.e. the units over 100,000 sq ft), over the last few years have been well chronicled. Essentially, demand levels have surged, albeit from already a high base. This is illustrated by the bar chart overleaf, which records take up nationally of big box units over the last five years, which is taken from JLL's latest quarterly summary (Q3) of the Big Box market.



23. The greater use of e-commerce has been a particular factor behind growth in demand over the last three years. However, there have been other factors, including: -

- Reshoring of industrial activities because of Covid-19 and Brexit.
- 'Just in case' approach replacing the 'just in time' practices to ensure greater resilience to supply chain networks.
- New industries emerging, such as electrical vehicle and component parts (e.g. battery production).

- Increasing ESG requirements for companies as part of the decarbonisation agenda.

24. The increase in demand has led to: -

- Significant increase in speculative development, illustrating the confidence of developers and investors.
- Vacancy rates falling to an all-time low.
- Dramatic increases in rents (16.3% over the last 12 months nationally).
- Reduced voids and letting periods.

25. All these market signals represent an imbalance of demand over supply. This has led to an absorption rate of development land that is far quicker than the development plan making process can sustain. In certain locations, the level of consented development land is very short and with no discernible supply within the pipeline.

26. The market for big box for Stafford, and Staffordshire generally, is strong and representative of the wider national and regional picture. This is demonstrated by the take-up of big box units in Staffordshire over the last three years.

Table 1 – Take-up of Big Box Units in Staffordshire 2020 – 2022

Year	Number of Deals	Floor Space Transacted (Sq Ft)
2020	8	1,190,422
2021	9	2,528,809
2022 (to end of Q3)	7	1,584,169
Total	**24**	**5,303,400**

Source: JLL

27. The vast majority of these transactions represent new space – 20 out of a total of 24 units. This is a further illustration of the strength of the market.

28. Despite obvious economic headwinds, JLL remain confident that occupational demand will continue to remain high. We are receiving a healthy number of enquiries, with companies recognising they still need to invest in resilient and sustainable supply chains in order to meet the continuing, and often changing, needs of their customers.

Absorption of Supply

29. A good example of the resilience of the occupational market at a local level is the promotion of CRE 02 – Land to the North of Redhill – by our client, Stoford Properties. This site is situated directly to the west of the Pets at Home warehouse development by Stoford and has a gross area of 31.15 hectares. It is the principal new employment allocation for the Borough.

30. Despite not being formally marketed, Stoford are already in serious discussions with two operators for units of 370,000 sq ft and 450,000 sq ft. These two units, totalling 820,000 sq ft, will absorb the entirety of the allocation.

31. The take-up of 30 hectares at this location is a further indicator that a projection based on past take-up rates – 181 hectares – is a more reasonable and realistic benchmark for assessing the land requirement for the plan period. Indeed, the current pace of development activity would suggest strongly it should be considered to be a minimum.

Government Guidance

32. National planning policy guidance issued by Central Government now recognises to a much greater extent the critical role that the logistics industry plays in terms of the wider economy. Recent changes made to the NPPF and PPG acknowledge the sector's contribution to local employment opportunities and its distinct locational requirements (i.e. at scale at suitably accessible locations).

33. Specific guidance in the PPG emphasises the importance of identifying gaps in employment land provision for different market sectors on both a quantitative and qualitative basis (paragraph 2a – 029-20190220). Paragraph 2a – 031-20190722 – provides more detailed guidance on how local planning authorities should assess need and allocate land for logistics. This refers to: -

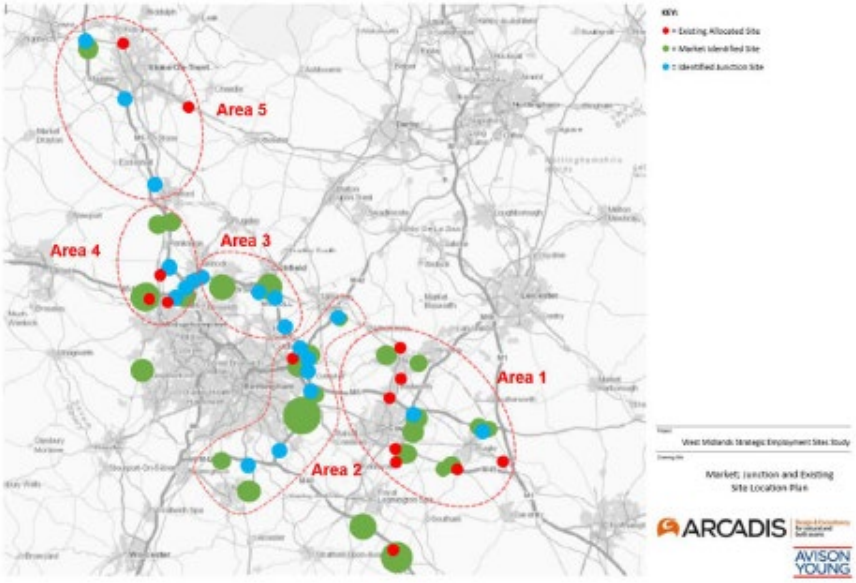
- Engagement with logistics developers.
- Analysis of market signals (including trends on take-up).
- Analysis of economic forecasts.
- Engagement with LEPs (or their successor bodies).

34. In June this year, the DFT published The Future of Freight – a long term plan. One of the principal themes is Planning. It sets a goal of *"a planning system which fully recognises the needs of the freight and logistics sector now and in the future and empowers the relevant planning authority to plan for these needs"*. In addition, *"an increase in site allocations for freight and supply infrastructure being adopted in Local Plans to reflect the needs of the sector"* is provided as a future measure of success for the overall strategy for freight in the UK.

Regional Evidence Base

35. In May 2021, the West Midlands Strategic Employment Sites Study was published. This study was commissioned by Staffordshire County Council on behalf of the four principal LEPs to the West Midlands. It concluded that there was a limited supply of available, allocated and/or committed strategic employment sites across the West Midlands and a *"urgent"* need for additional sites to be brought forward.

36. The study identified five key locations for future strategic employment sites. These are shown on the plan below (extracted from the study).



37. Area 3 was discounted, leaving four key locations. This includes Area 5, entitled Stoke and North Staffordshire. This area takes in both Stafford and Stone.

Recommendation

38. We would advocate that the new assessment of employment land need is undertaken with these factors setting the principal scope. An assessment taking this as its basis is likely to lead to a significantly greater need for employment land, particularly to serve the logistics and freight sectors. This requirement, if projected properly, is likely to exceed supply and lead to the need to identify further sites or extensions to existing sites.

Response to Policy 2 – Settlement Hierarchy

39. The settlement hierarchy places Stafford Town as Tier 1 and Stone as Tier 2. These are the top two tiers in the hierarchy.

40. JLL agrees with the identification of this hierarchy. However, it considers the Preferred Options have disregarded this hierarchy in allocating employment land. Specifically, the Preferred Options allocate 15 hectares at Meecebrook Garden Community (Tier 3) and 5.6 hectares at Ladfordfields at Seighford (Tier 5), but allocate insufficient land at Stafford (CRE 02 – 31.15 hectares) and no land at Stone.

41. These oversights are considered further in our response to Policy 7 (Meecebrook) and Policy 12 (Other Housing and Employment Land Allocations).

Response to Policy 7 – Meecebrook Site Allocation

42. JLL does not object to the principle of the proposed development of a new Garden Community at Meecebrook. However, it holds deep reservations in respect of the following aspects: -

- Scale of employment land proposed.
- Its deliverability on the timescales indicated.
- Its preference over better located sites which can provide employment development opportunities over a much more certain timeline.

43. These concerns are explored in greater detail below.

Scale of Employment Land

44. Part C of Policy 7 states that the new settlement will include about 15 hectares of employment land within the plan period (2020 – 2040). It states further that beyond the plan period the overall total will be at least 30 hectares.

45. With employment land, it is a fundamental tenet that its scale is commensurate with its attributes. These attributes, particularly for large scale industry and warehousing, are influenced heavily by communications, particularly connections to the motorway and strategic road network.

46. The West Midlands Strategic Employment Site Study (2021), which was commissioned by Staffordshire County Council on behalf of the four main LEPs for the West Midlands, sets out the criteria for strategic employment sites, which it defines as greater than 25 hectares. The principal criterion is stated as "*Motorway/Trunk Road Access*". It notes further that *"a site's proximity to a motorway junction, or other strategic highways network route, being a key criterion adopted by site promoters and developers"*.

47. Meecebrook is not well located in respect of either the motorway or strategic road network. The nearest Aroad is the A519. This is not a strategic highway, providing local connections from Newport (Shropshire) to Eccleshall and to Newcastle-under-Lyme.

48. The A519 does provide a link to Junction 15 of the M6. However, this junction is at least 7 miles to the north, with the route passing through a number of villages. To the south, the A5013 provides a link to Junction 14 of the M6. However, this requires passage through the small market town of Eccleshall.

49. Neither route will be attractive to occupiers within the industrial and warehouse sectors. Moreover, Policy 7 does not set out or require any specific major highway improvements. Previous consideration of the Garden Community referred to a potential link to the M6 motorway. However, this is no longer identified amongst the infrastructure requirements referenced by Policy 7.

50. On this basis, JLL does not consider the proposed scale of employment development to be realistic given the site's characteristics. Instead, a much more limited offer is more likely to be suitable, with this serving purely local needs.

Deliverability

51. JLL understands that it has been assumed that built development at Meecebrook Garden Community will commence from 2030. As such, none of the 15 hectares allocated for employment will come forward for another eight years.

52. Other representations made by Stoford (promoting housing on land directly to the east of the A34 north of Stafford) consider in greater detail the likelihood that the Garden Community will come forward for development on its proposed trajectory. In summary, Stoford conclude that this is most unlikely for a number of reasons. These are principally as follows: -

- Lead-in times for housing.
- Requirement for comprehensive development.
- Infrastructure requirements.
- Viability.

53. It is to be noted that Meecebrook Garden Community is in multi-ownership. Comprehensive development will require the co-ordination and agreement of all landowners. According to the Council's Local Plan and CIL Viability Assessment (paragraph 7.6), discussion with landowners has not reached an advanced stage and the willingness of all landowners to release land for development is not certain.

54. The infrastructure requirements are onerous. They include a new railway station on the West Coast Mainline (Part G). Again, we understand that consultation and discussions with the appropriate bodies (e.g Network Rail) are not advanced and there is no certainty that a new railway station serving the Garden Community would be feasible.

55. Part L of Policy 7 stipulates that development of the Garden Community can only commence once a route to funding and delivery has been identified for the railway station and other principal elements of infrastructure (including any necessary improvements to the strategic highway network). This stipulation ties, properly, the principal elements of the development (e.g housing and employment) with its necessary infrastructure. Given the

peripheral location of the proposed Garden Community – away from existing settlement and insufficient communications for its proposed scale – this is fundamental.

56. The extent of the necessary supporting infrastructure will also have a bearing on the viability of the overall proposed development. However, JLL understands that there is uncertainty about the scale of the cost of the necessary infrastructure. This is acknowledged by the Council's Local Plan and CIL Viability Assessment. Paragraph 7.5 confirms a lack of evidence and recognises it may be a limiting factor.

57. All these factors point to a proposed start date for development of the principal elements (e.g housing and employment) of 2030 to be very optimistic. There are too many unknown or uncertain factors to engage with and resolve.

58. As such, JLL considers and recommends that other employment land should be allocated in order to provide resilience to the plan.

Alternative Locations

59. JLL considers that there are better alternative locations which should be preferred for allocation for employment use. Principally, these are: -

- An extension to CRE 02 – land to the north of Redhill Business Park, Stafford.
- Land south of Stone Business Park, Stone.

60. Both these sites are being promoted by our client, Stoford. The principal grounds for their allocation are provided in the respective responses to Policy 12 (see below in respect of an extension to CRE 02). However, there are strong reasons why both should be preferred over the proposed allocation of 30 hectares (15 hectares within the plan period) at Meecebrook Garden Community. These are: -

- Both sites are located at settlements at a higher tier in the settlement hierarchy – Stafford (Tier 1) and Stone (Tier 2).
- Both sites are better located in market terms, with direct connections to the A34.
- Both sites are controlled by one party (Stoford), with direct recent experience of implementing large scale employment development in the Borough (i.e Pets at Home warehouse at Stafford and the JLR Vehicle Storage Facility at Stone).
- Both sites can be delivered in a reasonably short timescale and without the need for significant infrastructure improvements.

Response to Policy 12 – Other Housing and Employment Land Allocations

61. As referred to in the introduction to these Representations, Stoford support the allocation of CRE 02 for employment allocation (31.15 hectares). However, Stoford argues that this allocation should be extended to cover a larger site of 58.54 hectares (gross).

62. JLL has produced a Development Prospectus of the site. This forms **Enclosure No.3**. The prospectus provides justification for the proposal, giving details on the site characteristics, sets out the opportunity for development, and provides supporting information on a number of technical issues.

63. National Planning Policy Guidance sets three tests for consideration of the allocation of land for sustainable development. These are: -

- Suitability.
- Availability.
- Achievability (i.e being deliverable).

64. JLL considers that the extended site passes these tests for the following principal reasons:-

- It is uniquely well located to meet the identified needs for employment developments for the Borough, particularly for large floorplate industrial and warehouse buildings.
- It is situated directly adjacent to the prime industrial and distribution parks serving Stafford.
- It enjoys direct access to the A34 and has excellent accessibility to Junction 14 of the M6 motorway.
- It is located on the edge of Stafford, the largest settlement in the Borough and the greatest source of labour.
- The site can take advantage of recent improvements to the local road network which stem from the Pets at Home development (also developed by Stoford), which provides spare capacity for cars, commercial vehicles and other modes of transport.
- The high pressure gas main, which crosses on an east/west axis to the north of CRE02, has only a limited easement restricting development, providing for significantly greater scope for development of land to the north of CRE02.
- There are no landscape based policy constraints, with the landscape character to the site heavily influenced already by built development of the Pets at Home warehouse, Redhill Business Park and the adjacent M6 motorway.
- There is high overall landscape capacity for commercial built development, subject to high ground in the north of the extended site being retained.
- There is little ecological value in the site, with the site being used intensely for agriculture.
- The agricultural land is classified as Grade 3, and outside the definition of 'Best and Most Versatile'.
- There are very limited heritage assets in the local vicinity.
- The extended site falls outside of the flood zone.
- Full utility connections are available.

- The extended site is in single ownership, with Stoford charged by the owners to promote and develop the land.
- Stoford controls access into the site through the adjacent Pets at Home development.
- The extended site has potential to accommodate a development of 132,000 sq m (1,422,000 sq ft) on a net developable area of 30.14 hectares.
- This leaves over 25 hectares for strategic blue and green infrastructure and space for Biodiversity Net Gain (BNG), accounting for 44% of the total gross site area.
- Stoford have already agreed terms, in principle, with two occupiers for units of 370,000 sq ft and 450,000 sq ft.

65. On this basis, JLL recommends that Part B of Policy 12 should be amended so that the site area for land to the north of Redhill (CRE02) reads 58.54 hectares, instead of 31.15 hectares, and that the related plans on the Proposals Map are revised accordingly.

PJL

JLL

9 December 2022

Planning Policy Team
Stafford Borough Council
Civic Centre
Riverside
Stafford
ST16 3AQ

7th December 2022

Dear Sirs

Land at Creswell Farm

As the sole landowners of Creswell Farm, we can confirm that the site edged red on the attached Plan extending to 58.35 ha is available, and in our view suitable and achievable and should be allocated within the Stafford Borough Local Plan for employment development.

We are working with Hinson Parry, our property advisors and Stoford Developments Limited, who are advising on planning promotion and development and who have a proven track record in the area and who we understand have worked with our neighboring landowners under a similar agreement.

Available

Stoford are working with us to promote this land through the Local Plan process. Their role would be to promote the site, with a view to preparing and submitting a planning application ahead of a Local Plan allocation being secured, if this is supported by the Local Planning Authority. Therefore, the land is available in its entirety, within five years. Should only part of the land be allocated, the residual land is likely to be less valuable to our farming business given its topography, limited access and irregular field boundaries.

The land can be accessed via the existing infrastructure that has been constructed within the Pets at Home scheme developed by Stoford. The roundabout access onto the A34 has been sized to accommodate the full extent of land being promoted. We understand utilities connections are also available within this service road, to serve our land.

Suitable

The land is adjacent to the settlement of Stafford and the recently constructed commercial premises. The land's promotion would be accompanied by technical work commissioned by Stoford that include highways, ecology, landscape and heritage reports in the usual way. The Local Plan incorrectly denotes a buffer zone associated with a High Pressure Gas Pipeline that crosses part of our land to the north. We are informed that the technical work supporting the representations prepared by Stoford confirms that the allocation can be extended to deliver further land than the draft allocation of 31.15ha and in our opinion improves the land's potential to accommodate sustainable development and represents the best use of the land.

Achievable

We understand that Stoford have prepared viability appraisals which demonstrate the viability and deliverability of the scheme.

If you have any queries please do not hesitate to contact our agent

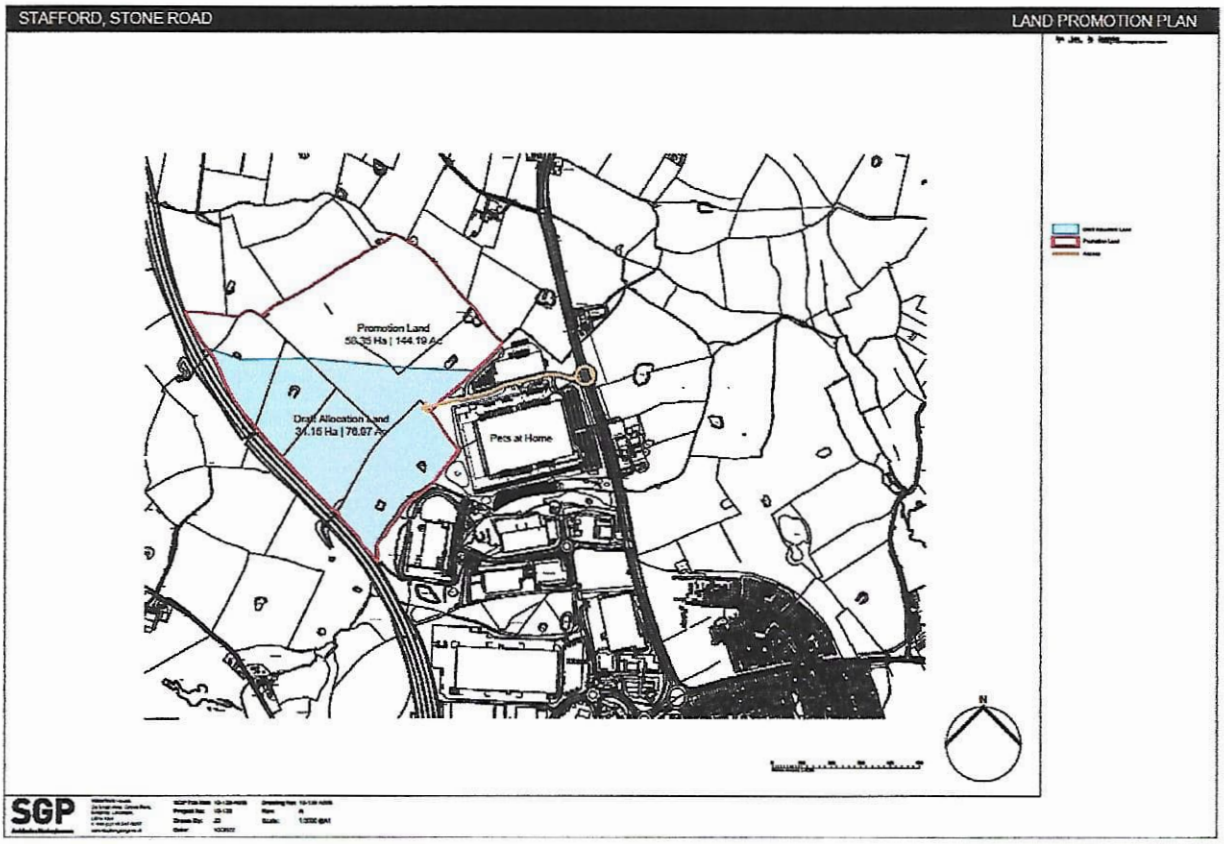
Yours faithfully

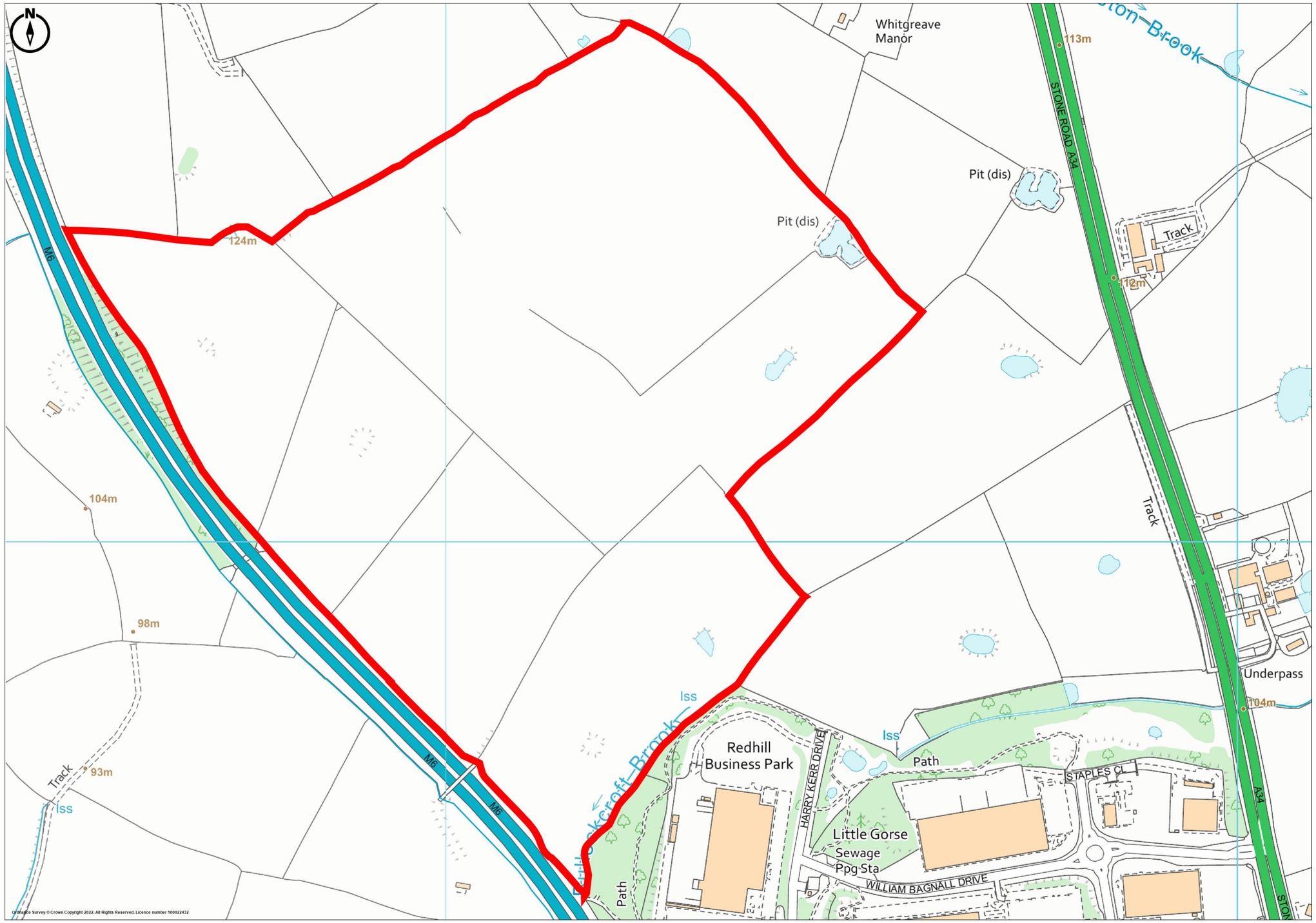
[redacted]

Robert H Hidderley

[redacted]

Promotion Plan





Promap
LANDMARK INFORMATION

Ordnance Survey © Crown Copyright 2022. All Rights Reserved.
Licence number 100022432
Plotted Scale - **1:5000**. Paper Size - **A3**

JLL

Development Prospectus

Representations to the Stafford Borough of Local Plan Preferred Options

Response to Policy 12 – Other Housing and Employment Land Allocations

Land North of Redhill Business Park, Stafford

Stoford Properties

December 2022

Contents

1. Introduction	3
2. Principal Grounds for Allocation	4
3. Site Characteristics	6
4. Opportunity for Development	11
5. Appraisal of Technical Issues	14
Appendix 1 – Red Line Plan of Promoted Land	
Appendix 2 – Report on High Pressure Gas Main Easement, ESC	
Appendix 3 – Constraints and Opportunities Plan, SGP	
Appendix 4 – Landscape Statement, Potterton Associates	
Appendix 5 – Parameters Plan, SGP	
Appendix 6 – Illustrative Masterplan, SGP	
Appendix 7 – Transport Note, BWB	
Appendix 8 – Initial Heritage Appraisal	

1. Introduction

1.1. This short statement supplements the information provided in the main representations, with specific reference to the response to Policy 12 – Other Housing and Employment Land Allocations.

1.2. Stoford Properties (Stoford) are promoting a site of 58.54 acres (gross) directly to the west of the Pets at Home development, north of Redhill Business Park, Stafford. A red line plan of this site is provided in **Appendix 1**.

1.3. A large part of this site – the southern half – is proposed to be allocated by the Preferred Options. This is site CRE02 – which covers 31.15 hectares. Stoford support this allocation, but argue that the allocation should be extended by 27.39 hectares (gross) to cover the whole site being promoted by Stoford.

1.4. This statement provides justification for this proposal. The principal grounds are summarised in Section 2.

1.5. Section 3 provides contextual information on the site characteristics, with this being supported by mapping and a short report by ESC, consulting engineers, on the restrictions imposed by the easement for a high pressure gas main, which runs on an east/west axis to the north of the site.

1.6. Section 4 introduces the opportunity for development. This is supported by a Landscape Statement by Potterton Associates and by plans and drawings by SGP Architects.

1.7. Section 5 provides further supporting information on a number of technical issues. These are principally transportation and ecology, although heritage, land quality, flooding and drainage, and utilities are also covered.

2. Principal Grounds for Allocation

2.1. National Planning Policy Guidance sets three tests for consideration of the allocation of land for sustainable development. These are: -

- Suitability.
- Availability.
- Achievability (i.e being deliverable).

2.2. JLL considers that the extended site passes these tests for the following principal reasons: -

- It is uniquely well located to meet the identified needs for employment developments for the Borough, particularly for large floorplate industrial and warehouse buildings.
- It is situated directly adjacent to the prime industrial and distribution parks serving Stafford.
- It enjoys direct access to the A34 and has excellent accessibility to Junction 14 of the M6 motorway.
- It is located on the edge of Stafford, the largest settlement in the Borough and the greatest source of labour.
- The site can take advantage of recent improvements to the local road network which stem from the Pets at Home development (also developed by Stoford), which provides spare capacity for cars, commercial vehicles and other modes of transport.
- The high pressure gas main, which crosses on an east/west axis to the north of CRE02, has only a limited easement restricting development, providing for significantly greater scope for development of land to the north of CRE02.
- There are no landscape based policy constraints, with the landscape character to the site heavily influenced already by built development of the Pets at Home warehouse, Redhill Business Park and the adjacent M6 motorway.
- There is high overall landscape capacity for commercial built development, subject to high ground in the north of the extended site being retained.
- There is little ecological value in the site, with the site being used intensely for agriculture.
- The agricultural land is classified as Grade 3, and outside the definition of 'Best and Most Versatile'.
- There are very limited heritage assets in the local vicinity.
- The extended site falls outside of the flood zone.
- Full utility connections are available.
- The extended site is in single ownership, with Stoford charged by the owners to promote and develop the land.
- Stoford controls access into the site through the adjacent Pets at Home development.
- The extended site has potential to accommodate a development of 132,000 sq m (1,422,000 sq ft) on a developable area of 40.79 hectares.
- This leaves approximately 18 hectares for strategic blue and green infrastructure and space for Biodiversity Net Gain (BNG).
- Stoford have already agreed terms, in principle, with two occupiers for units of 370,000 sq ft and 450,000 sq ft.

2.3. These reasons are explored in greater detail in the next three sections of this Development Prospectus, which address the site characteristics (Section 3), the opportunity for development (Section 4), and provides an appraisal of technical Issues (Section 5).

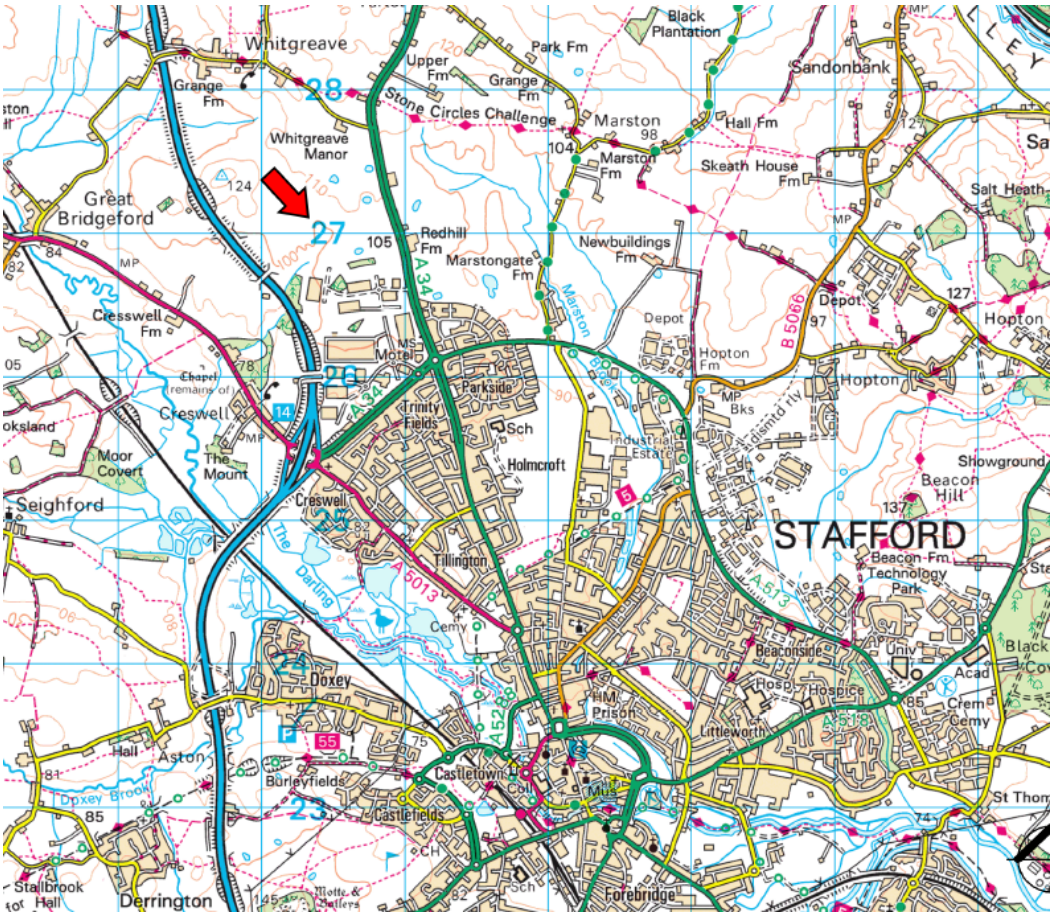
3. Site Characteristics

3.1. Site CRE02, and its potential expansion to the north, is uniquely well located to best meet the needs of the industrial and warehouse sectors for Stafford. This is because of its location, situation, and siting.

Location

3.2. The site is located directly north of Redhill Business Park, the prime pitch for industrial and warehouse units in Stafford. Figure 1 below provides a location plan. The site is marked by a red arrow.

Figure 1 – Location Plan



3.3. Redhill Business Park is well served by major road connections. It enjoys direct access to the A34 – the major alternative north/south to the M6 – and has excellent accessibility to Junction 14 of the M6 motorway.

3.4. It is located on the edge of Stafford, the largest settlement in the Borough and greatest source of labour. It is well related to recently built and planned housing that forms part of the North of Stafford development. It is accessible to existing and planned infrastructure and amenities, including road improvements, public transport provision, and other facilities such as local shops, cafes, hotels, and pubs.

Situation

3.5. The site holds a close relationship with established employment areas on the northern edge of Stafford, including Prime Point, Prologis Park and Redhill Business Park. These areas provide large floorspace units. Occupiers include Screwfix, Culina Logistics, Iron Mountain and GE.

3.6. The most recent development is the large Pets at Home warehouse. This is situated directly north of Redhill Business Park and lies to the east of the site within a designated Protected Employment Area.

3.7. The Pets at Home warehouse provides 61,045 sq m (657,000 sq ft) of built floorspace on a site of 26 hectares, with permission for a further extension of 9,291 sq m (100,000 sq ft) if and when required. The unit has a maximum height of 18m to ridge.

3.8. The unit was granted planning permission (Ref No. 20/33137/FUL) in January 2021 and is close to being completed. It will provide 800 jobs once operational (due Q1 2023) with this forecast to rise to 1,200 jobs by 2032. An aerial photograph of this development is provided in Figure 2 below.

Figure 2 – Aerial photograph of Pets at Home warehouse

3.9. This development has required major transport improvements. These have included: -

- New site access roundabout onto the A34.
- New shared foot/cycleway on the eastern side of A34.
- New footway on western side of A34.
- New toucan crossing across the A34, south of the proposed roundabout.

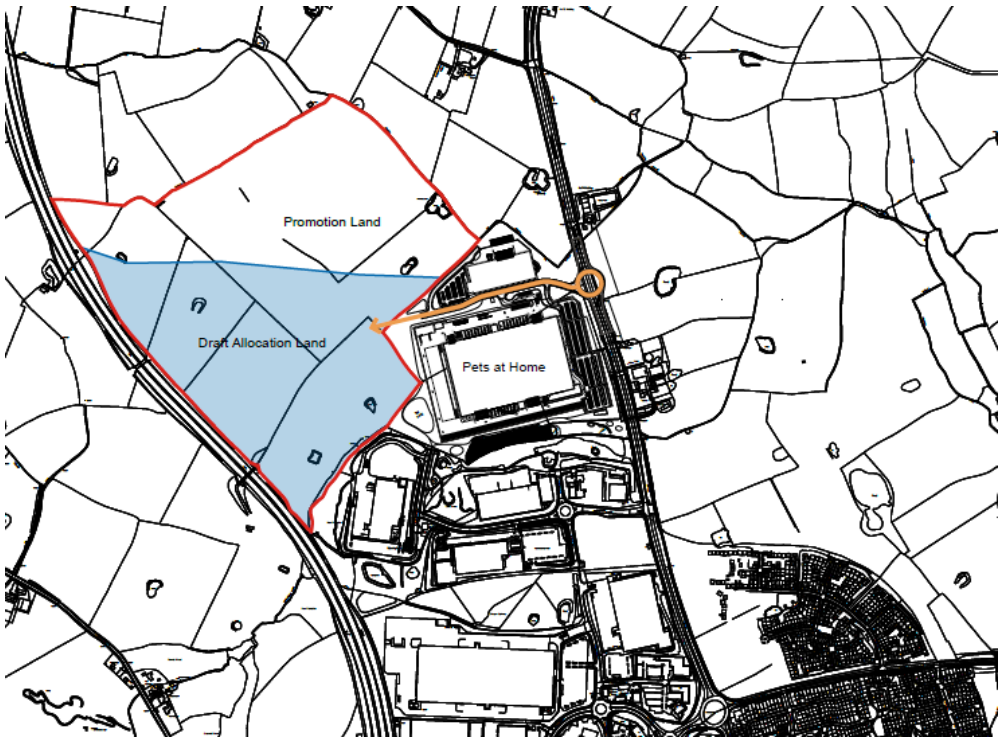
- Pedestrian crossing facilities across William Bagnall Drive.
- New bus layby on the western side of the A34.
- Improved bus infrastructure at both northbound and southbound bus stops in proximity of the site.

3.10. Consideration of wider highway and transportation matters concerning the development of the promoted site is provided in Section 5.

Siting

3.11. Site CRE02 sits directly to the west of the Pets at Home development. It is bound to the south by Redhill Business Park and is enclosed by the M6 motorway to the west. Land to the north is open countryside. A Site and Situation Plan is provided below in Figure 3.

Figure 3 – Site and Situation Plan

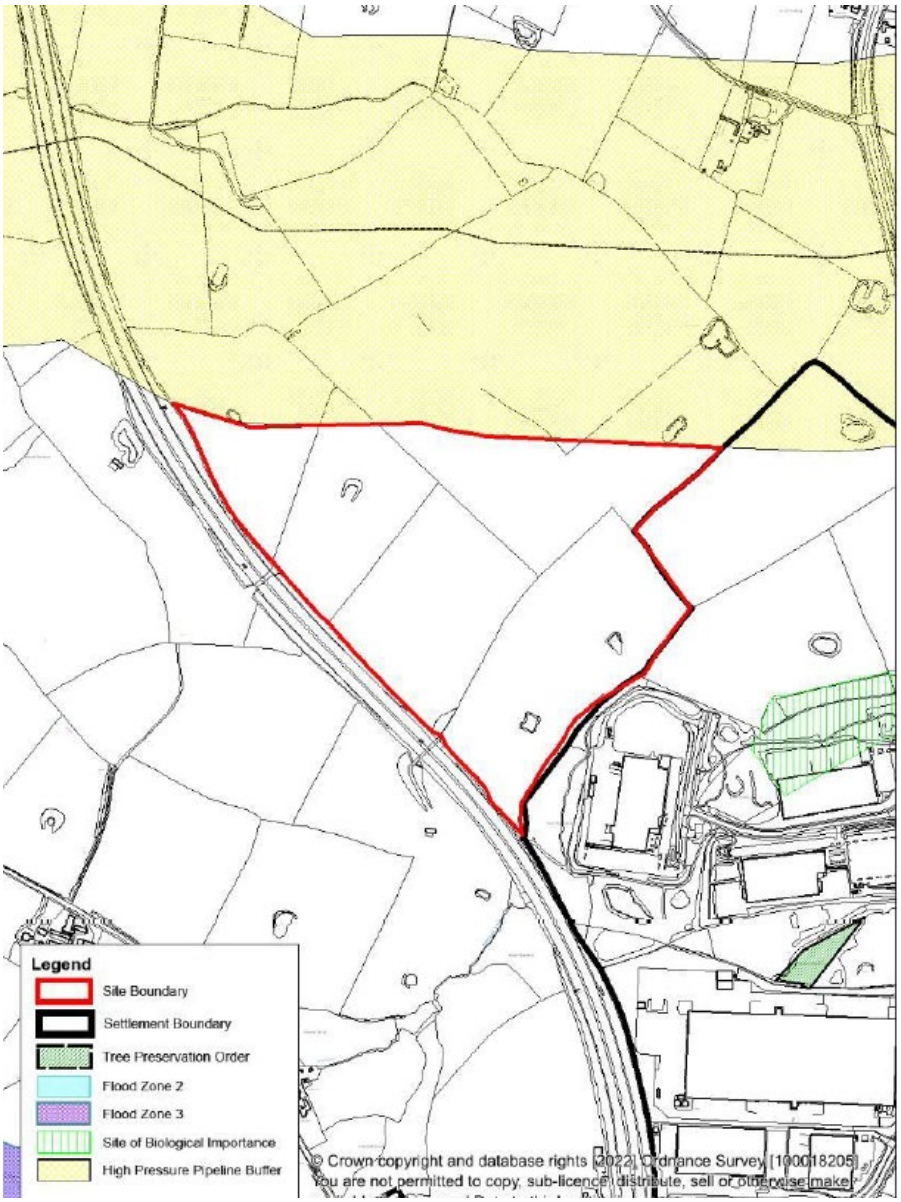


3.12. Site CRE02 is shaded blue and provides a gross site area of 31.15 hectares. In addition, Stoford are promoting an extension to the site. This extension, referred to as Promotion Land on the plan above, is located directly north of CRE02 and covers a further 27.39 hectares.

3.13. Both areas are owned by the same family, the Hidderleys. The Hidderleys have agreed that Stoford promote the site – covering a total of 58.54 hectares (gross) – for employment development.

3.14. A plan of CRE02 is provided in Appendix 2 of the Draft Local Plan – Other Site Allocations. It is reproduced below in Figure 4.

Figure 4 – Allocation Plan of CRE02



3.15. This shows that the northern boundary of CRE02 has been determined by 'High Pressure Pipeline Buffer'. This buffer is shaded yellow on the plan above and is extremely wide.

3.16. Stoford have consulted with ESC, consulting engineers, to understand better this potential constraint. ESC has produced a short report, with this forming **Appendix 2**.

3.17. ESC has approached National Grid Asset Protection team. They have advised that the pipeline is made of X60 grade steel with a 1,050mm diameter and operates at 70 bar pressure. National Grid have confirmed such a pipeline requires an easement of just 24.4 metres. Within this easement, there is a restriction on any built development. However, outside the easement, development can occur without adversely affecting the pipeline. The buffer area depicted by the site allocation plan shows the extent of the area National Grid should be consulted upon. However, it is not necessarily a constraint on the built development.

3.18. This opens land to the north of the site allocation for development, subject to consideration of the normal constraints and opportunities for development. These constraints and opportunities are considered further in the next section.

4. Opportunity for Development

4.1. Stoford have engaged Architects, SGP, to consider the potential development of all of the land controlled by the Hidderleys and being promoted by Stoford. This exercise has been guided by a number of principles: -

- The constraints of the high pressure gas main.
- Topography.
- Landscape and related issues.
- Access from the A34.
- Discussions with potential operators.

4.2. These are depicted on a Constraints and Opportunities Plan (**Appendix 3**) and considered briefly in turn below.

4.3. As considered in the previous section, the extent of the easement for the high pressure gas main is much more limited. The limit of built development is 288m further to the north than the current northern boundary to CRE02. This provides a larger and more naturally shaped development area.

4.4. The topography of the whole site area being promoted, and its landscape characteristics, have been assessed by Potterton Associates, landscape consultants. They have produced a Landscape Statement, which forms **Appendix 4**.

4.5. This statement refers to a gently undulating landscape which slopes uphill to the north. It culminates in a peak in the north-west corner of the overall site, which sits at 124m AOD.

4.6. The Landscape Statement concludes that the overall site is a good location for large commercial buildings in landscape terms, for the following reasons: -

- There are no landscape based policy constraints.
- Limited freestanding vegetation.
- Landscape character is heavily influenced already by the Pets at Home warehouse, other buildings in Redhill Business Park, and the adjacent M6 Motorway, and is of moderate value only.
- Moderate landscape sensitivity.
- Low to moderate visual sensitivity.
- High overall landscape capacity for commercial development.

4.7. The last conclusion is dependent on the retention of the higher ground in the north of the promoted site. This landform is a key local feature and provides significant screening from views from the limited settlement and open countryside to the north.

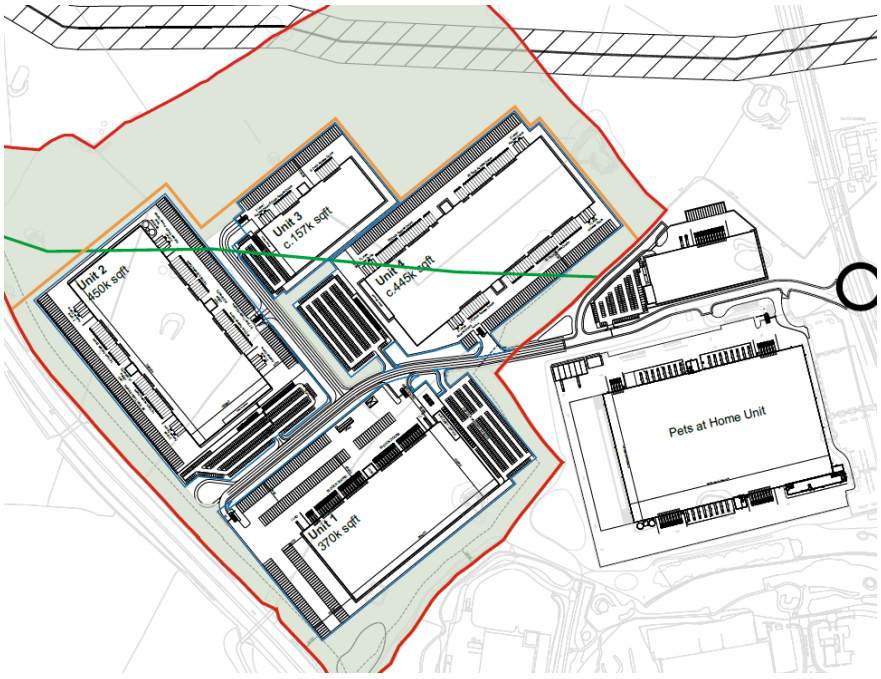
4.8. The description to the site allocation of CRE02 in Appendix 2 of the Local Plan states that "*access to be provided by the adjacent employment site*". Access is available from the neighbouring Pets at Home site, which was developed by Stoford and who control the ownership of the land required. The capacity of this road access, and the wider road network, is addressed separately in Section 5.

4.9. Despite not formally marketing the site, Stoford are already in serious discussions with two operators for units of 370,000 sq ft and 450,000 sq ft. These two units, totalling 820,000 sq ft, will absorb the entirety of the allocation of CRE02.

4.10. Taking these factors into account, SGP have produced a Parameters Plan and an Illustrative Master Plan. These are provided in **Appendices 5** and **6** respectively. Extracts from both are provided below in Figures 5 and 6.

Figure 5 – Extract from Parameters Plan

Figure 6 – Extract from Illustrative Masterplan



4.11. These plans show how development of a larger site can respect the principal constraints outlined above. They also illustrate how the constraints can be mitigated.

4.12. The principal consideration has been to respect the local landscape features and protect views from the limited settlement and open countryside to the north. This requires a large part of the north of the promoted site being retained as open space. This results in a gross developable area of 40.79 hectares (out of a total area of 58.54 hectares).

4.13. The undeveloped area to the north will still play a valuable role as part of a larger allocation. It could accommodate any requirements for landscaping, tree planting, areas for recreation and for BNG. The green infrastructure bordering the western boundary to the M6 motorway and the south eastern boundary to Redhill Business Park and Pets at Home could play a similar role. The total extent of proposed Green Infrastructure accounts for 25.76 hectares – 44% of the total site area.

4.14. Because of the arbitrarily drawn northern boundary to CRE02, the shape of the site is awkward to accommodate large floorplate building space. This is demonstrated by the Illustrative Masterplan. Unit 1 and Unit 2 – the buildings earmarked for specific operators – cannot actually fit within the tight constraints of the allocated site.

4.15. The extended site has a net developable area of 30.14 hectares. It can accommodate both Units 1 and 2 and a further two plots totalling 3.18 hectares and 9.06 hectares respectively. These two plots can accommodate units of 157,000 sq ft and 445,000 sq ft respectively.

5. Appraisal of Technical Issues

5.1 Aside from consideration of the high pressure gas main, landscape and master planning, Stoford have commissioned consultants to appraise transportation. This is addressed below.

Transportation

5.2 BWB have produced a Transport Note. This is provided in **Appendix 7**. This covers both development of the extended site for employment and land to the east of the A34 promoted by Stoford for housing. BWB advised Stoford on transportation matters concerning the Pets at Home planning application and understand well the relevant issues.

5.3 The principal findings of the Transport Note are as follows: -

- Access could be achieved via the new roundabout currently being built on the A34.
- The quantum and range of uses proposed within the immediate wider area (i.e North of Stafford) would encourage active travel and reduce car usage.
- The site would be accessible via a range of transport modes including walking, cycling and public transport.
- Traffic from the proposed development (of the extended site) is likely to be accommodated within the existing capacity of the network on the A34.
- Any impact on Junction 14 of the M6 would be minor and any mitigation, if necessary, is likely to be modest.
- Modest mitigation may be required at the Aston roundabout and Stafford roundabout in Stone, although the latter is likely to require a more comprehensive solution due to existing capacity issues.

5.4 Overall, the Transport Note concludes that the extended allocation of employment land would constitute sustainable development and would not result in any significant highway impacts that could not be mitigated.

Other Matters

5.5 The Landscape Statement (**Appendix 4**) refers to some other conservation and environmental issues. These are: -

- Heritage.
- Land quality.
- Public rights of way.

5.6 In terms of heritage, there is a single Grade II Listed building – Black and White Cottage – located 600 metres to the north of the site in the small hamlet of Whitgreave. Views to the site from this property are restricted by rising ground in between the site and Whitgreave. The Landscape Statement confirms also that there are no Scheduled Ancient Monuments or Conservation Areas in the vicinity of the site.

5.7 The Officer's report to the Planning Committee of the Pets at Home Application referred to other designated assets 400 metres to the south of the site (a mile post) and in the wider rural landscape of Cresswell, Whitgreave and Marston. However, it concluded they were a sufficient distance from the application site for there to be no potential impact upon their setting or significance.

5.8 Stoford have commissioned an initial heritage appraisal (Appendix 8). This confirms that these assets would not be harmed through any change in their setting caused by the promoted development.

5.9 The Officer's report considered also the impact of the loss of hedgerows within the application site. It considered that these would represent only a limited adverse effect in historic environmental terms.

5.10 The land is used for agriculture and is classified as Grade 3. It lies outside the definition of 'Best and Most Versatile Land' (i.e Grades 1, 2 and 3a).

5.11 No public rights of way cross the site. The nearest public right of way (Whitgreave 1) runs on an east to west axis north of Whitgreave Lane.

5.12 Other outstanding matters concern: -

- Flood risk and drainage.
- Ecology.
- Utilities.

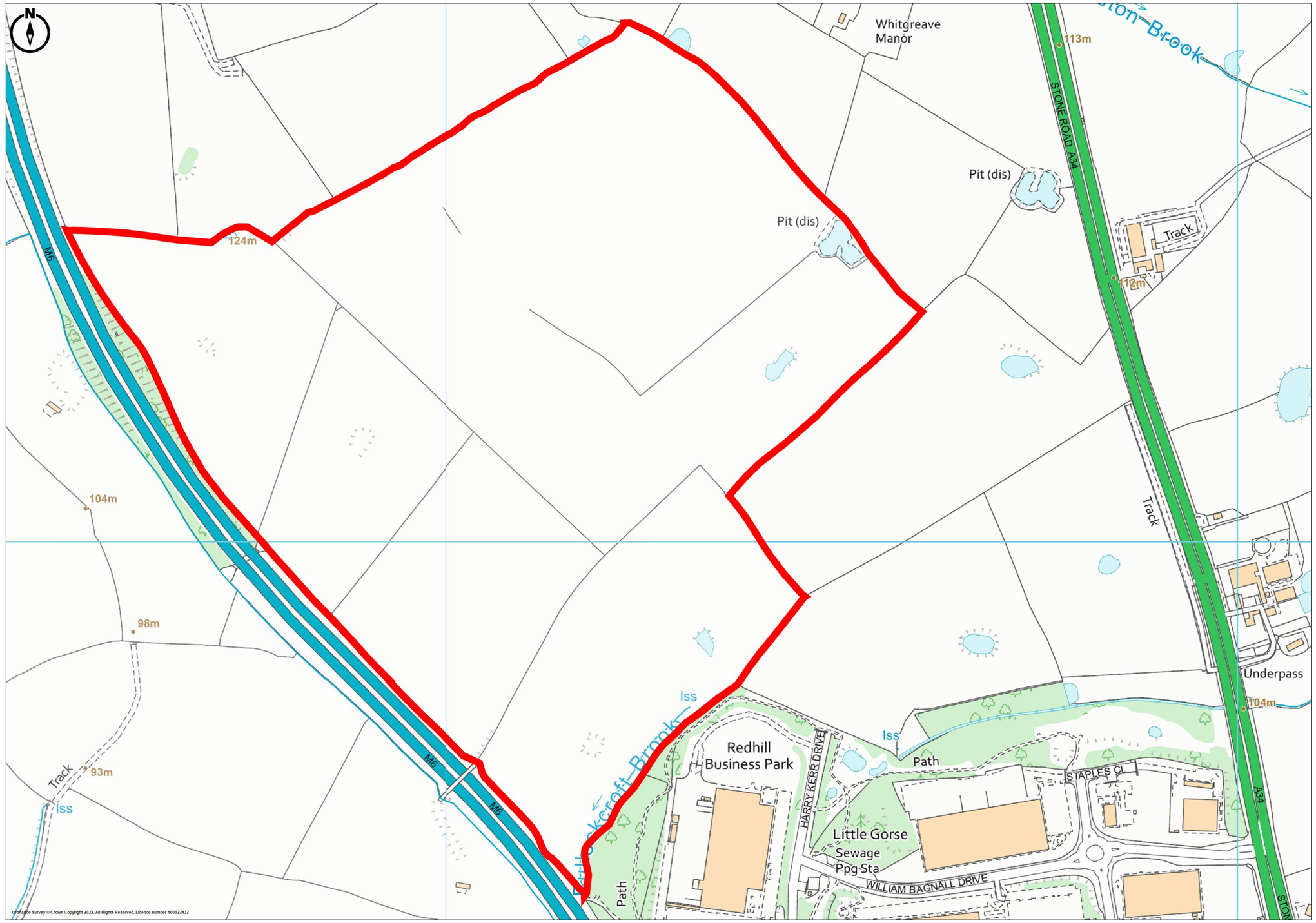
5.13 The extended site is located in Flood Zone 1 and is not considered to be at risk of flooding.

5.14 Stoford anticipate that the drainage strategy for the extended site will follow the approach with the Pets at Home development. Surface water will be discharged to local water courses following attenuation by various methods – ponds, swales, tanks and permeable parking. Foul drainage will be connected to the public sewer.

5.15 The site contains a number of trees, hedgerows and small ponds. However, the site holds no particular ecological designations. It has the same ecological characteristics as the Pets at Home site and it is considered that mitigation on the same basis should be feasible. Indeed, there is good potential, through the extent of green and blue infrastructure proposed, for a real gain in bio-diversity.

5.16 All utilities have been provided to the Pets at Home development. Connections are available for the development of the extended site.

Appendix 1 – Red Line Plan of Promoted Land



Promap
LANDMARK INFORMATION

JLL

Appendix 2 – Report on High Pressure Gas Main Easement

GAS EASEMENT

HIDDERLEY LAND

STOFORD

OUR PROJECT REF: ESC1631

ISSUED BY: [redacted]

ENGINEERING SERVICES CONSULTANCY LTD

[redacted]

Tel: [redacted]

Email: [redacted]

Web: www.escuk.com

REV	DATE	ISSUED BY
R1	05 December 2022	[redacted]

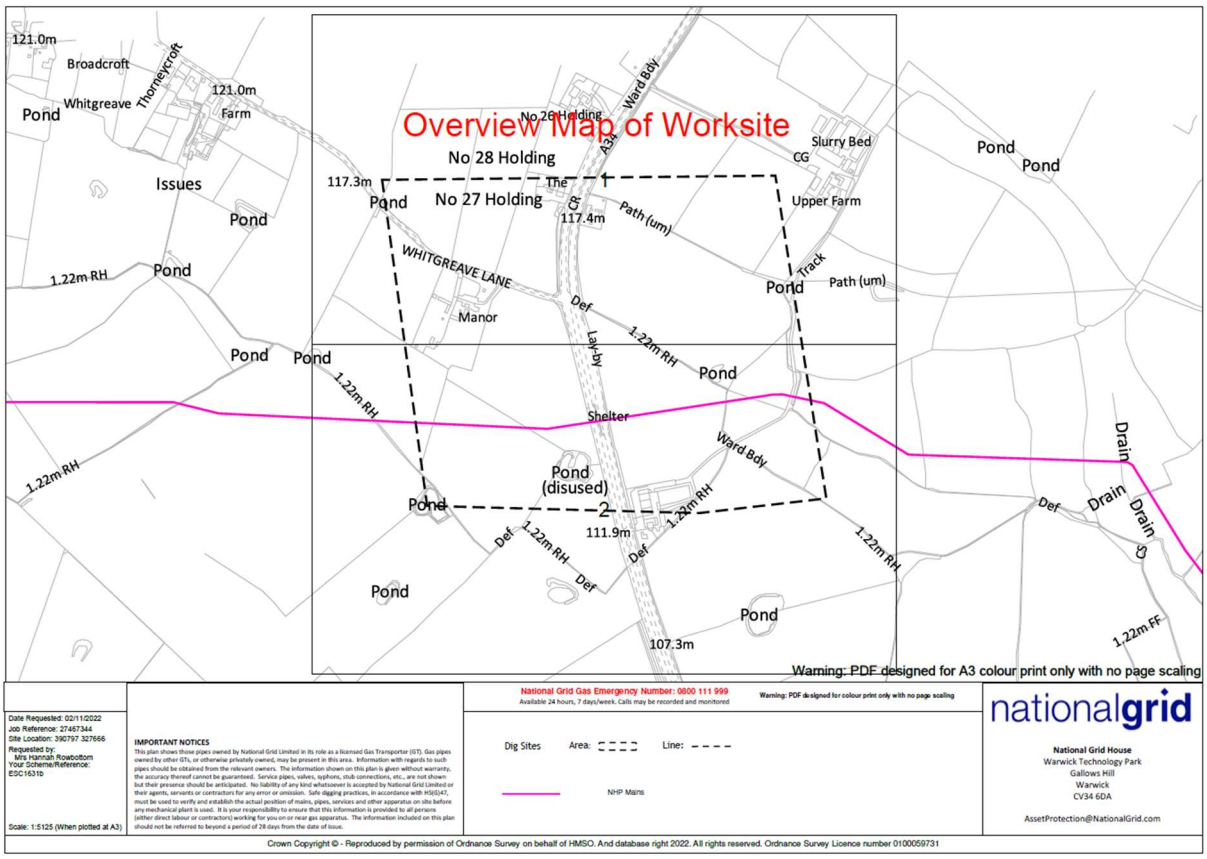
INTRODUCTION

The purpose of this document is to provide a summary of the existing National High Pressure (NHP) gas main and the constraints of the gas easement adjacent to Hidderley Land.

NATIONAL GRID RECORD INFORMATION.

The existing utility record information has been obtained from National Grid.

The extract below shows the location of the existing National High Pressure (NHP) gas main.



National Grid Asset Protection team have confirmed the pipeline is made up of X60 grade steel with a 1050mm Ø, which operates at 70 bar pressure.

GAS EASEMENT

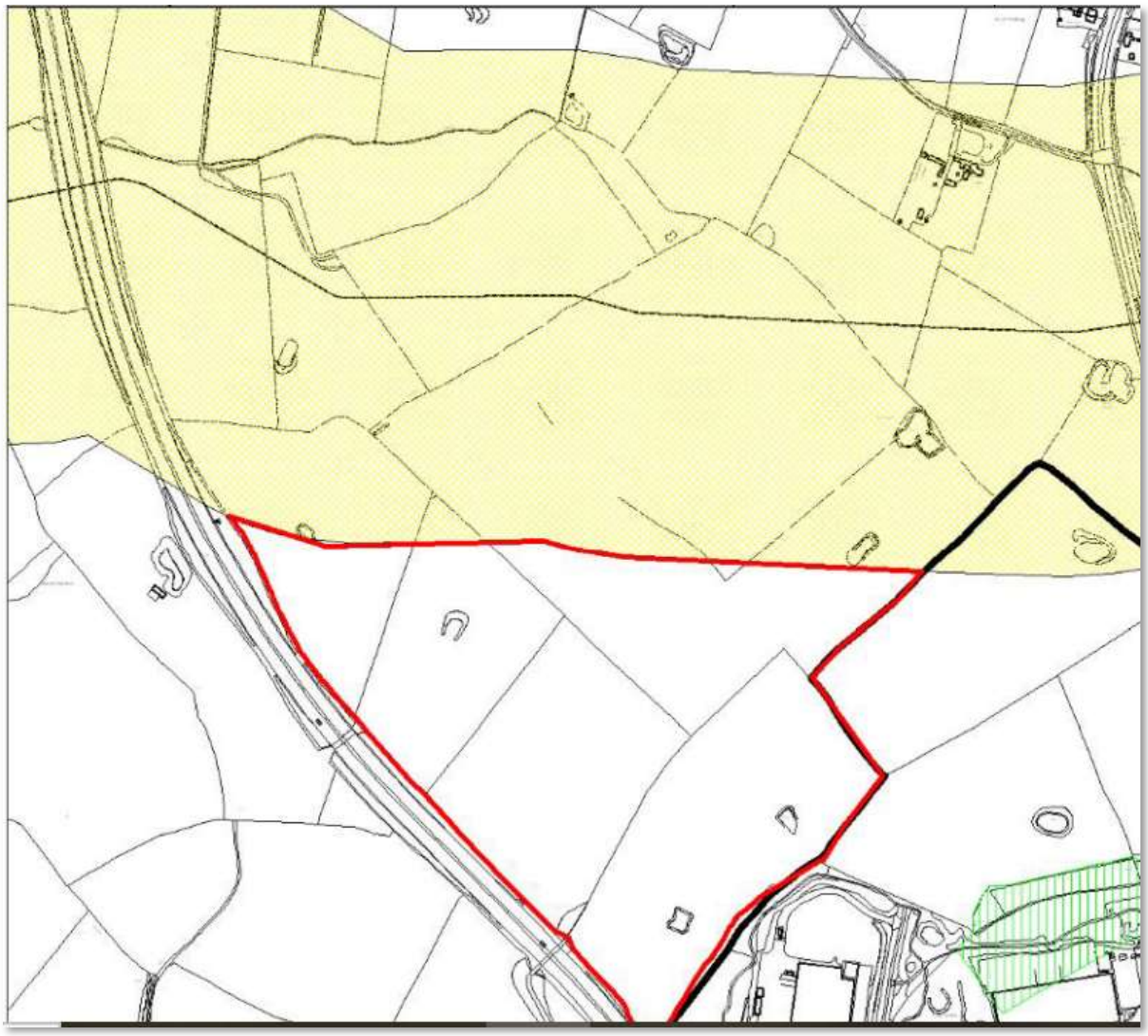
The existing NHP Main will have restrictions imposed due to its nature. Based on the information we have obtained from National Grid the following restrictions would apply:-

EASEMENT WIDTH:

1. HP Steel, with a diameter of 900mm, 1060mm, 1200mmm requires an easement of 24.4m total.

Based on the above, the overall worst case easement strip would be 24.4m total.

The extract below is taken from the local plan which shows a far more extensive area for restrictions and it does not show the easement strip.



The above shows the area, which includes certain restrictions. In all instances National Grid shall be consulted.

The table below shows, for some specific activities, the prescribed distances within which the advice of National Grid shall be sought.

Activity	Distance within which National Grid advice shall be sought
Piling	15 m
Surface Mineral Extraction	100 m
Landfilling	100 m
Demolition	150 m
Blasting	250 m
Deep Mining	1000 m

Figure 1 - Extract taken from the National Grid Requirements.

Works within the easement strip can be undertaken, the following extract from the National Grid specification for safe working in the vicinity of NHP pressure gas pipelines and associated installations requirements for third parties, the below shows the activities allowed:-

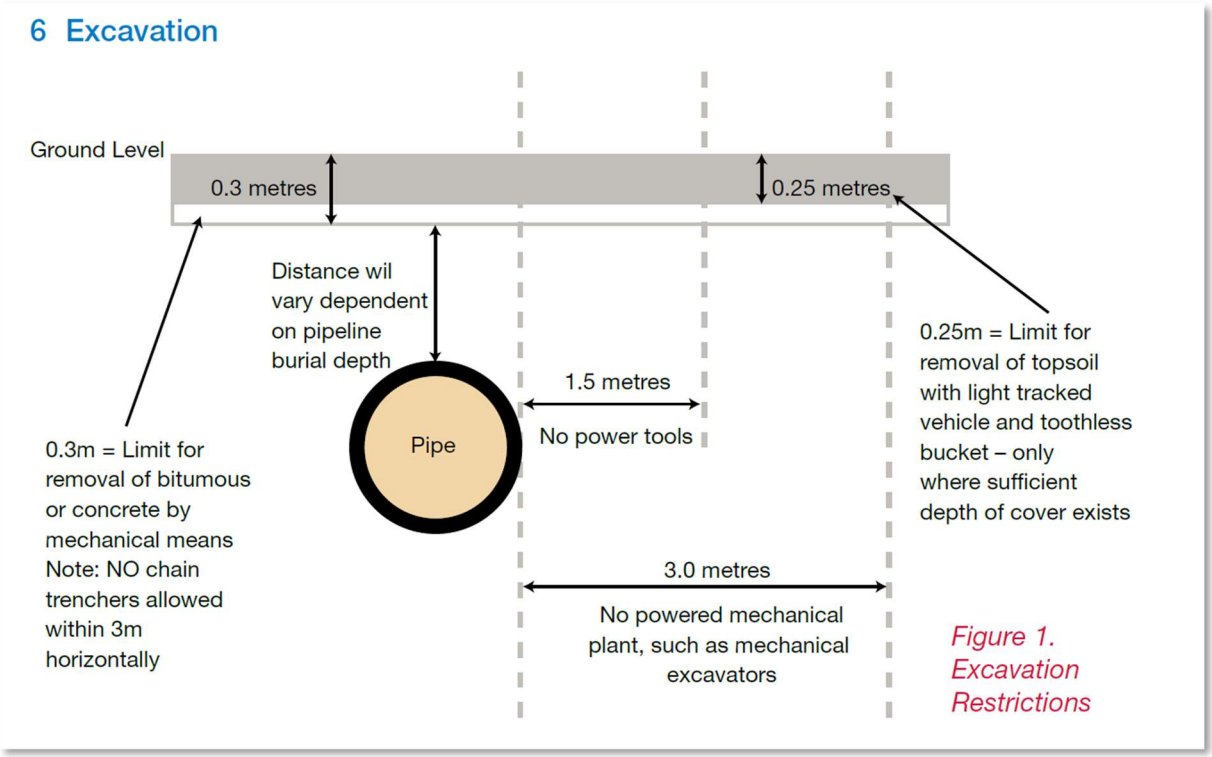


Figure 2 - Extract taken from the National Grid Requirements.

In addition to the above, there are certain restrictions within the easement which will need to be adhered to. These are contained in the easement agreement and are summarised below:-

1. No material alteration to, or any deposit of anything upon, any part of the strip of land so as to interfere with or obstruct the access to the pipeline and to lessen or in any way interfere with the support afforded to the said works by the surrounding soil including or so materially to reduce or increase the depth of soil above the pipeline.
2. No buildings or structures or permanent apparatus in, through, upon or over the easement strip of land will be accepted.

The above demonstrates that outside of the easement, development can occur without adversely affecting the pipeline and any works will be via consultation during the planning process and with National Grid for approval.

Engineering Services Consultancy Ltd

05 December 2022

Appendix 3 – Constraints and Opportunities Plan

Rev	Date	By	Description

Stone
3.3 miles

Next Junction
Hanchurch
9.9 miles

Next Junction
Stafford
1.0 miles

Stafford Centre
2.2 miles

Train Station
2.9 miles

Supermarket
1.4 miles

Legend:

- Gas Main Easement
- Gas Main
- Existing Trees
- Existing Hedgerow
- Bus Stops

NOTE:

Layout subject to assessment of Visual Impact, Levels, Retaining solutions, Ecology and Arboriculture

N

SGP
Architects + Masterplanners

Stafford North Business Park
Land to the West

Drawing Name:
Opportunities and Constraints Plan

Drawing Stage:	FEASIBILITY
Suitability:	S0 - Work In Progress
SGP File Ref:	19-138-004-SGP-STE-XX-DR-A-000002

SGP Project No:	Date:	Drawn:	Team:	Scale:	Rev:
19-138-004	02/12/2022	JS	JN	1:2000 @ A1	-

Drawing Number:
19138-04 - SGP - STE - XX - DR - A - 000002
Project Code | Originator | Volume | Level | Type | Role | Number

Appendix 4 – Landscape Statements

landscape architecture
potterton
associates ltd

Landscape statement

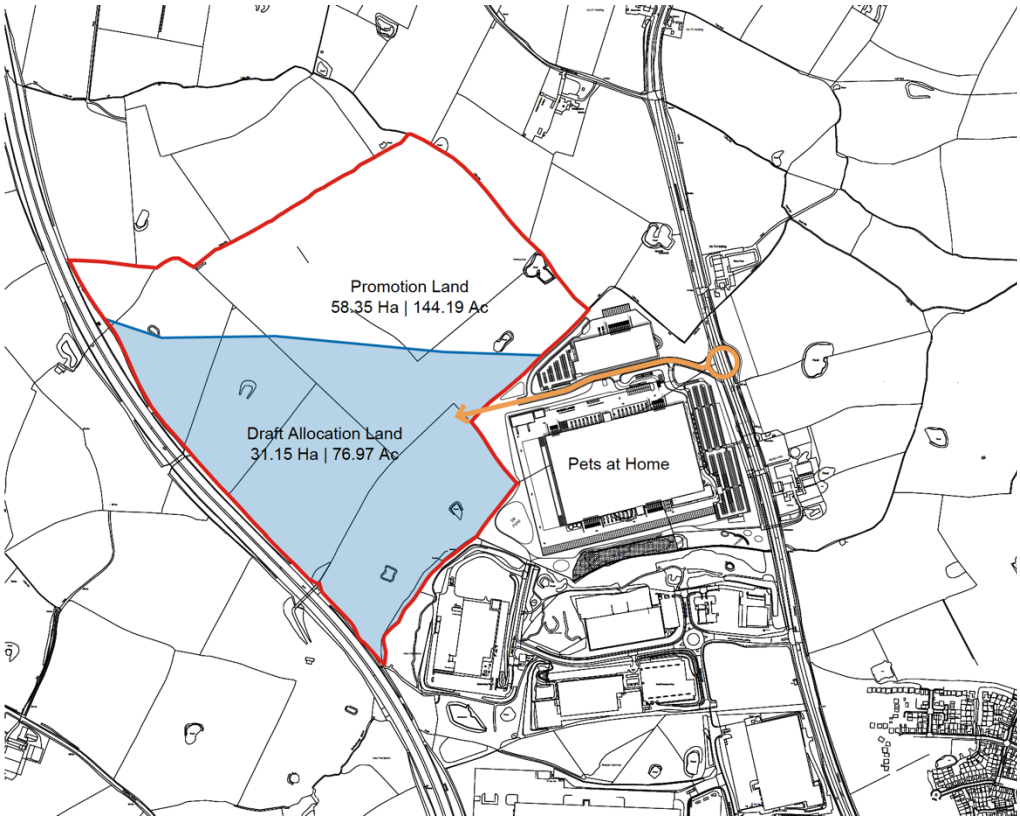
Land to the west of the A34

1. Introduction

1.1 The 'site' is respect of this assessment covers some 58.54 hectares of agricultural land to the immediate north of Pets at Home / Redhill Business Park. It lies to the immediate east of the M6, west of the A34 and south of Whitgreave Lane.

1.2 Part of this land (identified as CRE 02) has been assessed by Stafford Borough Council (SBC) as part of their 'Landscape Sensitivity Study', published in October 2022. This (SBC) study was carried out to provide an evidence base for the ongoing Local Plan 'Site allocation' process.

1.3 As part of this process, SBC have identified 31.15ha (light blue shaded on the plan below) as a 'draft allocation' for employment (B1,2,8) This (Potterton Associates Ltd) study includes additional land (outlined in red and north of the blue shaded land).



1.4 This study focusses on identifying the specific landscape and visual characteristics of the site and its context, assessing the sensitivity of the local landscape and therefore its ability to accommodate change in the form of proposed development.

1.5 We take a landscape led overview of the likely capacity for commercial development on the site. It is important to note that there is a clear difference between 'sensitivity' and 'capacity' in terms of landscape assessment. 'Landscape Sensitivity' is generally a measure of the resilience of a landscape to withstand change from development whereas 'Landscape Capacity' is generally a measure of 'how much'.

1.6 Overall, we make a judgement about whether the amount of change proposed can be accommodated without having unacceptable adverse effects on the character of the landscape (related to landscape character sensitivity), or the way that it is perceived (related to visual sensitivity), and without compromising the values attached to it (related to landscape value).

1.7 Whilst sensitivity is a part of the discussion, this report is looking more at the capacity. We refer to landscape sensitivity as noted in other studies such as the Stafford Borough Council Landscape Sensitivity Assessment and then make judgement on visual sensitivity based on our own site visits. We give a 'landscape value' to each site (based on a 5-step grade from High through Moderate to Low) to then be able to combine 'sensitivity' and 'value' to give a rating of 'capacity'.

2. Methodology

2.1 The assessment of landscape and visual impacts has been undertaken in accordance with the following good practice guidelines:

- Guidelines for Landscape & Visual Impact Assessment (GLVIA 3rd Edition)
- Valued Landscapes outside national Designations Landscape Institute Technical Guidance Note TGN 02/21
- Photography and Photomontage in Landscape and Visual Impact Assessment (Landscape Institute Advice Note 01/11)

- Landscape Character Assessment – Guidelines for England and Scotland (The Countryside Agency and Scottish National Heritage, 2002)
- An Approach to Landscape Character Assessment (Natural England)
- An approach to Landscape Sensitivity Assessment (2019 Natural England)

2.2 During the preparation of this report, the following more specific research documents were used –

- National, local and strategic planning policy guidance
- Planning for Landscape Change' (Staffordshire County Council 2008)
- The Plan for Stafford Borough 2011 – 2031 (Stafford Borough Council 2014)
- Staffordshire Landscape Character Assessment Review May 2015
- Historic Landscape Characterisation of Stafford (Staffordshire County Council 2008)
- Stafford Borough Council Landscape Sensitivity Study 2022
- Cannock Chase Views and Setting Guide July 2020
- Cannock Chase Area of Outstanding Natural Beauty Review of the AONB Landscape Character Framework August 2017

3. Study area

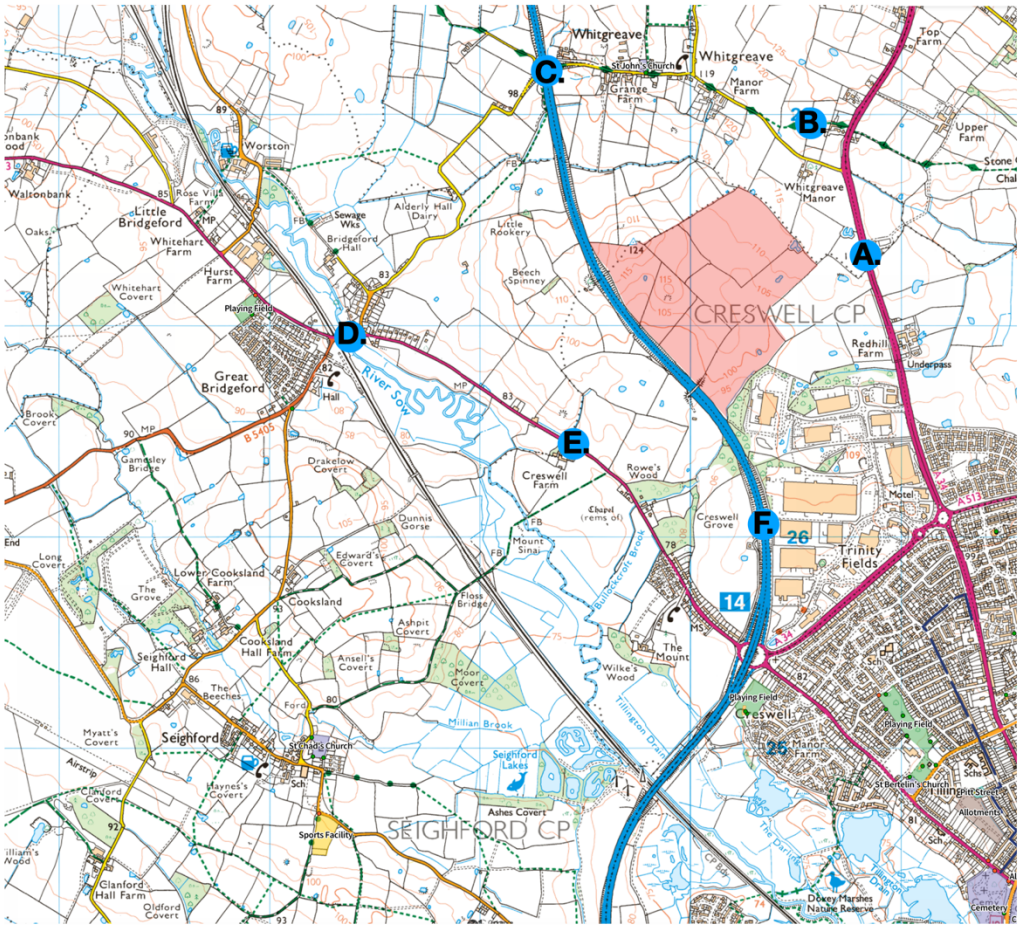
3.1 The study area was determined through a series of desk top studies, site visits and a general knowledge of the wider landscape within which the land in question is located. It is normal practice, depending on the size of the proposed development, to restrict a study to circa 5k from the site as beyond this it is usually difficult to locate and identify individual developments. It is more normal to restrict the primary study area to circa 2.5k from the site.

3.2 In this case, the primary receptor locations are within 2.5k of the site. Cognisant of the value and sensitivity of Cannock Chase AONB, we have visited potential locations further afield, such as Satnall Hill, Broc Hill and Sister Dora's high peak.

landscape architecture
potterton
associates ltd

3.3 Following our various site visits, these locations were subsequently excluded from the remainder of the study as they are some 10k to the south and the whole of the built-up area of Stafford lies in between these locations and the land in question, to include similar budlings at Redhill Business Park. Whilst this land does fall within 'Setting Zone I Stafford Centre and Farmland Fringe, we do not consider that there would be any impact on Cannock Chase AONB.

3.4 We then identified a number of viewpoints as representative of the type and extent of views of the land in question. See below -



4. Baseline

4.1 This section provides important baseline landscape information which needs to be considered.

4.2 **Public Rights of Way**

4.3 There are no PROWs on or crossing the site. The nearest is 'Whitgreave 1' (aka 'Stone Circles Challenge') which traverses east / west to the north of Whitgreave Lane (see photo 01). At its closest it is some 370m to the north of the proposed site.

4.4 **Listed buildings / SAMs' / Conservation Areas**

4.5 There is a single Grade 2 listed building within the study area. It is called 'Black and White cottage' and sits on the south side of Whitgreave Lane, some 600 metres to the north of the proposed site.

Listing NGR: SJ8990328180.
WESTON 1. 2385 Black & White Cottage SJ 82 YR 12/1 II
Probably CI7. Timber framed and brick with tiled (formerly thatched) roof and brick stacks. Single storeyed and attic; casement windows; 1 window front. Later addition on East side.

4.6 There are no Scheduled Ancient Monuments or Conservation Areas in the vicinity of the site.

4.7 **Land use**

4.8 The site is in agricultural use and comprises of a series of grass fields surrounded, generally, by well-trimmed hawthorn hedges.

4.9 Whilst no specific study has been carried out, it is considered that the land is in the same condition as the Pets at Home site to the immediate south, which was classified as Grade 3.

4.10 **Vegetation**

4.11 As noted above, the fields are surrounded, generally, by trimmed hawthorn hedges. There are a small number of freestanding trees within one of the fields adjacent to the M6.

4.12 There is a Site of Biological Interest (SBI) to the immediate south of the Pets at Home building.

4.13 **Topography**

4.14 This is a gently undulating landscape that includes a small stream running east / west between the site and Whitgreave Lane. This (tributary of the River Sow to the west) has created a gentle and shallow valley.

4.15 There is another stream (Bullockcroft Brook) that runs east to west on the southernmost boundary of the site.

4.16 The majority of the land in the area, to include the site, gently slopes uphill to the north, culminating in a 'peak' at the north-west corner of the site, which sits at 124m AOD.

4.17 The greater proportion of the proposed site sits between 95m AOD at its lowest in the south-west corner, and 110m AOD to the north-east corner.

4.18 **Landscape designations**

4.19 The site is not covered by any statutory Environment designations that might preclude development. It is not 'Special Landscape Area, 'Strategic Gap' or 'Green Belt'.

5. Landscape assessment

5.1 **Existing landscape character**

5.2 The site lies within National Character Area 61: Shropshire, Cheshire and Staffordshire Plain. According to the Staffordshire Landscape Character Assessment, the landscape character of this area is divided as follows –

- *Regional Character Area 61 Staffordshire Plain*
- *Landscape character – Settled farmlands*
- *Landscape character sub-type - Farmland*

5.3 Away from the published material, this site can be described as being a series of gently undulating fields which are heavily influenced by existing commercial development to the south, the M6 to the west and the A34 corridor to the immediate east.

5.4 Most importantly, the baseline already contains the commercial buildings located in a similar position just to the east of the M6, from junction 14 (A34 / Stafford north) up to and including the recently constructed Pets at Home building, immediately beside the site.

5.5 **Landscape (Character) Sensitivity**

5.6 We need to recognise nearby residential properties on Whitgreave Lane. However, given the existence of the large commercial buildings at Redhill Business Park and PAH together with the proximity of the M6 and A34, we conclude that, overall, this landscape is of '**moderate**' sensitivity in that -

- *Some of the key landscape characteristics/features are sensitive to the type of development.*
- *Although the landscape may have some ability to absorb development it is likely some change in character would result.*
- *Considerable care would be needed in locating any development within the landscape.*

5.7 **Visual sensitivity**

5.8 Whilst not an unattractive landscape, it is affected by the adjacent and very busy M6 with its associated gantries and signage. The large, but static built elements to the south are also an influencing factor.

5.9 We conclude a visual sensitivity the is '**moderate to low'** in that -

- *General visibility of the potential development is between low and moderate. It would be mostly well screened by existing features e.g. trees, topography, or would be relatively easy to visually mitigate.*
- *Development may be discernible, but impacts would be limited.*
- *Limited contribution to views to and from settlements.*

5.10 Overall, we conclude a sensitivity the is '**moderate'** in that -

5.11 **Landscape value**

5.12 This is not a 'valued landscape' under NPPF or GLVIA3 / TGN 02/21 criteria.

5.13 It could be properly categorised as '**moderate to low**' value in that it is already heavily influenced by existing / recent commercial development to the south, and -

- *Does not lie within or adjacent to a designated landscape.*
- *Includes very limited locally distinctive landscape characteristics with some scenic interest or presents limited amenity value by way of views and countryside access.*
- *Presents very few features of historic or ecological interest that contribute to landscape setting and character of the area*
- *Limited tranquillity,*
- *Significant human detractors*

5.14 **Landscape capacity**

5.15 It is important to note that there is a clear difference between 'sensitivity' and 'capacity' in terms of landscape assessment and detailed notes on methodology and terminology are included at the rear of this document.

5.16 'Landscape Sensitivity' is generally a measure of the resilience of a landscape to withstand change from development whereas 'Landscape Capacity' is generally a measure of 'how much'. Based on the points raised above, we conclude that the site has '**moderate to high'** capacity as -

- *The area is likely to be able accommodate a significant proportion of development without unacceptable adverse landscape and visual impacts or compromising the values attached to it, taking account of any appropriate mitigation*

6. Landscape and visual Impacts – a summary

6.1 Please note that the following is not intended as a fully detailed LVIA but does follow the same broad methodology and uses the same terminology.

6.2 **Physical Impacts**

6.3 Given proposed development of this nature and extent, this will inevitably include removal of a number of internal hedges and

ponds together with the loss of the area of grassland included in the development.

6.4 Most importantly, the perimeter vegetation will be retained. Whilst the loss of vegetation should be considered as major adverse, these losses could be substantially mitigated through an extensive scheme of on-site planting and habitat management / offsetting.

6.5 **Visual impacts**

6.6 As part of our background research, the site and surrounding area was visited on a number of occasions and a selection of viewpoints were chosen as being a good representation of the type and extent of the views into the site.

6.7 Whilst the scheme might be visible from further afield, local topography and existing buildings would restrict views to being primarily from the west of the site.

6.8 Views to and from the west are heavily influenced by the M6 and its associated noisy and fast-moving traffic, tall gantries and signage. There will inevitably be views into the site from the M6 as it passes by the site, but these receptors are generally in the lowest bracket of sensitivity

6.9 The A34 to the east is also a significant feature and 'break' in the landscape. This relatively wide corridor with a dual carriageway and lines of existing vegetation provides a break in the view from east to west.

View A. From entrance to PAH. Development would be visible.

View B. From PROW Whitgreave 1 looking south-west. Possible glimpsed views.

View C. From overbridge Whitgreave Lane / M6. Site hidden by landform.

landscape architecture
potterton
associates ltd

View D. Railway overbridge Great Bridgeford. Site generally well hidden.

View E. Gateway adj Cresswell Farm. Local topography provides good screen.

View F. M6 travelling north. Google earth screen snapshot.

6.10 From the A34, land falls downhill to the east to the valley formed by Marston Brook and its associated 'drains' or tributaries.

6.11 Parts of the buildings will be visible from more elevated land to the east but only extending as far as Yarlet Lane as it is on a ridge.

6.12 Bearing in mind the presence of existing buildings in the view and the M6, the A4567 and the railway all traversing through this view, then we consider that the effect is likely to be relatively low in terms of significance. The carefully designed colour scheme at PAH has demonstrated that a large building mass can sit relatively discretely in this area.

6.13 **Landscape character**

6.14 There will be an obvious change in character with the change from agricultural land to a commercial development. This is inevitable with any scheme of this nature. Bearing in mind the adjacent, similar uses, then it is out opinion that this an appropriate location as it is extending an existing characteristic and not necessarily creating a new one.

6.15 **Design & mitigation strategy**

6.16 Careful design, of both buildings and landscape are important and can effectively reduce harms further. We have set our overall findings in the following bullet points -

- *Significant native woodland blocks to the perimeter.*
- *Reinforce existing perimeter hedging.*
- *Suggest use of similar colour palette (as PAH)*
- *Dark roof to help with any longer-range views from elevated ground to the east.*
- *Woodland planting to upper edges of slope plus colour palette will help break the building profile.*
- *NE and NW boundaries. Buildings will need to sit lower in the landscape so as little building is visible as possible.*

- *Very important local landform / landmark feature to the NW of the site must be retained. Suggest staying as far back from this as possible. It will very usefully screen views from north especially from M6.*
- *Where possible and specifically on any buildings to the northern edge of the site, have lighting to the south or southeast side of the buildings.*
- *Important that not all the buildings are at the same angle to the M6 as this will reduce impact and give greater room for screen planting.*
- *The south-eastern corner is lowest so ideal for attenuation pond(s) and planting here will connect well into existing woodland.*

6.17 **Assessment summary**

6.18 Our overall assessment can be summarised as follows –

Heading / topic	Description & discussion
Location	• Land to the immediate north of Pets at Home, west of A34, east of M6.
Proposal	• Proposed commercial development – probably 4 buildings with associated infrastructure with associated landscape buffers. Access to be taken from the spine road within PAH.
Broad description	• Overall site to include 6 fields currently in agricultural use.
Elements likely to be a constraint - Conservation Area Public Rights of Way (PROW), Listed Buildings, Tree Protection Orders.	• No CA/s, no SAM and no PROW on or within 300m of the site. • One listed Building (Black & White Cottage on Whitgreave Lane to the north of the site (600m away).
Landscape based planning constraints or designations i.e. AONB, AGLV, Green Belt etc.	• No overarching landscape-based policies.
Landscape features (general)	• A typical agricultural landscape with trimmed hedges.
Landscape features (specific)	• The main focal point is elevated point at 124m AOD to NW corner. Limited freestanding vegetation. Two ponds which are not widely visible.
Landscape character	• Open agricultural land. Heavily influenced by PAH and buildings at Redhill Business Park and adjacent M6.
Landscape Sensitivity	• Moderate.

Visual Sensitivity	• Low to moderate. Heavily influenced by busy and noisy M6 with cars & lorries a constant distraction. • Development would be clearly visible from M6, albeit from limited duration (suggest 1k maximum based on topography, alignment of M6 and existing vegetation). These receptors are low sensitivity. • Some views from PROW to the north of Whitgreave Lane, but development would be seen in context of existing development.
Landscape Value	• Moderate. As noted elsewhere, the land is already heavily influenced by existing, adjacent development.
Landscape Capacity	• Overall, the site has high capacity for commercial development. • Retention of major landform feature to the north is essential as it is a key local feature and provides significant screening from the north. • Any development must include significant buffer zones to the north and east.
Visual matters	• Perimeter buffer zones are important to help screen the development in respect of more localised / shorter distance views. • Longer distance views are limited and are not a particular concern given the existence of similar buildings to the south. PAH has demonstrated that a muted colour palette will help minimise wider visibility.
Design matters	• Retention of key landform is essential for screening the proposed buildings. • Provision of extensive planted (native woodland and native hedgerows) buffer zones to the outer edges of the scheme will help with screening and an increase in biodiversity.
Mitigation potential	• Careful siting to minimise impact on local topography • Retention of existing vegetation where possible • Use of muted colour scheme as per PAH is essential. Different elevations can be treated differently to respond to different receptor types • Roof colour to be dark • Buffer zones to the northern and eastern boundaries are important to respond to more sensitive (residential and pedestrian receptors. • Planting to the M6 corridor should also be included. • Lighting to be located on south facing elevations (also facing away from more sensitive receptors.
Overall, does the site have development potential	• Yes.

6.19 Conclusions

6.20 If there is an identified need within the borough for large commercial buildings, then it is our opinion that this is a good location. Any development would be seen as an extension of an existing characteristic. Recent development at PAH has demonstrated that a well-designed colour scheme can be very effective in 'camouflaging the view of these relatively big buildings.

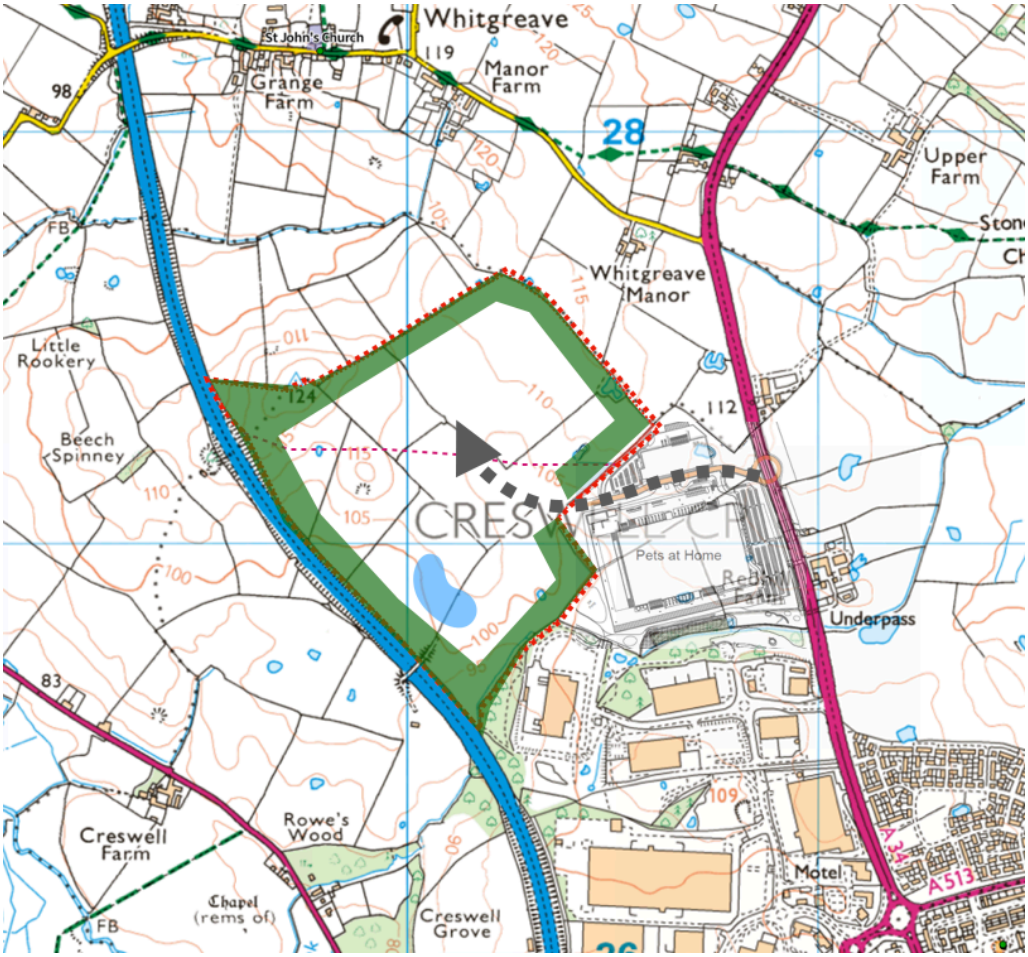
6.21 There is adequate space for an extensive scheme of native woodland planting to the perimeter which would provide long term screening as well as adding ecological value.

landscape architecture
potterton
associates ltd

6.22 The main group of receptors would be motorists on the M6 and these are in a low bracket of sensitivity.

6.23 Overall, it is our belief that we can provide an appropriate quantum of development that will sit well in the wider landscape, will cause minimal visual harm or harm to landscape character and offers extensive opportunity for the creation of a significant perimeter infrastructure of native planting.

6.24 Any landscape masterplan would need to be based on the following 'landscape framework' diagram.



[redacted]
Chartered Landscape Architect
for and on behalf of Potterton Associates Ltd

November 2022

landscape architecture
potterton
associates ltd

Methodology notes

This assessment has been carried out by a qualified and experienced Landscape Architect. It has been carried out in cognisance of -

Guidelines for Landscape and Visual Impact Assessment 3 (GLVIA3 2013)
An approach to landscape sensitivity assessment (Natural England 2019)
Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England October 2019)
The Setting of Heritage Assets (Historic England December 2017)
Heritage England website https://historicengland.org.uk/listing/the-list/

Landscape Sensitivity and Capacity Assessment broadly considers whether a particular landscape would be sensitive to changes from particular types of development in order to facilitate decisions about where development could be directed in a development plan.

It is important to note that that the levels of landscape sensitivity and capacity identified here are, by necessity, generalised statements and are intended to provide an indication of the primary landscape-based issues that would need to be addressed. Landscape sensitivity and capacity levels are not absolute, and it is intended that further analysis would be carried out in relation to specific applications where there are likely to be significant landscape and visual effects, or where there is the potential for cumulative impacts from several developments.

Table 1 Definitions of Landscape (Character) Sensitivity

Landscape Sensitivity	Definition
High	• Key landscape characteristics/features are highly vulnerable to the development type.
Moderate to High	• Many key landscape characteristics/features are vulnerable to development of this type with such change likely to result in a significant change in character. • Great care would be needed in locating and designing any development within the landscape
Moderate	• Some of the key landscape characteristics/features are sensitive to the type of development. • Although the landscape may have some ability to absorb development it is likely some change in character would result. • Considerable care would be needed in locating any development within the landscape.
Moderate to low	• The majority of the landscape characteristics/ features are less likely to be sensitive to this development type. • Although development can potentially be more easily accommodated, care would still be needed in locating and designing development in the landscape.
Low	• Key characteristics / features are less likely to be sensitive to the type of development. • Development can potentially be more easily accommodated without significantly altering the character of the landscape.

Table 2 Definitions of Visual Sensitivity

Visual Sensitivity	Definition
High	• General visibility of the potential development is high due to very limited enclosure, screening or elevated slopes/ridgelines. • Development would be uncharacteristically conspicuous and could not be successfully mitigated. • Provides important views into and out of settlements that could not be mitigated.

Moderate to High	• Limited enclosure, screening or elevated slopes or ridgelines means any development would be relatively visible in the landscape and would be difficult to mitigate. • Development would be perceptible and would alter the balance of features or elements in the view. • Provides views into and out of settlements which are of some importance
Moderate	• The general visibility of any potential development is moderate, with partial enclosure or screening but with some scope for mitigation. • Whilst development may be perceptible it would not significantly alter the balance of features or landscape elements within the view. Views into and out of settlements are of some importance but there is likely to be some scope for appropriate mitigation.
Moderate to low	• General visibility of the potential development is between low and moderate. It would be mostly well screened by existing features e.g. trees, topography, or would be relatively easy to visually mitigate. • Development may be discernible, but impacts would be limited. • Limited contribution to views to and from settlements.
Low	• General visibility of the potential development is low as it would be enclosed, well screened by existing features e.g. trees/topography and only visible from short distances. • Development would not be discernible or would enhance views. • Of little importance to views to and from settlements such that development would not lead to unacceptable visual intrusion into the landscape with or without mitigation.

Table 3 Landscape sensitivity matrix (combining landscape and visual sensitivity)

LANDSCAPE SENSITIVITY						
	High	High	High	High	High	High
	Moderate to high	Moderate to high	Moderate to high	Moderate to high	Moderate to high	High
	Moderate	Moderate	Moderate	Moderate	Moderate to high	High
	Low to moderate	Low to moderate	Low to moderate	Moderate	Moderate to high	High
	Low	Low	Low to moderate	Moderate	Moderate to high	High
		VISUAL SENSITIVITY				

Table 4 Definitions of Landscape Value

Landscape Value	Definition
High	▪ Lies wholly within or adjacent to a designated landscape where scenic value and localised character is very distinctive or is important to the setting of a designated landscape with significant intervisibility between the two. ▪ Includes locally distinctive landscape characteristics of considerable scenic value or provides important amenity value by way of views and countryside access. ▪ Includes prominent features of historic or ecological interest (e.g. taking into account the intactness and integrity of historic landscape features/patterns and nature conservation designations) that contribute to landscape setting and character of the area. ▪ Tranquil with a strong sense of naturalness.
Moderate to High	▪ Lies wholly within a designated landscape where localised character and scenic value is less distinctive, or has become degraded, or; lies adjacent to a designated landscape. ▪ Includes some amenity value by way of views and countryside access (takes into account the intactness and integrity of historic landscape patterns and ecological designations).

	▪ Includes locally distinctive landscape characteristics of scenic value. ▪ Relatively tranquil with a relatively strong sense of naturalness
Moderate	▪ Does not lie within or lies adjacent to a designated landscape where localised character and scenic value is less distinctive or has become degraded. ▪ Includes limited locally distinctive landscape characteristics of some scenic value or provides some amenity value by way of views and countryside access. ▪ Includes some features of historic or ecological interest that contribute to landscape setting and character of the area. ▪ Some detracting elements that affect tranquillity
Low to Moderate	▪ Does not lie within or adjacent to a designated landscape. ▪ Includes very limited locally distinctive landscape characteristics with some scenic interest or presents limited amenity value by way of views and countryside access. ▪ Presents very few features of historic or ecological interest that contribute to landscape setting and character of the area ▪ Limited tranquillity ▪ Significant human detractors
Low	▪ Does not lie within or adjacent to a designated landscape. ▪ Does not present locally distinctive landscape characteristics with some scenic interest or does not provide some amenity value by way of views and countryside access. ▪ Does not present features of historic or ecological interest that contribute to landscape setting and character of the area.

Table 5 Landscape Capacity matrix (combining sensitivity & value)

OVERALL LANDSCAPE SENSITIVITY						
	High	High	High	High	High	High
	Moderate to high	Moderate to high	Moderate to high	Moderate to high	Moderate to high	High
	Moderate	Moderate	Moderate	Moderate	Moderate to high	High
	Low to moderate	Low to moderate	Low to moderate	Moderate	Moderate to high	High
	Low	Low	Low to moderate	Moderate	Moderate to high	High
		Low	**Low to moderate**	**Moderate**	**Moderate to high**	**High**
		LANDSCAPE VALUE				

Table 6 Landscape Capacity definitions

Capacity	Definition
High	▪ The area is likely to be able to accommodate the specified type and scale of development without unacceptable landscape and visual impacts or compromising the values attached to it taking account of appropriate mitigation.
Moderate to high	▪ The area is likely to be able accommodate a significant proportion of development without unacceptable adverse landscape and visual impacts or compromising the values attached to it, taking account of any appropriate mitigation
Moderate	▪ This area has an ability to accommodate development in some parts without unacceptable adverse landscape and visual impacts or compromising the values attached to it, taking account of any appropriate mitigation There is a need for each proposal to be considered on its individual merits to ensure there are no unacceptable adverse impacts.
Low to moderate	▪ The area only has potential to be able to accommodate development in limited locations without unacceptable adverse landscape and visual impacts or compromising the values attached to it, taking account of any appropriate mitigation

landscape architecture
potterton
associates ltd

None / low	▪ The area is unable or only has very limited potential to be able to accommodate the specified type and scale of development without unacceptable adverse landscape and visual effects or compromising the values attached to it, taking account of any appropriate mitigation

Appendix 7 – Transport Note

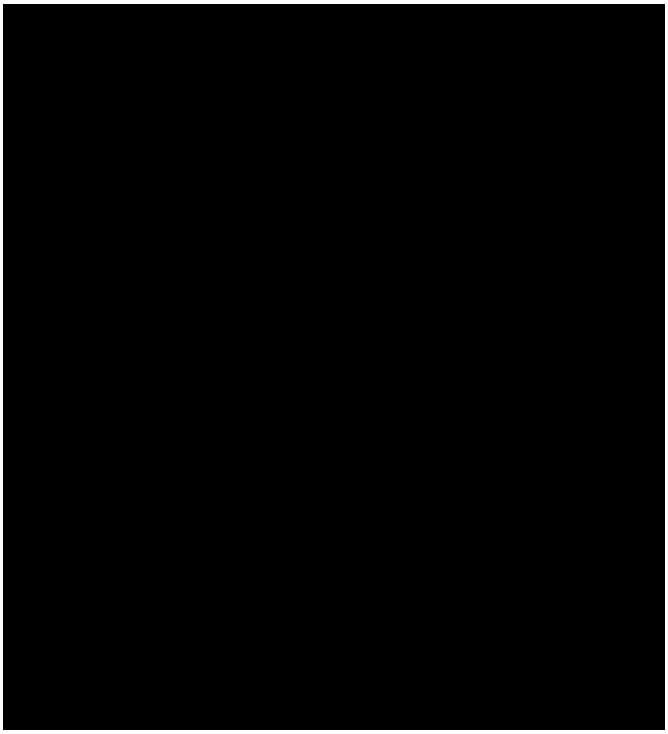
BWB
A CAF GROUP COMPANY

TRANSPORT & INFRASTRUCTURE PLANNING

Stoford Properties Ltd
North Stafford (Cresswell Farm) Employment Allocation (Preferred Options) and Redhill Farm Residential Local Plan Promotion
Transport Note

TRANSPORT & INFRASTRUCTURE PLANNING

Stoford Properties Ltd
North Stafford (Cresswell Farm) Employment Allocation (Preferred Options) and Redhill Farm Residential Local Plan Promotion Transport Note



December 2022

DOCUMENT ISSUE RECORD

Document Number:	RP3-BWB-GEN-XX-RP-TR-0002_Transport Note-S2-P3
BWB Reference:	220583

Revision	Date of Issue	Status	Author:	Checked:	Approved:
P1	30.11.22	S2	[redacted]	[redacted]	[redacted]
P2	06.12.22	S2	[redacted]	[redacted]	[redacted]
P3	09.12.22	S2	[redacted]	[redacted]	[redacted]

Notice

CONTENTS

1. INTRODUCTION 5
2. BACKGROUND INFORMATION 6
Stafford Local Plan 2011-2031 6
Land North of Stafford 6
Stafford North Business Park (Pets at Home) Application 7
3. SUSTAINABLE INFRASTRUCTURE 7
Introduction 7
Catchment Areas 8
Active Travel Infrastructure 10
Public Transport (Bus) 11
Public Transport (Rail) 11
4. ACCESS PROPOSALS 11
5. HIGHWAY IMPACT 13
Proposed Allocations Traffic Generation and Distribution 13
Background Traffic Growth 13
Junction Assessments 14
6. PROPOSED STONE ALLOCATION 15
7. CONCLUSIONS 15

FIGURES

Figure 1. Site Locations
Figure 2. Existing/Consented Sustainable Travel Infrastructure
Figure 3. 2 Kilometres Walking Catchment Area
Figure 4. 5 Kilometres Cycling Catchment Area

TABLES

Table 1. Stafford Allocations Traffic Generation
Table 2. Stone Development Traffic Generation

DRAWINGS

RP2-BWB-GEN-4TH-SK-C-1000 – 4TH Arm General Arrangement
RP3-BWB-ZZ-XX-DR-TR-0001 – Priority Access Option
RP3-BWB-ZZ-XX-DR-TR-0002 – Signal Access Option

APPENDICES

APPENDIX 1: Latest Site Masterplans
APPENDIX 2: North of Stafford Planning History
APPENDIX 3 Sustainable Travel Infrastructure Improvements
APPENDIX 4: Modelling Technical Note

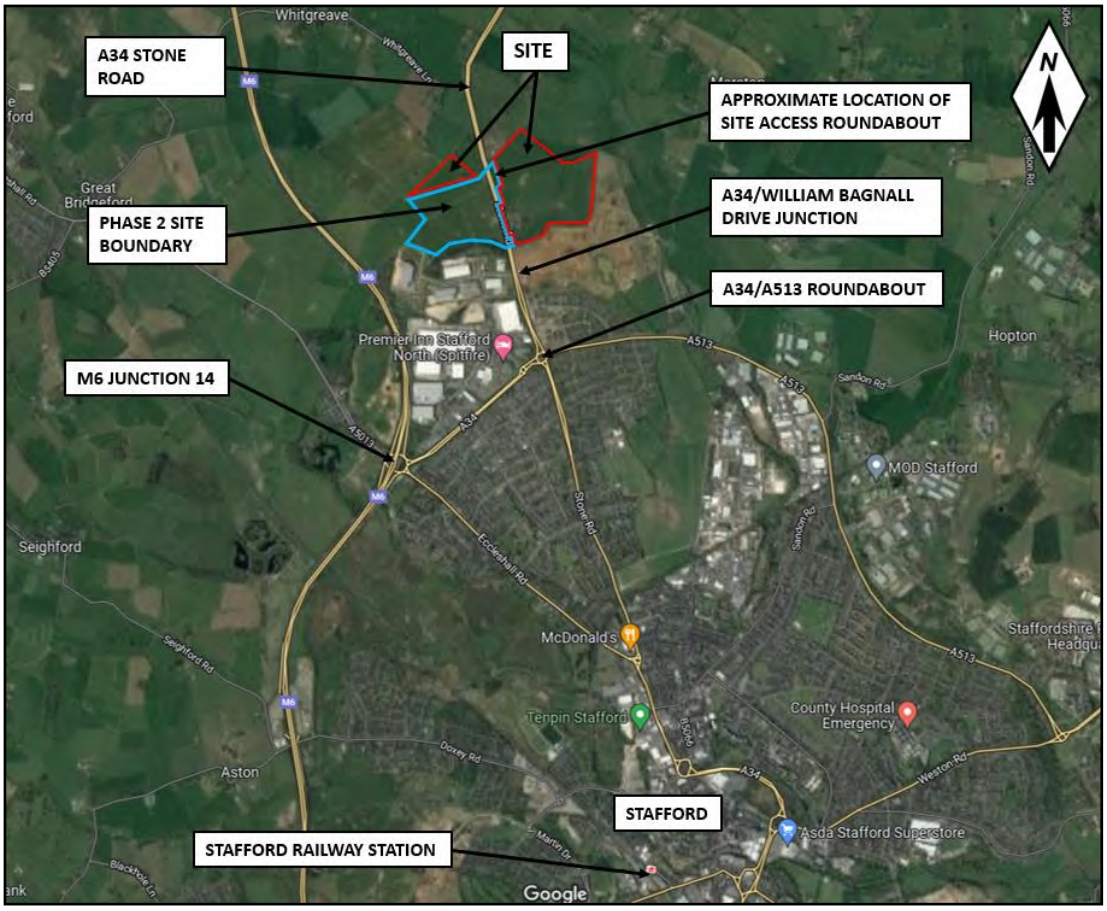
1. INTRODUCTION

1.1 BWB Consulting Ltd ("BWB") has been appointed by Stoford Properties Ltd ("Stoford") to assist with promoting land located to the east and west of the A34 Stone Road through the Stafford Local Plan process.

1.2 Stafford Borough Council (SBC) is consulting on the Local Plan 2020-2040 'Preferred Options' document, seeking views on draft policies and land for new development over the next 18 years. SBC has already identified 31.15 hectares of land to the west of the A34 (Site CRE02 'land to the north of Redhill) for possible employment development. Stoford wish to extend the allocation by 27.39 hectares to include additional land further north, to maximise the development opportunity and achieve a total area of 58.54 hectares (gross). This is considered necessary to deliver the required amount of development and make the most effective use of the site.

1.3 Stoford also control land adjacent to the employment allocation, identified within the emerging Local Plan as Protected Employment land. The land can accommodate 135,000sqft (12,500sqm) of B2/B8 development. Finally, Stoford are promoting land to the east of the A34 for circa 600 residential dwellings, a primary school and other ancillary local uses. **Figure 1** shows the various allocations being promoted to the north of Stafford and the subject of this Technical Note, whilst **Appendix 1** includes the latest site masterplans.

Figure 1. Site Locations



1.4 The purpose of this Technical Note is to support the above allocations through the SBC Local Plan process by examining the following associated transport areas:

1. Accessibility by sustainable modes.
2. Vehicular access.
3. Highway impact on the A34 corridor.

1.5 This Technical Note considers the two following development options across each of the allocations:

- Development Option 1 – circa 600 residential dwellings and a primary school (east of A34) plus 135,000sqft (12,500sqm) of B2/B8 use and 1 million sqft (93,000sqm) of B2/B8 development (west of A34).
- Development Option 2 – circa 600 residential dwellings and a primary school (east of A34) plus 135,000sqft (12,500sqm) of B2/B8 use and 1.4 million sqft (130,000sqm) of B2/B8 development (west of A34).

1.6 The former represents the maximum capacity for employment floorspace from the allocation CRE 02 (i.e. 31.15 hectares). The latter represents the capacity of the potential extended allocation (i.e. total gross site area of 58.54 hectares).

2. BACKGROUND INFORMATION

Stafford Local Plan 2011-2031

2.1 The adopted SBC Local Plan currently covers the period between 2011 and 2031. The Local Plan review covers the period between 2020 and 2040 as mentioned above. Policy 2 – 'North of Stafford' relates to a strategic development located to the north of Stafford, which is allocated for a total of 3,100 dwellings and 36 hectares of employment development. The allocation includes most of the Stafford North Business Park land to the west of the A34, recently developed for Pets at Home.

Land North of Stafford

2.2 The North of Stafford Strategic Development Location is an allocation of over 3,000 homes from the former Local Plan, which has subsequently benefited from a number of planning permissions. The Stafford North Masterplan document, is approved by SBC and has guided these planning applications.

2.3 **Appendix 2** includes a table summarising the key planning history at North of Stafford sourced from the SBC website in November 2022. To date, the 'Land at Beaconside' (Marston Grange) development has received planning permission and delivered 409 houses. A further 2,000 dwellings are permitted in outline (16/25450/OUT) and a further 700 dwellings have reserved matters approval (20/32039/REM). These are partially constructed and served by the A34/William Bagnall Drive signal-controlled crossroads junction.

2.4 The 2,000 dwellings with outline permission (16/25450/OUT) are yet to progress to reserved matters stage. A reserved matters application has been made for some elements of associated infrastructure. However, not for the houses themselves.

Stafford North Business Park (Pets at Home) Application

2.5 In 2020, BWB produced a Transport Assessment in support of a planning application for Phase 2 of the Redhill development (planning ref: **20/33137/FUL**), the location of which is shown on **Figure 1**. The 2020 scheme received planning permission in January 2021 for a single B8 distribution unit of 77,900sqm and is being occupied by Pets at Home. The permission also included for a new 3-arm roundabout on the A34 to serve the development and construction has since started with completion scheduled for 2023. It is anticipated that the employment and residential allocations would be primarily accessed via this roundabout.

2.6 The 2020 Transport Assessment considered the traffic impacts of Phase 2 on the surrounding network using the Stafford SATURN model at a future year of 2033. The Transport Assessment included detailed modelling assessments of the following three junctions on the A34, which showed that each junction was predicted to operate within capacity.

1. Site access roundabout on the A34.
2. A34/William Bagnall Drive signal-controlled crossroads junction.
3. A34/A513 (Redhill) roundabout (committed signal-controlled layout).

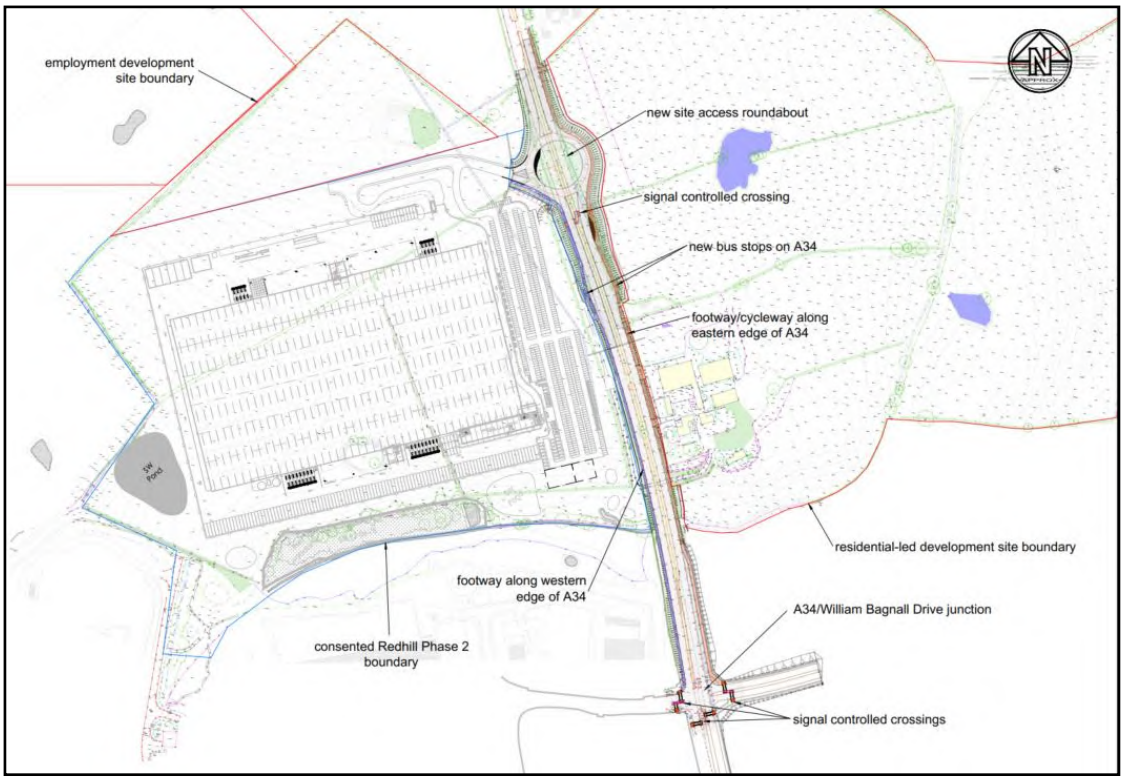
2.7 This Transport Note therefore utilises information from the 2020 Transport Assessment, where relevant to test the impacts of the employment and residential allocations. This includes the vehicular trip rates, distribution pattern and the models for the above junctions.

3. SUSTAINABLE INFRASTRUCTURE

Introduction

3.1 Phase 2 of Redhill and the Marston Grange developments are delivering several local infrastructure improvements to provide walking, cycling and public transport connections to the associated sites. **Appendix 3** includes drawings showing these facilities, which are also shown indicatively on **Figure 2.** This includes footway and cycleway infrastructure, signal-controlled Toucan crossings and new bus stops on the A34, further details of which are provided below.

Figure 2. Existing/Consented Sustainable Travel Infrastructure



Catchment Areas

3.2 In terms of catchment areas, it is typically accepted for people to walk up to 2 kilometres for commuting, leisure and shopping trips, whist 5 kilometres is typically accepted for cycling trips. **Figure 3** shows a 2 kilometres catchment area, whilst **Figure 4** shows a 5 kilometres catchment area centred on the employment allocation. These show that the allocations on either side of the A34 and the northernmost part of Stafford are within suitable walking distance, whilst the majority of Stafford is within convenient cycling distance.

Figure 3. 2 Kilometres Walking Catchment Area

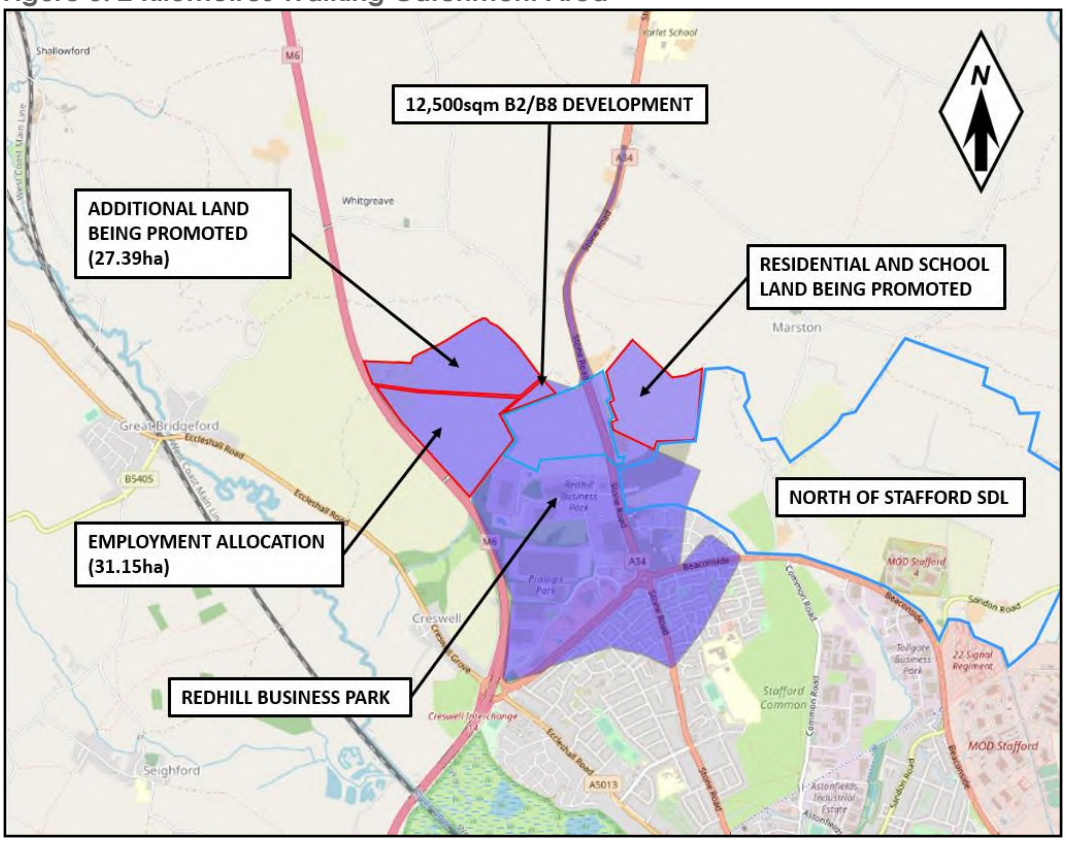
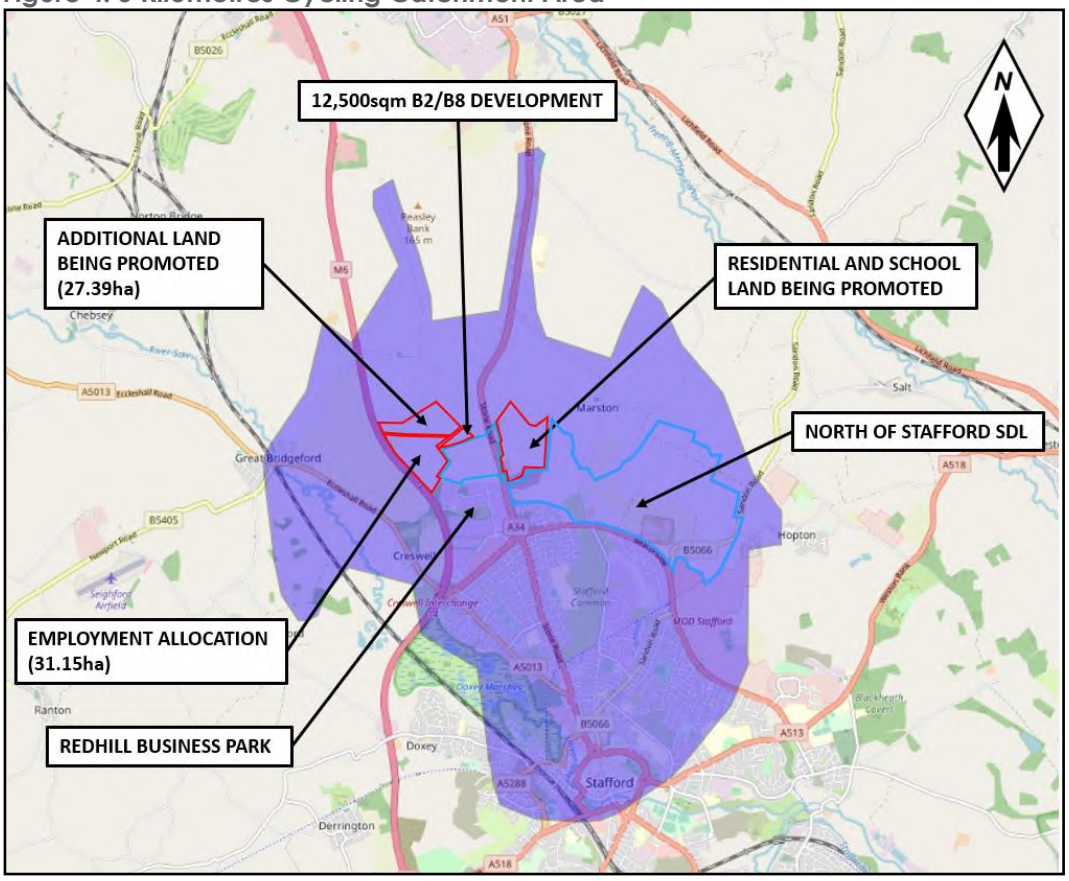


Figure 4. 5 Kilometres Cycling Catchment Area



3.3 It should be noted that cumulatively the North of Stafford allocation would result in approximately 3,100 dwellings located to the east of the A34. All of these would be within convenient cycling distance of the employment allocations, whilst circa 1,500 dwellings would be located within convenient walking distance of the employment allocations. It is highly likely that a proportion of residents would work within Redhill Business Park/employment allocations increasing the proportion of active travel trips. In addition, the residential allocation would include a school and local centre with a mix of retail uses that would serve the residents and reduce the need for off-site travel.

Active Travel Infrastructure

3.4 **Figure 2** shows the indicative location of the new roundabout currently being construction on the A34, which will serve the allocations being promoted in this Transport Note. It also shows the following infrastructure improvements being delivered in the local area:

- A new signal-controlled Toucan crossing on the A34 immediately south of the roundabout (to accommodate both pedestrians and cyclists).
- A 3.5 metres wide shared footway/cycleway along the eastern side of the A34 from the new roundabout south towards the William Bagnall Drive signal-controlled junction. The footway/cycleway will then extend through the new Marston Grange residential development and connect with the A513 Beaconside.
- A 2 metres wide footway along the western side of the A34 from the new roundabout south towards the William Bagnall Drive junction. A footpath link will also be provided internally within Stafford North Business Park, along the eastern and southern boundaries, connecting to existing footway/cycleway infrastructure within the Redhill Business Park.
- Signal-controlled crossings on three of the arms at the A34/William Bagnall Drive junction (A34S, residential access and Redhill Business Park access arms).

3.5 The above pedestrian and cycle facilities should therefore be suitable in supporting the proposed employment and residential allocations and connecting future staff and residents to the wider areas of Stafford. To further encourage sustainable travel, the following infrastructure would be proposed:

- A new footway/cycleway along the main industrial access road from the A34 within the proposed employment allocation.
- A new footway/cycleway network within the proposed residential allocation extending from a new connection to the A34 at the southwest corner of the site to the A34 roundabout via an internal spine road.
- Suitable crossing facilities within the site to connect people to the building entrances.

Public Transport (Bus)

3.6 A pair of new bus stops are being provided on the A34 approximately 40 metres south of the new roundabout. The bus stops will feature a layby to ensure that traffic is not obstructed by waiting buses and both stops will also provide waiting areas with shelters and timetable information.

3.7 The pair of new bus stops will be served by Route Number 101, which currently travels along the A34 twice per hour in either direction. Route Number 101 provides a connection to Stafford Town Centre (inc. railway station), Stone, Newcastle-under-Lyme and Hanley (Stoke-on-Trent).

3.8 These bus stops are within a convenient walking distance of Stafford North Business Park, however outside the recommended distance of the proposed employment allocation. Therefore, an on-site bus turning area would be provided to reduce the walking distances. In terms of the residential allocation, the internal estate road would be designed to accommodate buses and ensure that all residents are within 400 metres of a bus stop.

3.9 Discussions will be required with the local bus operator (Firstbus) and local highway authority to establish whether funding is necessary to ensure an appropriate level of bus provision to the two allocations. However, given the scale and range of uses, it is considered that such a service could be financially sustainable in time. This will need to be examined further as part of any future Transport Assessment and Travel Plan.

Public Transport (Rail)

3.10 Bus Route Number 101 travels to Stafford Railway Station (**Figure 1**) located approximately 4.5 kilometres to the south and could therefore transport future staff and residents as part of a linked trip with rail travel. Stafford Railway Station is located on the West Coast Mainline and is served by two trains per hour in either direction that also call at major stations including Birmingham New Street, Stoke-on-Trent, London Euston and Liverpool Lime Street. Stafford Railway Station is also a stop on the Cross Country and Avanti West Coast lines which operate at an hourly frequency in both directions serving Manchester Piccadilly, Reading, Liverpool Lime Street and London Euston.

4. ACCESS PROPOSALS

4.1 The following section considers whether access is achievable to serve the employment and residential allocations. The access options presented are all preliminary layouts based on an 85kph design speed on the A34. They also consider adopted design standards within the Design Manual for Roads and Bridges. However, all options will need to be the subject of further detailed assessment within any future Transport Assessment.

4.2 The Local Plan Preferred Options document states that access to the 31.15ha employment allocation should be from the new roundabout currently under construction on the A34 and therefore this has been considered as the starting point. At this stage, it is anticipated that access into the residential allocation to the east would

be via a fourth arm from this roundabout, although secondary access options have also been considered given the scale of development being promoted.

4.3 **Appendix 2** includes a drawing of the consented three arm roundabout on the A34. The western arm will serve Stafford North Business Park and has been designed to accommodate industrial uses and HGVs. Therefore, its current form should continue to be suitable in accommodating traffic associated with the proposed employment allocation. **Drawing Number RP2-BWB-GEN-4TH-SK-C-1000 Revision P1** shows how a fourth arm could be created from the eastern side of the roundabout into land to the east to serve the residential allocation. This arm would comprise a similar geometric footprint to the western arm, which should be appropriate given the residential arm would primarily accommodate car-based traffic. The proposed four arm roundabout would meet current adopted design standards for the nature of the A34 and land uses being promoted on the adjacent land.

4.4 It is considered that a secondary point of access would be required to serve the residential allocation to the east of the A34. At this stage, any secondary access would likely comprise a left in/left out arrangement and several layout options have been considered to the south of the roundabout. The existing farmhouse and associated buildings would be demolished as part of any future proposals and hence there would be flexibility in the location of any new secondary access on the A34. For the purposes of this Transport Note, two access options have been considered:

- Option 1 – Priority-controlled left in/left out junction.
- Option 2 – Signal controlled left in/left out junction.

4.5 **Drawing Number RP3-BWB-ZZ-XX-DR-TR-0001 Revision P1** shows the priority-controlled left in/left out layout consisting of 80 metres long diverge and merge tapers. The merge and diverge tapers would require the access to be positioned centrally between the bus layby to the north and the signal-controlled junction to Redhill Business Park. This option would require vehicles departing the site to merge onto the A34, which should work effectively as the A34 comprises a two lane, dual carriageway where main line traffic should be able to move across into the far side lane to allow development traffic to join the A34. It would also allow traffic on the A34 to continue free flowing.

4.6 **Drawing Number RP3-BWB-ZZ-XX-DR-TR-0002 Revision P1** shows a signal-controlled left in/left out layout, with signals being provided on the A34 southbound and for movements turning left out of the site. The access location has been positioned further south (although there is flexibility in this). The signals would provide better control for movements joining the A34 from the allocation and reduce the chance of conflict occurring, although would cause some delay to traffic on the A34. The design would meet current design standards and would follow the form of junction that exist further south on the A34 which are signal controlled.

4.7 Both access options would result in the farm operations ceasing and consolidate all traffic to the new roundabout and left in/left out junctions on the A34. This would allow the existing farm accesses directly from the A34 to be closed along with the existing gap in the central reservation, removing all agricultural traffic that currently turns right into the site across two southbound lanes of traffic on the A34. Hence, there would be highway safety benefits of the new access layouts to existing road users. Overall, the

details show that suitable access is achievable to serve both the employment and residential allocations.

5. HIGHWAY IMPACT

Proposed Allocations Traffic Generation and Distribution

5.1 To calculate the volume of peak hour traffic that could be generated by the two development options, the trip rates from the Stafford SATURN model have been used, which were agreed with the local highway authority and National Highways during the planning application for Stafford North Business Park.

5.2 Using these trip rates, **Table 1** calculates the peak hour traffic generation for both development options.

Table 1. Stafford Allocations Traffic Generation

	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
Traffic Generation (Development Option 1)						
Lights	273	330	604	245	195	440
HGVs	30	26	56	23	23	46
Total Veh.	303	357	661	266	218	485
PCU	333	383	717	289	241	530
Traffic Generation (Development Option 2)						
Lights	339	347	687	265	254	519
HGVs	49	43	92	37	38	75
Total Veh.	388	390	779	301	293	593
PCU	437	433	871	338	331	667

*The traffic generation has been reduced by 40% to reflect the number of school places taken up by the residential allocation.

5.3 The agreed distribution pattern used to assign traffic from Stafford North Business Park to the surrounding highway network has also been retained to assign the above traffic generation. As with Phase 2, separate distribution patterns were used for light and heavy vehicles.

5.4 Whilst this distribution pattern was agreed for the employment allocation at Stafford North Business Park, a separate distribution model has been prepared using Census 2011 information as a sensitivity check for the residential and primary school allocations. This distribution pattern showed very similar results in terms of the percentage weighting of movements north and south along the A34 and therefore the previously agreed distribution pattern has been used for simplicity.

Background Traffic Growth

5.5 Background traffic flows have been obtained from the Stafford SATURN model at a future year of 2033 and inclusive of all local committed development and infrastructure planned to be delivered during that time.

5.6 The SBC Local Plan review covers a period from 2020 to 2040 and therefore new growth factors have been obtained from the TEMPro database to scale the 2033 flows to 2040.

Whilst this traffic flow data is considered the most suitable available, it is to represent a worst-case for the following reasons:

- The Stafford planning data assumptions used in the derivation of the 2033 SATURN flows (67,514 households and 77,539 jobs) are higher than those currently predicted in TEMPro (66,802 households and 75,932 jobs). Hence, over-estimating the number of trips originating in and destined for Stafford.
- The 2033 SATURN model flows are based on traffic counts undertaken between 2004 and 2007, which were subsequently validated to a 2013 base model. Whilst this validation exercise accounted for the fact that traffic in Stafford has fallen by 4% between 2007 and 2013, general traffic was then forecast to grow until 2033. However, DfT count 16327 on the A34 at Yarlet, indicates that peak hour traffic flows on the A34 had fallen further than this between 2006 and 2016 and by 2021 were still yet to return to 2007 levels.

5.7 Consequently, whilst the assessments undertaken within the Technical Note can be considered to provide a robust view of likely highway impact, the issue of local traffic growth and mitigation requirements will need to be examined further as part of any future Transport Assessment and Travel Plan.

5.8 TEMPro filtering removed planning data assumptions across Stafford during this period as the planning data used in the 2033 SATURN flows are higher than predicted and because the allocations being considered in this Transport Note would make up the remaining shortfall in housing and jobs (thereby preventing double counting).

Junction Assessments

5.9 The junctions along the A34 corridor have been tested for capacity with the employment and residential allocations in place at a future year of 2040. The full modelling methodology and results tables are included in a separate Technical Note included at **Appendix 4**, whilst a summary of the future performance of each junction is provided below:

- The new roundabout on the A34 and Redhill Roundabout (A34/A513) would operate within capacity and hence the existing junction layouts should satisfactorily accommodate the future traffic flows from the employment and residential allocations.
- Whilst the allocations are not expected to cause a severe impact at the A34/William Bagnall Drive signal-controlled crossroads junction, it is likely that some form of mitigation would be required. This is likely to be achieved by increasing the length of the flare on the A34(N) and carriageway widening on the A34.
- The allocations would have a modest increase in the number of movements travelling through M6J14. Whilst National Highways would be consulted on any future planning application, it is considered that the impacts are likely to be minimal. If mitigation is required, then this is likely to be limited to minor kerb realignment and/or alterations to the signals.
- The allocations are expected to require modest mitigation at the Aston Roundabout and Stafford Roundabout in Stone. However, the latter is likely to require a more comprehensive solution if capacity issues are to also be resolved.

5.10 In summary, it is considered that there should be no significant impacts on the existing operation of the highway network that should preclude the allocations from being included in the SBC Local Plan.

6. PROPOSED STONE ALLOCATION

6.1 In addition to the allocations being promoted to the north of Stafford, Stoford are promoting another allocation for inclusion in the SBC Local Plan within Stone located approximately 6 kilometres north. This allocation is located to the south of Stone Business Park and considered suitable in accommodating up to 412,000sqft (38,276sqm) of B8 development.

6.2 Using the trip rates within **Table 1**, the Stone allocation is expected to generate the levels of traffic shown in **Table 2.**

Table 2. Stone Allocation Traffic Generation

	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
Lights	38	10	48	11	34	45
HGVs	11	10	21	8	8	16
Total Veh.	48	19	67	20	43	63
pcu	59	29	88	28	51	79

6.3 This traffic was assigned in general accordance with the agreed distribution pattern used for the Stafford allocations. However, traffic heading northbound on the M6 was assigned via Junction 15 (rather than Junction 14) and traffic heading to the east of Stafford was assigned via the A51 from Aston Roundabout (rather than via the A513 from Redhill Roundabout). Consequently, approximately 40% of the Stone allocation traffic would route south via the A34 corridor, which would equate to 27 additional two-way vehicular movements (or 35 pcus). This is a minimal increase which would have little effect on the conclusions of this Transport Note, particularly given the robustness of the background traffic growth assumptions.

7. CONCLUSIONS

7.1 This Transport Note has been prepared to promote proposed allocations to the north of Stafford for inclusion in the SBC Local Plan (2020-2040). Two development options have been considered which are as follows:

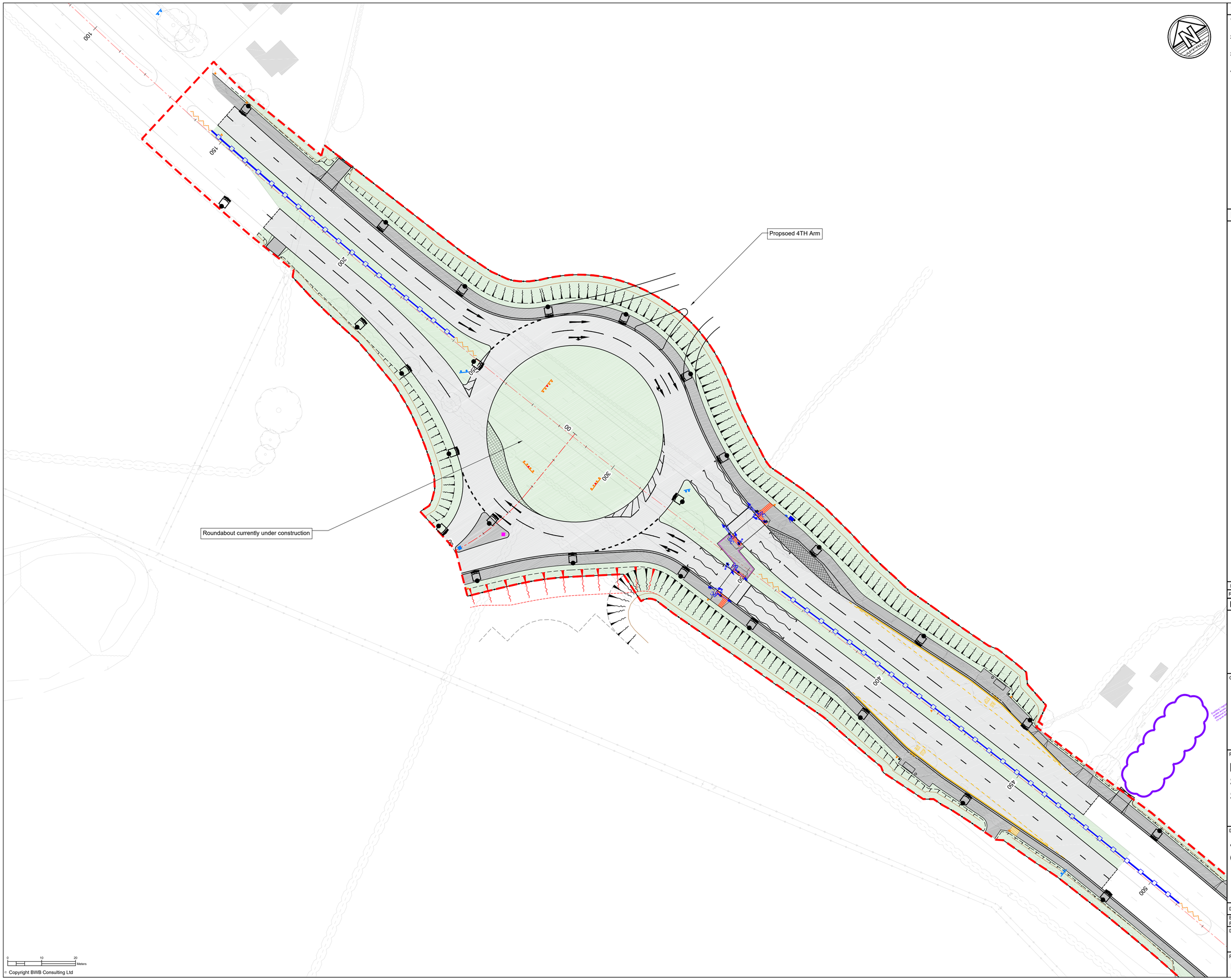
- Option 1 – circa 600 residential dwellings and a primary school (east of A34) plus 135,000sqft (12,500sqm) of B2/B8 use and 1 million sqft (93,000sqm) of B2/B8 development (west of A34).
- Option 2 – circa 600 residential dwellings and a primary school (east of A34) plus 135,000sqft (12,500sqm) of B2/B8 use and 1.4 million sqft (130,000sqm) of B2/B8 development (west of A34).

7.2 The main conclusions of the Transport Note are as follows:

1. Access to the proposed employment and residential allocations could be achieved via the new roundabout currently being built on the A34. A secondary left in/left out access could also be delivered in addition to serve the residential allocation. Hence, suitable vehicular access is achievable.
2. The quantum and range of land uses proposed within a walking and cycling distance would encourage active travel, reduced car usage and sustainably located developments.
3. The employment and residential allocations would be accessible via a range of transport modes including walking, cycling and public transport. New infrastructure could be provided to connect the allocations to the surrounding pedestrian and cycle infrastructure on the A34. Any detailed masterplan would be designed to accommodate buses internally within both the employment and residential allocations to make sure residents and staff are within convenient walking distances of bus stops.
4. Based on an assumed 15% B2/85% B8 employment land use split, traffic from the allocations is likely to be accommodated within the existing capacity of the network on the A34, with the possibility of some mitigation being required at the A34/William Bagnall Drive signal-controlled junction. However, it is considered that a scheme of mitigation is deliverable to address any significant impacts, if required.
5. Whilst the impact on M6J14 will need to be assessed further within any future Transport Assessment produced in consultation with National Highways, it is concluded that the impact would be minor and any mitigation (if required) is likely to be modest.
6. The allocations are expected to require modest mitigation at the Aston Roundabout and Stafford Roundabout in Stone. However, the latter is likely to require a more comprehensive solution if capacity issues are to also be resolved.

7.3 Overall, it is concluded that the Stafford allocations constitute sustainable development and would not result in any significant highway impacts that could not be mitigated. On this basis, the allocations are considered suitable for inclusion within the SBC Local Plan.

DRAWINGS



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Legend

Rev	Date	Details of issue / revision	Drw	Rev
P1	20.05.22	Preliminary Issue	DH	AP

Issues & Revisions

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

[redacted]

Client

STOFORD

Project Title

LAND EAST OF THE A34 STONE ROAD, STAFFORD

Drawing Title

4TH ARM GENERAL ARRANGEMENT

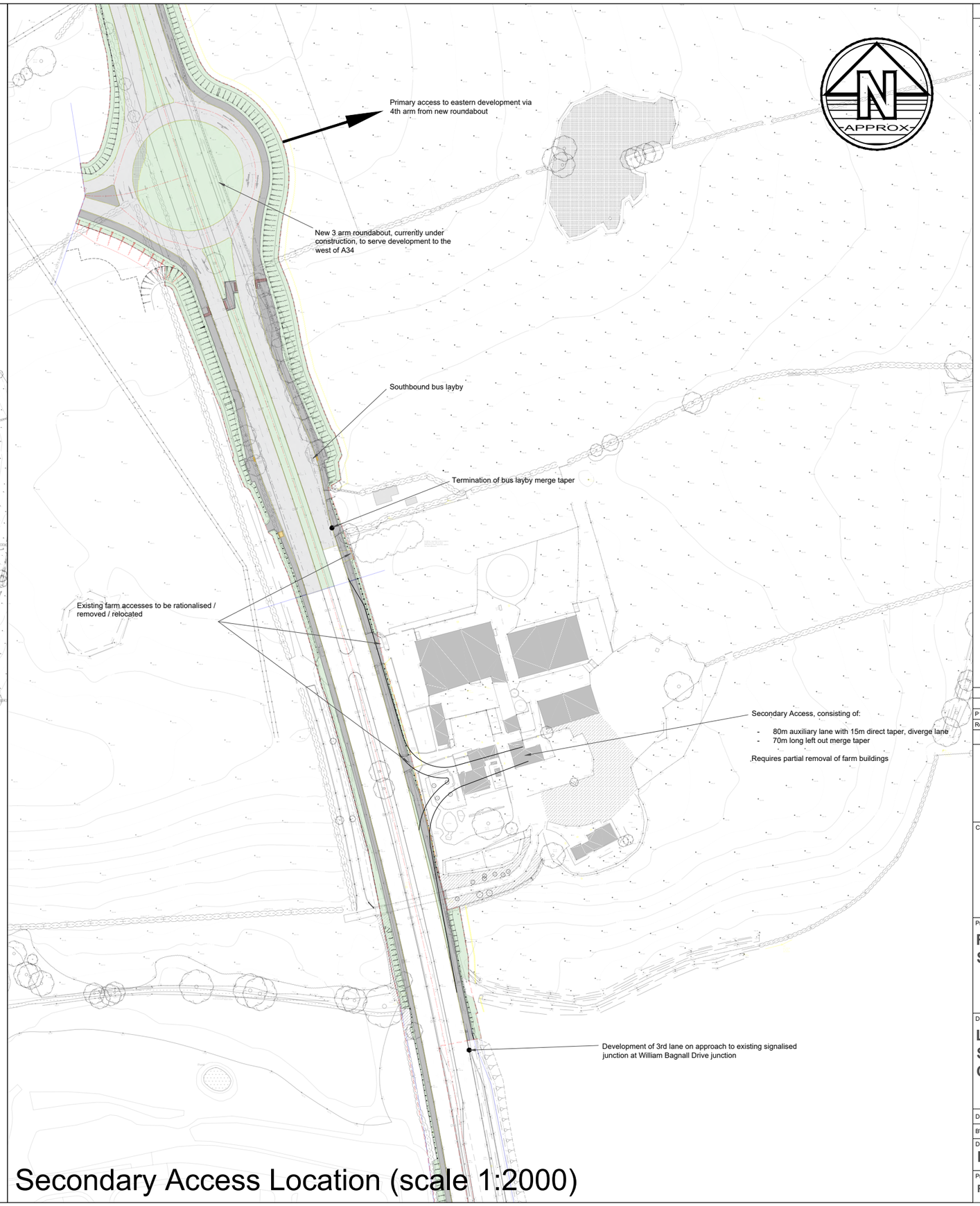
Drawn:	[redacted]	Reviewed:	[redacted]	
BWB Ref:	BMT 2473	Date:	20.05.22	Scale@A1: 1:500

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
RP2-BWB-GEN-4TH-SK-C-1000	S1	P1

Context Plan (scale 1:5000)



Secondary Access Location (scale 1:2000)

Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Rev	Date	Details of issue / revision	Drw	Rev
P1	25.11.22	PRELIMINARY ISSUE	CP	DH

Issues & Revisions

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

Client: STOFORD

Project Title: **REDHILL PHASE 3, STAFFORD**

Drawing Title: **LEFT IN / LEFT OUT SECONDARY ACCESS OPTION - PRIORITY**

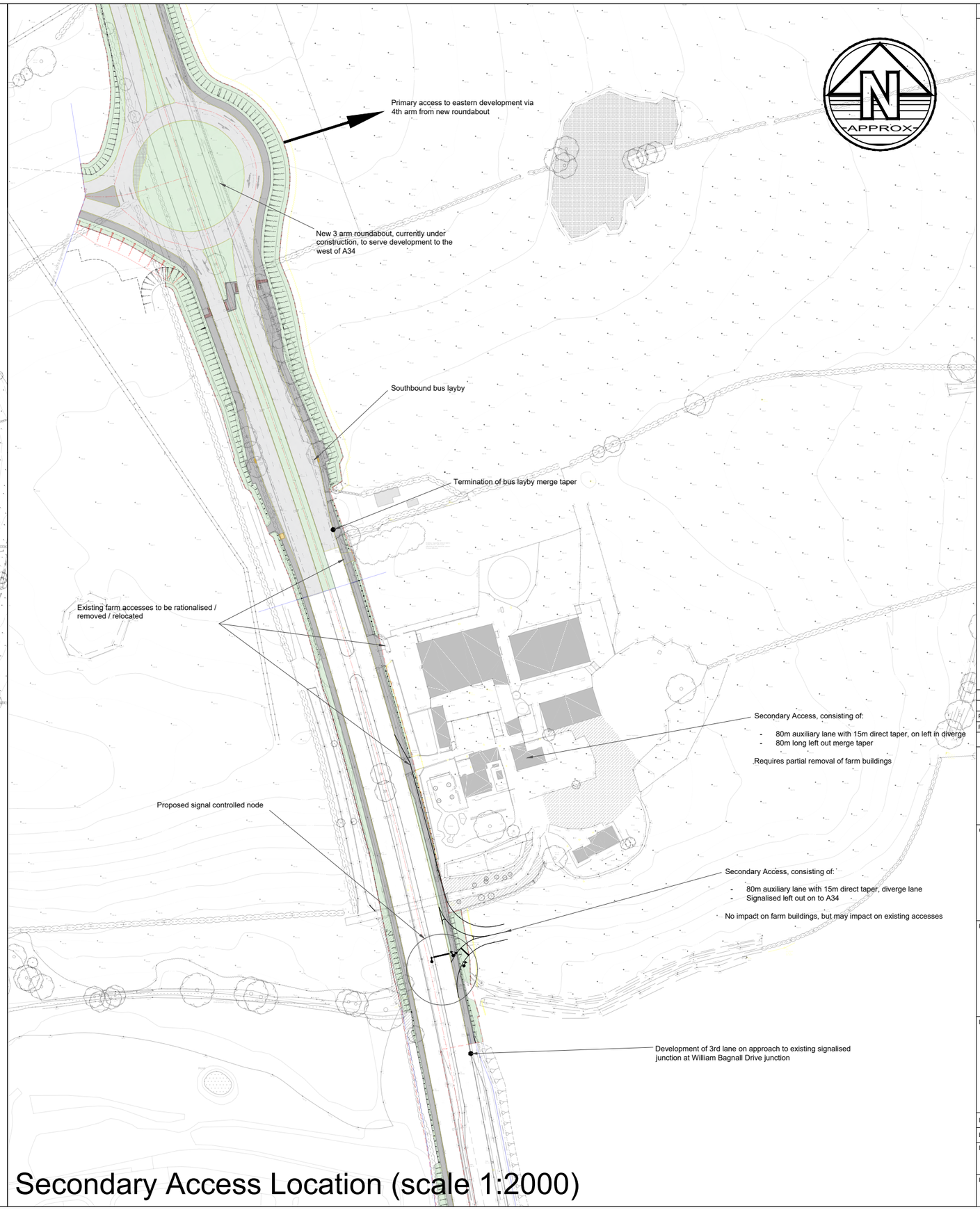
Drawn:	[redacted]		Reviewed:	[redacted]	
BWB Ref:	220583	Date:	25.11.22	Scale@A3:	As Shown

Drawing Status: **PRELIMINARY**

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
RP3-BWB-ZZ-XX-DR-TR-0001	S2	P01

J:\2022\220583-Redhill Phase 3 Stafford\ProjectDelivery\01-WIP\Drawings\RP3-BWB-ZZ-XX-DR-TR-0001 - Priority Access Option P01.dwg

Context Plan (scale 1:5000)



Secondary Access Location (scale 1:2000)

Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Rev	Date	Details of issue / revision	Drw	Rev
P1	25.11.22	PRELIMINARY ISSUE	CP	DH

Issues & Revisions

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

Client: STOFORD

Project Title: **REDHILL PHASE 3, STAFFORD**

Drawing Title: **LEFT IN / LEFT OUT SECONDARY ACCESS OPTION - SIGNALS**

Drawn:		Reviewed:	
BWB Ref:	220583	Date: 25.11.22	Scale@A3: As Shown

Drawing Status: **PRELIMINARY**

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
RP3-BWB-ZZ-XX-DR-TR-0002	S2	P01

J:\2022\220583-Redhill Phase 3 Stafford\ProjectDelivery\01-WIP\Drawings\RP3-BWB-ZZ-XX-DR-TR-0002 - Signal Access Option P01.dwg

APPENDICES

APPENDIX 1: Latest Site Masterplans

Rev	Date	By	Description
-			

Draft Council Allocation Land
31.61 Ha / 78.12 Ac
Hidderley Land Ownership
58.54 Ha / 144.67 Ac
Gross Developable Area
40.79 Ha / 100.81 Ac
Net Developable Area
30.14 Ha / 74.48 Ac

Unit 2
450k sqft

Unit 3
c.157k sqft

Unit 1
c.445k sqft

Unit 1
370k sqft

Pets at Home Unit

Area Schedule

Total GIA: **1,427,000sqft (132,572m²)**

NOTE:

Layout subject to assessment of Visual Impact, Levels, Retaining solutions, Ecology and Arboriculture

N

SGP
Architects + Masterplanners

Stafford North Business Park
Land to the West

Drawing Name:
Site Footprint

Drawing Stage:	FEASIBILITY
Suitability:	S0 - Work In Progress
SGP File Ref:	19-138-004-SGP-STE-XX-DR-A-001006

SGP Project No:	Date:	Drawn:	Team:	Scale:	Rev:
19-138-004	24/11/2022	JS	JN	1:2000 @ A1	-

Drawing Number:
19138-04-SGP-STE-XX-DR-A-001006
Project Code Originator Volume Level Type Role Number

STAFFORD, STONE ROAD, RESIDENTIAL

STRATEGIC MASTERPLAN

Rev	Date	By	Description
-			

Key:

- Red Line Boundary
- Residential
- Local Centre & Apartments
- Retirement Living
- Primary School including sports provision
- Proposed Loop Road inc. 3m wide Footpath/Cycleway
- Boulevard Trees set in Grass Verge
- 3m Wide Footpath/Cycleway To be Constructed in 2023
- Existing Mature Hedgerow
- Existing Trees
- Proposed Trees
- Ponds
- LEAP
- NEAP
- Proposed Woodland Habitat

Pedestrian Crossing

Left In Left Out Secondary Access

SGP Architects + Masterplanners

[redacted]

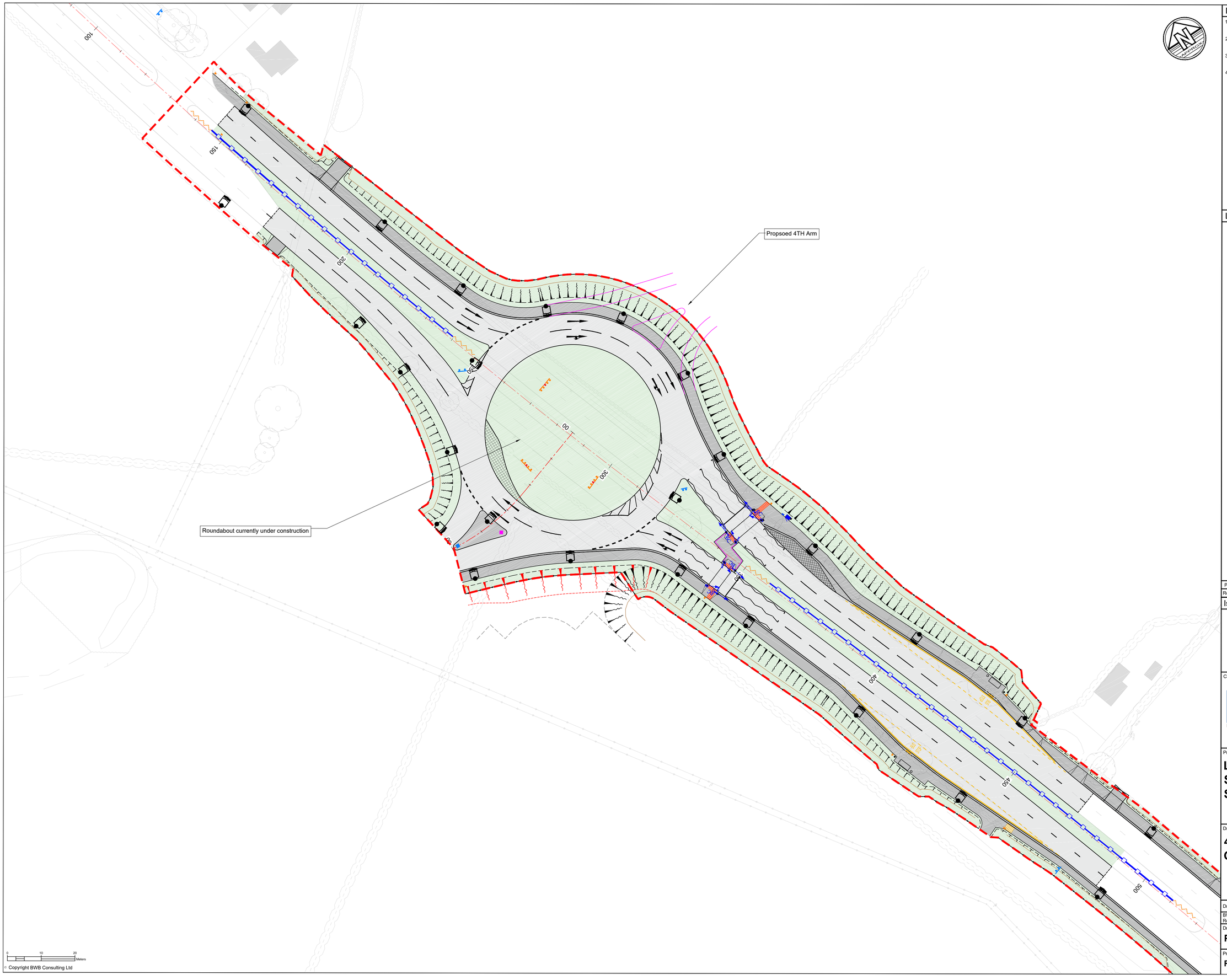
SGP File Ref:	20-113 K001	**Drawing No:**	201130-SGP-ZZ-ST-DR-A-001001
Project No:	20-113	**Rev:**	F
Drawn By:	CA	**Scale:**	NTS @A3
Date:	29/04/22		

APPENDIX 2: North of Stafford Planning History

	Reference/ Application Number	Description of Development	Date Application Received	Date Application validated	Date Decision Made	Applicant Name
1	13/18533/REM - 257 dwellings	13/18533/REM | Submission of Reserved Matters (layout, scale, appearance and landscaping) for the construction of 257 dwellings served via two access points from Beaconside (approved under planning permission 10/13362/OUT), landscaping, car parking, earthworks to facilitate storm water drainage and all other ancillary and enabling works (Phase 1) | Land At Beaconside Stafford Staffordshire	8th April 2013	20th May 2013	1st August 2013	Taylor Wimpey North Midlands
2	14/20781/REM - 152 dwellings	14/20781/REM | Reserved matters application (appearance, landscaping, layout and scale) for 152 dwellings pursuant to planning permission 10/13362/OUT | Land To North Of Beaconside And East Of A34 Stone Road Beaconside Stafford Staffordshire	15th July 2014	15th July 2014	24th September 2014	Taylor Wimpey North Midlands
3	*10/13362/OUT - 409 dwellings: 152 dwellings (Reserved Matters 14/200781/REM) and 257 dwellings (Reserved Matters 18533/REM)*	***Outline permission for the above Reserved Matters:*** *10/13362/OUT | Residential development - 409 dwellings (outline)*	*12th April 2010*	*12th April 2010*	*31st August 2012*	*Akzo Nobel UK Ltd*
4	20/32039/REM to outline permission 16/24595/OUT- 700 dwellings	20/32039/REM | Reserved matters application for 700 dwellings to outline permission 16/24595/OUT seeking approval of layout, scale, appearance and landscaping, and including internal access roads, footpaths, drainage, associated parking provision, open space and infrastructure. | Land North Of Marston Grange Marston Stafford Staffordshire	3rd May 2020	24th March 2020	3rd February 2021	Barratt West Midlands & Bovis Homes (Mercia Region)

5	*16/24595/OUT- 700 dwellings*	***Outline permission for the above Reserved Matters:*** *16/24595/OUT-* Outline planning application for residential development of up to 700 dwellings (Use Class C3), 1 No. (up to 60 bed) elderly living facility (Use Class C2), a one form entry primary school (Use Class D1) and a local centre to provide up to 2500 sqm GIA of open use (Use Classes A1 and/or A2 and/or A3 and/or A5 and/or D1) development together with supporting infrastructure including: green infrastructure, highways and associated works. All matters are reserved other than the principal points of access.	*27th July 2016*	*17th Nov 2016*	*10th October 2018*	*Akzo Nobel UK Ltd*
6	16/25450/OUT - 2,000 dwellings	16/25450/OUT | Outline planning application for mixed-use development, comprising of the demolition of existing buildings and structures, the erection of up to 2,000 dwellings (Use Class C3), 2 no. Local Centres to provide up to 4,500 sqm of GIA (Use Class A1- up to 1,100 sqm, Use Classes A2/A3/A5 - up to 2,800 sqm and Use Class A4- up to 600 sqm), 1 no. Health Centre (Use Class D1- up to 600 sqm), 1 no. (up to 60 bed) elderly Living Facility (Use Class C2), a two form entry Primary School (Use Class D1), a five form entry Secondary School (Use Class D1), together with supporting infrastructure including: green Infrastructure, highways and associated works. All matters are reserved with the exception of principal means of access on to existing highway | Land North Of Beaconside Stafford	19th December 2016	20th December 2016	30th May 2022	Maximus Strategic Stafford LLP
7	18/28182/REM and 16/25260/OUT - 100 dwellings	18/28182/REM | Reserved matters for 100 dwellings with details of appearance, landscaping, layout and scale pursuant to outline application 16/25260/OUT | Land North Of Marstongate Farm Marston Lane Marston Stafford Staffordshire	8th March 2018	14th March 2018	12th June 2018	Miller Homes Limited
8	16/25260/OUT - 100 dwellings	***Outline planning permission for above reserved matters*** *Outline planning application for residential development with associated works and the demolition of existing building and structures . All matters are reserved other than means of access to the site.*	16 Nov 2016	25th Nov 2016	22nd Jan 2018	Richborough Estates

APPENDIX 3 Sustainable Travel Infrastructure Improvements



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Legend

Rev	Date	Details of issue / revision	Drw	Rev
P1	20.05.22	Preliminary Issue	DH	AP

Issues & Revisions

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

[redacted]

Client

STOFORD

Project Title

LAND EAST OF THE A34 STONE ROAD, STAFFORD

Drawing Title

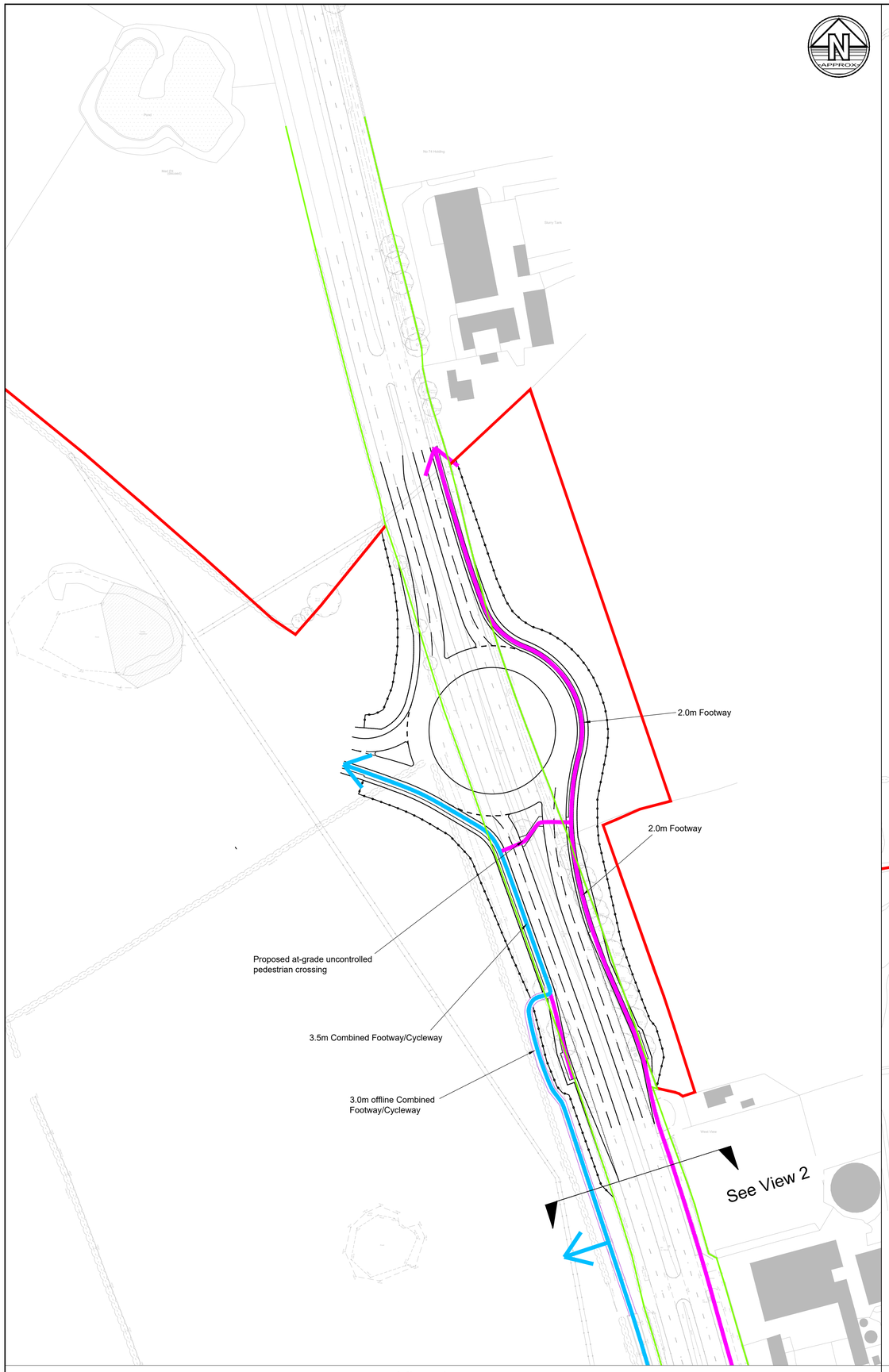
4TH ARM GENERAL ARRANGEMENT

Drawn:	[redacted]		Reviewed:	[redacted]	
BWB Ref:	BMT 2473	Date:	20.05.22	Scale@A1:	1:500

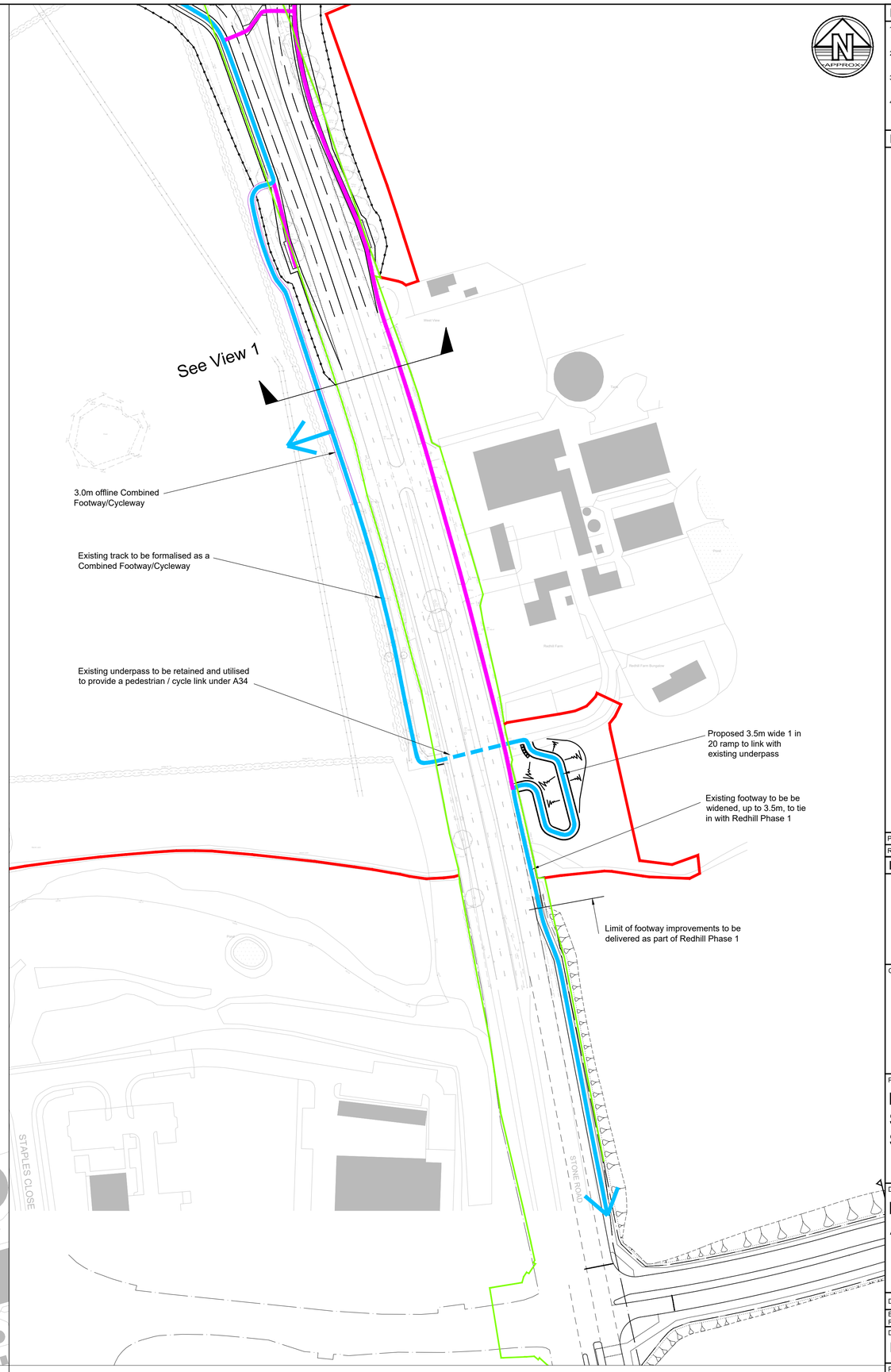
Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
RP2-BWB-GEN-4TH-SK-C-1000	S1	P1



View 1



View 2

Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Legend

- Site Boundary
- Highway Boundary
- Combined Pedestrian / Cyclist Route
- Pedestrian Route

Rev	Date	Details of issue / revision	Drw	Rev
P1	15.09.20	Preliminary Issue	JF	DH

Issues & Revisions

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

[redacted]

Client

STOFORD

Project Title

LAND WEST OF THE A34 STONE ROAD, STAFFORD

Drawing Title

PROPOSED PEDESTRIAN AND CYCLE ROUTES

Drawn:	[redacted]		Reviewed:	[redacted]	
BWB Ref:	BMT 2473	Date:	15.09.20	Scale@A1:	1:1000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
RP2-BWB-HGN-XX-SK-TR-0101	**S2**	**P1**

APPENDIX 4: Modelling Technical Note

Project Name	**North Stafford Proposed Employment and Residential Local Plan Allocations – Modelling Work**		
Document Number	RP3-BWB-GEN-XX-RP-TR-0003_TN	**BWB Ref**	220583
Author	[redacted]	**Status**	S2
Checked	[redacted]	**Revision**	P2
Approved	[redacted]	**Date**	December 2022

1. INTRODUCTION

1.1 This Technical Note includes full details of the modelling work undertaken within a separate Transport Note prepared to support employment and residential allocations to the north of Stafford through the Stafford Borough Council (SBC) Local Plan process (report ref: **RP3-BWB-GEN-XX-RP-TR-0002_HN**). This Technical Note sets out the following details:

1. Trip rates and traffic generation.
2. Traffic distribution.
3. Background traffic growth.
4. Modelling results.
5. Summary.

1.2 This Technical Note should be read in conjunction with the accompanying Transport Note.

2. HIGHWAY IMPACT

2.1 The 2020 Transport Assessment (supporting Phase 2) included results of junction capacity assessments undertaken to test the impact of the associated development traffic. Traffic flows were obtained from the Stafford SATURN model at a future year of 2033 and included all local committed development and infrastructure planned to be delivered during that time. This included traffic from the 'Land North of Marston Grange' development and associated link road being delivered between the A34 and the A513.

2.2 The SBC Local Plan period extends to 2040 and therefore growth factors have been obtained from the TEMPro database to scale the 2033 flows to 2040. TEMPro filtering removed planning data assumptions across Stafford during this period as the planning data used in the 2033 SATURN flows are higher than predicted and also because the employment and residential allocations in Stafford would make up the remaining shortfall in housing and jobs (thereby preventing double counting). **Appendix A** includes the TEMPro outputs, which calculated the following growth factors:

- 2033 – 2040 (AM) = 1.013
- 2033 – 2040 (PM) = 1.010

2.3 Using the above information, the following traffic flow scenarios have been calculated:

- **Diagram STA1** = 2033 SATURN Flows.
- **Diagram STA2** = 2040 Base Flows
- **Diagram STA3** = 2040 Base + Pets at Home

2.4 Whilst the 2040 traffic flows should be acceptable for the purposes of this Technical Note, any future Transport Assessment would obtain new traffic flows from up to date survey information and the latest version of the Stafford SATURN model. However, they are considered robust for the reasons set out in the Transport Note.

Development Traffic Generation, Distribution and Assessment Scenarios

2.5 Employment and residential trip rates from the Stafford SATURN model have been used to calculate the potential peak hour traffic generation that could be generated by the allocations. The Stafford SATURN model does not provide trip rates for the primary school and therefore these have been obtained from TRICS by filtering the database to generate surveys from sites with similar characteristics. The TRICS data for the primary school is included at **Appendix B**. **Table 1** shows the trip rates for each of the land uses included in the allocations.

Table 1: Trip Rates

	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
B8 Employment Trip Rates (per 100sqm GFA)						
Lights	0.098	0.025	0.123	0.030	0.089	0.199
HGVs	0.028	0.025	0.053	0.021	0.022	0.043
Total Veh.	0.126	0.050	0.176	0.051	0.111	0.162
B2 Employment Trip Rates (per 100sqm GFA)						
Lights	0.340	0.120	0.460	0.050	0.270	0.320
HGVs	0.030	0.020	0.050	0.000	0.000	0.000
Total Veh.	0.370	0.140	0.510	0.050	0.270	0.320
Residential Trip Rates (per dwelling)						
Lights	0.120	0.350	0.470	0.320	0.140	0.460
HGVs	0.000	0.000	0.000	0.000	0.000	0.000
Total Veh.	0.120	0.350	0.470	0.320	0.140	0.460
Primary School Trip Rates (per pupil)						
Lights	0.324	0.266	0.590	0.018	0.034	0.052
HGVs	0.000	0.000	0.000	0.000	0.000	0.000
Total Veh.	0.324	0.266	0.590	0.018	0.034	0.052

2.6 Using the above trip rates and the quantum of development being considered within the Stafford allocations, **Table 2** calculates the peak hour traffic generation for development Option 1, whilst **Table 3** calculates the peak hour traffic generation for development Option 2. It is expected that the number of primary school children arising from the allocation would account for 40% of places at the school and hence the trip generation has been reduced accordingly to account for the smaller number of external trips.

Table 2: Traffic Generation for Development Option 1

	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
12,500sqm Employment Development Traffic Generation						
Lights	12	3	15	4	11	15
HGVs	4	3	7	3	3	6
Total Veh.	16	6	22	6	14	20
PCU	20	9	29	9	17	26
1 million sqft (93,000sqm) Employment Development						
Lights	91	23	114	28	83	111
HGVs	26	23	49	20	20	40
Total Veh.	117	47	164	47	103	151
PCU	143	70	213	67	123	190
650 Residential Dwellings						
Lights	78	228	306	208	91	299
HGVs	0	0	0	0	0	0
Total Veh.	78	228	306	208	91	299
PCU	78	228	306	208	91	299
476 Place Primary School*						
Lights	92	76	169	5	10	15
HGVs	0	0	0	0	0	0
Total Veh.	92	76	169	5	10	15
PCU	92	76	169	5	10	15
Total Traffic Generation						
Lights	273	330	604	245	195	440
HGVs	30	26	56	23	23	46
Total Veh.	303	357	661	266	218	485
PCU	333	383	717	289	241	530

*The traffic generation has been reduced by 40% to reflect the number of school places taken up by the residential allocation.

Table 3: Traffic Generation for Development Option 2

	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
12,500sqm Employment Development Traffic Generation						
Lights	12	3	15	4	11	15
HGVs	4	3	7	3	3	6
Total Veh.	16	6	22	6	14	20
PCU	20	9	29	9	17	26
1.7 million sqft (160,000sqm) Employment Development						
Lights	157	40	197	48	142	190
HGVs	45	40	85	34	35	69
Total Veh.	202	80	282	82	178	259
PCU	247	120	367	116	213	328
650 Residential Dwellings						
Lights	78	228	306	208	91	299
HGVs	0	0	0	0	0	0
Total Veh.	78	228	306	208	91	299
PCU	78	228	306	208	91	299
476 Place Primary School*						
Lights	92	76	169	5	10	15
HGVs	0	0	0	0	0	0
Total Veh.	92	76	169	5	10	15
PCU	92	76	169	5	10	15
Total Traffic Generation						
Lights	339	347	687	265	254	519
HGVs	49	43	92	37	38	75
Total Veh.	388	390	779	301	293	593
PCU	437	433	871	338	331	667

*The traffic generation has been reduced by 40% to reflect the number of school places taken up by the residential allocation.

2.7 The details in **Tables 2** and **3** show that development Option 1 is expected to generate up to 661 peak hour movements (and 717 pcus), whilst development Option 2 could generate up to 779 peak hour movements (and 871 pcus). Whilst the above figures provide an indication of the likely traffic volumes, the figures are likely to be worst-case as they do not account for any internalisation of trips between the residential and employment uses and assume only 40% of school places would be taken up from within the residential allocation. They also do not account for an expected higher number of active travel trips given the future infrastructure improvements detailed in **Section 3** of the Transport Note. However, the final trip generation calculations will be detailed within the supporting Transport Assessment and provide evidence to justify any reductions to account for internalisation etc.

2.8 Since the work in this Technical Note was originally undertaken, further development of the proposals has demonstrated that Development Option 2 would most likely comprise 135,000sqft (12,500sqm) of B2/B8 use and 1.4 million sqft of B2/B8 use, with an approximate 15% B2/85% B8 split. In addition, it is likely that the land to the east of the A34 would be suitable for circa 600 dwellings rather than 650 dwellings. Therefore, the agreed trip rates in **Table 1** have been used to calculate the peak hour traffic generation for this alternative and more likely development quantum to compare against the figures in **Table 3**. The traffic generation is shown in **Table 4**.

Table 4: Traffic Generation for Alternative Development

	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
12,500sqm B2/B8 Employment Development Traffic Generation						
Lights	17	5	22	4	15	19
HGVs	4	3	7	2	2	5
Total Veh.	20	8	28	6	17	23
PCU	24	11	35	8	19	27
1.4 million sqft (130,000sqm) B2/B8 Employment Development						
Lights	174	51	226	43	151	193
HGVs	37	32	69	23	24	48
Total Veh.	211	82	293	66	176	241
PCU	248	114	362	89	200	289
600 Residential Dwellings						
Lights	72	210	282	192	84	276
HGVs	0	0	0	0	0	0
Total Veh.	72	210	282	192	84	276
PCU	72	210	282	192	84	276
476 Place Primary School*						
Lights	92	76	169	5	10	15
HGVs	0	0	0	0	0	0
Total Veh.	92	76	169	5	10	15
PCU	92	76	169	5	10	15
Total Traffic Generation						
Lights	355	342	699	244	260	503
HGVs	41	35	76	25	26	53
Total Veh.	395	376	772	269	287	555
PCU	436	411	848	295	313	608

*The traffic generation has been reduced by 40% to reflect the number of school places taken up by the residential allocation.

2.9 The calculations show that the alternative, more likely development option is expected to generate 848 two-way pcus in the morning peak hour and 608 two-way pcus in the evening peak hour. This is marginally less than shown in **Table 3** for Development Option 2 and hence the following assessment constitutes robust assessment for the proposals.

2.10 The agreed distribution pattern used to assign traffic from Phase 2 to the surrounding highway network has also been retained to assign the above traffic generation. As with Phase 2, separate distribution patterns were used for light and heavy vehicles and are shown in **Diagram STA4** (light vehicles) and **Diagram STA5** (HGVs).

2.11 Using these distribution patterns, **Diagrams STA6** and **STA7** show the traffic assignment for light vehicles and HGVs respectively for development Option 1, whilst **Diagrams STA8** and **STA9** show the traffic assignment for light vehicles and HGVs for development Option 2.

2.12 In light of the above, the following traffic flow scenarios have been calculated to understand the end of Local Plan traffic flows.

- **Diagram STA10** = 2040 + Pets at Home + Development Option 1
- **Diagram STA11** = 2040 + Pets at Home + Development Option 2

Junction Modelling

2.13 The following section tests the capacity of the three off-site junctions on the A34 with the employment and residential allocations in place. It also considers the percentage change in traffic flows along each arm of M6J14. The purpose is to demonstrate whether the allocations could cause any significant capacity problems on the surrounding network, if mitigation is likely to be needed and whether this is likely to be deliverable.

Junction 1: Site Access Roundabout

2.14 The potential 4-arm roundabout on the A34 has been tested for capacity. The 3-arm ARCADY model presented in the 2020 Transport Assessment for Phase 2 has been retained, with a fourth arm being added to the east. Geometric information for the fourth arm has been taken from General Arrangement drawing included in the Transport Note and mirrors the geometry of the arm serving Phase 2 to the west. The modelling assumes that 100% of traffic from the allocations would enter and depart via this junction, which is worst-case noting that the residential allocation to the east would be served by two points of access. **Appendix C** includes the full ARCADY output data, whilst **Table 5** summarises the results.

Table 5: Site Access Roundabout ARCADY Summary Results

	Morning Peak Hour			Evening Peak Hour		
	Queue (pcu)	Delay (s)	RFC	Queue (pcu)	Delay (s)	RFC
2040 + Pets at Home + Development Option 1						
Access (E)	0.9	9.99	0.48	0.2	5.10	0.14
A34 (S)	6.3	11.80	0.86	6.6	12.01	0.86
Access(W)	0.3	7.37	0.17	0.6	7.92	0.32
A34 (N)	6.5	11.58	0.86	3.4	6.97	0.76
2040 + Pets at Home + Development Option 2						
Access (E)	1.0	11.03	0.51	0.2	5.45	0.14
A34 (S)	9.3	16.88	0.90	7.8	14.04	0.88
Access(W)	0.4	7.98	0.23	1.0	9.65	0.45
A34 (N)	7.7	13.54	0.88	3.8	7.80	0.78

2.15 The results show that the site access roundabout would operate within capacity. There would be no significant delays or queueing along any of the four arms during either peak hour period. Hence, from a capacity perspective, the new roundabout is considered suitable in serving development on both sides of the A34.

Junction 2: Left in, Left out Site Access

2.16 The priority-controlled left in/left out junction on the A34 shown at **Drawing Number RP3-BWB-ZZ-XX-DR-TR-0001 Revision P1** has been tested for capacity. The modelling assumes that 100% of traffic arriving to the residential allocation from the north on the A34 and all traffic departing to the south on the A34 would use this junction, which presents a highly

robust assessment given that this is a secondary access. **Appendix D** includes the full PICADY output data, whilst **Table 6** summarises the results.

Table 6: Left in, Left out Access PICADY Summary Results

	Morning Peak Hour			Evening Peak Hour		
	Queue (pcu)	Delay (s)	RFC	Queue (pcu)	Delay (s)	RFC
2040 + Pets at Home + Development Option 1						
Stream B-AC (site access)	0.3	4.65	0.26	0.1	3.59	0.08
Stream C-AB (A34S)	0.0	0.00	0.00	0.0	0.00	0.00
2040 + Pets at Home + Development Option 2						
Stream B-AC (site access)	0.3	4.71	0.26	0.1	3.65	0.08
Stream C-AB (A34S)	0.0	0.00	0.00	0.0	0.00	0.00

2.17 The results show that the priority-controlled left in/left out junction would operate within capacity. Therefore, from a capacity perspective there would be no reason to propose a signal-controlled layout although this would also be an option that could be considered as part of any future Transport Assessment.

Junction 3: A34/William Bagnall Drive Signal-Controlled Junction

2.18 The LinSig model for the A34/William Bagnall Drive signal-controlled crossroads junction has been retained from the 2020 Transport Assessment supporting Phase 2 to test the impact of the allocations. The modelling assumes that traffic from the allocations heading towards the A513 Stafford bypass would route through the Marston Grange development. **Appendix E** includes the LinSig output data, whilst **Table 7** summarises the results.

Table 7: A34/William Bagnall Drive Junction LinSig Summary Results

	Morning Peak Hour		Evening Peak Hour	
	MMQ (pcu)	DoS (%)	MMQ (pcu)	DoS (%)
2040 Base Year				
A34 (N)	23.4	82.9	19.3	78.3
Betony Villas	14.5	82.2	10.7	78.2
A34 (S)	21.3	73.5	16.2	65.4
Redhill Access	3.3	58.9	10.7	78.8
PRC	8.6%		14.2%	
2040 + Pets at Home				
A34 (N)	24.7	84.9	21.2	82.0
Betony Villas	14.8	83.7	10.9	80.0
A34 (S)	23.4	77.7	19.3	72.9
Redhill Access	3.3	58.9	10.9	80.8
PRC	6.0%		9.8%	
2040 + Pets at Home + Development Option 1				
A34 (N)	38.2	97.2	24.9	89.2
Betony Villas	22.3	96.2	13.7	89.2
A34 (S)	26.9	85.4	23.2	80.4
Redhill Access	3.3	58.9	12.0	87.1
PRC	-8.0%		0.9%	
2040 + Pets at Home + Development Option 2				
A34 (N)	43.0	98.9	26.3	91.1
Betony Villas	25.7	98.1	14.0	89.8
A34 (S)	29.4	88.3	23.8	81.3
Redhill Access	3.3	58.9	12.6	89.5
PRC	-9.9%		-1.2%	

2.19 The results show that the junction is expected to operate within theoretical capacity where each arm would have a Degree of Saturation of less than 100%, however given the results show negative Practical Reserve Capacity it is likely that queueing and delays may start to occur, particularly along the A34(N) and Betony Villas (Marston Grange) arms.

2.20 Any future Transport Assessment would therefore consider a scheme of mitigation to address any significant impacts triggered by the allocations. As a starting point, mitigation would consider sustainable travel improvements to reduce the number of vehicle trips altogether. In terms of physical improvements, at this early stage, mitigation could include extending the length of the left turn flare on the A34(N) and amending the lane configuration to allow for ahead and left turning movements in the southbound

direction. This would require carriageway widening to the south of the junction and possibly minor kerb realignment on Betony Villas, although this should be achievable within available land. Hence, whilst further assessment is required, it is likely that the A34/William Bagnall signal-controlled junction would be capable of accommodating traffic from the employment and residential allocations.

Junction 4: A34/A513 Signal Controlled Roundabout

2.21 The LinSig model for the A34/A513 signal-controlled roundabout has been retained from the Stafford North Business Park Transport Assessment to test the impact of the allocations. **Appendix F** includes the LinSig output data, whilst **Table 8** summarises the results.

Table 8: A34/A513 Junction LinSig Summary Results

	Morning Peak Hour		Evening Peak Hour	
	MMQ (pcu)	DoS (%)	MMQ (pcu)	DoS (%)
2040 Base				
A34 (N)	9.4	71.7	9.9	73.2
A513	8.4	75.9	7.7	71.4
A34 (S)	6.4	68.9	6.4	70.8
A34-M6 Link	5.4	65.9	6.1	71.9
PRC	16.2%		22.9%	
2040 + Pets at Home				
A34 (N)	10.8	77.7	9.1	68.7
A513	8.6	77.1	7.6	74.1
A34 (S)	7.0	75.3	6.8	74.4
A34-M6 Link	4.9	62.5	6.0	70.8
PRC	15.8%		20.9%	
2040 + Pets at Home + Development Option 1				
A34 (N)	14.6	85.4	12.4	80.9
A513	10.2	84.8	6.5	66.1
A34 (S)	9.2	85.8	7.9	80.4
A34-M6 Link	10.1	85.2	8.7	79.5
PRC	4.9%		11.2%	
2040 + Pets at Home + Development Option 2				
A34 (N)	12.5	87.4	12.3	80.3
A513	11.2	87.9	8.2	77.0
A34 (S)	9.7	87.8	7.4	77.0
A34-M6 Link	9.8	83.1	9.2	80.9
PRC	2.4%		11.3%	

2.22 The results show that the A34/A513 signal-controlled roundabout is predicted to operate within capacity when accommodating traffic from the employment and residential allocations at a 2040 future year. Hence, the approved signal-controlled junction arrangement should be suitable in accommodating future traffic flows without any further improvements being needed.

Junction 5: M6 Junction 14

2.23 To understand the impacts of the employment and residential allocations at M6J14, **Table 9** compares the traffic flows on each arm against the 2040 Base + Pets at Home scenario.

Table 9: A34/William Bagnall Drive Junction LinSig Summary Results

	2040 Base Year + Pets at Home	2040 Base Year + Pets at Home + Development Option 1	Increase (no./%)	2040 Base Year + Pets at Home + Development Option 2	Increase (no./%)
Arm 1: A34					
Morning Peak Hour	1347	1545	15%	1572	17%
Evening Peak Hour	1430	1512	6%	1542	8%
Arm 2: A5013 (east)					
Morning Peak Hour	757	757	0%	757	0%
Evening Peak Hour	829	829	0%	829	0%
Arm 3: M6 northbound off-slip					
Morning Peak Hour	1161	1232	6%	1255	8%
Evening Peak Hour	1277	1355	6%	1368	7%
Arm 4: A5013 (west)					
Morning Peak Hour	1037	1043	1%	1045	1%
Evening Peak Hour	974	980	1%	981	1%
Arm 5: M6 southbound off-slip					
Morning Peak Hour	620	665	7%	679	16%
Evening Peak Hour	455	517	14%	527	9%

2.24 The results show that the allocations could increase traffic flows by up to 17% on the A34. Whilst National Highways would be consulted on any future planning application, it is considered that the impacts are likely to be modest, although if required, mitigation could be achieved by delivering minor kerb-realignment and/or alterations to the signals. Hence, it is considered that the development options being considered would not have a significant impact at M6J14.

3. ASSESSMENT OF JUNCTIONS IN STONE

Introduction

3.1 The proposed employment and residential allocations at Stafford are expected to generate 160 movements (or 179 pcus) in the morning peak hour and 134 movements (or 151 pcus) two-way to the north along the A34 towards Stone. This additional traffic therefore has the potential to cause impacts at the Aston Roundabout and Stafford Roundabout.

3.2 To provide an understanding of the potential traffic implications at these junctions, historic traffic flow data has been obtained from a Transport Assessment Addendum supporting a residential development at Udall Grange located on Eccleshall Road in Stone (**13/19002/OUT**). The planning application received permission for 500 dwellings in February 2015 and is now largely built out and occupied. The Transport Assessment Addendum contains turning count information from 2012 at the two roundabouts, which has been extracted and shown on **Diagram STO1**. Relevant extracts from the 2012 Transport Assessment Addendum are included at **Appendix G.**

3.3 The 2012 traffic flows have been scaled up to 2040 by obtaining growth factors from the TEMPro database. To start with, growth factors have been obtained to scale the 2012 flows to 2033, which includes all planning data assumptions during this time such as the Stafford North Business Park development and is in keeping with the assessment undertaken for the junctions in Stafford. Separate growth factors have then been obtained to scale the 2033 flows to 2040 but with all planning data assumptions removed across Stafford, as it is considered that this would be covered by the allocations in both Stafford and Stone, that will be manually added onto the background flows to avoid double counting. **Appendix A** includes the TEMPro outputs, which calculate the following growth factors:

- 2012 – 2033 (AM) = 1.243
- 2012 – 2033 (PM) = 1.245
- 2033 – 2040 (AM) = 1.044
- 2033 – 2040 (PM) = 1.042

3.4 Using the above information, the following traffic flow scenarios have been calculated.

- **Diagram STO1** = 2012 Observed Flows
- **Diagram STO2** = 2033 Base Flows
- **Diagram STO3** = 2040 Future Flows
- **Diagram STO4 =** 2040 Future Flows with Development Option 1
- **Diagram STO5 =** 2040 Future Flows with Development Option 2

3.5 The 2040 two-way traffic flows entering/departing Stafford at the new roundabout (**Diagram STA2**) have been compared against the 2040 two-way traffic flows entering/departing Stone (**Diagram STO3**) to check whether the numbers are consistent between the two data sets. The data shows that the 2040 traffic flows derived using the 2012 survey data from the Udall Grange Transport Assessment are approximately 13%

lower than the 2040 traffic flows derived using the Stafford SATURN model. This could be because of additional traffic joining the A34 towards Stafford from local villages or simply because traffic flows reduced from 2007 to 2012 when the two surveys were undertaken. Whilst this is currently unknown, this difference has been considered in the following assessments of the Aston Roundabout and Stafford Roundabout.

Assessment of Aston Roundabout

3.6 The Aston Roundabout was modelled as part of the Transport Assessment Addendum supporting the Udall Grange development. The assessment considered a future year of 2027 inclusive of local committed developments and the associated 500 dwellings. The results showed that the junction was expected to exceed capacity and therefore mitigation was proposed. Those improvements have since been delivered and are what are shown on the ground today. The modelling results under the improved layout within the Transport Assessment Addendum (now existing) are summarised in **Table 10**.

Table 10: Aston Roundabout Modelling Results (2027 Future Year)

Approach	2017 with 185 units				2027 with 500 units			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
A34 Stafford Road north	0.777	3	0.517	1	0.855	6	0.566	1
A51	0.737	3	0.292	0	0.883	6	0.343	1
A34 Stafford Road south	0.473	1	0.602	2	0.514	1	0.638	2
Brooms Road	0.118	0	0.654	2	0.129	0	0.760	3

3.7 The results show the junction is forecast to operate within capacity at the 2027 future year, inclusive of general background growth and the Udall Grange development. However, the existing junction is unlikely to operate within capacity in 2040 when accounting for the additional 13 years of traffic growth.

3.8 To understand the potential impacts of the Stafford allocations, **Table 11** shows the percentage increase in traffic along each arm compared to the 2040 background flows.

Table 11: Percentage Change in Traffic Flows at Aston Roundabout

	2040 Future Year	2040 Future Year + Development + Stafford Development Option 1	Increase (no./%)	2040 Future Year + Development + Stafford Development Option 2	Increase (no./%)
Arm 1: A34(N)					
Morning Peak Hour	2392	2456	2.7%	2473	3.4%
Evening Peak Hour	1474	1531	3.8%	1538	4.3%
Arm 2: A51					
Morning Peak Hour	1073	1073	0%	1073	0%
Evening Peak Hour	602	602	0%	602	0%
Arm 3: A34(S)					
Morning Peak Hour	1142	1213	6.2%	1221	6.9%
Evening Peak Hour	1684	1737	3.1%	1754	4.2%
Arm 4: Brooms Road					
Morning Peak Hour	224	224	0%	224	0%
Evening Peak Hour	686	686	0%	686	0%

3.9 The results show that the Stafford allocations could trigger a 4.3% increase in traffic on the A34(N) and a 6.9% increase in traffic on the A34(S). Given that the junction is likely to be already over capacity in 2040, it is likely that this will require mitigation.

3.10 HS2 are delivering an improvement scheme at Aston Roundabout as part of the strategy for mitigating the impacts of construction traffic associated with the railway works. Indicative proposals have been found on HS2 drawing CT-05-220-R2 included at **Appendix H**, which show how a segregated left turn lane would be provided for movements from the A51 to the A34 southbound. By 2040, construction of HS2 will have been completed and the improvement scheme will result in an overall benefit to the operation of the junction.

3.11 Whilst modelling results for the improved junction layout are unavailable, the HS2 improvements may not be sufficient for the junction to operate satisfactorily with the allocations in place. Nevertheless, there are opportunities available to provide mitigation through minor widening of the approach arms and this will be considered as part of any future Transport Assessment.

Assessment of Stafford Roundabout

3.12 The Stafford Roundabout was also modelled as part of the Transport Assessment Addendum supporting the Udall Grange development at a future year of 2027. The results showed that the junction would exceed capacity and hence mitigation was proposed. Those improvements have since been delivered and are what are shown on the ground today. The modelling results under the improved layout within the Transport Assessment (now existing) are summarised in **Table 12**.

Table 12: Stafford Roundabout Modelling Results (2027 Future Year)

Approach	2017 with 185 units				2027 with 500 units			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
A34 The Fillybrooks north	0.941	12	0.781	2	1.086	81	0.878	6
Stafford Road	0.741	3	0.578	1	0.867	6	0.578	1
A34 The Fillybrooks south	0.529	1	0.858	3	0.567	1	0.858	6
Eccleshall Road	0.554	1	0.655	1	0.709	2	0.655	2

3.13 The results show that all arms of the junction are expected to operate within capacity with the exception of the A34(N) arm during the morning peak hour. This situation is expected to worsen with an additional 13 years of traffic growth from 2027 to 2040.

3.14 To understand the impacts of the Stafford allocations, **Table 13** shows the percentage increase in traffic along each arm compared to the 2040 background flows.

Table 13: Percentage Change in Traffic Flows at Stafford Roundabout

	2040 Future Year	2040 Future Year + Development + Stafford Development Option 1	Increase (no./%)	2040 Future Year + Development + Stafford Development Option 2	Increase (no./%)
Arm 1: A34(N)					
Morning Peak Hour	1527	1588	4.0%	1605	5.1%
Evening Peak Hour	1273	1327	4.2%	1334	4.8%
Arm 2: Stafford Road					
Morning Peak Hour	1104	1107	<1%	1108	<1%
Evening Peak Hour	921	924	<1%	924	<1%
Arm 3: A34(S)					
Morning Peak Hour	1532	1603	4.6%	1611	5.2%
Evening Peak Hour	2279	2332	2.3%	2349	3.1%
Arm 4: Eccleshall Road					
Morning Peak Hour	963	963	0%	963	0%
Evening Peak Hour	704	704	0%	704	0%

3.15 The results show that Stafford allocations could have a 5.1% increase in traffic on the A34(N) arm and a 5.2% increase in traffic on the A34(S) arm which is likely to require mitigation. The environment around the junction is largely built up on all sides and therefore any mitigation could involve delivering a scheme of signalisation at the roundabout to provide better control for movements and prioritise arms that are expected to reach capacity, such as the A34(N). This would have wider benefits in terms of allowing signal-controlled pedestrian crossings to be implemented at the junction, which would provide safer conditions for vulnerable road users and possibly encourage

more local residents to travel by sustainable modes and reduce overall traffic movements.

3.16 In summary, it is considered that the additional traffic generated by the Stafford allocations is likely to require modest mitigation at the Aston Roundabout and Stafford Roundabout in Stone. However, the latter is likely to involve a more comprehensive solution if existing capacity issues are to also be resolved.

4. SUMMARY

4.1 This Technical Note has been prepared to set out full details of the modelling work undertaken to support sites located to the north of Stafford through the SBC Local Plan process.

4.2 The main conclusions of the Technical Note are as follows:

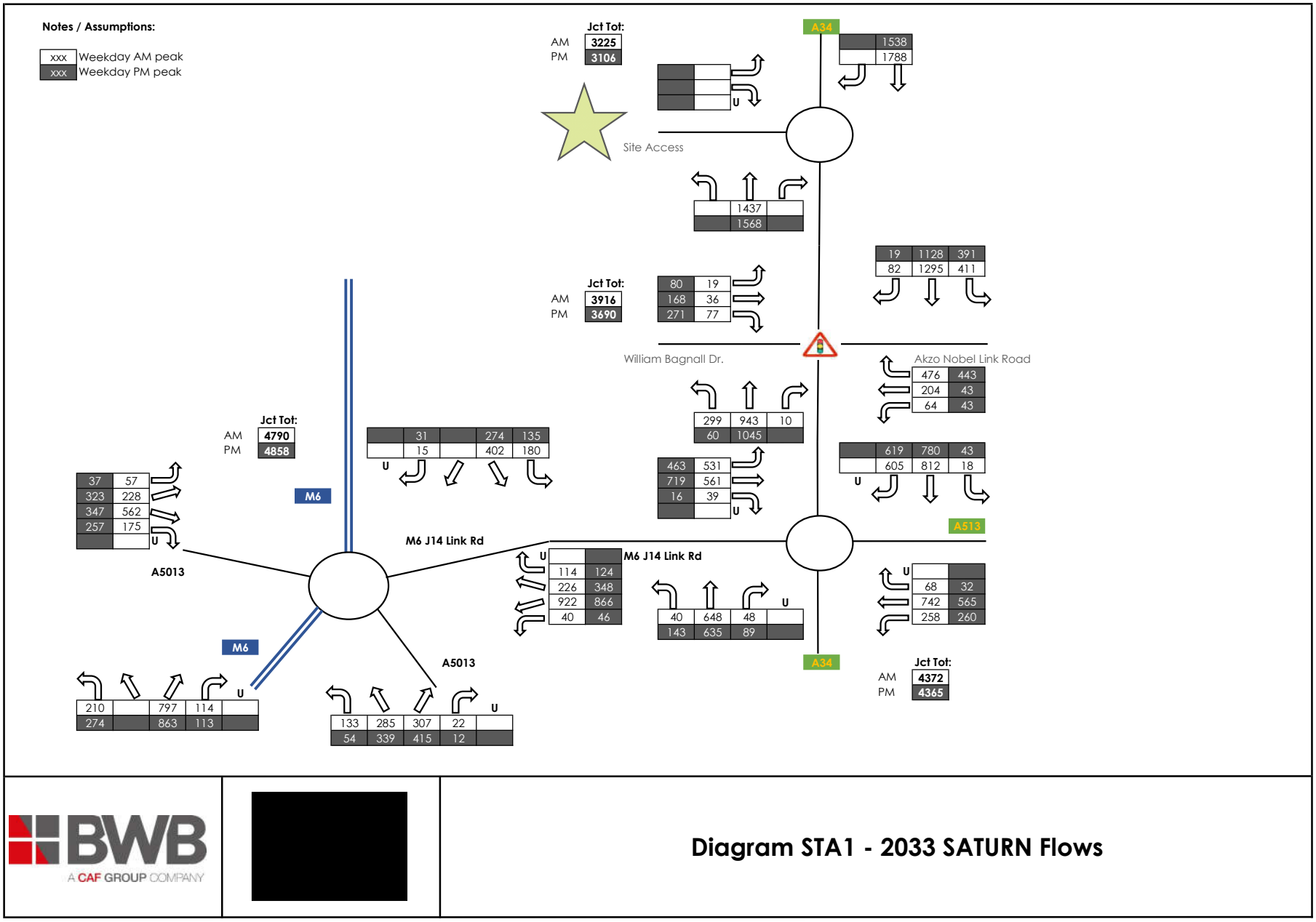
1. The new roundabout on the A34 built to serve Phase 2 and Redhill Roundabout would continue to operate within capacity.

2. The allocations are not expected to have a severe impact at the A34/William Bagnall Drive crossroads junction although some form of mitigation is expected to be needed, such as increasing flare lengths and kerb realignment.

3. Whilst the impact on M6J14 will need to be assessed further within any future Transport Assessment produced in consultation with National Highways, it is concluded that the impact would be minor and any mitigation (if required) is likely to be modest.

4. The allocations are expected to require mitigation at the Aston Roundabout and Stafford Roundabout in Stone. However, the latter is likely to require a more comprehensive solution if capacity issues are to also be resolved.

TRAFFIC FLOW DIAGRAMS



BWB
A CAF GROUP COMPANY

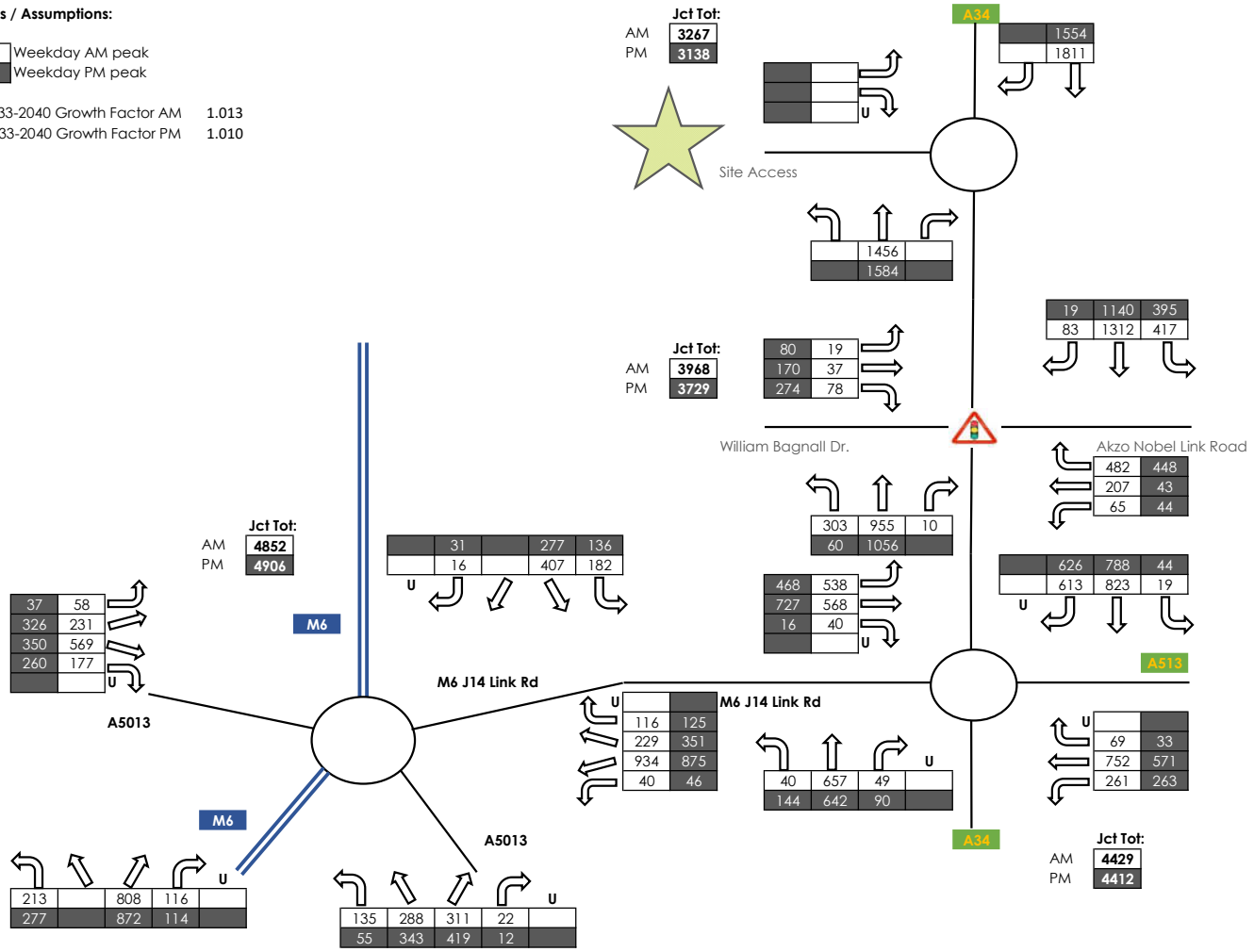
[redacted]

Diagram STA1 - 2033 SATURN Flows

Notes / Assumptions:

xxx	Weekday AM peak
xxx	Weekday PM peak

2033-2040 Growth Factor AM 1.013
2033-2040 Growth Factor PM 1.010



BWB
A CAF GROUP COMPANY

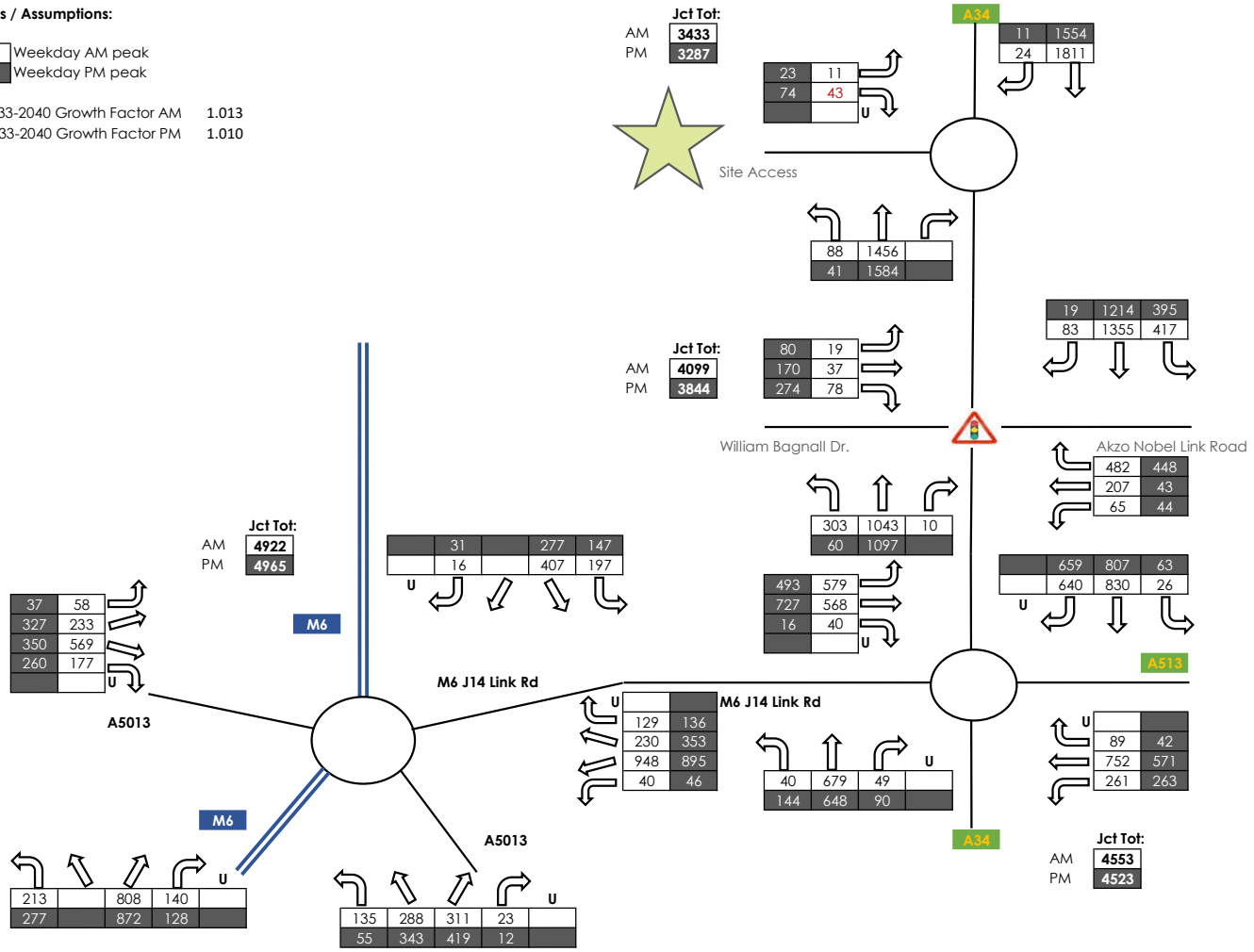
[redacted]

Diagram STA2 - 2040 Base Flows

Notes / Assumptions:

xxx	Weekday AM peak
xxx	Weekday PM peak

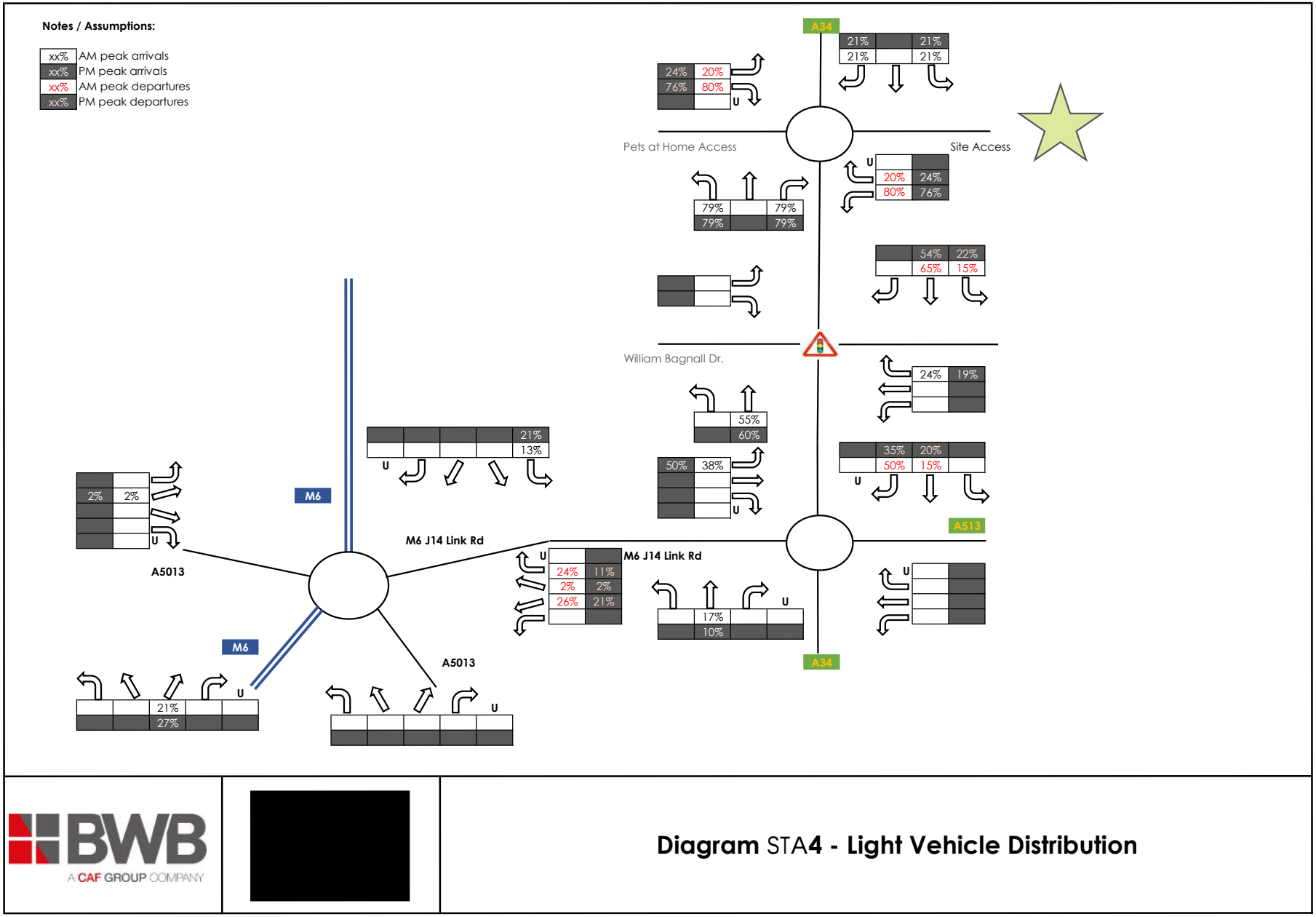
2033-2040 Growth Factor AM 1.013
2033-2040 Growth Factor PM 1.010



BWB
A CAF GROUP COMPANY

[redacted]

Diagram STA3 - 2040 Base Flows + Pets at Home



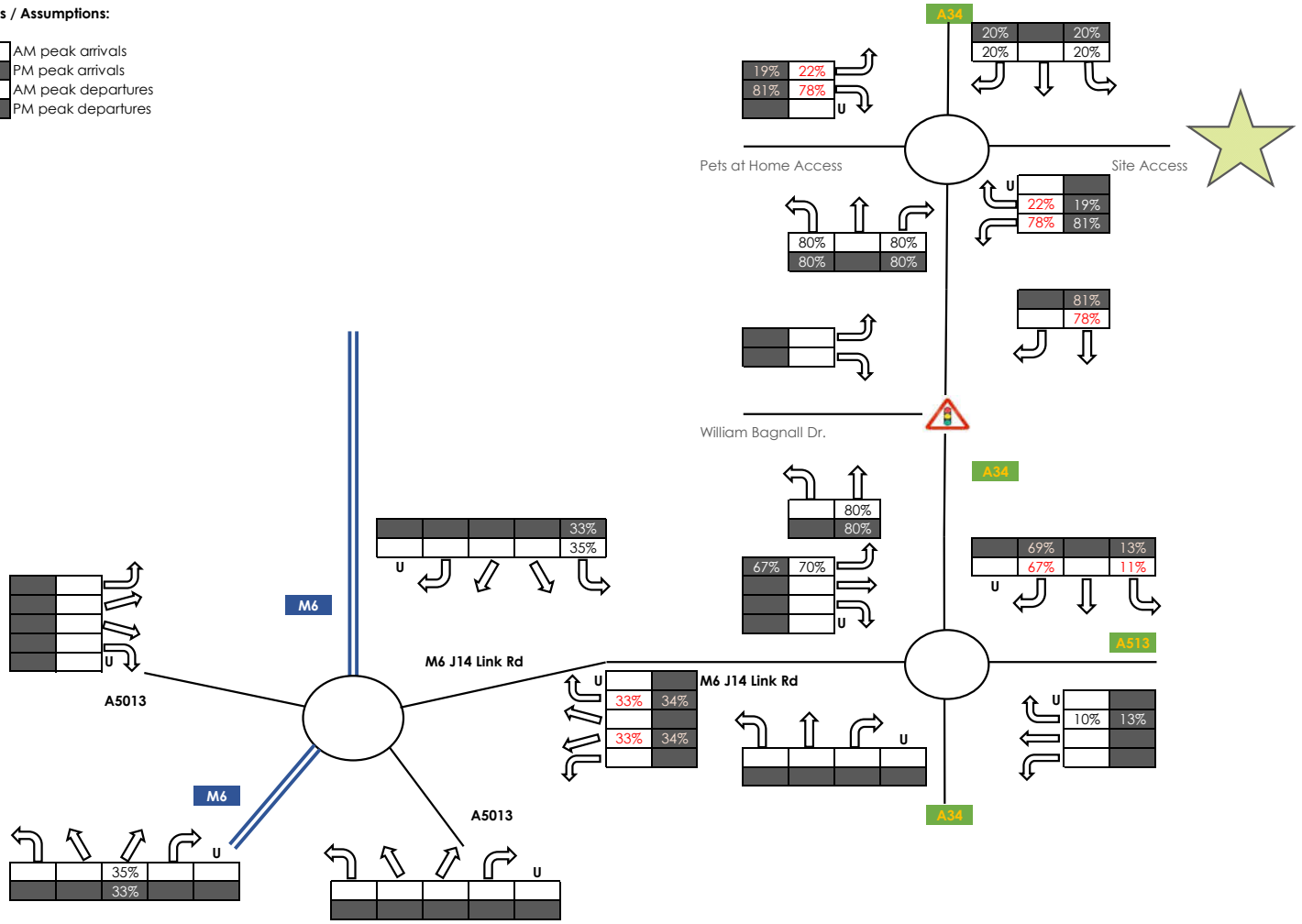
BWB
A CAF GROUP COMPANY

[redacted]

Diagram STA4 - Light Vehicle Distribution

Notes / Assumptions:

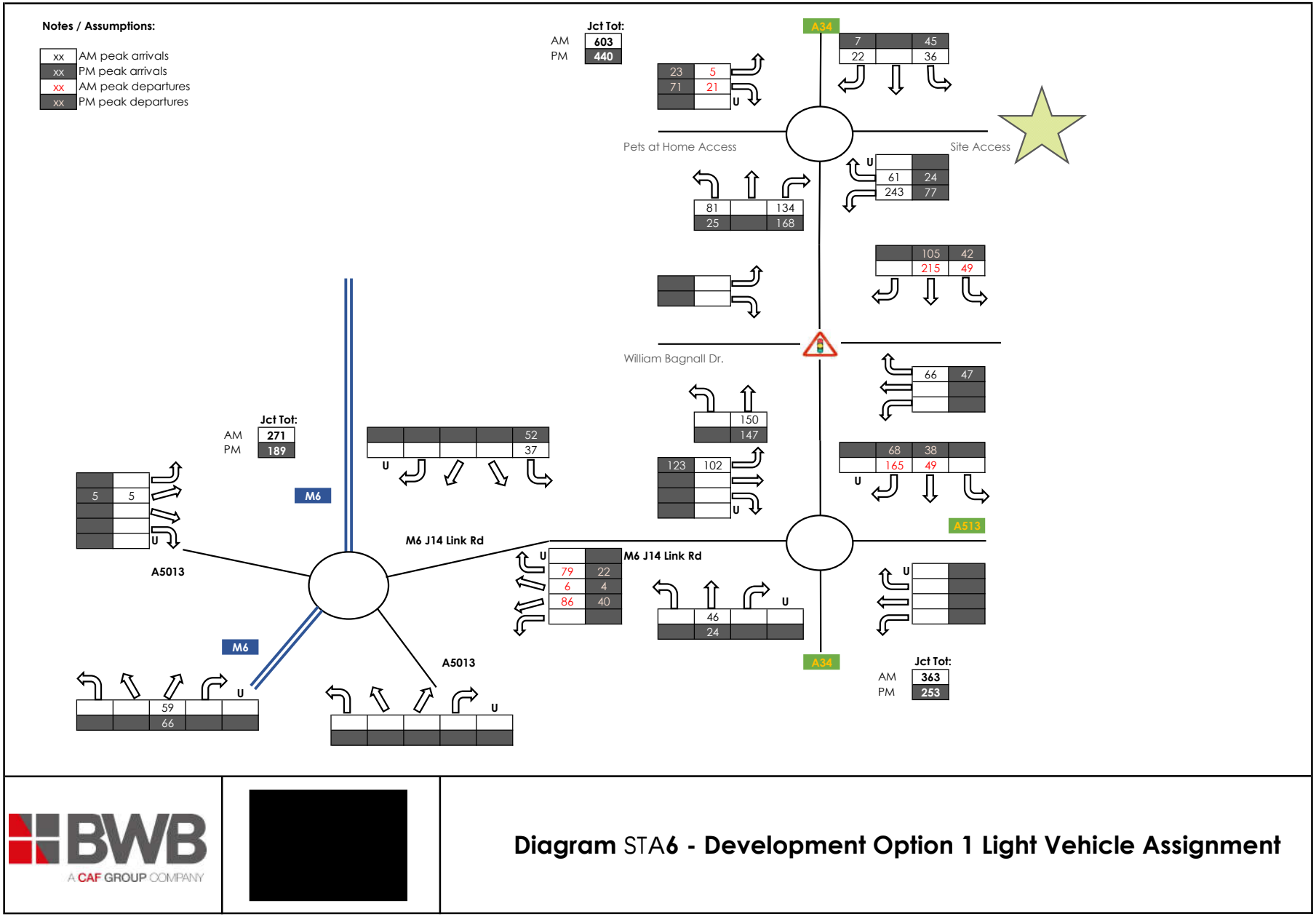
xx%	AM peak arrivals
xx%	PM peak arrivals
xx%	AM peak departures
xx%	PM peak departures



BWB
A CAF GROUP COMPANY

[redacted]

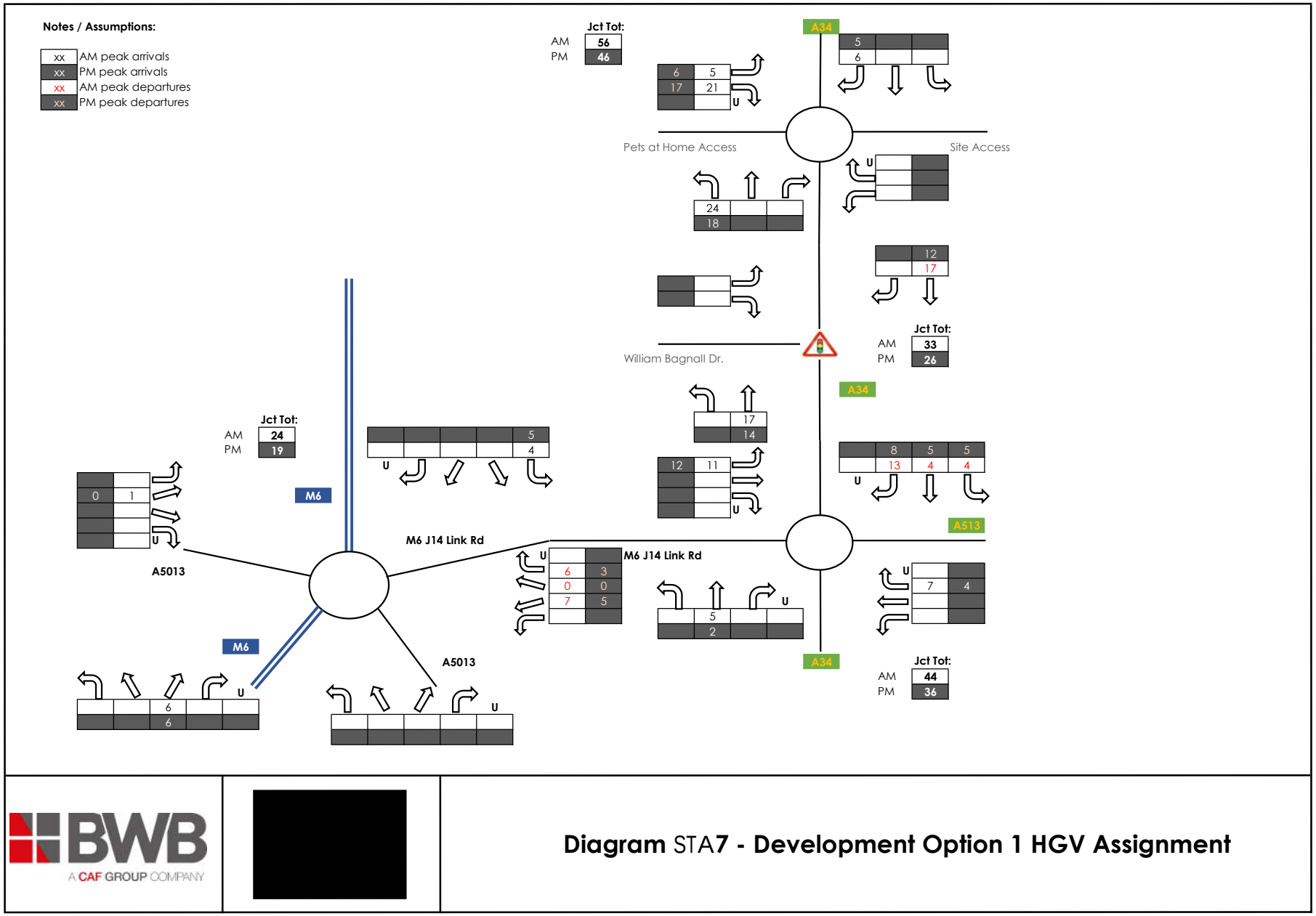
Diagram STA5 - HGV Distribution



BWB
A CAF GROUP COMPANY

[redacted]

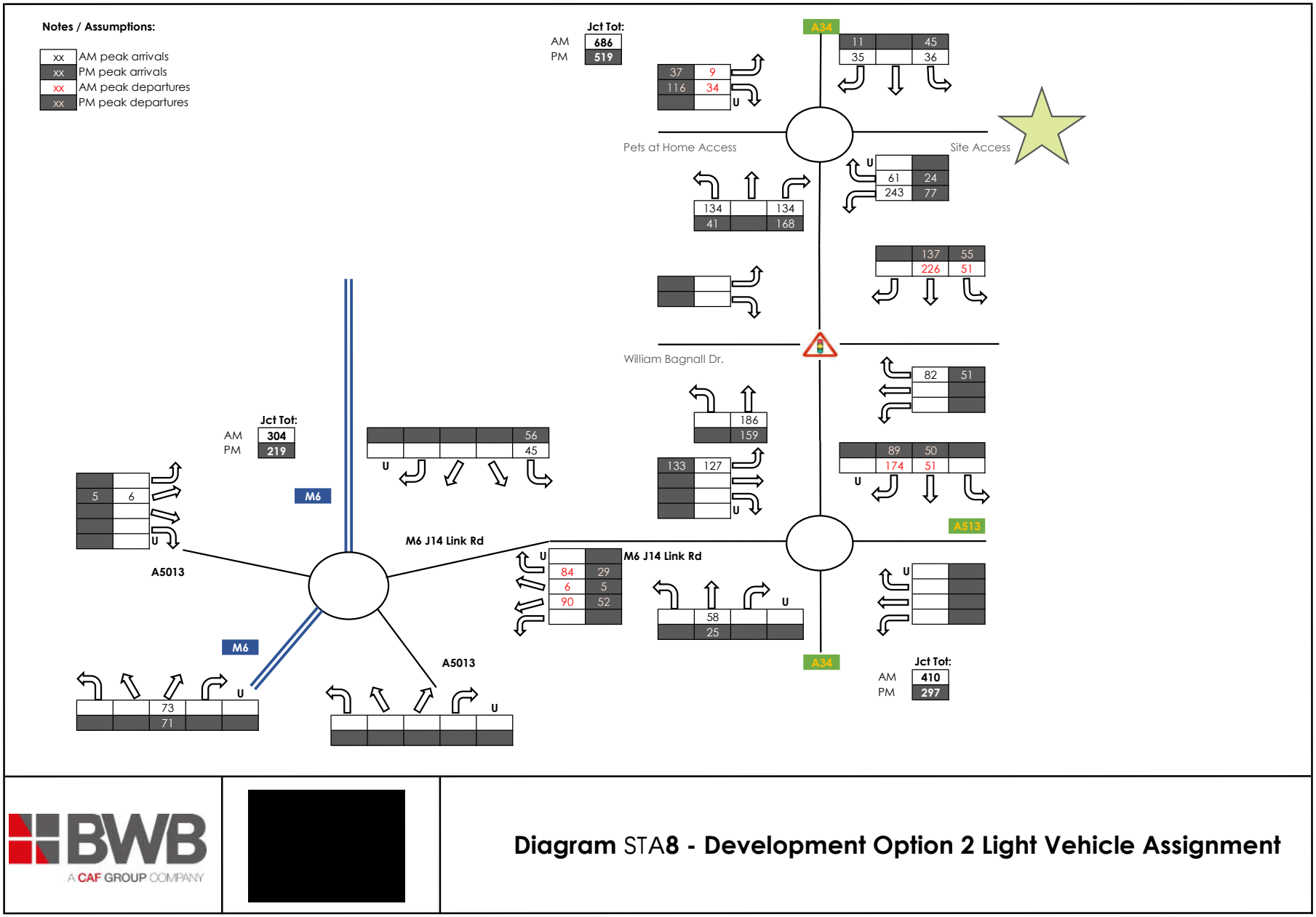
Diagram STA6 - Development Option 1 Light Vehicle Assignment



BWB
A CAF GROUP COMPANY

[redacted]

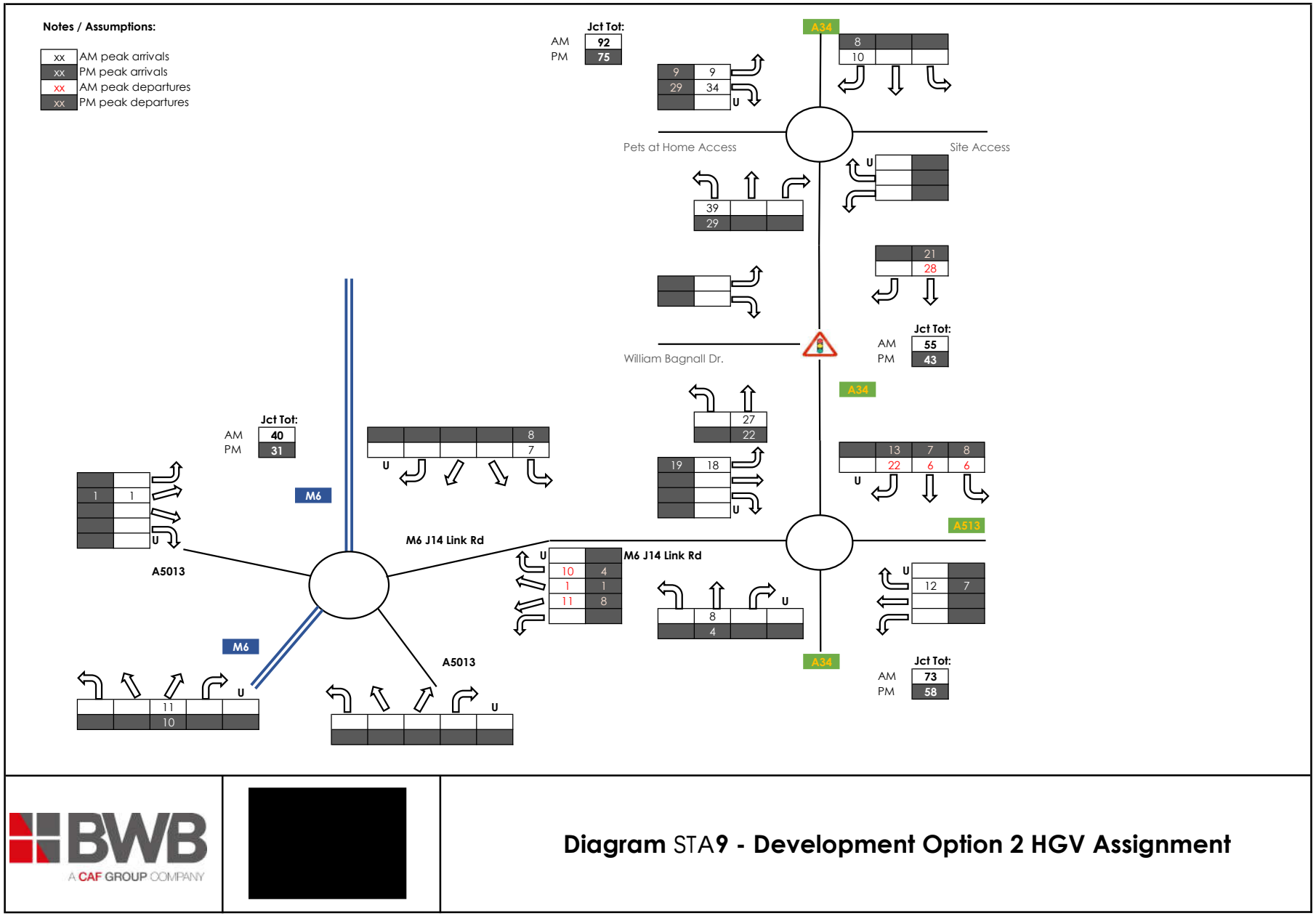
Diagram STA7 - Development Option 1 HGV Assignment



BWB
A CAF GROUP COMPANY

[redacted]

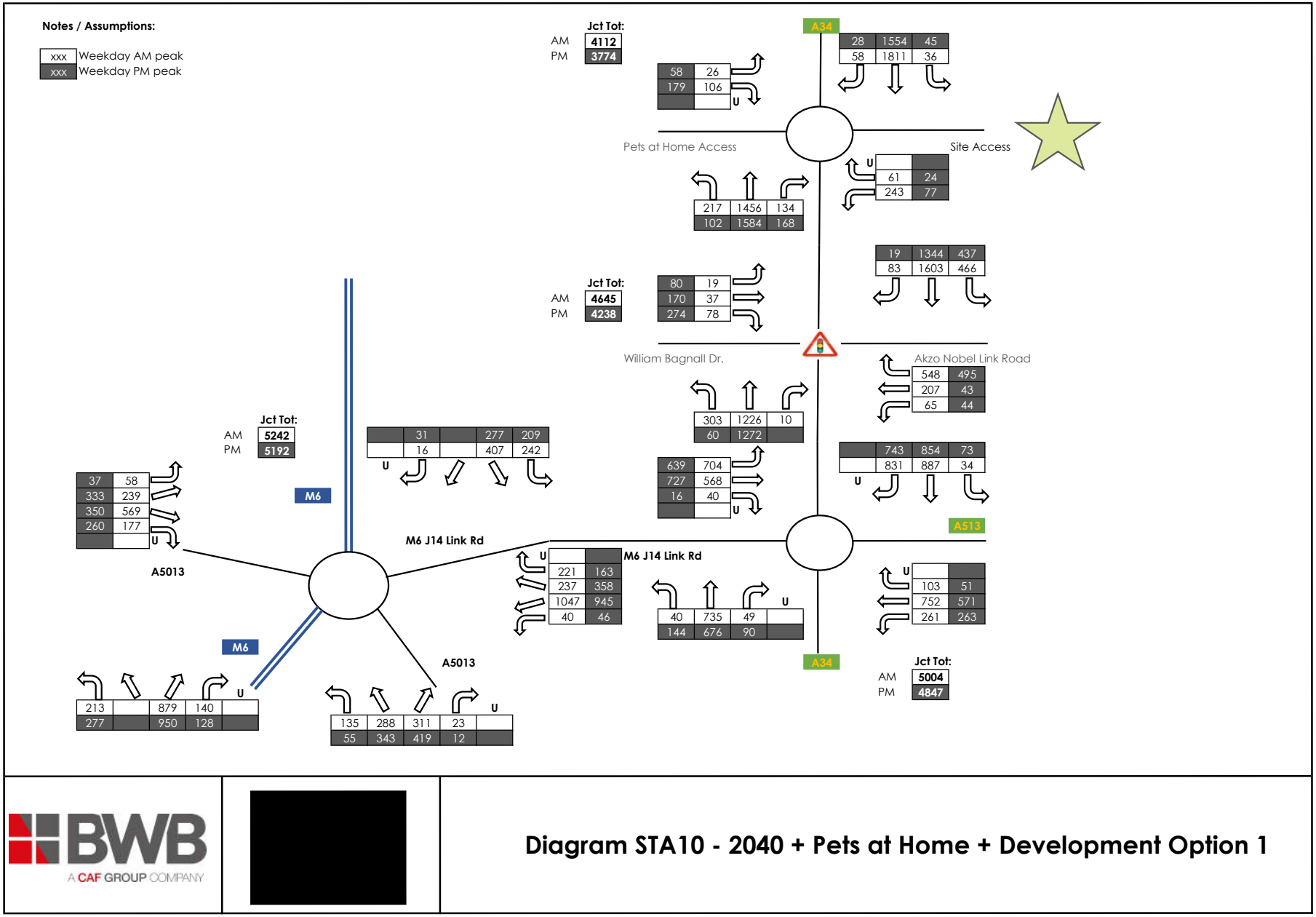
Diagram STA8 - Development Option 2 Light Vehicle Assignment



BWB
A CAF GROUP COMPANY

[redacted]

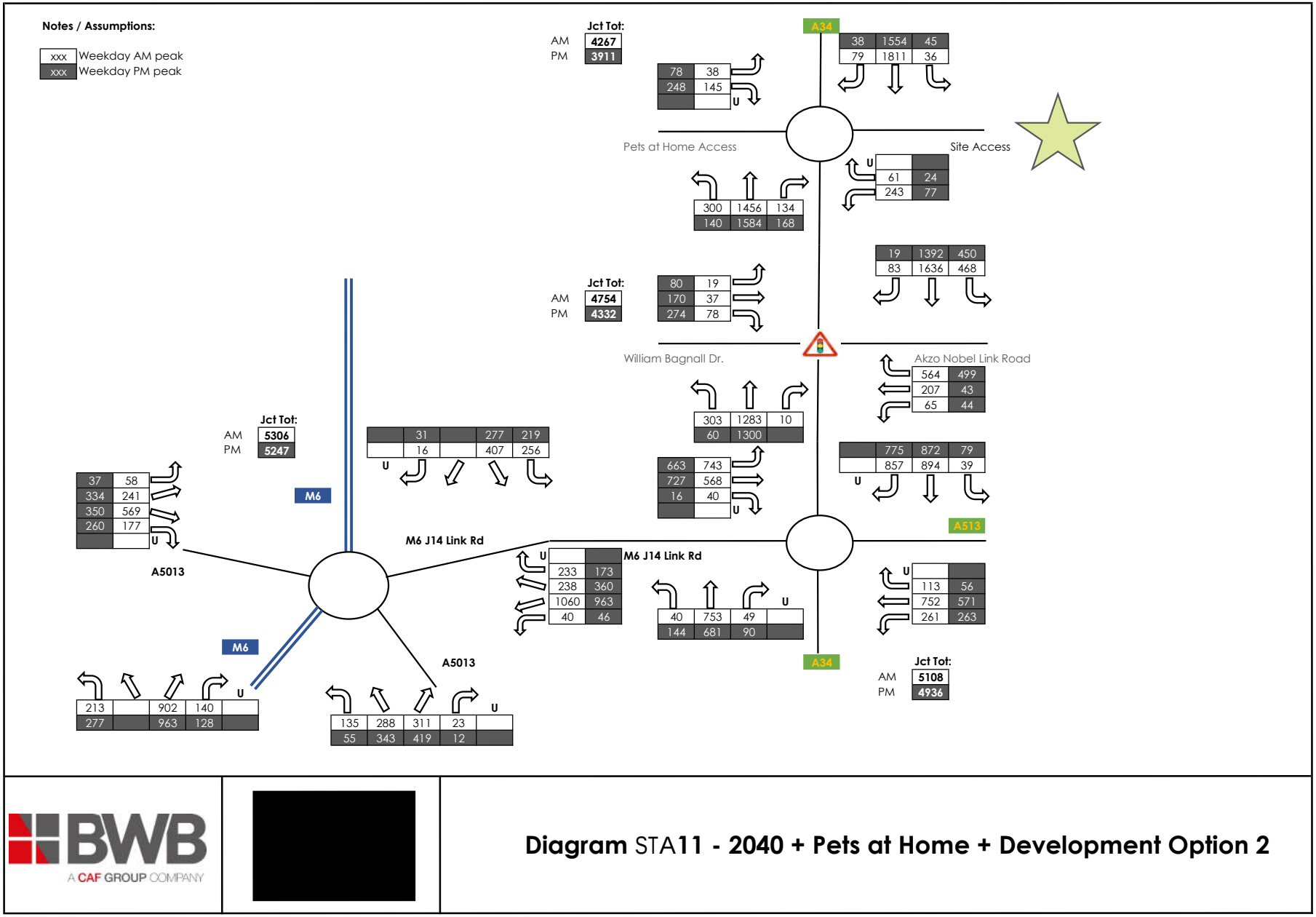
Diagram STA9 - Development Option 2 HGV Assignment



BWB
A CAF GROUP COMPANY

[redacted]

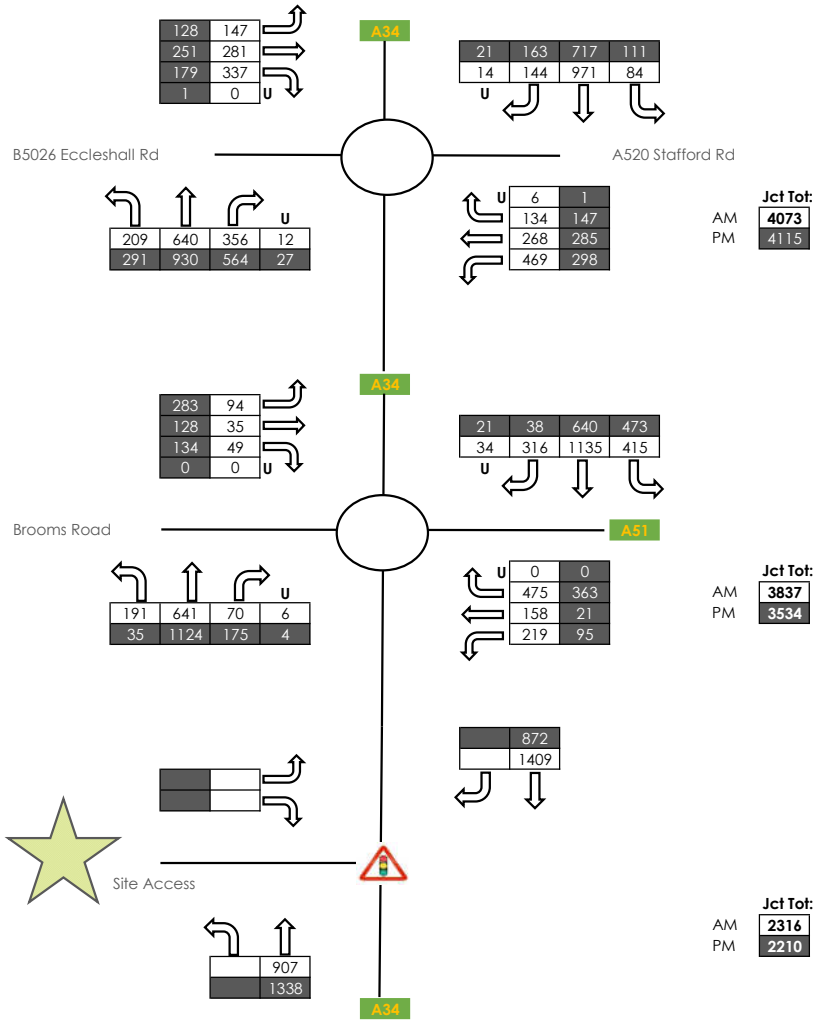
Diagram STA10 - 2040 + Pets at Home + Development Option 1



BWB
A CAF GROUP COMPANY

[redacted]

Diagram STA11 - 2040 + Pets at Home + Development Option 2



Notes / Assumptions:

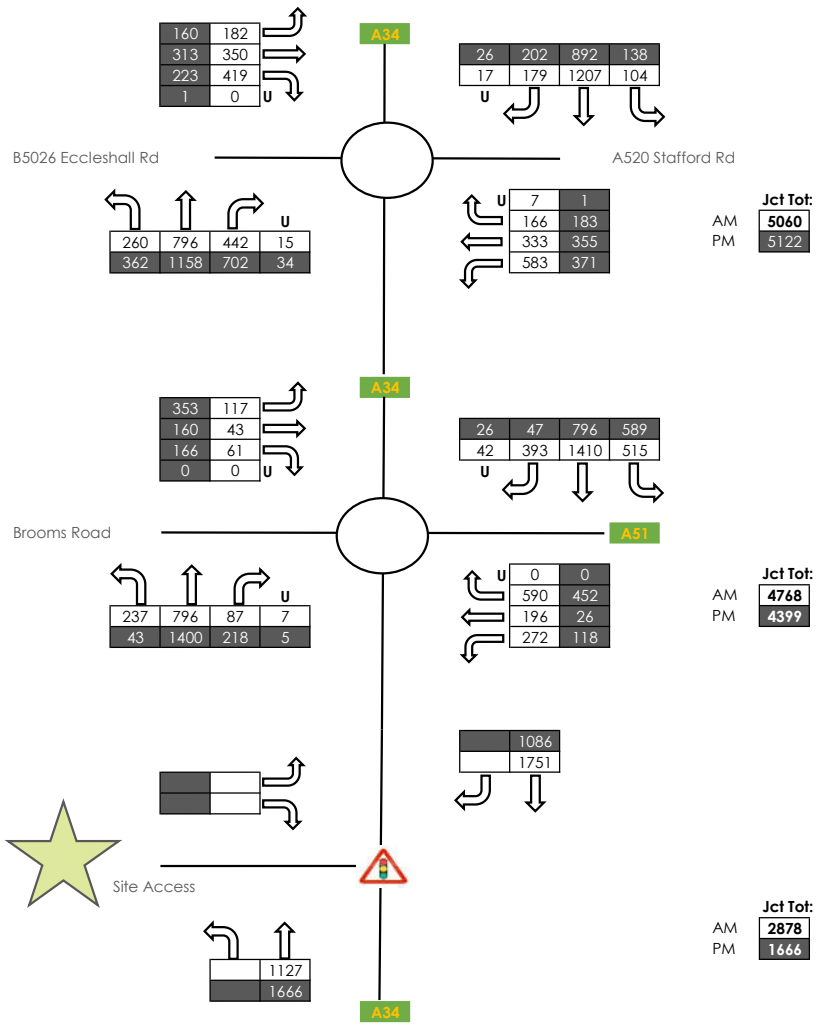
2012 Base Flows from West Of Longhope Drive TAA

AM
PM

BWB
A CAF GROUP COMPANY

[redacted]

STO1 - 2012 Observed Flows



Notes / Assumptions:

AM
PM

	Jct Tot:
AM	5060
PM	5122

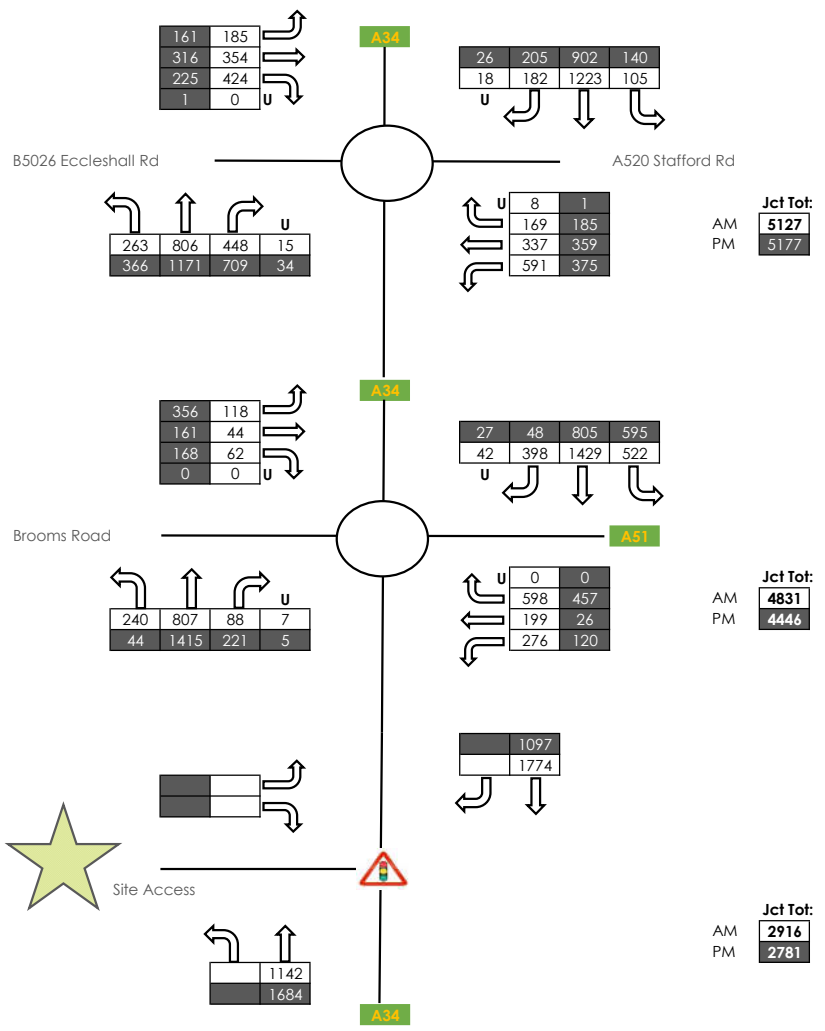
	Jct Tot:
AM	4768
PM	4399

	Jct Tot:
AM	2878
PM	1666

BWB
A CAF GROUP COMPANY

[redacted]

STO2 - 2033 Base Flows



Notes / Assumptions:

AM
PM

	Jct Tot:
AM	5127
PM	5177

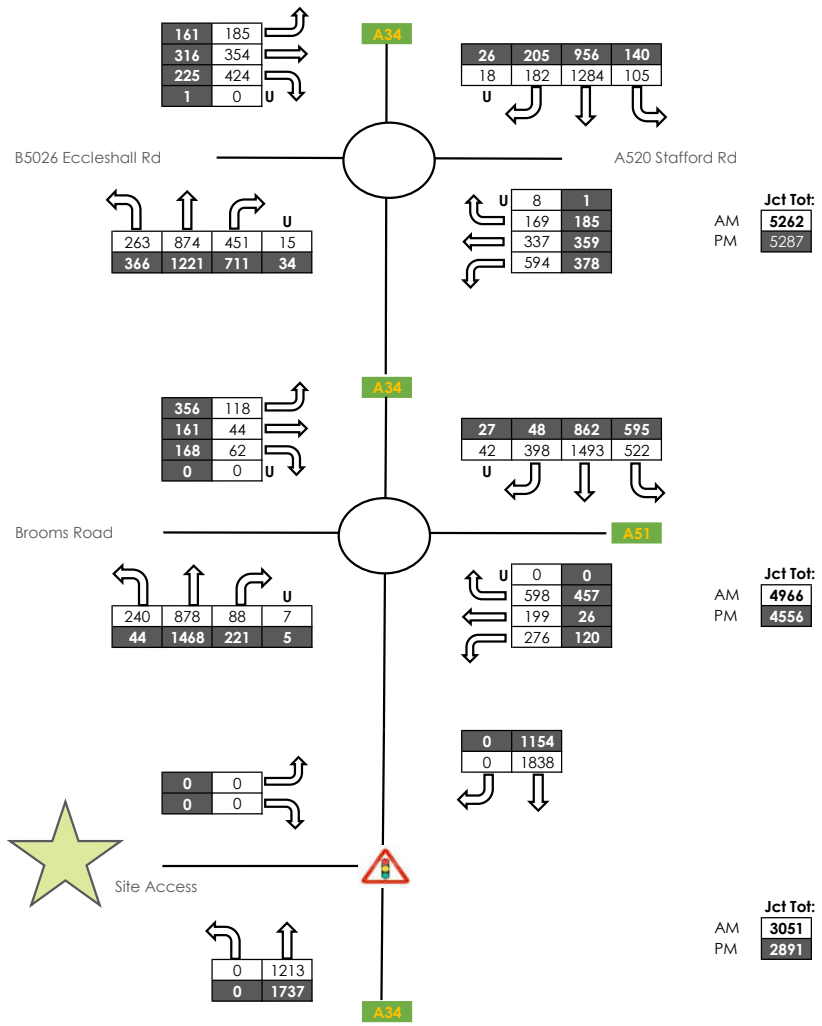
	Jct Tot:
AM	4831
PM	4446

	Jct Tot:
AM	2916
PM	2781

BWB
A CAF GROUP COMPANY

[redacted]

STO3 - 2040 Observed Flows



Notes / Assumptions:

AM
PM

	Jct Tot:
AM	5262
PM	5287

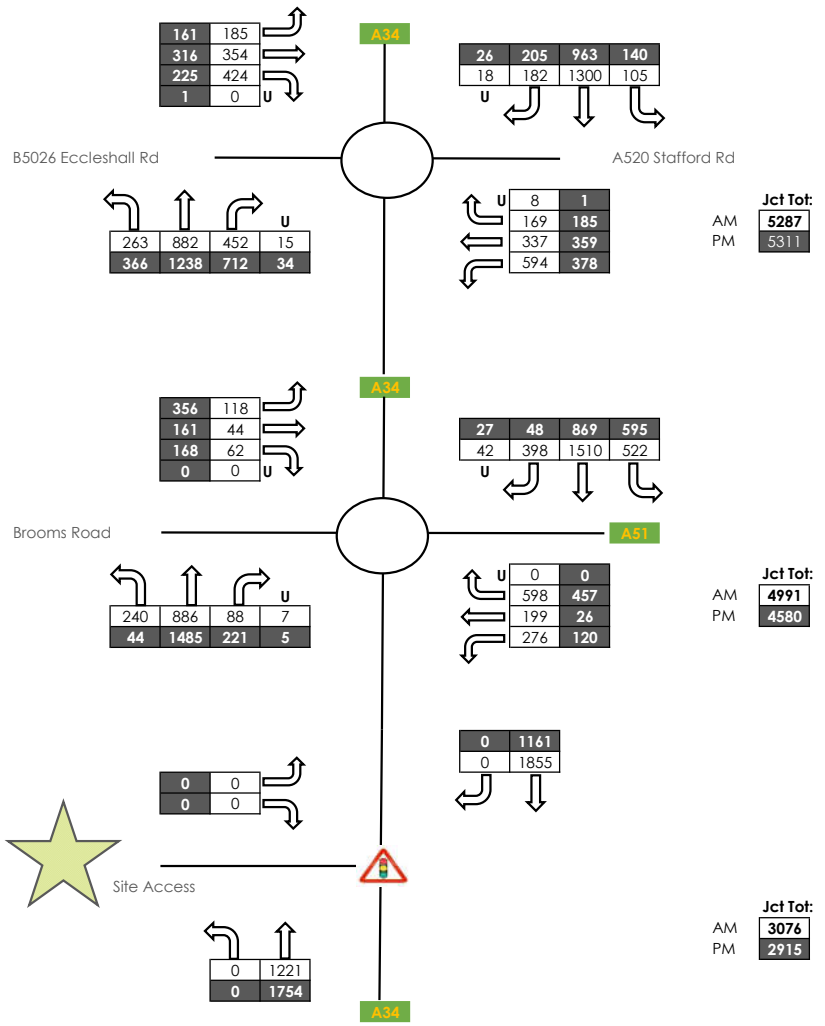
	Jct Tot:
AM	4966
PM	4556

	Jct Tot:
AM	3051
PM	2891

BWB
A CAF GROUP COMPANY

[redacted]

STO4 - 2040 Future Year + Development Option 1



Notes / Assumptions:

AM
PM

BWB
A CAF GROUP COMPANY

[redacted]

STO5 - 2040 Future Year + Development Option 2

APPENDICES

APPENDIX A: TEMPro Growth Factors

Dataset Version: 72
Result Type: Trip ends by time period
Base Year: 2033
Future Year: 2040
Trip Purpose Group: All purposes
Time Period: Weekday AM peak period (0700 - 0959)
Trip End Type: Origin/Destination
Alternative Assumptions Applied: Yes

Growth Factor

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	0.9991	1.0183

Future Year - Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	-36	729

Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	38,829	40,030

Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	38,793	40,759

Level	Area	Local Growth Figure
Authority	Stafford	1.013002843

Dataset Version: 72
Result Type: Trip ends by time period
Base Year: 2033
Future Year: 2040
Trip Purpose Group: All purposes
Time Period: Weekday PM peak period (1600 - 1859)
Trip End Type: Origin/Destination
Alternative Assumptions Applied Yes

Growth Factor

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	1.0125	0.9997

Future Year - Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	531	-15

Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	42,727	41,045

Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
Authority	Stafford	43,258	41,030

Level	Area	Local Growth Figure
Authority	Stafford	1.010391752

APPENDIX B: TRICS Output Data

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : A - PRIMARY
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	BU	BUCKINGHAMSHIRE	1 days
	HC	HAMPSHIRE	1 days
03	SOUTH WEST		
	BR	BRISTOL CITY	1 days
	CW	CORNWALL	1 days
	SM	SOMERSET	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DY	DERBY	1 days
	LE	LEICESTERSHIRE	1 days
	NM	WEST NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	AC	CHESHIRE WEST & CHESTER	1 days
	BP	BLACKPOOL	1 days
	GM	GREATER MANCHESTER	1 days
09	NORTH		
	TW	TYNE & WEAR	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of pupils
Actual Range: 208 to 621 (units:)
Range Selected by User: 200 to 800 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 23/05/22

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	4 days
Wednesday	2 days
Thursday	5 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	15 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	7
Neighbourhood Centre (PPS6 Local Centre)	5

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

F1(a)	15 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	4 days
10,001 to 15,000	1 days
15,001 to 20,000	4 days
20,001 to 25,000	2 days
25,001 to 50,000	2 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
75,001 to 100,000	3 days
125,001 to 250,000	3 days
250,001 to 500,000	7 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	5 days
1.1 to 1.5	10 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	2 days
No	13 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	15 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 AC-04-A-01 PRIMARY SCHOOL CHESHIRE WEST & CHESTER
WESTON GROVE
CHESTER
UPTON
Edge of Town
Residential Zone
Total Number of pupils: 219
Survey date: MONDAY *17/11/14* *Survey Type: MANUAL*

2 BP-04-A-01 PRIMARY SCHOOL BLACKPOOL
SEVERN ROAD
BLACKPOOL
SOUTH SHORE
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of pupils: 449
Survey date: TUESDAY *27/09/16* *Survey Type: MANUAL*

3 BR-04-A-01 PRIMARY SCHOOL BRISTOL CITY
SCHOOL CLOSE
BRISTOL
WHITCHURCH
Edge of Town
Residential Zone
Total Number of pupils: 208
Survey date: TUESDAY *22/09/15* *Survey Type: MANUAL*

4 BU-04-A-01 PRIMARY SCHOOL BUCKINGHAMSHIRE
LOWER ROAD
NEAR AYLESBURY
STOKE MANDEVILLE
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 208
Survey date: WEDNESDAY *01/10/14* *Survey Type: MANUAL*

5 CW-04-A-03 PRIMARY ACADEMY CORNWALL
TREVERBYN RISE
PENRYN

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 440
Survey date: THURSDAY *28/03/19* *Survey Type: MANUAL*

6 DY-04-A-01 PRIMARY SCHOOL DERBY
VICARAGE ROAD
DERBY
MICKLEOVER
Edge of Town
Residential Zone
Total Number of pupils: 387
Survey date: THURSDAY *25/06/15* *Survey Type: MANUAL*

7 GM-04-A-01 PRIMARY SCHOOL GREATER MANCHESTER
ROCH MILLS CRESCENT
ROCHDALE

Edge of Town
Residential Zone
Total Number of pupils: 457
Survey date: TUESDAY *20/10/15* *Survey Type: MANUAL*

8 HC-04-A-05 PRIMARY SCHOOL HAMPSHIRE
HAVANT ROAD
HAYLING ISLAND

Edge of Town
Residential Zone
Total Number of pupils: 550
Survey date: MONDAY *30/11/15* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9	LE-04-A-02	PRIMARY SCHOOL		LEICESTERSHIRE
	BEAUFORT WAY			
	LEICESTER			
	OADBY			
	Edge of Town			
	Residential Zone			
	Total Number of pupils:		380	
	Survey date: THURSDAY		*30/10/14*	*Survey Type: MANUAL*
10	NM-04-A-02	PRIMARY SCHOOL		WEST NORTHAMPTONSHIRE
	BOOTH LANE NORTH			
	NORTHAMPTON			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of pupils:		400	
	Survey date: THURSDAY		*24/03/16*	*Survey Type: MANUAL*
11	SF-04-A-03	PRIMARY SCHOOL		SUFFOLK
	ENSTONE ROAD			
	LOWESTOFT			
	KIRKLEY			
	Neighbourhood Centre (PPS6 Local Centre)			
	Residential Zone			
	Total Number of pupils:		234	
	Survey date: WEDNESDAY		*10/12/14*	*Survey Type: MANUAL*
12	SM-04-A-01	PRIMARY SCHOOL		SOMERSET
	BRIDGWATER ROAD			
	NEAR TAUNTON			
	BATHPOOL			
	Neighbourhood Centre (PPS6 Local Centre)			
	Village			
	Total Number of pupils:		407	
	Survey date: THURSDAY		*27/09/18*	*Survey Type: MANUAL*
13	TW-04-A-02	PRIMARY SCHOOL		TYNE & WEAR
	KELLS LANE			
	GATESHEAD			
	LOW FELL			
	Neighbourhood Centre (PPS6 Local Centre)			
	No Sub Category			
	Total Number of pupils:		416	
	Survey date: FRIDAY		*19/10/18*	*Survey Type: MANUAL*
14	WM-04-A-02	PRIMARY SCHOOL		WEST MIDLANDS
	HAZEL ROAD			
	BIRMINGHAM			
	RUBERY			
	Edge of Town			
	Residential Zone			
	Total Number of pupils:		234	
	Survey date: TUESDAY		*10/11/15*	*Survey Type: MANUAL*
15	WY-04-A-02	PRIMARY SCHOOL		WEST YORKSHIRE
	TOWN STREET			
	LEEDS			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of pupils:		621	
	Survey date: MONDAY		*19/10/15*	*Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

RANK ORDER for Land Use 04 - EDUCATION/A - PRIMARY

TOTAL VEHICLES

Ranking Type: TOTALS Time Range: 08:00-09:00

WARNING: Using 85th and 15th percentile highlighted trip rates in data sets of under 20 surveys is not recommended by TRICS and may be misleading.

15th Percentile = No. 13 GM-04-A-01 Tot: 0.280

85th Percentile = No. 3 TW-04-A-02 Tot: 0.683

Median Values		Mean Values	
Arrivals:	0.308	Arrivals:	0.305
Departures:	0.260	Departures:	0.246
Totals:	0.568	Totals:	0.551

Rank	Site-Ref	Description	Town/City	Area	PUPILS	Day	Date	Trip Rate (Sorted by Totals)		
								Arrivals	Departures	Totals
1	HC-04-A-05	PRIMARY SCHOOL	HAYLING ISLAND	HAMPSHIRE	550	Mon	30/11/15	0.822	0.698	1.520
2	BP-04-A-01	PRIMARY SCHOOL	BLACKPOOL	BLACKPOOL	449	Tue	27/09/16	0.412	0.336	0.748
3	TW-04-A-02	PRIMARY SCHOOL	GATESHEAD	TYNE & WEAR	416	Fri	19/10/18	0.380	0.303	0.683
4	BR-04-A-01	PRIMARY SCHOOL	BRISTOL	BRISTOL CITY	208	Tue	22/09/15	0.375	0.260	0.635
5	NM-04-A-02	PRIMARY SCHOOL	NORTHAMPTON	WEST NORTHAMPTONSHI	400	Thu	24/03/16	0.305	0.305	0.610
6	WY-04-A-02	PRIMARY SCHOOL	LEEDS	WEST YORKSHIRE	621	Mon	19/10/15	0.298	0.290	0.588
7	LE-04-A-02	PRIMARY SCHOOL	LEICESTER	LEICESTERSHIRE	380	Thu	30/10/14	0.324	0.263	0.587
8	BU-04-A-01	PRIMARY SCHOOL	NEAR AYLESBURY	BUCKINGHAMSHIRE	208	Wed	01/10/14	0.308	0.260	0.568
9	SM-04-A-01	PRIMARY SCHOOL	NEAR TAUNTON	SOMERSET	407	Thu	27/09/18	0.310	0.256	0.566
10	WM-04-A-02	PRIMARY SCHOOL	BIRMINGHAM	WEST MIDLANDS	234	Tue	10/11/15	0.231	0.179	0.410
11	AC-04-A-01	PRIMARY SCHOOL	CHESTER	CHESHIRE WEST & CHE	219	Mon	17/11/14	0.196	0.128	0.324
12	SF-04-A-03	PRIMARY SCHOOL	LOWESTOFT	SUFFOLK	234	Wed	10/12/14	0.171	0.132	0.303
13	GM-04-A-01	PRIMARY SCHOOL	ROCHDALE	GREATER MANCHESTER	457	Tue	20/10/15	0.173	0.107	0.280
14	DY-04-A-01	PRIMARY SCHOOL	DERBY	DERBY	387	Thu	25/06/15	0.158	0.119	0.277
15	CW-04-A-03	PRIMARY ACADEM	PENRYN	CORNWALL	440	Thu	28/03/19	0.114	0.052	0.166

This section displays actual (not average) trip rates for each of the survey days in the selected set, and ranks them in order of relative trip rate intensity, for a given time period (or peak period irrespective of time) selected by the user. The count type and direction are both displayed just above the table, along with the rows within the table representing the 85th and 15th percentile trip rate figures (highlighted in bold within the table itself).

The table itself displays details of each individual survey, alongside arrivals, departures and totals trip rates, sorted by whichever of the three directional options has been chosen by the user. As with the preceeding trip rate calculation results table, the trip rates shown are per the calculation factor (e.g. per 100m2 GFA, per employee, per hectare, etc). Note that if the peak period option has been selected (as opposed to a specific chosen time period), the peak period for each individual survey day in the table is also displayed.

RANK ORDER for Land Use 04 - EDUCATION/A - PRIMARY

TOTAL VEHICLES

Ranking Type: TOTALS Time Range: 17:00-18:00

WARNING: Using 85th and 15th percentile highlighted trip rates in data sets of under 20 surveys is not recommended by TRICS and may be misleading.

15th Percentile = No. 13 NM-04-A-02 Tot: 0.010

85th Percentile = No. 3 LE-04-A-02 Tot: 0.090

Median Values		Mean Values	
Arrivals:	0.004	Arrivals:	0.017
Departures:	0.047	Departures:	0.037
Totals:	0.051	Totals:	0.054

Rank	Site-Ref	Description	Town/City	Area	PUPILS	Day	Date	Trip Rate (Sorted by Totals)		
								Arrivals	Departures	Totals
1	HC-04-A-05	PRIMARY SCHOOL	HAYLING ISLAND	HAMPSHIRE	550	Mon	30/11/15	0.051	0.082	0.133
2	WM-04-A-02	PRIMARY SCHOOL	BIRMINGHAM	WEST MIDLANDS	234	Tue	10/11/15	0.034	0.060	0.094
3	LE-04-A-02	PRIMARY SCHOOL	LEICESTER	LEICESTERSHIRE	380	Thu	30/10/14	0.037	0.053	0.090
4	BU-04-A-01	PRIMARY SCHOOL	NEAR AYLESBURY	BUCKINGHAMSHIRE	208	Wed	01/10/14	0.014	0.072	0.086
5	SM-04-A-01	PRIMARY SCHOOL	NEAR TAUNTON	SOMERSET	407	Thu	27/09/18	0.034	0.047	0.081
6	BR-04-A-01	PRIMARY SCHOOL	BRISTOL	BRISTOL CITY	208	Tue	22/09/15	0.005	0.058	0.063
7	CW-04-A-03	PRIMARY ACADEM	PENRYN	CORNWALL	440	Thu	28/03/19	0.016	0.045	0.061
8	SF-04-A-03	PRIMARY SCHOOL	LOWESTOFT	SUFFOLK	234	Wed	10/12/14	0.004	0.047	0.051
9	AC-04-A-01	PRIMARY SCHOOL	CHESTER	CHESHIRE WEST & CHE	219	Mon	17/11/14	0.018	0.032	0.050
10	GM-04-A-01	PRIMARY SCHOOL	ROCHDALE	GREATER MANCHESTER	457	Tue	20/10/15	0.033	0.013	0.046
11	DY-04-A-01	PRIMARY SCHOOL	DERBY	DERBY	387	Thu	25/06/15	0.003	0.013	0.016
12	WY-04-A-02	PRIMARY SCHOOL	LEEDS	WEST YORKSHIRE	621	Mon	19/10/15	0.003	0.008	0.011
13	NM-04-A-02	PRIMARY SCHOOL	NORTHAMPTON	WEST NORTHAMPTONSHI	400	Thu	24/03/16	0.003	0.007	0.010
14	TW-04-A-02	PRIMARY SCHOOL	GATESHEAD	TYNE & WEAR	416	Fri	19/10/18	0.000	0.007	0.007
15	BP-04-A-01	PRIMARY SCHOOL	BLACKPOOL	BLACKPOOL	449	Tue	27/09/16	0.000	0.007	0.007

This section displays actual (not average) trip rates for each of the survey days in the selected set, and ranks them in order of relative trip rate intensity, for a given time period (or peak period irrespective of time) selected by the user. The count type and direction are both displayed just above the table, along with the rows within the table representing the 85th and 15th percentile trip rate figures (highlighted in bold within the table itself).

The table itself displays details of each individual survey, alongside arrivals, departures and totals trip rates, sorted by whichever of the three directional options has been chosen by the user. As with the preceeding trip rate calculation results table, the trip rates shown are per the calculation factor (e.g. per 100m2 GFA, per employee, per hectare, etc). Note that if the peak period option has been selected (as opposed to a specific chosen time period), the peak period for each individual survey day in the table is also displayed.

BWB CONSULTING STATION STREET NOTTINGHAM Licence No: 714101

RANK ORDER for Land Use 04 - EDUCATION/A - PRIMARY
TOTAL VEHICLES

Ranking Type: TOTALS Time Range: 15:00-16:00
WARNING: Using 85th and 15th percentile highlighted trip rates in data sets of under 20 surveys is not recommended by TRICS and may be misleading.
15th Percentile = No. 13 SF-04-A-03 Tot: 0.205
85th Percentile = No. 3 NM-04-A-02 Tot: 0.580

Median Values		Mean Values	
Arrivals:	0.167	Arrivals:	0.180
Departures:	0.299	Departures:	0.249
Totals:	0.466	Totals:	0.430

Rank	Site-Ref	Description	Town/City	Area	PUPILS	Day	Date	Trip Rate (Sorted by Totals)		
								Arrivals	Departures	Totals
1	TW-04-A-02	PRIMARY SCHOOL	GATESHEAD	TYNE & WEAR	416	Fri	19/10/18	0.361	0.435	0.796
2	HC-04-A-05	PRIMARY SCHOOL	HAYLING ISLAND	HAMPSHIRE	550	Mon	30/11/15	0.280	0.509	0.789
3	NM-04-A-02	PRIMARY SCHOOL	NORTHAMPTON	WEST NORTHAMPTONSHI	400	Thu	24/03/16	0.307	0.273	0.580
4	WY-04-A-02	PRIMARY SCHOOL	LEEDS	WEST YORKSHIRE	621	Mon	19/10/15	0.261	0.304	0.565
5	BP-04-A-01	PRIMARY SCHOOL	BLACKPOOL	BLACKPOOL	449	Tue	27/09/16	0.238	0.290	0.528
6	BR-04-A-01	PRIMARY SCHOOL	BRISTOL	BRISTOL CITY	208	Tue	22/09/15	0.212	0.303	0.515
7	SM-04-A-01	PRIMARY SCHOOL	NEAR TAUNTON	SOMERSET	407	Thu	27/09/18	0.241	0.268	0.509
8	WM-04-A-02	PRIMARY SCHOOL	BIRMINGHAM	WEST MIDLANDS	234	Tue	10/11/15	0.167	0.299	0.466
9	LE-04-A-02	PRIMARY SCHOOL	LEICESTER	LEICESTERSHIRE	380	Thu	30/10/14	0.168	0.213	0.381
10	AC-04-A-01	PRIMARY SCHOOL	CHESTER	CHESHIRE WEST & CHE	219	Mon	17/11/14	0.105	0.187	0.292
11	BU-04-A-01	PRIMARY SCHOOL	NEAR AYLESBURY	BUCKINGHAMSHIRE	208	Wed	01/10/14	0.082	0.197	0.279
12	DY-04-A-01	PRIMARY SCHOOL	DERBY	DERBY	387	Thu	25/06/15	0.116	0.160	0.276
13	SF-04-A-03	PRIMARY SCHOOL	LOWESTOFT	SUFFOLK	234	Wed	10/12/14	0.098	0.107	0.205
14	GM-04-A-01	PRIMARY SCHOOL	ROCHDALE	GREATER MANCHESTER	457	Tue	20/10/15	0.018	0.125	0.143
15	CW-04-A-03	PRIMARY ACADEM	PENRYN	CORNWALL	440	Thu	28/03/19	0.052	0.070	0.122

This section displays actual (not average) trip rates for each of the survey days in the selected set, and ranks them in order of relative trip rate intensity, for a given time period (or peak period irrespective of time) selected by the user. The count type and direction are both displayed just above the table, along with the rows within the table representing the 85th and 15th percentile trip rate figures (highlighted in bold within the table itself).

The table itself displays details of each individual survey, alongside arrivals, departures and totals trip rates, sorted by whichever of the three directional options has been chosen by the user. As with the preceeding trip rate calculation results table, the trip rates shown are per the calculation factor (e.g. per 100m2 GFA, per employee, per hectare, etc). Note that if the peak period option has been selected (as opposed to a specific chosen time period), the peak period for each individual survey day in the table is also displayed.

Calculation Reference: AUDIT-714101-221114-1140

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : A - PRIMARY
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	BU	BUCKINGHAMSHIRE	1 days
	HC	HAMPSHIRE	1 days
03	SOUTH WEST		
	BR	BRISTOL CITY	1 days
	CW	CORNWALL	1 days
	SM	SOMERSET	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DY	DERBY	1 days
	LE	LEICESTERSHIRE	1 days
	NM	WEST NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	AC	CHESHIRE WEST & CHESTER	1 days
	BP	BLACKPOOL	1 days
	GM	GREATER MANCHESTER	1 days
09	NORTH		
	TW	TYNE & WEAR	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of pupils
Actual Range: 208 to 621 (units:)
Range Selected by User: 200 to 800 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 23/05/22

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	4 days
Wednesday	2 days
Thursday	5 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	15 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	7
Neighbourhood Centre (PPS6 Local Centre)	5

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	12
Village	2
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

F1(a)	15 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	4 days
10,001 to 15,000	1 days
15,001 to 20,000	4 days
20,001 to 25,000	2 days
25,001 to 50,000	2 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
75,001 to 100,000	3 days
125,001 to 250,000	3 days
250,001 to 500,000	7 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	5 days
1.1 to 1.5	10 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	2 days
No	13 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	15 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 AC-04-A-01 PRIMARY SCHOOL CHESHIRE WEST & CHESTER
WESTON GROVE
CHESTER
UPTON
Edge of Town
Residential Zone
Total Number of pupils: 219
Survey date: MONDAY *17/11/14* *Survey Type: MANUAL*

2 BP-04-A-01 PRIMARY SCHOOL BLACKPOOL
SEVERN ROAD
BLACKPOOL
SOUTH SHORE
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of pupils: 449
Survey date: TUESDAY *27/09/16* *Survey Type: MANUAL*

3 BR-04-A-01 PRIMARY SCHOOL BRISTOL CITY
SCHOOL CLOSE
BRISTOL
WHITCHURCH
Edge of Town
Residential Zone
Total Number of pupils: 208
Survey date: TUESDAY *22/09/15* *Survey Type: MANUAL*

4 BU-04-A-01 PRIMARY SCHOOL BUCKINGHAMSHIRE
LOWER ROAD
NEAR AYLESBURY
STOKE MANDEVILLE
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 208
Survey date: WEDNESDAY *01/10/14* *Survey Type: MANUAL*

5 CW-04-A-03 PRIMARY ACADEMY CORNWALL
TREVERBYN RISE
PENRYN

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 440
Survey date: THURSDAY *28/03/19* *Survey Type: MANUAL*

6 DY-04-A-01 PRIMARY SCHOOL DERBY
VICARAGE ROAD
DERBY
MICKLEOVER
Edge of Town
Residential Zone
Total Number of pupils: 387
Survey date: THURSDAY *25/06/15* *Survey Type: MANUAL*

7 GM-04-A-01 PRIMARY SCHOOL GREATER MANCHESTER
ROCH MILLS CRESCENT
ROCHDALE

Edge of Town
Residential Zone
Total Number of pupils: 457
Survey date: TUESDAY *20/10/15* *Survey Type: MANUAL*

8 HC-04-A-05 PRIMARY SCHOOL HAMPSHIRE
HAVANT ROAD
HAYLING ISLAND

Edge of Town
Residential Zone
Total Number of pupils: 550
Survey date: MONDAY *30/11/15* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9 LE-04-A-02 PRIMARY SCHOOL LEICESTERSHIRE
BEAUFORT WAY
LEICESTER
OADBY
Edge of Town
Residential Zone
Total Number of pupils: 380
Survey date: THURSDAY *30/10/14* *Survey Type: MANUAL*

10 NM-04-A-02 PRIMARY SCHOOL WEST NORTHAMPTONSHIRE
BOOTH LANE NORTH
NORTHAMPTON

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 400
Survey date: THURSDAY *24/03/16* *Survey Type: MANUAL*

11 SF-04-A-03 PRIMARY SCHOOL SUFFOLK
ENSTONE ROAD
LOWESTOFT
KIRKLEY
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of pupils: 234
Survey date: WEDNESDAY *10/12/14* *Survey Type: MANUAL*

12 SM-04-A-01 PRIMARY SCHOOL SOMERSET
BRIDGWATER ROAD
NEAR TAUNTON
BATHPOOL
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 407
Survey date: THURSDAY *27/09/18* *Survey Type: MANUAL*

13 TW-04-A-02 PRIMARY SCHOOL TYNE & WEAR
KELLS LANE
GATESHEAD
LOW FELL
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Number of pupils: 416
Survey date: FRIDAY *19/10/18* *Survey Type: MANUAL*

14 WM-04-A-02 PRIMARY SCHOOL WEST MIDLANDS
HAZEL ROAD
BIRMINGHAM
RUBERY
Edge of Town
Residential Zone
Total Number of pupils: 234
Survey date: TUESDAY *10/11/15* *Survey Type: MANUAL*

15 WY-04-A-02 PRIMARY SCHOOL WEST YORKSHIRE
TOWN STREET
LEEDS

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 621
Survey date: MONDAY *19/10/15* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
TOTAL VEHICLES
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	374	0.059	15	374	0.020	15	374	0.079
08:00 - 09:00	15	374	0.324	15	374	0.266	15	374	0.590
09:00 - 10:00	15	374	0.030	15	374	0.047	15	374	0.077
10:00 - 11:00	15	374	0.012	15	374	0.012	15	374	0.024
11:00 - 12:00	15	374	0.021	15	374	0.012	15	374	0.033
12:00 - 13:00	15	374	0.020	15	374	0.027	15	374	0.047
13:00 - 14:00	15	374	0.016	15	374	0.023	15	374	0.039
14:00 - 15:00	15	374	0.077	15	374	0.020	15	374	0.097
15:00 - 16:00	15	374	0.193	15	374	0.262	15	374	0.455
16:00 - 17:00	15	374	0.060	15	374	0.094	15	374	0.154
17:00 - 18:00	15	374	0.018	15	374	0.034	15	374	0.052
18:00 - 19:00	15	374	0.011	15	374	0.014	15	374	0.025
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.841			0.831			1.672

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	208 - 621 (units:)
Survey date date range:	01/01/14 - 23/05/22
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
OGVS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	374	0.000	15	374	0.000	15	374	0.000
08:00 - 09:00	15	374	0.000	15	374	0.000	15	374	0.000
09:00 - 10:00	15	374	0.001	15	374	0.000	15	374	0.001
10:00 - 11:00	15	374	0.000	15	374	0.001	15	374	0.001
11:00 - 12:00	15	374	0.000	15	374	0.000	15	374	0.000
12:00 - 13:00	15	374	0.000	15	374	0.000	15	374	0.000
13:00 - 14:00	15	374	0.000	15	374	0.000	15	374	0.000
14:00 - 15:00	15	374	0.000	15	374	0.000	15	374	0.000
15:00 - 16:00	15	374	0.000	15	374	0.000	15	374	0.000
16:00 - 17:00	15	374	0.000	15	374	0.000	15	374	0.000
17:00 - 18:00	15	374	0.000	15	374	0.000	15	374	0.000
18:00 - 19:00	15	374	0.000	15	374	0.000	15	374	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.001			0.002

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

APPENDIX C: ARCADY Output Data (Site Access Roundabout)

Junctions 9

ARCADY 9 - Roundabout Module

Filename: A34 Site Access (4 arm) Test 6 v02.j9
Path: J:\2022\220583-Redhill Phase 3 Stafford\ProjectDelivery\01-WIP\DesignAndCalculations\JCAs
Report generation date: 16/11/2022 16:54:54

»2040 + PAH + Proposed Development (1M), AM
»2040 + PAH + Proposed Development (1M), PM
»2040 + PAH + Proposed Development (1.7M), AM
»2040 + PAH + Proposed Development (1.7M), PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2040 + PAH + Proposed Development (1M)							
1 - Access (E)	0.9	9.99	0.48	A	0.2	5.10	0.14	A
2 - A34 (S)	6.3	11.80	0.86	B	6.6	12.01	0.86	B
3 - Pets at Home Access	0.3	7.37	0.17	A	0.6	7.92	0.32	A
4 - A34 (N)	6.5	11.58	0.86	B	3.4	6.97	0.76	A
	2040 + PAH + Proposed Development (1.7M)							
1 - Access (E)	1.0	11.03	0.51	B	0.2	5.45	0.14	A
2 - A34 (S)	9.3	16.88	0.90	C	7.8	14.04	0.88	B
3 - Pets at Home Access	0.4	7.98	0.23	A	1.0	9.65	0.45	A
4 - A34 (N)	7.7	13.54	0.88	B	3.8	7.80	0.78	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

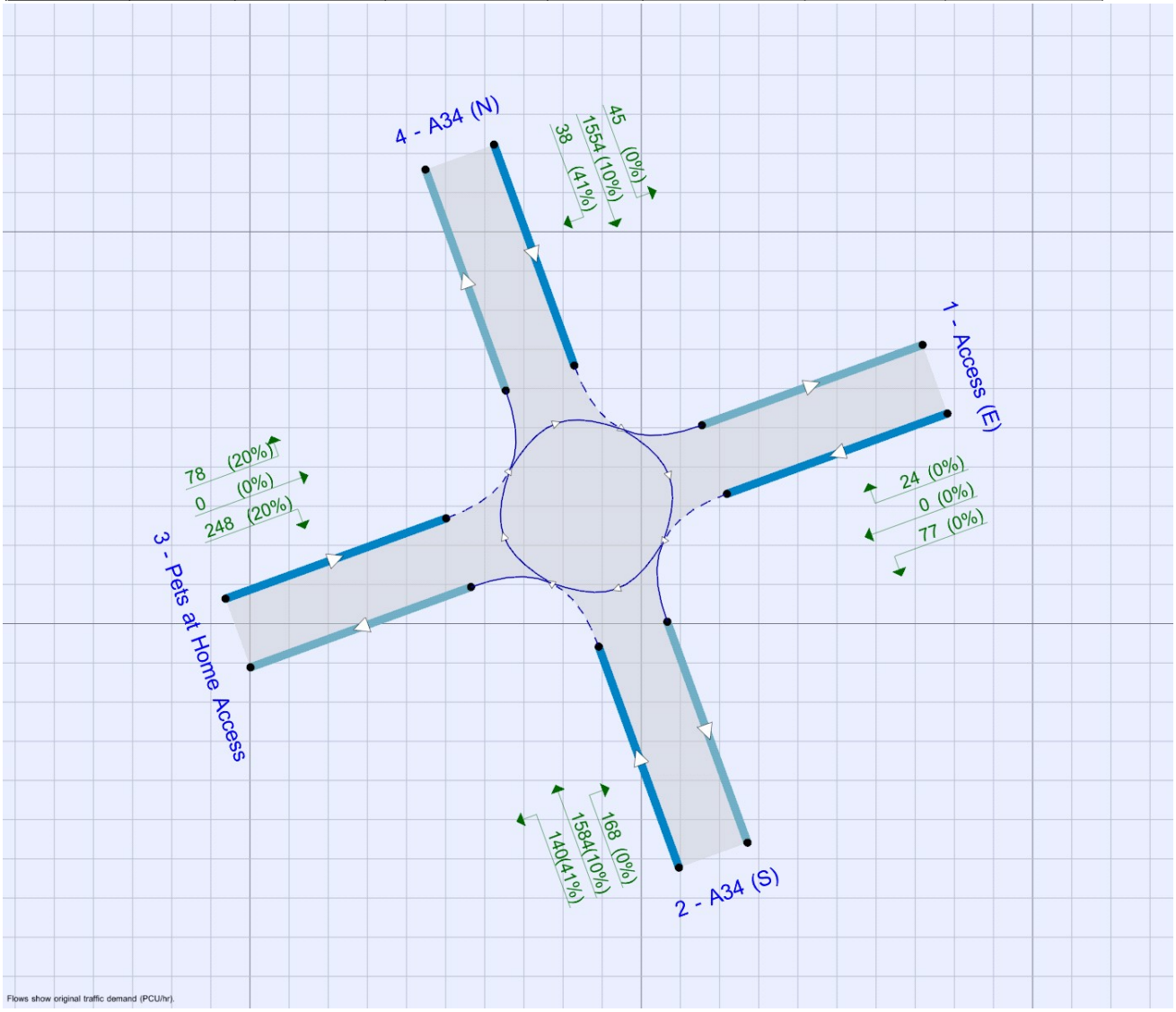
File summary

File Description

Title	
Location	
Site number	
Date	16/10/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	BWB\jordan.farrell
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2040 + PAH + Proposed Development (1M)	AM	ONE HOUR	07:45	09:15	15
D4	2040 + PAH + Proposed Development (1M)	PM	ONE HOUR	16:45	18:15	15
D5	2040 + PAH + Proposed Development (1.7M)	AM	ONE HOUR	07:45	09:15	15
D6	2040 + PAH + Proposed Development (1.7M)	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2040 + PAH + Proposed Development (1M), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Proposed Access	Standard Roundabout		1, 2, 3, 4	11.43	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Access (E)	
2	A34 (S)	
3	Pets at Home Access	
4	A34 (N)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Access (E)	5.00	7.10	8.0	20.0	70.0	35.0	
2 - A34 (S)	7.30	9.00	4.0	23.0	70.0	35.0	
3 - Pets at Home Access	5.00	7.10	8.0	20.0	70.0	36.0	
4 - A34 (N)	7.30	9.00	13.0	30.0	70.0	31.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Access (E)	0.522	1829
2 - A34 (S)	0.614	2403
3 - Pets at Home Access	0.520	1822
4 - A34 (N)	0.651	2608

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2040 + PAH + Proposed Development (1M)	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Access (E)		✓	304	100.000
2 - A34 (S)		✓	1807	100.000
3 - Pets at Home Access		✓	132	100.000
4 - A34 (N)		✓	1905	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	243	0	61
	2 - A34 (S)	134	0	217	1456
	3 - Pets at Home Access	0	106	0	26
	4 - A34 (N)	36	1811	58	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	0	0	0
	2 - A34 (S)	0	0	22	10
	3 - Pets at Home Access	0	50	0	50
	4 - A34 (N)	0	10	22	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - Access (E)	229	229
	2 - A34 (S)	1360	1360
	3 - Pets at Home Access	99	99
	4 - A34 (N)	1434	1434
08:00-08:15	1 - Access (E)	273	273
	2 - A34 (S)	1624	1624
	3 - Pets at Home Access	119	119
	4 - A34 (N)	1713	1713
08:15-08:30	1 - Access (E)	335	335
	2 - A34 (S)	1990	1990
	3 - Pets at Home Access	145	145
	4 - A34 (N)	2097	2097
08:30-08:45	1 - Access (E)	335	335
	2 - A34 (S)	1990	1990
	3 - Pets at Home Access	145	145
	4 - A34 (N)	2097	2097
08:45-09:00	1 - Access (E)	273	273
	2 - A34 (S)	1624	1624
	3 - Pets at Home Access	119	119
	4 - A34 (N)	1713	1713
09:00-09:15	1 - Access (E)	229	229
	2 - A34 (S)	1360	1360
	3 - Pets at Home Access	99	99
	4 - A34 (N)	1434	1434

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Access (E)	0.48	9.99	0.9	A
2 - A34 (S)	0.86	11.80	6.3	B
3 - Pets at Home Access	0.17	7.37	0.3	A
4 - A34 (N)	0.86	11.58	6.5	B

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	229	1481	1056	0.217	228	0.3	4.341	A
2 - A34 (S)	1360	89	2349	0.579	1354	1.5	3.976	A
3 - Pets at Home Access	99	1237	1179	0.084	99	0.1	4.998	A
4 - A34 (N)	1434	180	2491	0.576	1428	1.5	3.709	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	273	1772	904	0.302	273	0.4	5.692	A
2 - A34 (S)	1624	107	2338	0.695	1621	2.5	5.514	A
3 - Pets at Home Access	119	1481	1052	0.113	118	0.2	5.780	A
4 - A34 (N)	1713	215	2468	0.694	1709	2.5	5.195	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	335	2159	702	0.477	333	0.9	9.698	A
2 - A34 (S)	1990	130	2324	0.856	1975	6.1	10.982	B
3 - Pets at Home Access	145	1805	884	0.164	145	0.3	7.304	A
4 - A34 (N)	2097	263	2437	0.861	2082	6.3	10.739	B

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	335	2174	695	0.482	335	0.9	9.988	A
2 - A34 (S)	1990	131	2323	0.856	1989	6.3	11.799	B
3 - Pets at Home Access	145	1817	878	0.166	145	0.3	7.373	A
4 - A34 (N)	2097	264	2436	0.861	2096	6.5	11.583	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	273	1791	894	0.306	275	0.4	5.836	A
2 - A34 (S)	1624	108	2337	0.695	1639	2.6	5.816	A
3 - Pets at Home Access	119	1498	1044	0.114	119	0.2	5.845	A
4 - A34 (N)	1713	217	2467	0.694	1728	2.5	5.484	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	229	1491	1051	0.218	230	0.3	4.388	A
2 - A34 (S)	1360	90	2348	0.579	1365	1.5	4.060	A
3 - Pets at Home Access	99	1247	1174	0.085	100	0.1	5.026	A
4 - A34 (N)	1434	181	2490	0.576	1438	1.5	3.786	A

2040 + PAH + Proposed Development (1M), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Proposed Access	Standard Roundabout		1, 2, 3, 4	9.42	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2040 + PAH + Proposed Development (1M)	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Access (E)		✓	101	100.000
2 - A34 (S)		✓	1854	100.000
3 - Pets at Home Access		✓	237	100.000
4 - A34 (N)		✓	1627	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	77	0	24
	2 - A34 (S)	168	0	102	1584
	3 - Pets at Home Access	0	179	0	58
	4 - A34 (N)	45	1554	28	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	0	0	0
	2 - A34 (S)	0	0	41	10
	3 - Pets at Home Access	0	20	0	20
	4 - A34 (N)	0	10	41	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - Access (E)	76	76
	2 - A34 (S)	1396	1396
	3 - Pets at Home Access	178	178
	4 - A34 (N)	1225	1225
17:00-17:15	1 - Access (E)	91	91
	2 - A34 (S)	1667	1667
	3 - Pets at Home Access	213	213
	4 - A34 (N)	1463	1463
17:15-17:30	1 - Access (E)	111	111
	2 - A34 (S)	2041	2041
	3 - Pets at Home Access	261	261
	4 - A34 (N)	1791	1791
17:30-17:45	1 - Access (E)	111	111
	2 - A34 (S)	2041	2041
	3 - Pets at Home Access	261	261
	4 - A34 (N)	1791	1791
17:45-18:00	1 - Access (E)	91	91
	2 - A34 (S)	1667	1667
	3 - Pets at Home Access	213	213
	4 - A34 (N)	1463	1463
18:00-18:15	1 - Access (E)	76	76
	2 - A34 (S)	1396	1396
	3 - Pets at Home Access	178	178
	4 - A34 (N)	1225	1225

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Access (E)	0.14	5.10	0.2	A
2 - A34 (S)	0.86	12.01	6.6	B
3 - Pets at Home Access	0.32	7.92	0.6	A
4 - A34 (N)	0.76	6.97	3.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	76	1321	1140	0.067	76	0.1	3.384	A
2 - A34 (S)	1396	39	2380	0.587	1390	1.5	3.988	A
3 - Pets at Home Access	178	1331	1130	0.158	178	0.2	4.531	A
4 - A34 (N)	1225	260	2439	0.502	1220	1.1	3.242	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	91	1581	1004	0.090	91	0.1	3.941	A
2 - A34 (S)	1667	47	2375	0.702	1663	2.5	5.547	A
3 - Pets at Home Access	213	1593	994	0.214	213	0.3	5.526	A
4 - A34 (N)	1463	311	2405	0.608	1460	1.7	4.185	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	111	1932	821	0.135	111	0.2	5.070	A
2 - A34 (S)	2041	57	2368	0.862	2026	6.3	11.138	B
3 - Pets at Home Access	261	1941	813	0.321	260	0.6	7.797	A
4 - A34 (N)	1791	380	2361	0.759	1785	3.4	6.805	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	111	1939	817	0.136	111	0.2	5.098	A
2 - A34 (S)	2041	57	2368	0.862	2040	6.6	12.005	B
3 - Pets at Home Access	261	1954	806	0.324	261	0.6	7.921	A
4 - A34 (N)	1791	382	2359	0.759	1791	3.4	6.970	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	91	1590	999	0.091	91	0.1	3.967	A
2 - A34 (S)	1667	47	2375	0.702	1682	2.7	5.862	A
3 - Pets at Home Access	213	1611	984	0.216	214	0.3	5.615	A
4 - A34 (N)	1463	314	2403	0.609	1469	1.7	4.273	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	76	1328	1136	0.067	76	0.1	3.397	A
2 - A34 (S)	1396	39	2379	0.587	1400	1.6	4.072	A
3 - Pets at Home Access	178	1341	1125	0.159	179	0.2	4.569	A
4 - A34 (N)	1225	262	2437	0.503	1227	1.1	3.281	A

2040 + PAH + Proposed Development (1.7M), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Proposed Access	Standard Roundabout		1, 2, 3, 4	14.60	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2040 + PAH + Proposed Development (1.7M)	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Access (E)		✓	304	100.000
2 - A34 (S)		✓	1890	100.000
3 - Pets at Home Access		✓	183	100.000
4 - A34 (N)		✓	1926	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	243	0	61
	2 - A34 (S)	134	0	300	1456
	3 - Pets at Home Access	0	145	0	38
	4 - A34 (N)	36	1811	79	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	0	0	0
	2 - A34 (S)	0	0	22	10
	3 - Pets at Home Access	0	50	0	50
	4 - A34 (N)	0	10	22	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - Access (E)	229	229
	2 - A34 (S)	1423	1423
	3 - Pets at Home Access	138	138
	4 - A34 (N)	1450	1450
08:00-08:15	1 - Access (E)	273	273
	2 - A34 (S)	1699	1699
	3 - Pets at Home Access	165	165
	4 - A34 (N)	1731	1731
08:15-08:30	1 - Access (E)	335	335
	2 - A34 (S)	2081	2081
	3 - Pets at Home Access	201	201
	4 - A34 (N)	2121	2121
08:30-08:45	1 - Access (E)	335	335
	2 - A34 (S)	2081	2081
	3 - Pets at Home Access	201	201
	4 - A34 (N)	2121	2121
08:45-09:00	1 - Access (E)	273	273
	2 - A34 (S)	1699	1699
	3 - Pets at Home Access	165	165
	4 - A34 (N)	1731	1731
09:00-09:15	1 - Access (E)	229	229
	2 - A34 (S)	1423	1423
	3 - Pets at Home Access	138	138
	4 - A34 (N)	1450	1450

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Access (E)	0.51	11.03	1.0	B
2 - A34 (S)	0.90	16.88	9.3	C
3 - Pets at Home Access	0.23	7.98	0.4	A
4 - A34 (N)	0.88	13.54	7.7	B

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	229	1525	1033	0.222	228	0.3	4.465	A
2 - A34 (S)	1423	105	2339	0.608	1416	1.7	4.295	A
3 - Pets at Home Access	138	1237	1179	0.117	137	0.2	5.179	A
4 - A34 (N)	1450	209	2472	0.587	1444	1.5	3.837	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	273	1825	877	0.312	273	0.4	5.955	A
2 - A34 (S)	1699	126	2326	0.730	1694	2.9	6.268	A
3 - Pets at Home Access	165	1480	1053	0.156	164	0.3	6.076	A
4 - A34 (N)	1731	250	2445	0.708	1727	2.6	5.495	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	335	2222	670	0.500	333	1.0	10.619	B
2 - A34 (S)	2081	153	2310	0.901	2058	8.7	14.694	B
3 - Pets at Home Access	201	1798	887	0.227	201	0.4	7.858	A
4 - A34 (N)	2121	305	2409	0.880	2102	7.3	12.230	B

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	335	2239	661	0.507	335	1.0	11.034	B
2 - A34 (S)	2081	154	2309	0.901	2078	9.3	16.884	C
3 - Pets at Home Access	201	1816	878	0.229	201	0.4	7.978	A
4 - A34 (N)	2121	307	2408	0.881	2119	7.7	13.545	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	273	1849	864	0.316	275	0.5	6.139	A
2 - A34 (S)	1699	127	2326	0.731	1724	3.1	6.897	A
3 - Pets at Home Access	165	1505	1040	0.158	165	0.3	6.182	A
4 - A34 (N)	1731	253	2443	0.709	1751	2.7	5.890	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	229	1537	1027	0.223	230	0.3	4.520	A
2 - A34 (S)	1423	106	2339	0.608	1428	1.7	4.414	A
3 - Pets at Home Access	138	1248	1174	0.117	138	0.2	5.218	A
4 - A34 (N)	1450	211	2471	0.587	1455	1.6	3.922	A

2040 + PAH + Proposed Development (1.7M), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Proposed Access	Standard Roundabout		1, 2, 3, 4	10.88	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2040 + PAH + Proposed Development (1.7M)	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Access (E)		✓	101	100.000
2 - A34 (S)		✓	1892	100.000
3 - Pets at Home Access		✓	326	100.000
4 - A34 (N)		✓	1637	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	77	0	24
	2 - A34 (S)	168	0	140	1584
	3 - Pets at Home Access	0	248	0	78
	4 - A34 (N)	45	1554	38	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Access (E)	2 - A34 (S)	3 - Pets at Home Access	4 - A34 (N)
From	1 - Access (E)	0	0	0	0
	2 - A34 (S)	0	0	41	10
	3 - Pets at Home Access	0	20	0	20
	4 - A34 (N)	0	10	41	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - Access (E)	76	76
	2 - A34 (S)	1424	1424
	3 - Pets at Home Access	245	245
	4 - A34 (N)	1232	1232
17:00-17:15	1 - Access (E)	91	91
	2 - A34 (S)	1701	1701
	3 - Pets at Home Access	293	293
	4 - A34 (N)	1472	1472
17:15-17:30	1 - Access (E)	111	111
	2 - A34 (S)	2083	2083
	3 - Pets at Home Access	359	359
	4 - A34 (N)	1802	1802
17:30-17:45	1 - Access (E)	111	111
	2 - A34 (S)	2083	2083
	3 - Pets at Home Access	359	359
	4 - A34 (N)	1802	1802
17:45-18:00	1 - Access (E)	91	91
	2 - A34 (S)	1701	1701
	3 - Pets at Home Access	293	293
	4 - A34 (N)	1472	1472
18:00-18:15	1 - Access (E)	76	76
	2 - A34 (S)	1424	1424
	3 - Pets at Home Access	245	245
	4 - A34 (N)	1232	1232

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Access (E)	0.14	5.45	0.2	A
2 - A34 (S)	0.88	14.04	7.8	B
3 - Pets at Home Access	0.45	9.65	1.0	A
4 - A34 (N)	0.78	7.80	3.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	76	1380	1109	0.069	76	0.1	3.485	A
2 - A34 (S)	1424	47	2375	0.600	1418	1.6	4.140	A
3 - Pets at Home Access	245	1331	1130	0.217	244	0.3	4.868	A
4 - A34 (N)	1232	312	2405	0.512	1228	1.1	3.360	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	91	1651	967	0.094	91	0.1	4.107	A
2 - A34 (S)	1701	56	2369	0.718	1696	2.8	5.888	A
3 - Pets at Home Access	293	1592	994	0.295	292	0.5	6.150	A
4 - A34 (N)	1472	373	2365	0.622	1469	1.8	4.418	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	111	2017	776	0.143	111	0.2	5.409	A
2 - A34 (S)	2083	68	2362	0.882	2065	7.4	12.692	B
3 - Pets at Home Access	359	1938	815	0.441	357	0.9	9.409	A
4 - A34 (N)	1802	455	2312	0.780	1794	3.8	7.562	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	111	2026	772	0.144	111	0.2	5.448	A
2 - A34 (S)	2083	68	2362	0.882	2082	7.8	14.044	B
3 - Pets at Home Access	359	1954	806	0.445	359	1.0	9.648	A
4 - A34 (N)	1802	458	2310	0.780	1802	3.8	7.804	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	91	1663	961	0.094	91	0.1	4.139	A
2 - A34 (S)	1701	56	2369	0.718	1721	2.9	6.328	A
3 - Pets at Home Access	293	1615	983	0.298	295	0.5	6.297	A
4 - A34 (N)	1472	377	2362	0.623	1480	1.8	4.537	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Access (E)	76	1388	1104	0.069	76	0.1	3.503	A
2 - A34 (S)	1424	47	2375	0.600	1429	1.7	4.241	A
3 - Pets at Home Access	245	1342	1125	0.218	246	0.3	4.922	A
4 - A34 (N)	1232	314	2403	0.513	1235	1.2	3.407	A

APPENDIX D: PICADY Output Data (Left in, Left out Access)

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Resi Site Access (Priority Option) - advanced mode.j9
Path: J:\2022\220583-Redhill Phase 3 Stafford\ProjectDelivery\01-WIP\DesignAndCalculations\JCAs
Report generation date: 24/11/2022 16:45:17

»2040 + PAH + Dev (1M), AM
»2040 + PAH + Dev (1M), PM
»2040 + PAH + Dev (1.7M), AM
»2040 + PAH + Dev (1.7M), PM

Summary of junction performance

	AM							PM						
	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2040 + PAH + Dev (1M)													
Stream B-AC	0.3	4.65	0.26	A	0.45	A	132 % [Stream B-AC]	0.1	3.59	0.08	A	0.13	A	633 % [Stream B-AC]
Stream C-AB	0.0	0.00	0.00	A				0.0	0.00	0.00	A			
	2040 + PAH + Dev (1.7M)													
Stream B-AC	0.3	4.71	0.26	A	0.45	A	132 % [Stream B-AC]	0.1	3.65	0.08	A	0.13	A	633 % [Stream B-AC]
Stream C-AB	0.0	0.00	0.00	A				0.0	0.00	0.00	A			

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	16/11/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	BWB\matt.corner
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	mph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2040 + PAH + Dev (1M)	AM	ONE HOUR	08:00	09:30	15	✓
D2	2040 + PAH + Dev (1M)	PM	ONE HOUR	17:00	18:30	15	✓
D3	2040 + PAH + Dev (1.7M)	AM	ONE HOUR	08:00	09:30	15	✓
D4	2040 + PAH + Dev (1.7M)	PM	ONE HOUR	17:00	18:30	15	✓
D5	2040 + PAH + Dev (1M) + Stone Phase 1	AM	ONE HOUR	08:00	09:30	15	
D6	2040 + PAH + Dev (1M) + Stone Phase 1	PM	ONE HOUR	17:00	18:30	15	
D7	2040 + PAH + Dev (1.7M) + Stone Phase 1	AM	ONE HOUR	08:00	09:30	15	
D8	2040 + PAH + Dev (1.7M) + Stone Phase 1	PM	ONE HOUR	17:00	18:30	15	
D9	2040 + PAH + Dev (1M) + Stone Total	AM	ONE HOUR	08:00	09:30	15	
D10	2040 + PAH + Dev (1M) + Stone Total	PM	ONE HOUR	17:00	18:30	15	
D11	2040 + PAH + Dev (1.7M) + Stone Total	AM	ONE HOUR	08:00	09:30	15	
D12	2040 + PAH + Dev (1.7M) + Stone Total	PM	ONE HOUR	17:00	18:30	15	

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2040 + PAH + Dev (1M), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Site Access	T-Junction	One-way from A to C		0.45	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	132	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	A34 (N)		Major
B	Site Access		Minor
C	A34 (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - A34 (S)	7.30				✓	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Site Access	One lane	5.00	70	70

Slope / Intercept / Capacity

Stream Intercept Adjustments

Stream intercept adjustment	Use adjustment	Reason	Direct intercept adjustment (PCU/hr)
B-AC	✓		715

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	642	0.073	0.185	0.116	0.264
1	B-C	802	0.077	0.194	-	-
1	C-B	574	0.139	0.139	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2040 + PAH + Dev (1M)	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A34 (N)		ONE HOUR	✓	1953	100.000
B - Site Access		ONE HOUR	✓	243	100.000
C - A34 (S)		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	36	1917
	B - Site Access	0	0	243
	C - A34 (S)	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	0	15
	B - Site Access	0	0	0
	C - A34 (S)	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.26	4.65	0.3	A	223	334
C-AB	0.00	0.00	0.0	A	0	0
C-A					0	0
A-B					33	50
A-C					1759	2639

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	183	46	1192	0.153	182	0.0	0.2	3.564	A
C-AB	0	0	339	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	27	7			27				
A-C	1443	361			1443				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	218	55	1129	0.194	218	0.2	0.2	3.951	A
C-AB	0	0	294	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	32	8			32				
A-C	1723	431			1723				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	268	67	1042	0.257	267	0.2	0.3	4.645	A
C-AB	0	0	231	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	2111	528			2111				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	268	67	1042	0.257	268	0.3	0.3	4.649	A
C-AB	0	0	231	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	2111	528			2111				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	218	55	1129	0.194	219	0.3	0.2	3.957	A
C-AB	0	0	294	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	32	8			32				
A-C	1723	431			1723				

09:15 - 09:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	183	46	1192	0.153	183	0.2	0.2	3.571	A
C-AB	0	0	339	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	27	7			27				
A-C	1443	361			1443				

2040 + PAH + Dev (1M), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Site Access	T-Junction	One-way from A to C		0.13	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	633	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2040 + PAH + Dev (1M)	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A34 (N)		ONE HOUR	✓	1778	100.000
B - Site Access		ONE HOUR	✓	77	100.000
C - A34 (S)		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	45	1733
	B - Site Access	0	0	77
	C - A34 (S)	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	0	15
	B - Site Access	0	0	0
	C - A34 (S)	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.08	3.59	0.1	A	71	106
C-AB	0.00	0.00	0.0	A	0	0
C-A					0	0
A-B					41	62
A-C					1590	2385

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	14	1222	0.047	58	0.0	0.0	3.090	A
C-AB	0	0	360	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	34	8			34				
A-C	1305	326			1305				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	69	17	1165	0.059	69	0.0	0.1	3.283	A
C-AB	0	0	319	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	1558	389			1558				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	1086	0.078	85	0.1	0.1	3.593	A
C-AB	0	0	262	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	50	12			50				
A-C	1908	477			1908				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	1086	0.078	85	0.1	0.1	3.593	A
C-AB	0	0	262	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	50	12			50				
A-C	1908	477			1908				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	69	17	1165	0.059	69	0.1	0.1	3.284	A
C-AB	0	0	319	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	1558	389			1558				

18:15 - 18:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	14	1222	0.047	58	0.1	0.0	3.091	A
C-AB	0	0	360	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	34	8			34				
A-C	1305	326			1305				

2040 + PAH + Dev (1.7M), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Site Access	T-Junction	One-way from A to C		0.45	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	132	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2040 + PAH + Dev (1.7M)	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A34 (N)		ONE HOUR	✓	1992	100.000
B - Site Access		ONE HOUR	✓	243	100.000
C - A34 (S)		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	36	1956
	B - Site Access	0	0	243
	C - A34 (S)	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	0	15
	B - Site Access	0	0	0
	C - A34 (S)	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.26	4.71	0.3	A	223	334
C-AB	0.00	0.00	0.0	A	0	0
C-A					0	0
A-B					33	50
A-C					1795	2692

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	183	46	1185	0.154	182	0.0	0.2	3.587	A
C-AB	0	0	334	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	27	7			27				
A-C	1473	368			1473				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	218	55	1121	0.195	218	0.2	0.2	3.986	A
C-AB	0	0	288	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	32	8			32				
A-C	1758	440			1758				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	268	67	1032	0.259	267	0.2	0.3	4.703	A
C-AB	0	0	224	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	2154	538			2154				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	268	67	1032	0.259	268	0.3	0.3	4.707	A
C-AB	0	0	224	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	2154	538			2154				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	218	55	1121	0.195	219	0.3	0.2	3.993	A
C-AB	0	0	288	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	32	8			32				
A-C	1758	440			1758				

09:15 - 09:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	183	46	1185	0.154	183	0.2	0.2	3.594	A
C-AB	0	0	334	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	27	7			27				
A-C	1473	368			1473				

2040 + PAH + Dev (1.7M), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Site Access	T-Junction	One-way from A to C		0.13	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	633	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2040 + PAH + Dev (1.7M)	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - A34 (N)		ONE HOUR	✓	1847	100.000
B - Site Access		ONE HOUR	✓	77	100.000
C - A34 (S)		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	45	1802
	B - Site Access	0	0	77
	C - A34 (S)	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - A34 (N)	B - Site Access	C - A34 (S)
From	A - A34 (N)	0	0	15
	B - Site Access	0	0	0
	C - A34 (S)	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.08	3.65	0.1	A	71	106
C-AB	0.00	0.00	0.0	A	0	0
C-A					0	0
A-B					41	62
A-C					1654	2480

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	14	1211	0.048	58	0.0	0.1	3.121	A
C-AB	0	0	352	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	34	8			34				
A-C	1357	339			1357				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	69	17	1151	0.060	69	0.1	0.1	3.325	A
C-AB	0	0	309	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	1620	405			1620				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	1069	0.079	85	0.1	0.1	3.655	A
C-AB	0	0	250	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	50	12			50				
A-C	1984	496			1984				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	85	21	1069	0.079	85	0.1	0.1	3.655	A
C-AB	0	0	250	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	50	12			50				
A-C	1984	496			1984				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	69	17	1151	0.060	69	0.1	0.1	3.326	A
C-AB	0	0	309	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	40	10			40				
A-C	1620	405			1620				

18:15 - 18:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	58	14	1211	0.048	58	0.1	0.1	3.122	A
C-AB	0	0	352	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	34	8			34				
A-C	1357	339			1357				

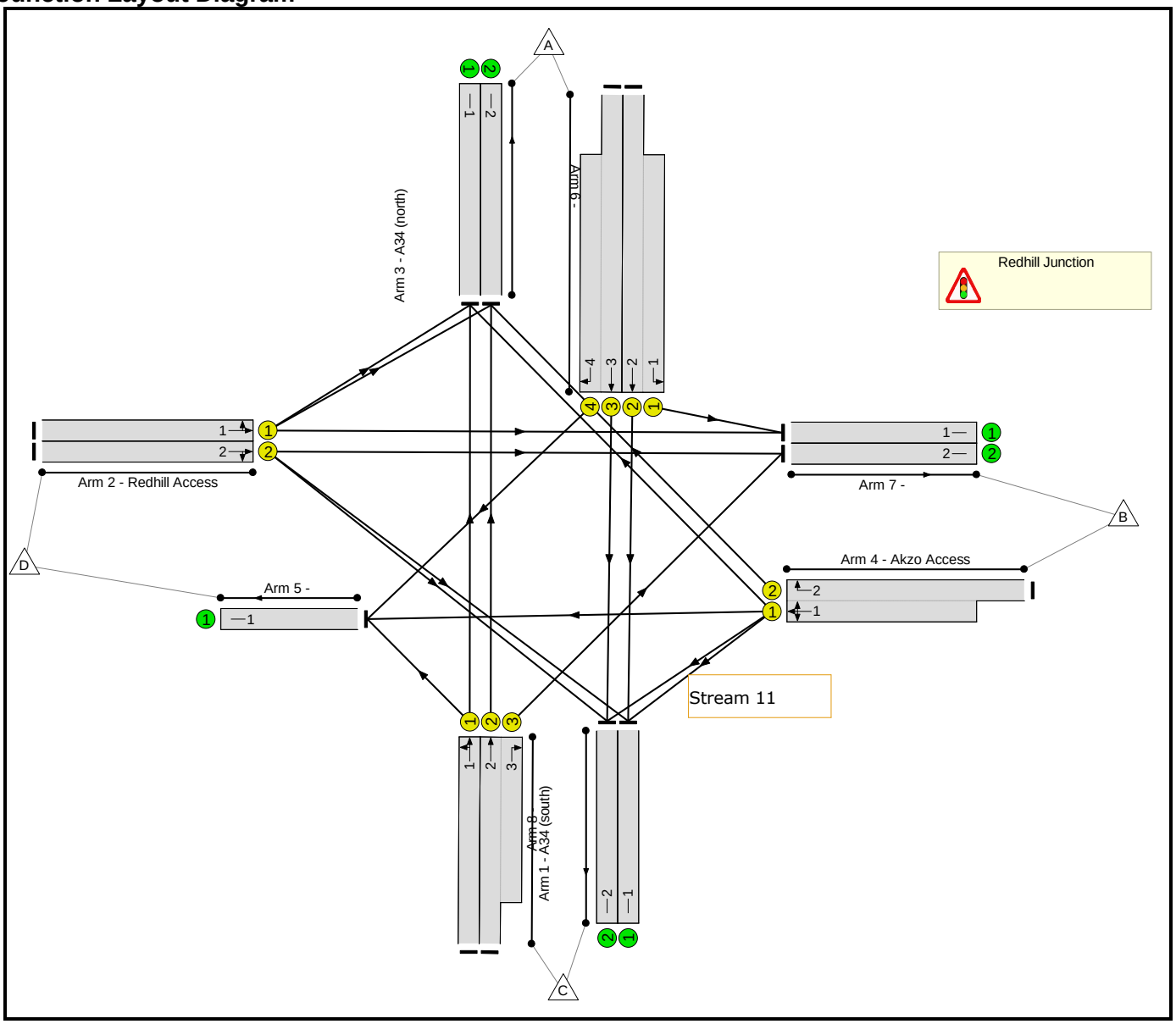
APPENDIX E: LinSig Output Data (A34/William Bagnall Drive Junction)

Full Input Data And Results

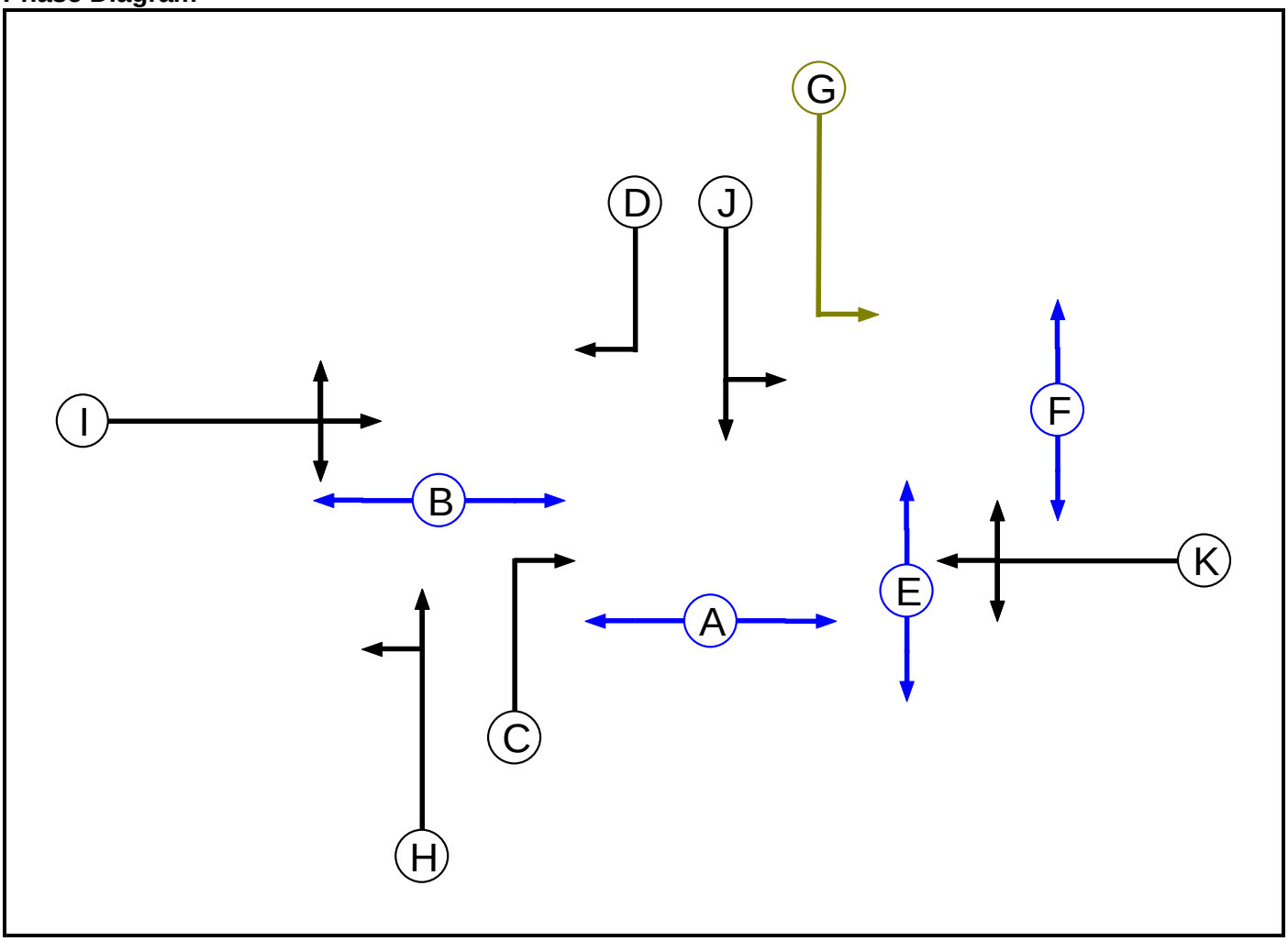
User and Project Details

Project:	**Stafford North Business Park**
Title:	**Redhill Business Park (Committed Layout)**
Location:	Redhill Roundabout Network - Stafford
Additional detail:	
File name:	A34-William Bagnall-Akzo Nobel v4.lsg3x
Author:	[redacted]
Company:	BWB
Address:	Birmingham

Junction Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Pedestrian	1		4	4
B	Pedestrian	1		4	4
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Pedestrian	1		4	4
F	Pedestrian	1		4	4
G	Filter	1	J	4	0
H	Traffic	1		7	7
I	Traffic	1		7	7
J	Traffic	1		7	7
K	Traffic	1		7	7

Full Input Data And Results

Phase Intergreens Matrix

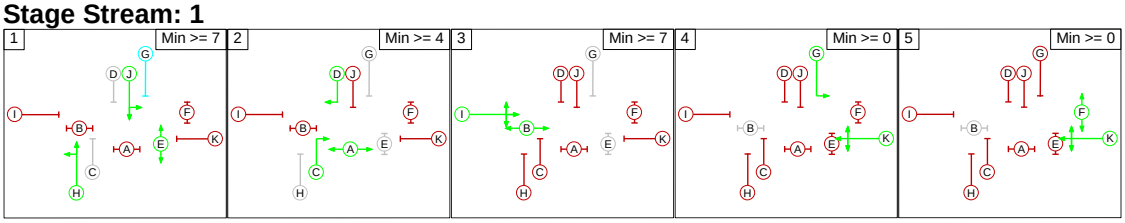
		Starting Phase										
		A	B	C	D	E	F	G	H	I	J	K
Terminating Phase	A		-	-	-	-	-	-	-	8	8	8
	B	-		15	-	-	-	-	15	-	-	-
	C	-	5		-	-	5	-	-	5	-	5
	D	-	-	-		-	-	-	-	5	-	5
	E	-	-	-	-		-	-	-	-	-	9
	F	-	-	9	-	-		9	-	9	9	-
	G	-	-	-	-	-	9		-	-	-	-
	H	-	5	-	-	-	-	-		7	-	5
	I	11	-	5	5	-	5	-	5		7	8
	J	9	-	-	-	-	5	-	-	5		7
	K	7	-	5	5	5	-	-	5	8	5	

Phases in Stage

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

Stages Diagram

Stage Stream: 1



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Changes

Stage Stream: 1

From Stage \ To Stage	1	2	3	4	5
1		9	7	9	9
2	8		8	8	8
3	15	15		8	8
4	5	X	X		X
5	9	9	9	9	

Full Input Data And Results

Give-Way Link Input Data

Junction: Redhill Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: Redhill Junction

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A34 (south))	U	H	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Left	18.00
											Arm 6 Ahead	Inf
1/2 (A34 (south))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	Inf
1/3 (A34 (south))	U	C	2	3	15.1	Geom	-	3.50	0.00	Y	Arm 7 Right	22.00
2/1 (Redhill Access)	U	I	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Left	10.00
											Arm 7 Ahead	Inf
2/2 (Redhill Access)	U	I	2	3	60.0	Geom	-	3.50	0.00	N	Arm 7 Ahead	Inf
											Arm 8 Right	25.00
3/1 (A34 (north))	U	J G	2	3	23.5	Geom	-	3.50	2.00	Y	Arm 7 Left	10.00
3/2 (A34 (north))	U	J	2	3	60.0	Geom	-	3.50	2.00	N	Arm 8 Ahead	Inf
3/3 (A34 (north))	U	J	2	3	60.0	Geom	-	3.50	2.00	N	Arm 8 Ahead	Inf
3/4 (A34 (north))	U	D	2	3	18.1	Geom	-	3.50	2.00	Y	Arm 5 Right	20.50
4/1 (Akzo Access)	U	K	2	3	35.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	24.00
											Arm 8 Left	10.00
4/2 (Akzo Access)	U	K	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Right	24.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-

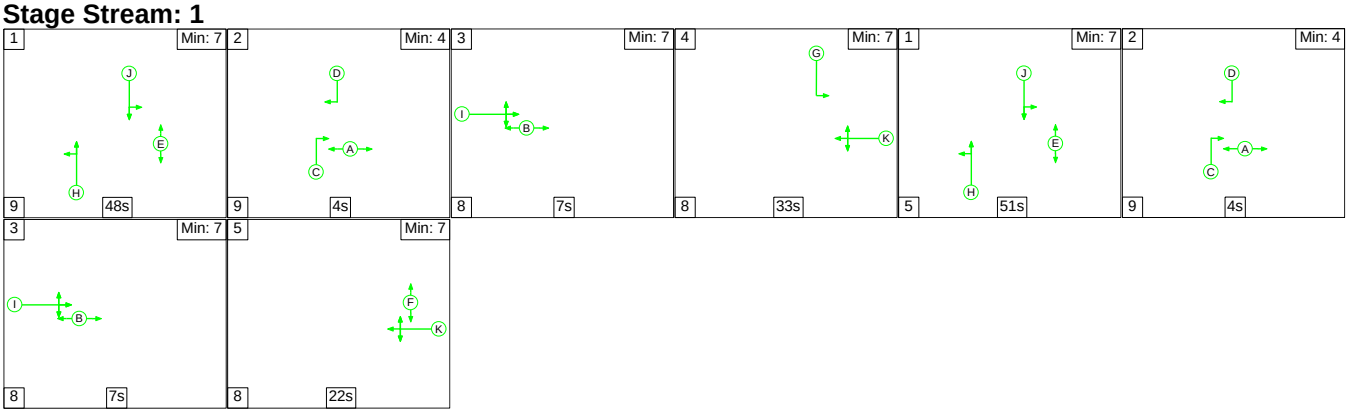
Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2033 + PAH + Development (AM)'	08:00	09:00	01:00	
2: '2033 + PAH + Development (PM)'	08:00	09:00	01:00	
3: '2040 Base (AM)'	08:00	09:00	01:00	
4: '2040 Base (PM)'	17:00	18:00	01:00	
5: '2040 Base + PAH (AM)'	08:00	09:00	01:00	
6: '2040 Base + PAH (PM)'	17:00	18:00	01:00	
7: '2040 + PAH + Development (1m) AM'	08:00	09:00	01:00	
8: '2040 + PAH + Development (1m) PM'	17:00	18:00	01:00	
9: '2040 + PAH + Development (1.7m) AM'	08:00	09:00	01:00	
10: '2040 + PAH + Development (1.7m) PM'	17:00	18:00	01:00	
11: '2040 + PAH + Development (1m) + Stone Phase 1 AM'	08:00	09:00	01:00	
12: '2040 + PAH + Development (1m) + Stone Phase 1 PM'	17:00	18:00	01:00	
13: '2040 + PAH + Development (1.7m) + Stone Phase 1 AM'	08:00	09:00	01:00	
14: '2040 + PAH + Development (1.7m) + Stone Phase 1 PM'	17:00	18:00	01:00	
15: '2040 + PAH + Development (1m) + Stone Total AM'	08:00	09:00	01:00	
16: '2040 + PAH + Development (1m) + Stone Total PM'	17:00	18:00	01:00	
17: '2040 + PAH + Development (1.7m) + Stone Total AM'	08:00	09:00	01:00	
18: '2040 + PAH + Development (1.7m) + Stone Total PM'	17:00	18:00	01:00	
19: '2040 + PAH + Development (1m) AM_A513 Light Vehs through Resi'	08:00	09:00	01:00	
20: '2040 + PAH + Development (1m) PM_A513 Light Vehs through Resi'	17:00	18:00	01:00	
21: '2040 + PAH + Development (1.7m) AM_A513 Light Vehs through Resi'	08:00	09:00	01:00	
22: '2040 + PAH + Development (1.7m) PM_A513 Light Vehs through Resi'	17:00	18:00	01:00	

Scenario 1: '2024 Base AM' (FG3: '2040 Base (AM)', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

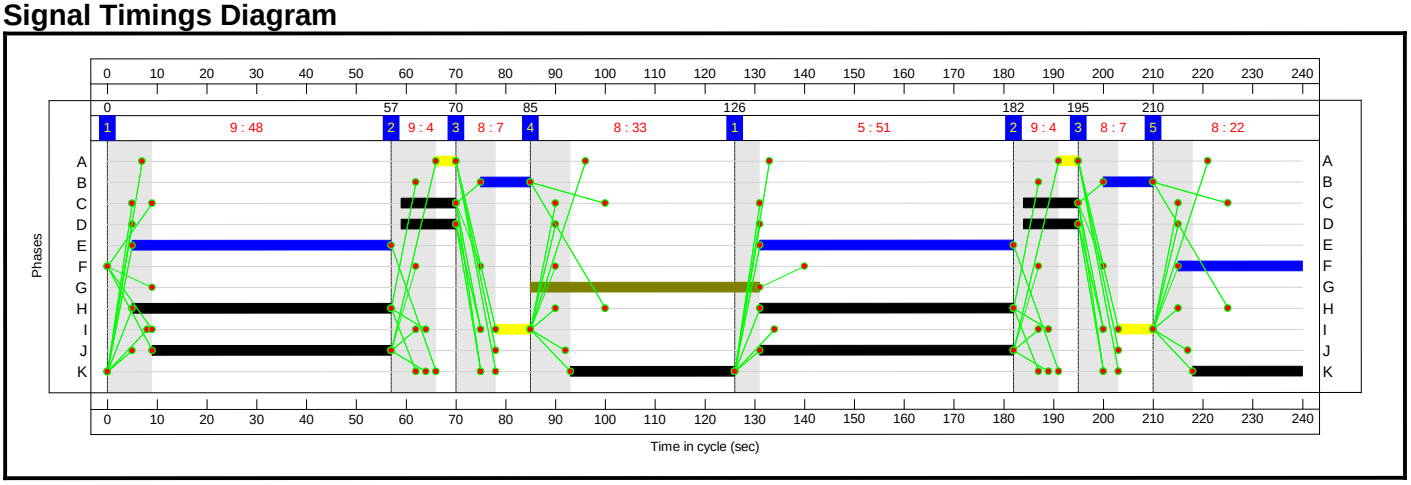


Stage Timings

Stage Stream: 1

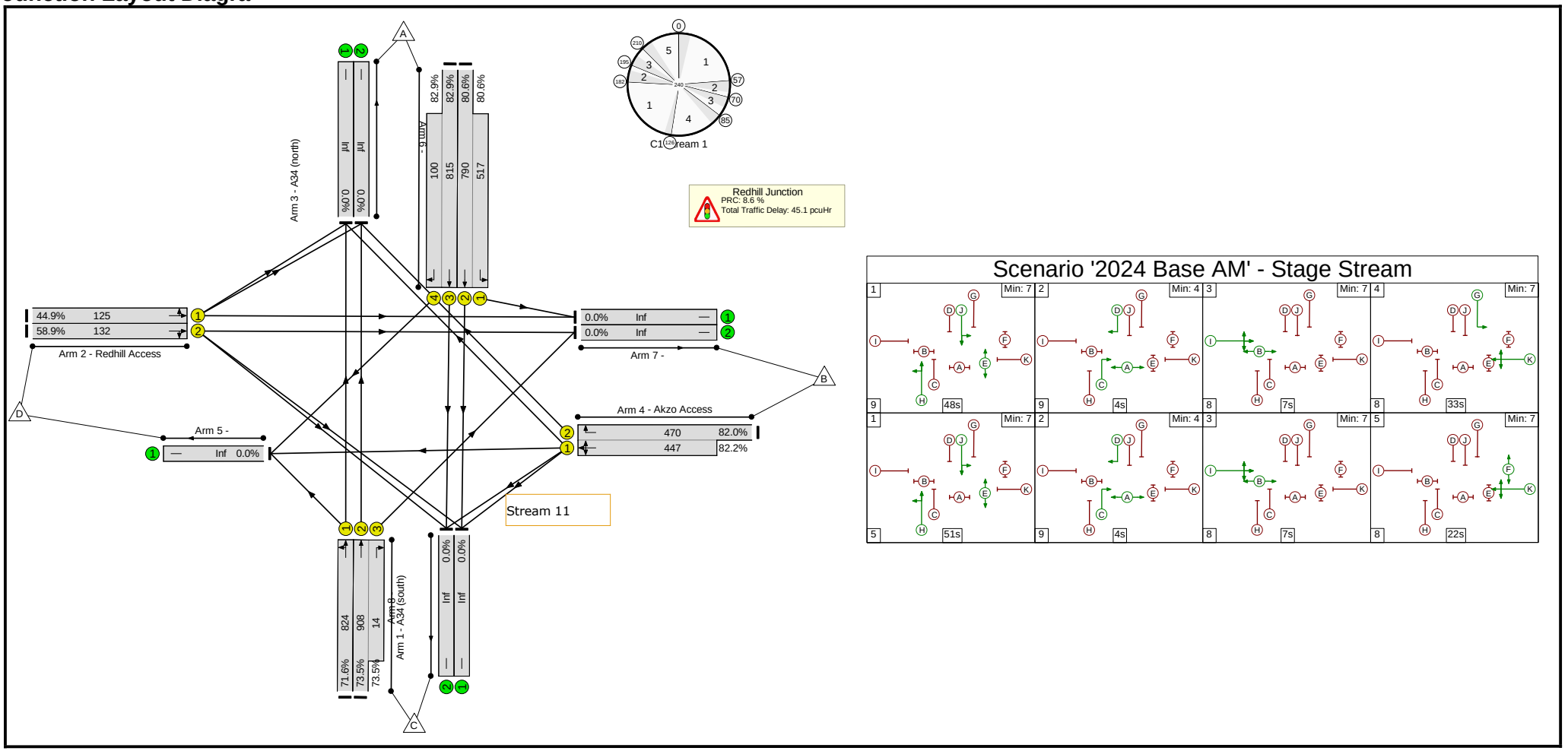
Stage	1	2	3	4	1	2	3	5
Duration	48	4	7	33	51	4	7	22
Change Point	0	57	70	85	126	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.9%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.9%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	103	-	590	1884	824	71.6%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	103:22	-	678	2105:1840	908+14	73.5 : 73.5%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	99:145	46	1054	2021:1636	790+517	80.6 : 80.6%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	99:22	-	758	2021:1753	815+100	82.9 : 82.9%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	55	-	754	1981:1884	470+447	82.0 : 82.2%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1064	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	708	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	747	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**34.7**	**10.4**	**0.0**	**45.1**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**34.7**	**10.4**	**0.0**	**45.1**	**-**	**-**	**-**	**-**
1/1	590	590	-	-	-	4.6	1.2	-	5.8	35.4	17.4	1.2	18.6
1/2+1/3	678	678	-	-	-	5.3	1.4	-	6.7	35.7	19.9	1.4	21.3
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.9	1.9	0.4	2.3
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.8	2.6	0.7	3.3
3/2+3/1	1054	1054	-	-	-	6.9	2.0	-	8.9	30.4	18.8	2.0	20.8
3/3+3/4	758	758	-	-	-	6.9	2.3	-	9.2	43.7	21.0	2.3	23.4
4/2+4/1	754	754	-	-	-	9.1	2.2	-	11.3	54.0	12.2	2.2	14.5
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1064	1064	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	708	708	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

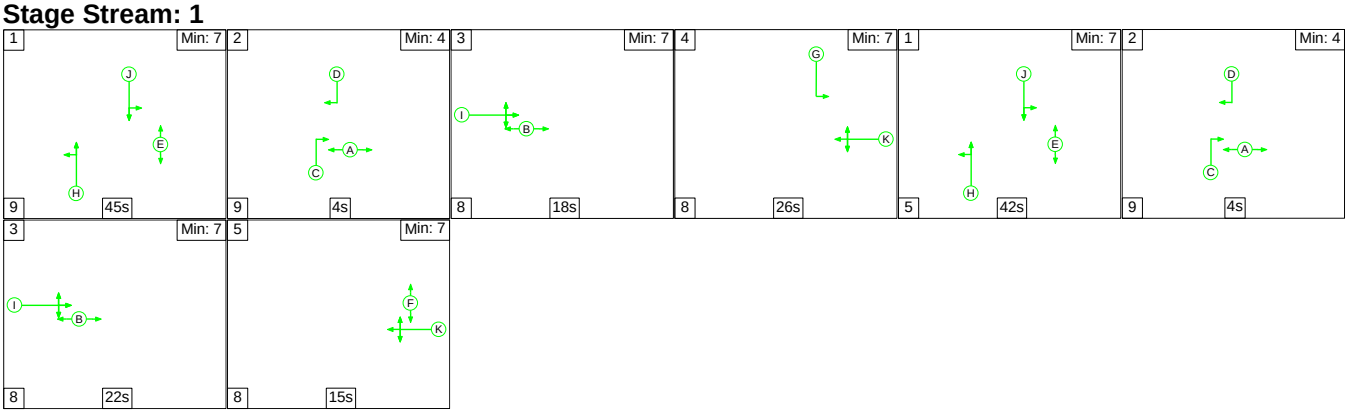
C1 Stream: 1 PRC for Signalled Lanes (%): 8.6 Total Delay for Signalled Lanes (pcuHr): 45.08 Cycle Time (s): 240
PRC Over All Lanes (%): 8.6 Total Delay Over All Lanes(pcuHr): 45.08

Full Input Data And Results

Scenario 2: '2024 Base PM' (FG4: '2040 Base (PM)', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

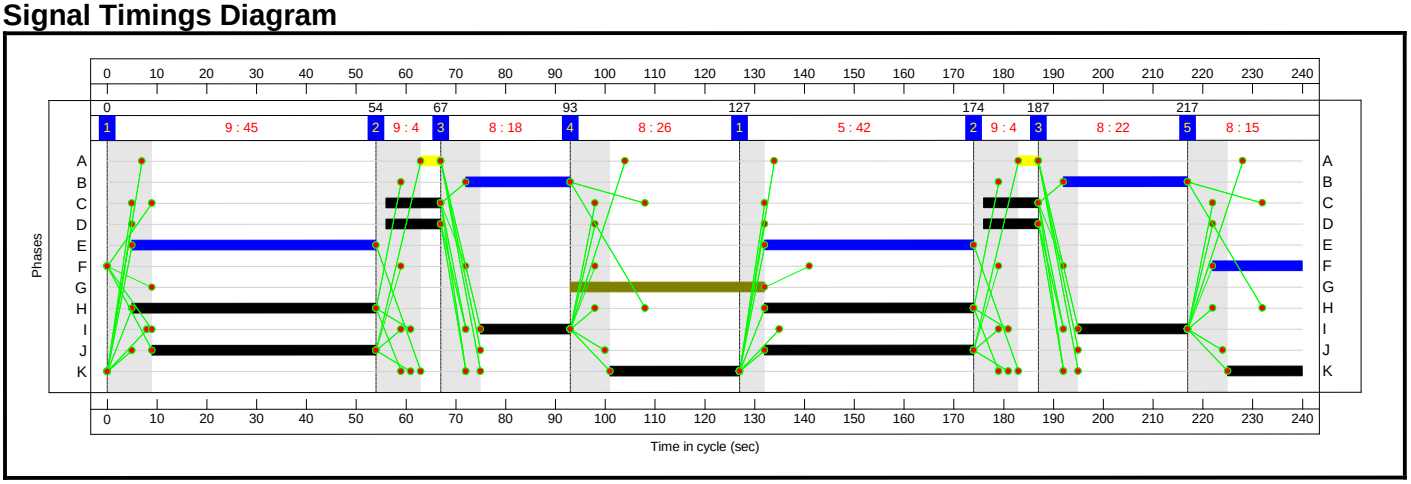


Stage Timings

Stage Stream: 1

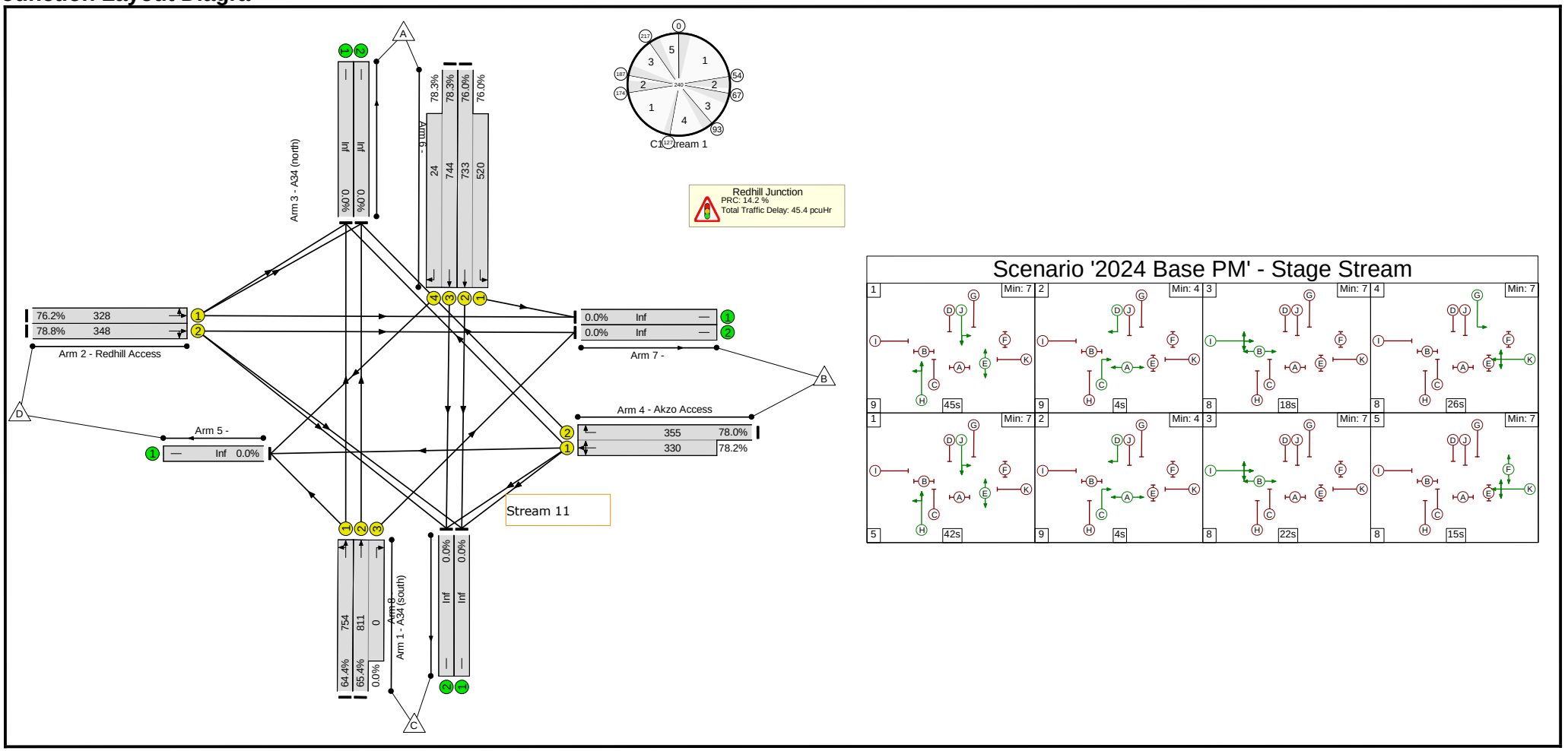
Stage	1	2	3	4	1	2	3	5
Duration	45	4	18	26	42	4	22	15
Change Point	0	54	67	93	127	174	187	217

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.8%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.8%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	91	-	485	1945	754	64.4%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	91:22	-	530	2105:1965	811+0	65.4 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	40	-	250	1875	328	76.2%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	40	-	274	1986	348	78.8%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	87:126	39	952	2021:1636	733+520	76.0 : 76.0%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	87:22	-	602	2021:1753	744+24	78.3 : 78.3%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	41	-	535	1981:1842	355+330	78.0 : 78.2%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	847	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	716	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	742	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**35.2**	**10.2**	**0.0**	**45.4**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**35.2**	**10.2**	**0.0**	**45.4**	**-**	**-**	**-**	**-**
1/1	485	485	-	-	-	4.0	0.9	-	4.9	36.7	13.7	0.9	14.6
1/2+1/3	530	530	-	-	-	4.4	0.9	-	5.4	36.5	15.2	0.9	16.2
2/1	250	250	-	-	-	3.3	1.5	-	4.8	69.3	8.1	1.5	9.6
2/2	274	274	-	-	-	3.6	1.8	-	5.4	70.7	8.9	1.8	10.7
3/2+3/1	952	952	-	-	-	7.2	1.6	-	8.7	33.0	16.4	1.6	18.0
3/3+3/4	602	602	-	-	-	5.7	1.8	-	7.4	44.5	17.5	1.8	19.3
4/2+4/1	535	535	-	-	-	7.0	1.7	-	8.7	58.8	8.9	1.7	10.7
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	847	847	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	742	742	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

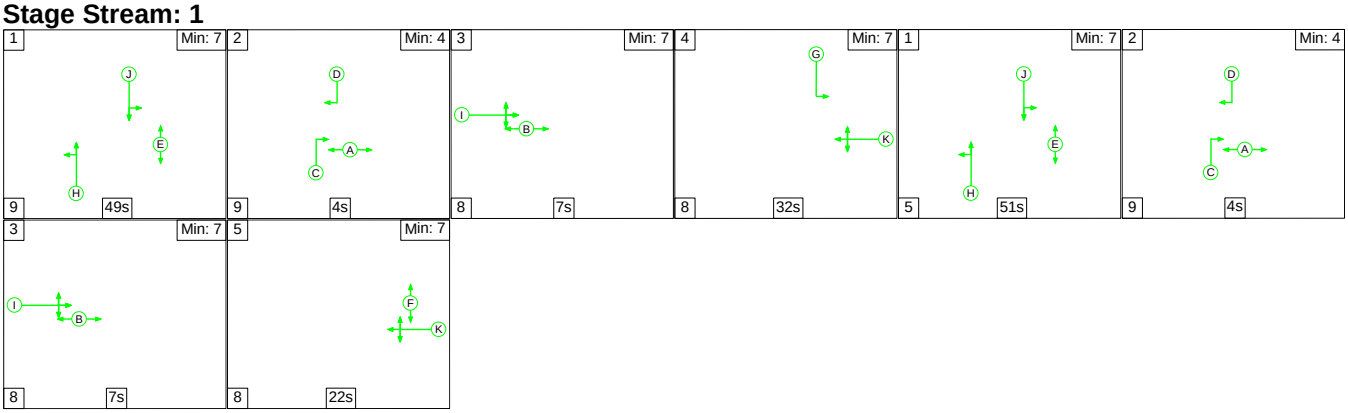
C1 Stream: 1 PRC for Signalled Lanes (%): 14.2 Total Delay for Signalled Lanes (pcuHr): 45.41 Cycle Time (s): 240
PRC Over All Lanes (%): 14.2 Total Delay Over All Lanes(pcuHr): 45.41

Full Input Data And Results

Scenario 3: '2024 Base + PAH AM' (FG5: '2040 Base + PAH (AM)', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

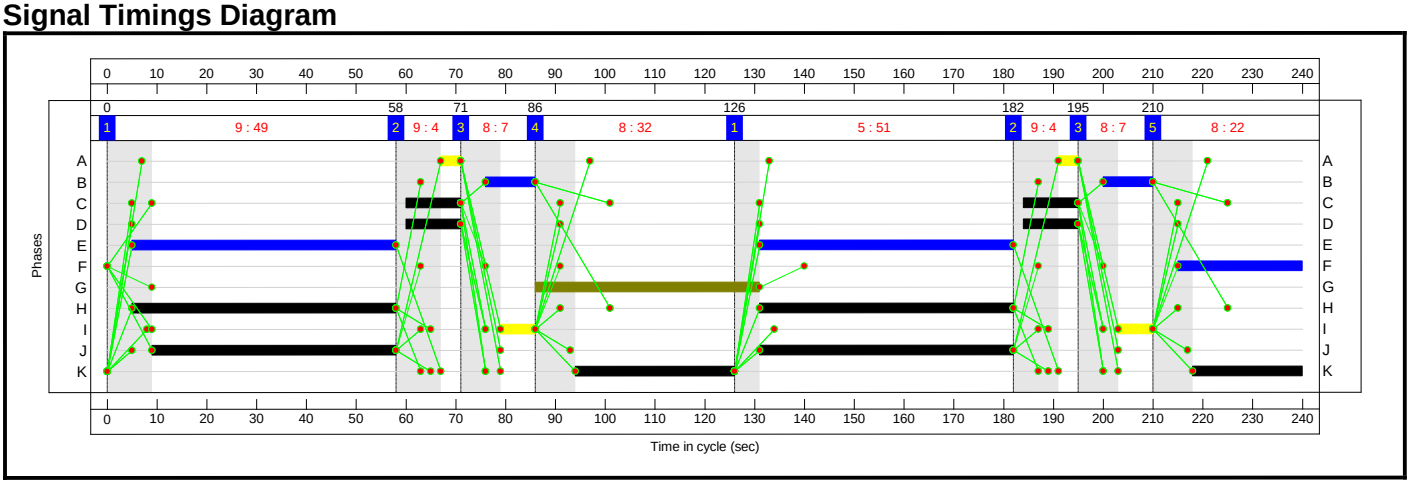


Stage Timings

Stage Stream: 1

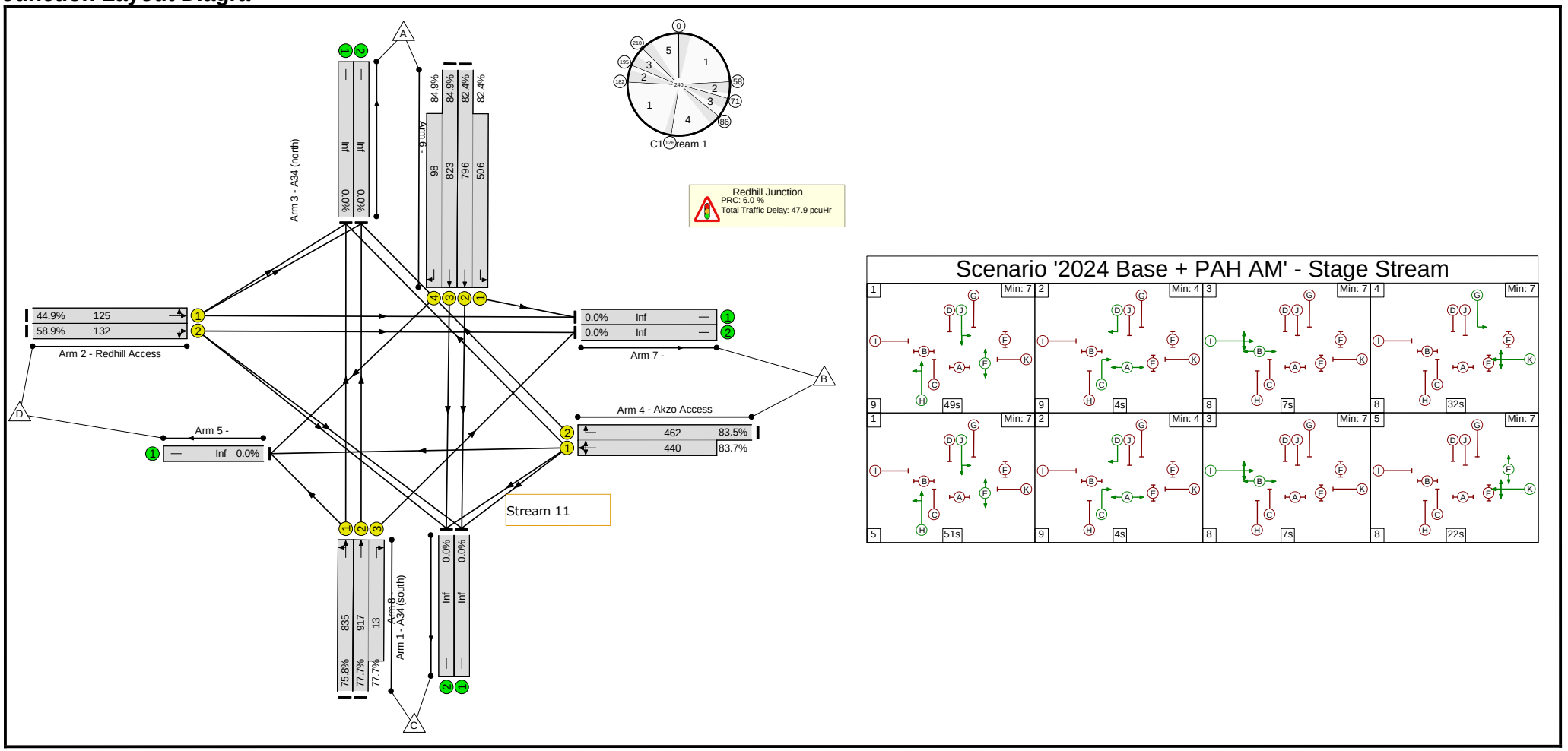
Stage	1	2	3	4	1	2	3	5
Duration	49	4	7	32	51	4	7	22
Change Point	0	58	71	86	126	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.9%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.9%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	104	-	633	1890	835	75.8%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	104:22	-	723	2105:1840	917+13	77.7 : 77.7%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	100:145	45	1073	2021:1636	796+506	82.4 : 82.4%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	100:22	-	782	2021:1753	823+98	84.9 : 84.9%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	54	-	754	1981:1884	462+440	83.5 : 83.7%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	435	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1109	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	727	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	771	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**36.0**	**11.8**	**0.0**	**47.9**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**36.0**	**11.8**	**0.0**	**47.9**	**-**	**-**	**-**	**-**
1/1	633	633	-	-	-	5.0	1.5	-	6.5	37.1	19.0	1.5	20.5
1/2+1/3	723	723	-	-	-	5.8	1.7	-	7.5	37.3	21.7	1.7	23.4
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.9	1.9	0.4	2.3
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.8	2.6	0.7	3.3
3/2+3/1	1073	1073	-	-	-	7.0	2.3	-	9.3	31.2	19.3	2.3	21.6
3/3+3/4	782	782	-	-	-	7.1	2.7	-	9.8	45.1	22.0	2.7	24.7
4/2+4/1	754	754	-	-	-	9.2	2.5	-	11.6	55.6	12.3	2.5	14.8
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	435	435	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1109	1109	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	727	727	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	771	771	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

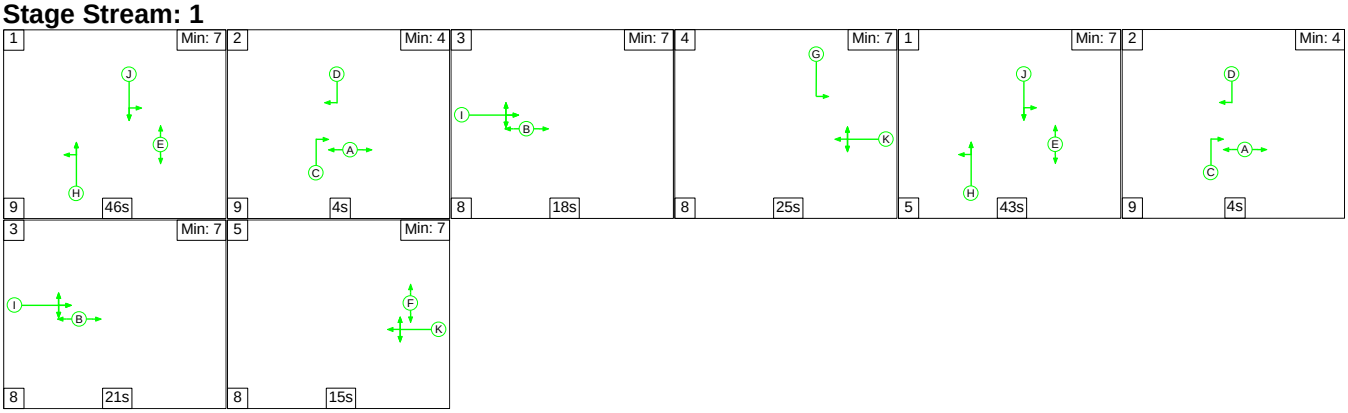
C1 Stream: 1 PRC for Signalled Lanes (%): 6.0 Total Delay for Signalled Lanes (pcuHr): 47.89 Cycle Time (s): 240
PRC Over All Lanes (%): 6.0 Total Delay Over All Lanes(pcuHr): 47.89

Full Input Data And Results

Scenario 4: '2024 Base + PAH PM' (FG6: '2040 Base + PAH (PM)', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

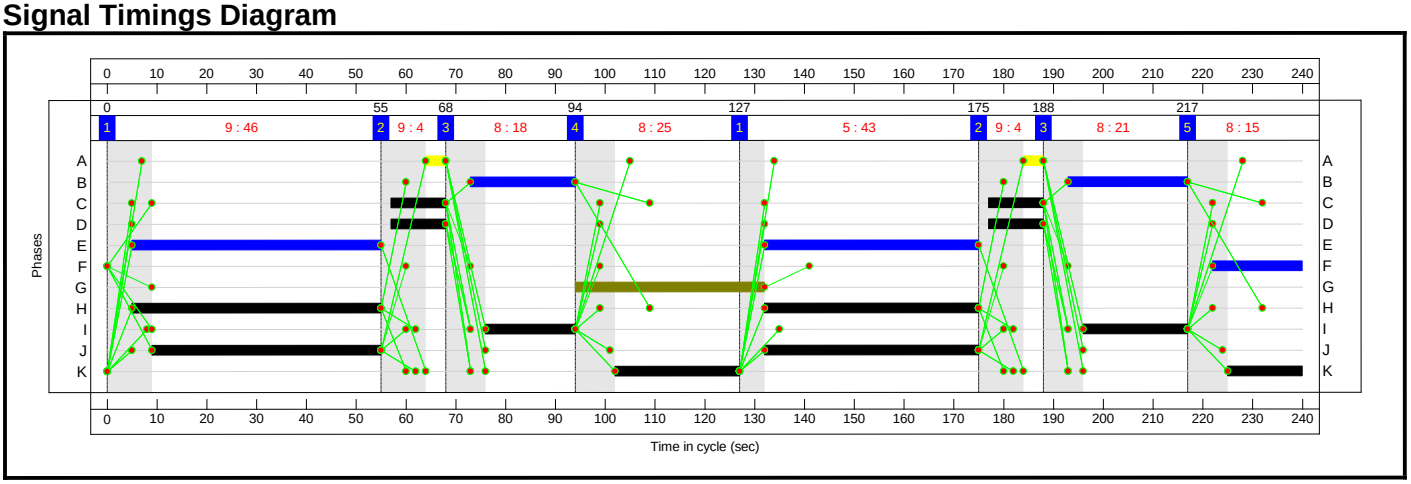


Stage Timings

Stage Stream: 1

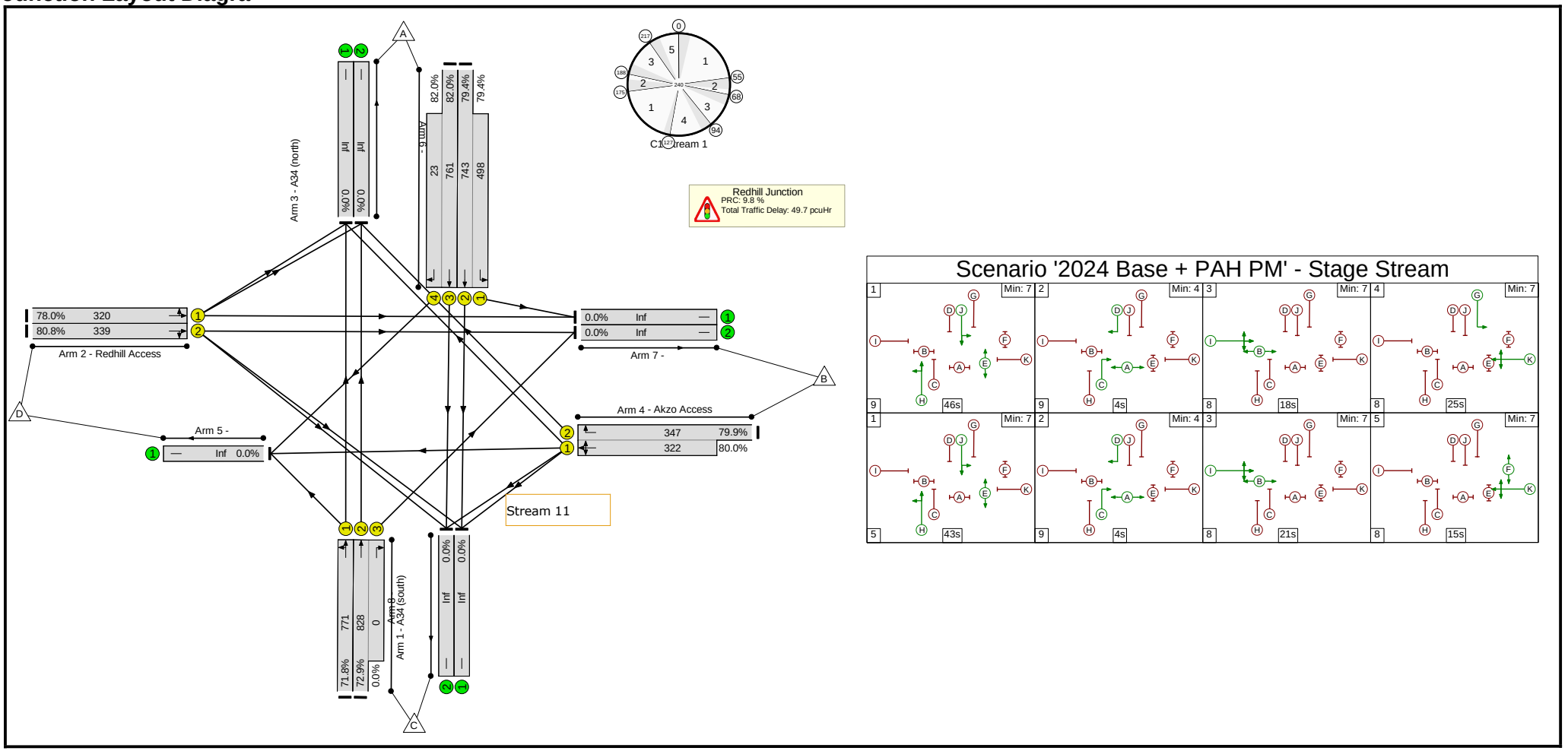
Stage	1	2	3	4	1	2	3	5
Duration	46	4	18	25	43	4	21	15
Change Point	0	55	68	94	127	175	188	217

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.0%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.0%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	93	-	553	1947	771	71.8%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	93:22	-	604	2105:1965	828+0	72.9 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	39	-	250	1875	320	78.0%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	39	-	274	1986	339	80.8%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	89:127	38	985	2021:1636	743+498	79.4 : 79.4%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	89:22	-	643	2021:1753	761+23	82.0 : 82.0%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	40	-	535	1981:1842	347+322	79.9 : 80.0%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	704	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	921	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	749	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**37.3**	**12.3**	**0.0**	**49.7**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**37.3**	**12.3**	**0.0**	**49.7**	**-**	**-**	**-**	**-**
1/1	553	553	-	-	-	4.7	1.3	-	6.0	38.8	16.3	1.3	17.5
1/2+1/3	604	604	-	-	-	5.2	1.3	-	6.5	38.7	18.0	1.3	19.3
2/1	250	250	-	-	-	3.3	1.7	-	5.0	72.0	8.1	1.7	9.8
2/2	274	274	-	-	-	3.6	2.0	-	5.6	73.9	8.9	2.0	10.9
3/2+3/1	985	985	-	-	-	7.4	1.9	-	9.3	34.0	17.5	1.9	19.4
3/3+3/4	643	643	-	-	-	6.1	2.2	-	8.3	46.3	19.0	2.2	21.2
4/2+4/1	535	535	-	-	-	7.1	1.9	-	9.0	60.6	9.0	1.9	10.9
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	704	704	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	921	921	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	749	749	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

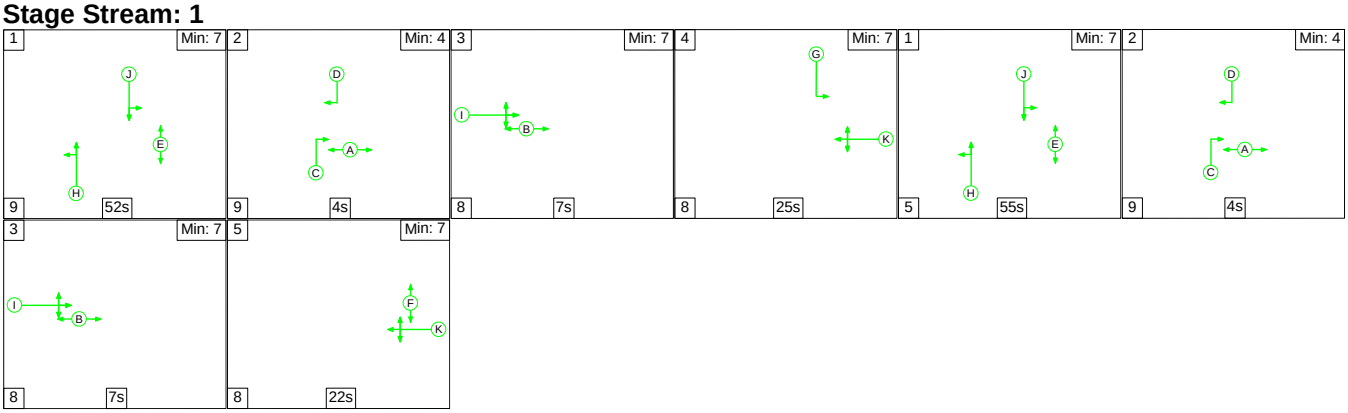
C1 Stream: 1 PRC for Signalled Lanes (%): 9.8 Total Delay for Signalled Lanes (pcuHr): 49.65 Cycle Time (s): 240
PRC Over All Lanes (%): 9.8 Total Delay Over All Lanes(pcuHr): 49.65

Full Input Data And Results

Scenario 5: '2040 PAH + Dev (1m) AM' (FG7: '2040 + PAH + Development (1m) AM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

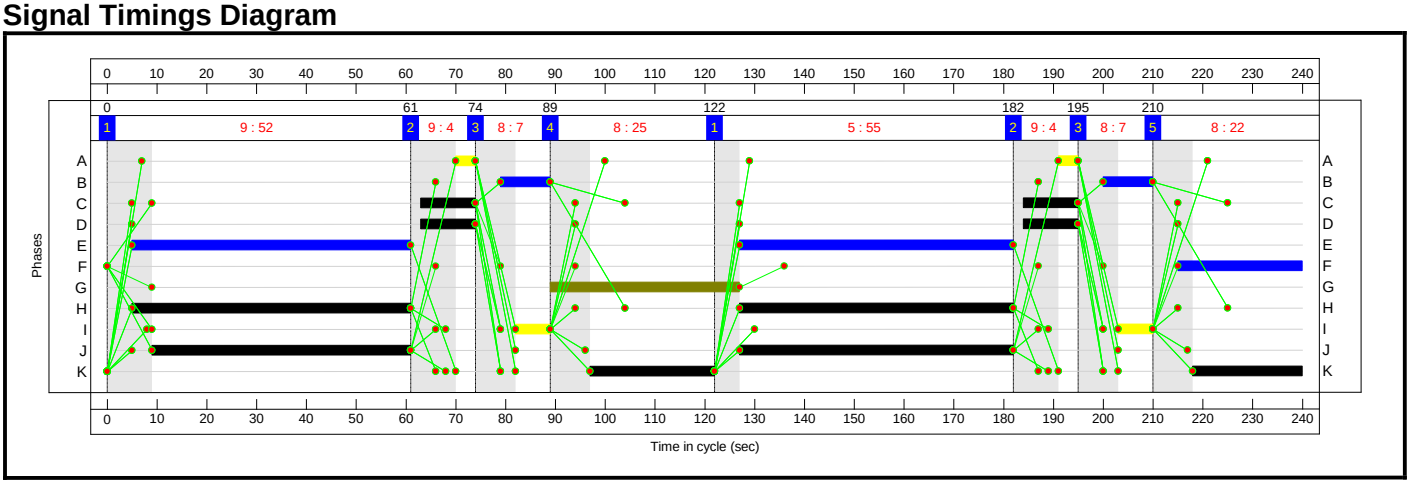


Stage Timings

Stage Stream: 1

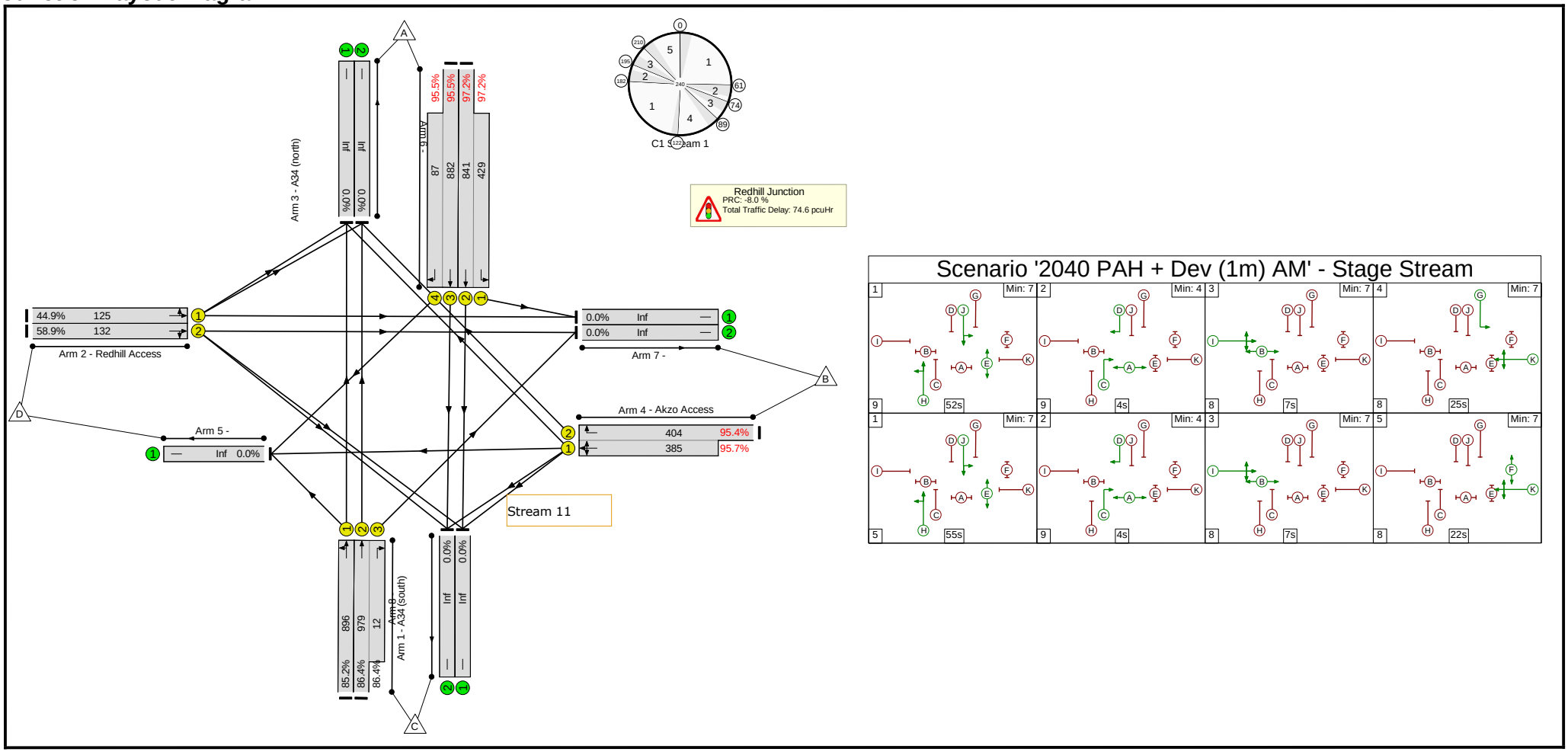
Stage	1	2	3	4	1	2	3	5
Duration	52	4	7	25	55	4	7	22
Change Point	0	61	74	89	122	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	111	-	763	1902	896	85.2%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	111:22	-	856	2105:1840	979+12	86.4 : 86.4%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	107:145	38	1234	2021:1636	841+429	97.2 : 97.2%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	107:22	-	925	2021:1753	882+87	95.5 : 95.5%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	47	-	754	1981:1884	404+385	95.4 : 95.7%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1242	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	888	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	914	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**41.6**	**33.0**	**0.0**	**74.6**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**41.6**	**33.0**	**0.0**	**74.6**	**-**	**-**	**-**	**-**
1/1	763	763	-	-	-	5.9	2.8	-	8.7	41.1	22.9	2.8	25.7
1/2+1/3	856	856	-	-	-	6.8	3.0	-	9.8	41.3	25.7	3.0	28.8
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.5	0.7	3.2
3/2+3/1	1234	1234	-	-	-	8.6	10.8	-	19.4	56.5	27.3	10.8	38.1
3/3+3/4	925	925	-	-	-	8.4	7.8	-	16.2	63.0	28.0	7.8	35.8
4/2+4/1	754	754	-	-	-	9.9	7.5	-	17.4	83.2	12.8	7.5	20.3
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1242	1242	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	888	888	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	914	914	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

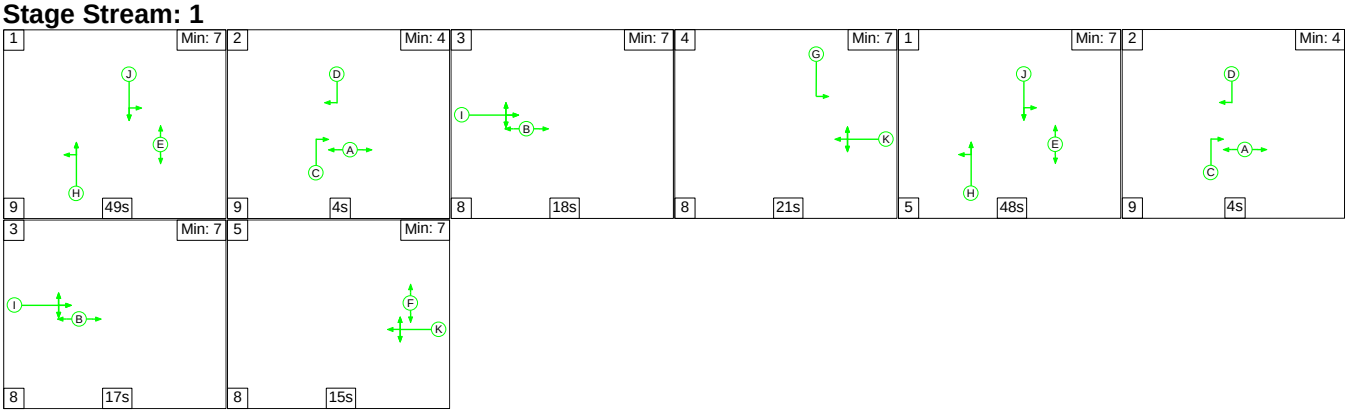
C1 Stream: 1 PRC for Signalled Lanes (%): -8.0 Total Delay for Signalled Lanes (pcuHr): 74.60 Cycle Time (s): 240
PRC Over All Lanes (%): -8.0 Total Delay Over All Lanes(pcuHr): 74.60

Full Input Data And Results

Scenario 6: '2040 PAH + Dev (1m) PM' (FG8: '2040 + PAH + Development (1m) PM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

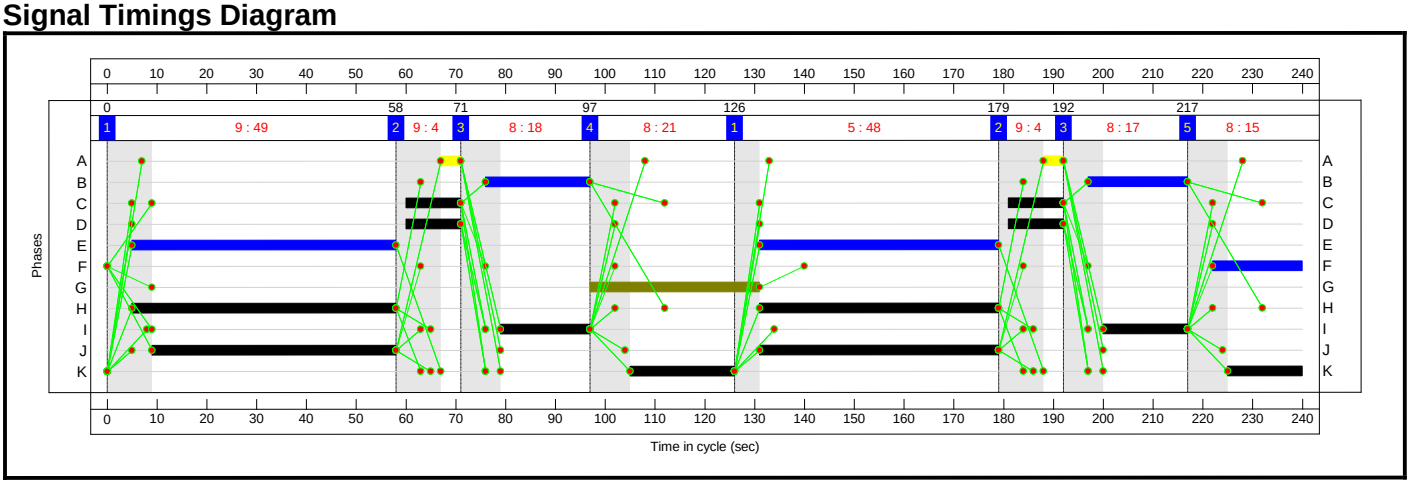


Stage Timings

Stage Stream: 1

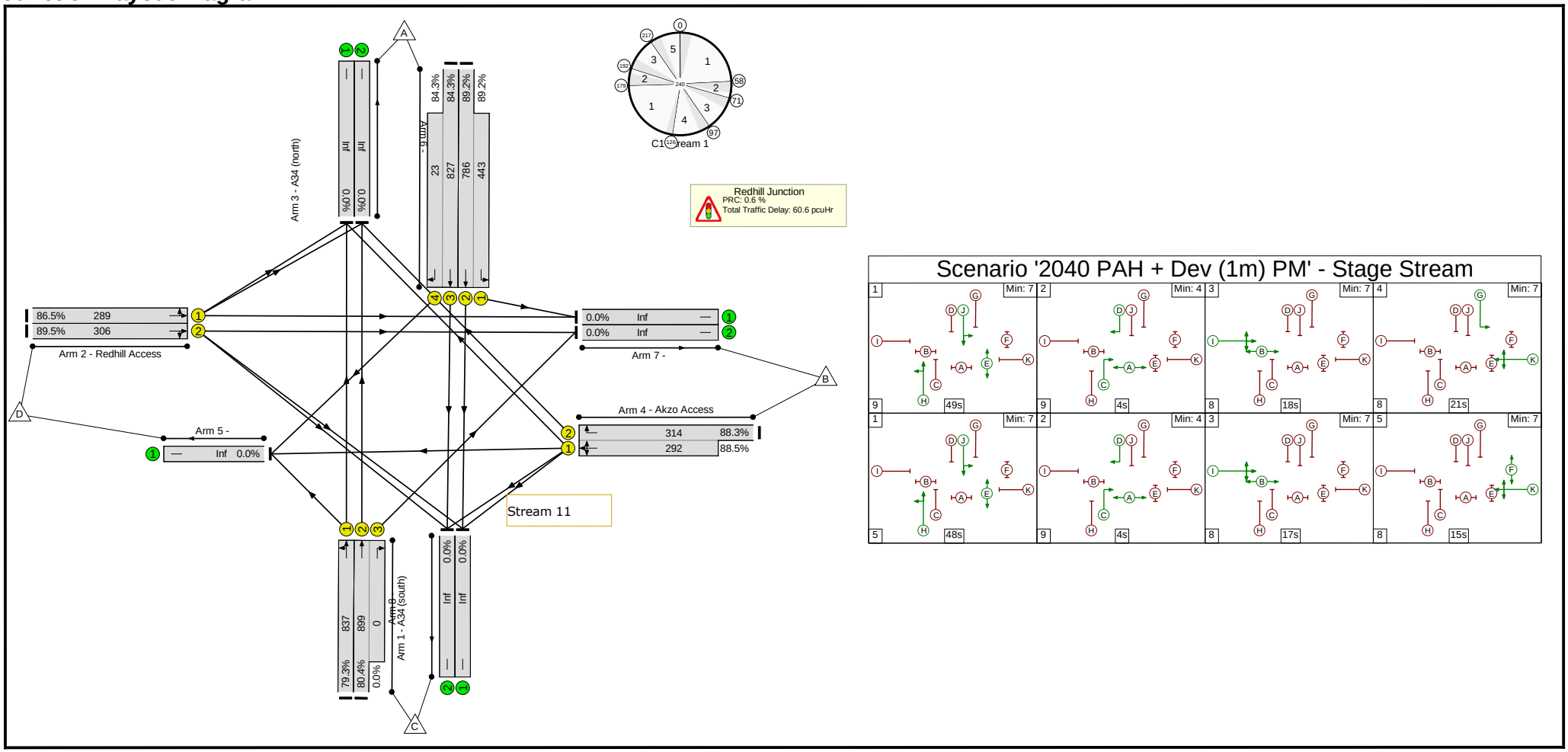
Stage	1	2	3	4	1	2	3	5
Duration	49	4	18	21	48	4	17	15
Change Point	0	58	71	97	126	179	192	217

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.5%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.5%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	101	-	664	1950	837	79.3%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	101:22	-	722	2105:1965	899+0	80.4 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	35	-	250	1875	289	86.5%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	35	-	274	1986	306	89.5%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	97:131	34	1096	2021:1636	786+443	89.2 : 89.2%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	97:22	-	716	2021:1753	827+23	84.3 : 84.3%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	36	-	535	1981:1842	314+292	88.3 : 88.5%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	815	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1039	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	856	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**40.5**	**20.1**	**0.0**	**60.6**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**40.5**	**20.1**	**0.0**	**60.6**	**-**	**-**	**-**	**-**
1/1	664	664	-	-	-	5.5	1.9	-	7.4	39.9	20.1	1.9	22.0
1/2+1/3	722	722	-	-	-	6.0	2.0	-	8.0	39.9	22.1	2.0	24.1
2/1	250	250	-	-	-	3.4	2.8	-	6.2	89.8	8.1	2.8	10.9
2/2	274	274	-	-	-	3.8	3.5	-	7.3	95.8	9.0	3.5	12.5
3/2+3/1	1096	1096	-	-	-	8.0	3.9	-	12.0	39.3	21.4	3.9	25.3
3/3+3/4	716	716	-	-	-	6.4	2.6	-	9.0	45.1	21.3	2.6	23.9
4/2+4/1	535	535	-	-	-	7.4	3.5	-	10.8	72.8	9.2	3.5	12.7
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	815	815	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1039	1039	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	856	856	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

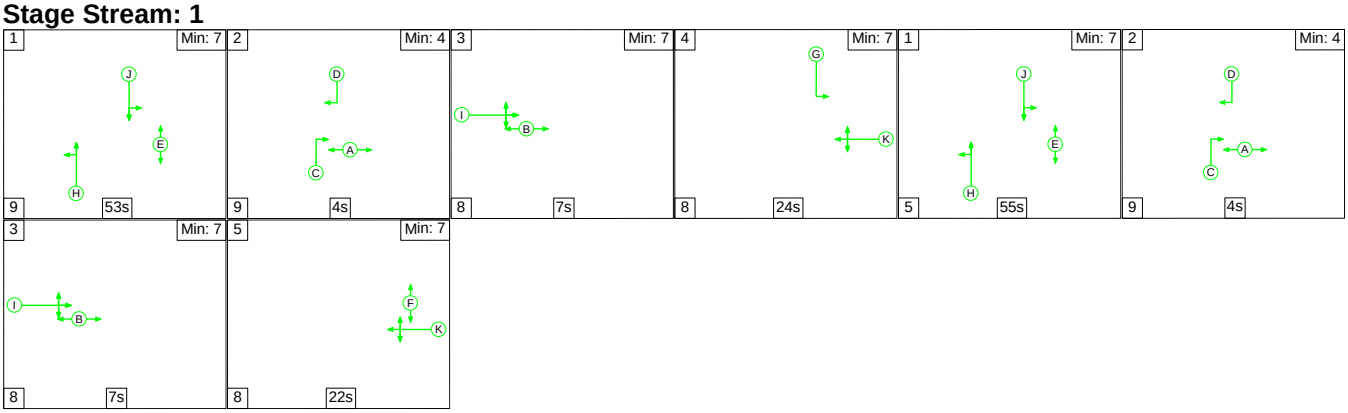
C1 Stream: 1 PRC for Signalled Lanes (%): 0.6 Total Delay for Signalled Lanes (pcuHr): 60.62 Cycle Time (s): 240
PRC Over All Lanes (%): 0.6 Total Delay Over All Lanes(pcuHr): 60.62

Full Input Data And Results

Scenario 7: '2040 PAH + Dev (1.7m) AM' (FG9: '2040 + PAH + Development (1.7m) AM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

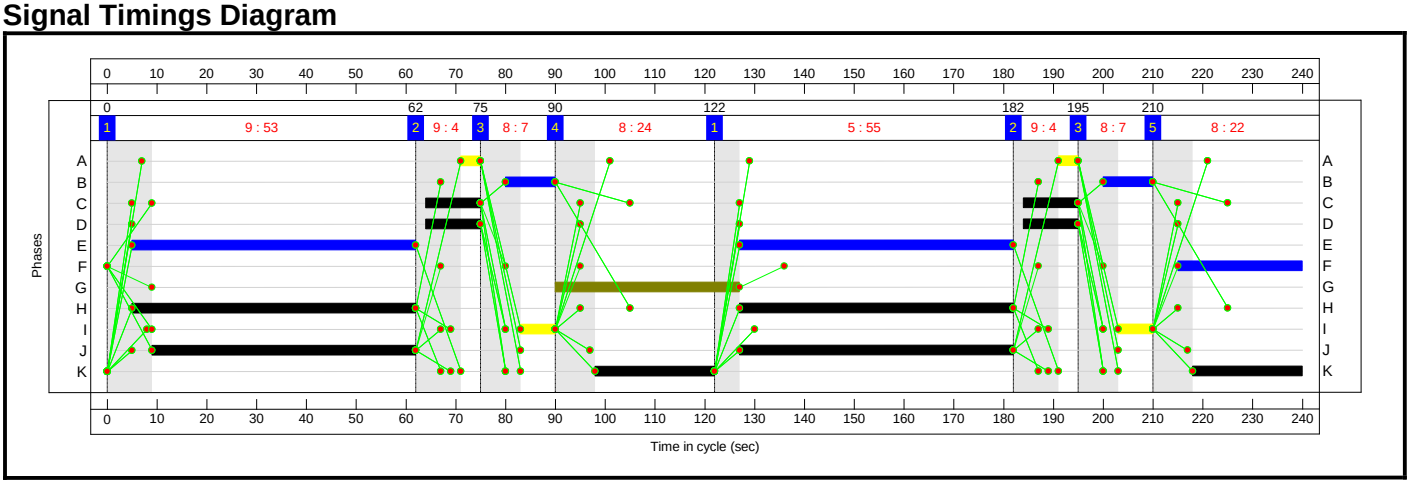


Stage Timings

Stage Stream: 1

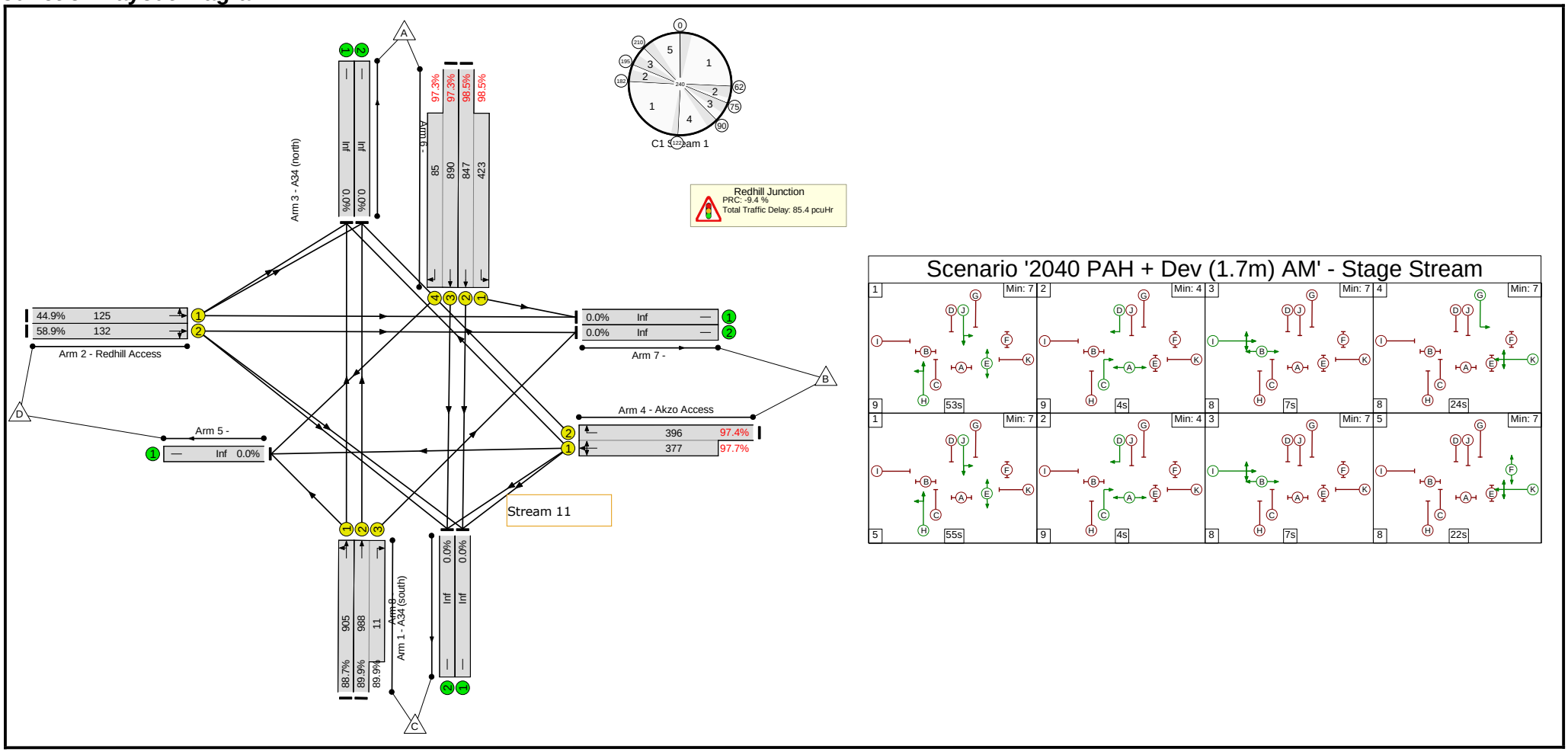
Stage	1	2	3	4	1	2	3	5
Duration	53	4	7	24	55	4	7	22
Change Point	0	62	75	90	122	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.5%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.5%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	112	-	803	1905	905	88.7%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	112:22	-	898	2105:1840	988+11	89.9 : 89.9%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	108:145	37	1251	2021:1636	847+423	98.5 : 98.5%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	108:22	-	949	2021:1753	890+85	97.3 : 97.3%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	46	-	754	1981:1884	396+377	97.4 : 97.7%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1284	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	905	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	938	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**43.1**	**42.3**	**0.0**	**85.4**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**43.1**	**42.3**	**0.0**	**85.4**	**-**	**-**	**-**	**-**
1/1	803	803	-	-	-	6.4	3.7	-	10.1	45.1	24.5	3.7	28.2
1/2+1/3	898	898	-	-	-	7.2	4.1	-	11.3	45.4	27.5	4.1	31.6
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.5	0.7	3.2
3/2+3/1	1251	1251	-	-	-	8.8	13.5	-	22.3	64.2	29.8	13.5	43.3
3/3+3/4	949	949	-	-	-	8.7	10.1	-	18.8	71.1	29.4	10.1	39.5
4/2+4/1	754	754	-	-	-	10.0	9.8	-	19.8	94.5	12.9	9.8	22.6
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1284	1284	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	905	905	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	938	938	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

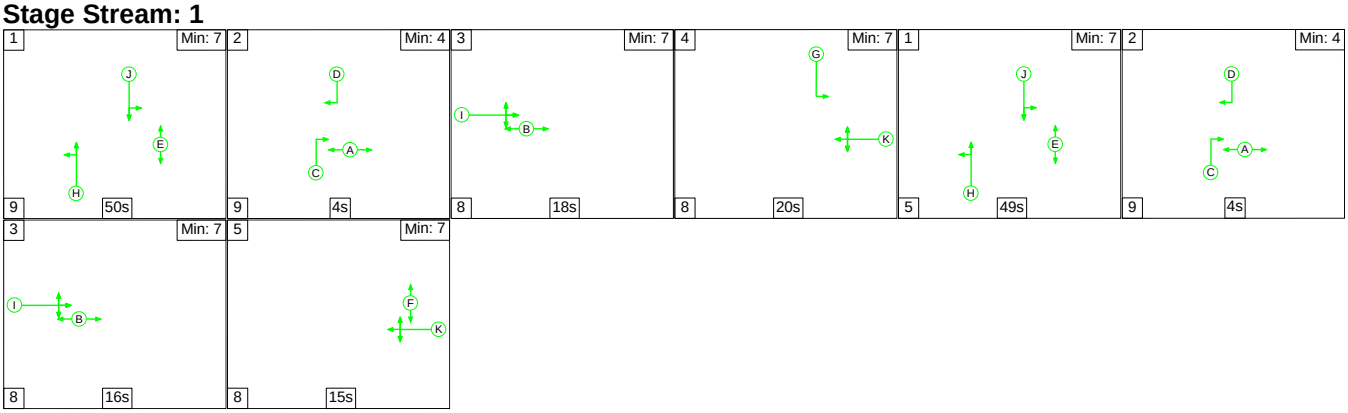
C1 Stream: 1 PRC for Signalled Lanes (%): -9.4 Total Delay for Signalled Lanes (pcuHr): 85.37 Cycle Time (s): 240
PRC Over All Lanes (%): -9.4 Total Delay Over All Lanes(pcuHr): 85.37

Full Input Data And Results

Scenario 8: '2040 PAH + Dev (1.7m) PM' (FG10: '2040 + PAH + Development (1.7m) PM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

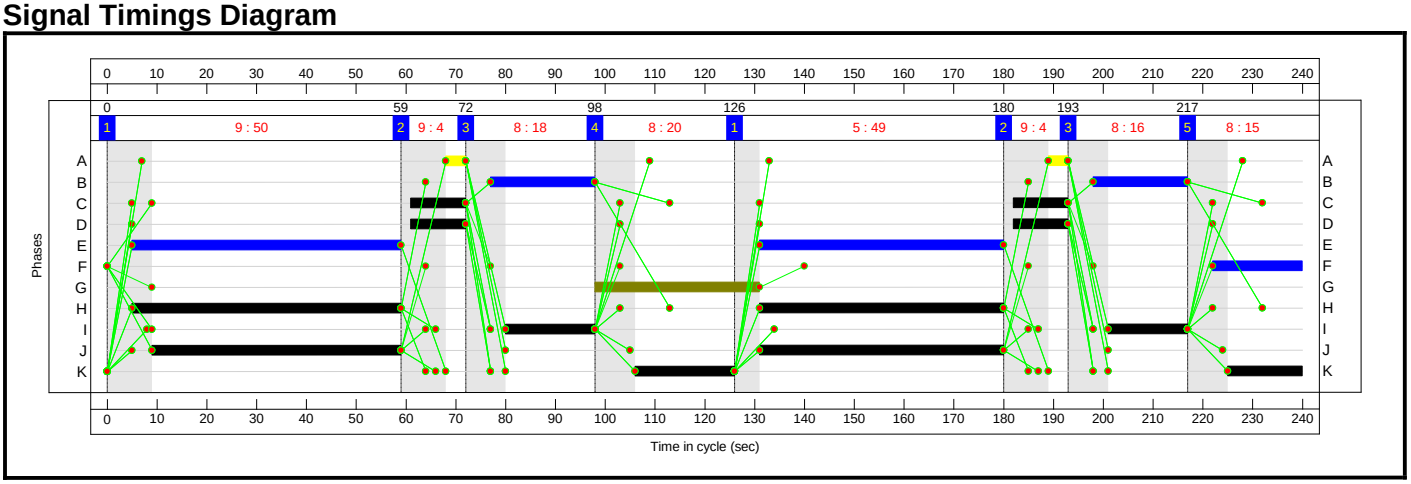


Stage Timings

Stage Stream: 1

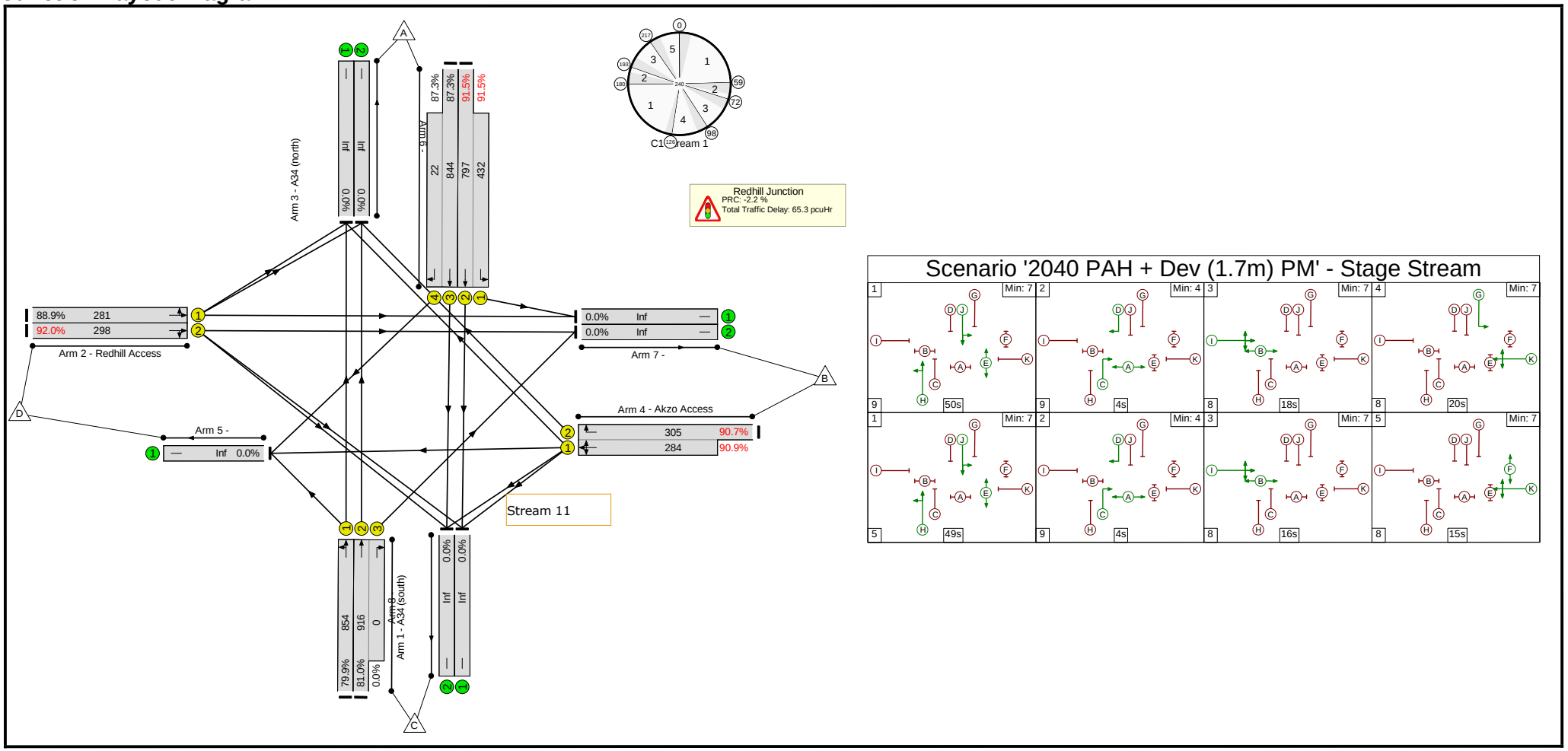
Stage	1	2	3	4	1	2	3	5
Duration	50	4	18	20	49	4	16	15
Change Point	0	59	72	98	126	180	193	217

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.0%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.0%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	103	-	682	1951	854	79.9%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	103:22	-	742	2105:1965	916+0	81.0 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	34	-	250	1875	281	88.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	34	-	274	1986	298	92.0%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	99:132	33	1124	2021:1636	797+432	91.5 : 91.5%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	99:22	-	756	2021:1753	844+22	87.3 : 87.3%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	35	-	535	1981:1842	305+284	90.7 : 90.9%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	833	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1059	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	888	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	896	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**41.3**	**24.0**	**0.0**	**65.3**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**41.3**	**24.0**	**0.0**	**65.3**	**-**	**-**	**-**	**-**
1/1	682	682	-	-	-	5.5	1.9	-	7.5	39.5	20.6	1.9	22.6
1/2+1/3	742	742	-	-	-	6.1	2.1	-	8.2	39.6	22.7	2.1	24.8
2/1	250	250	-	-	-	3.5	3.3	-	6.8	97.6	8.1	3.3	11.4
2/2	274	274	-	-	-	3.8	4.2	-	8.1	105.9	9.0	4.2	13.2
3/2+3/1	1124	1124	-	-	-	8.2	4.9	-	13.1	42.0	22.5	4.9	27.4
3/3+3/4	756	756	-	-	-	6.7	3.3	-	10.0	47.6	22.9	3.3	26.2
4/2+4/1	535	535	-	-	-	7.4	4.3	-	11.7	78.6	9.4	4.3	13.6
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	833	833	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1059	1059	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	888	888	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	896	896	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

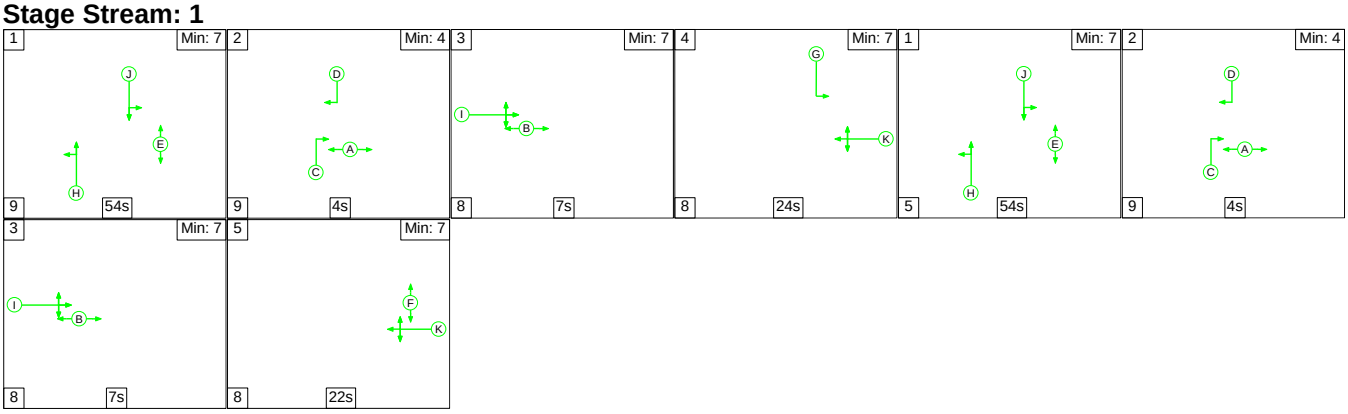
C1 Stream: 1 PRC for Signalled Lanes (%): -2.2 Total Delay for Signalled Lanes (pcuHr): 65.27 Cycle Time (s): 240
PRC Over All Lanes (%): -2.2 Total Delay Over All Lanes(pcuHr): 65.27

Full Input Data And Results

Scenario 9: '2040+ PAH + Dev (1m) + Stone Phase 1 AM' (FG11: '2040 + PAH + Development (1m) + Stone Phase 1 AM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

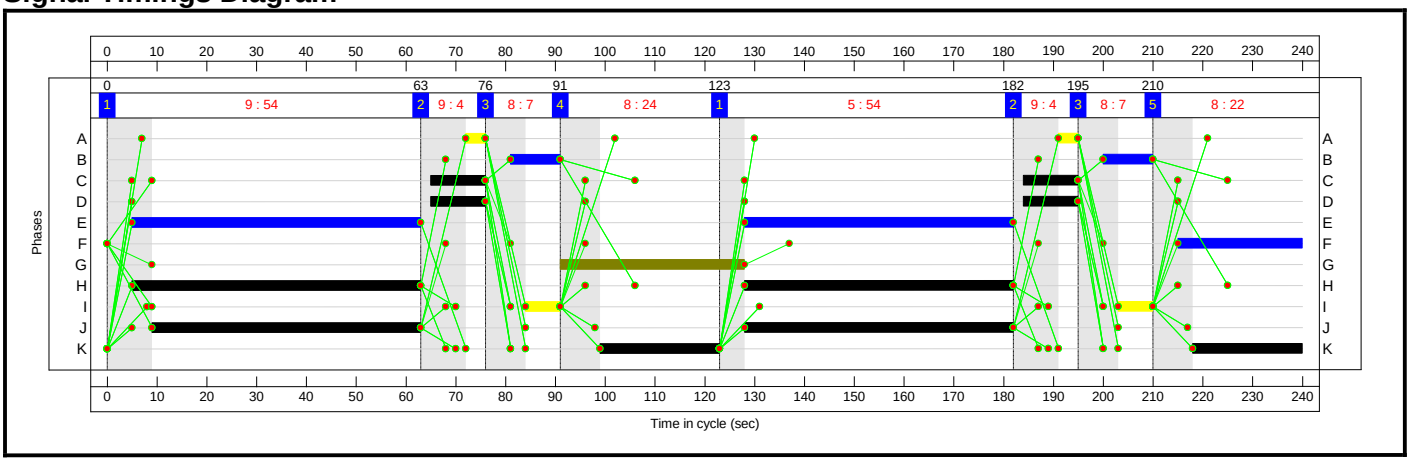


Stage Timings

Stage Stream: 1

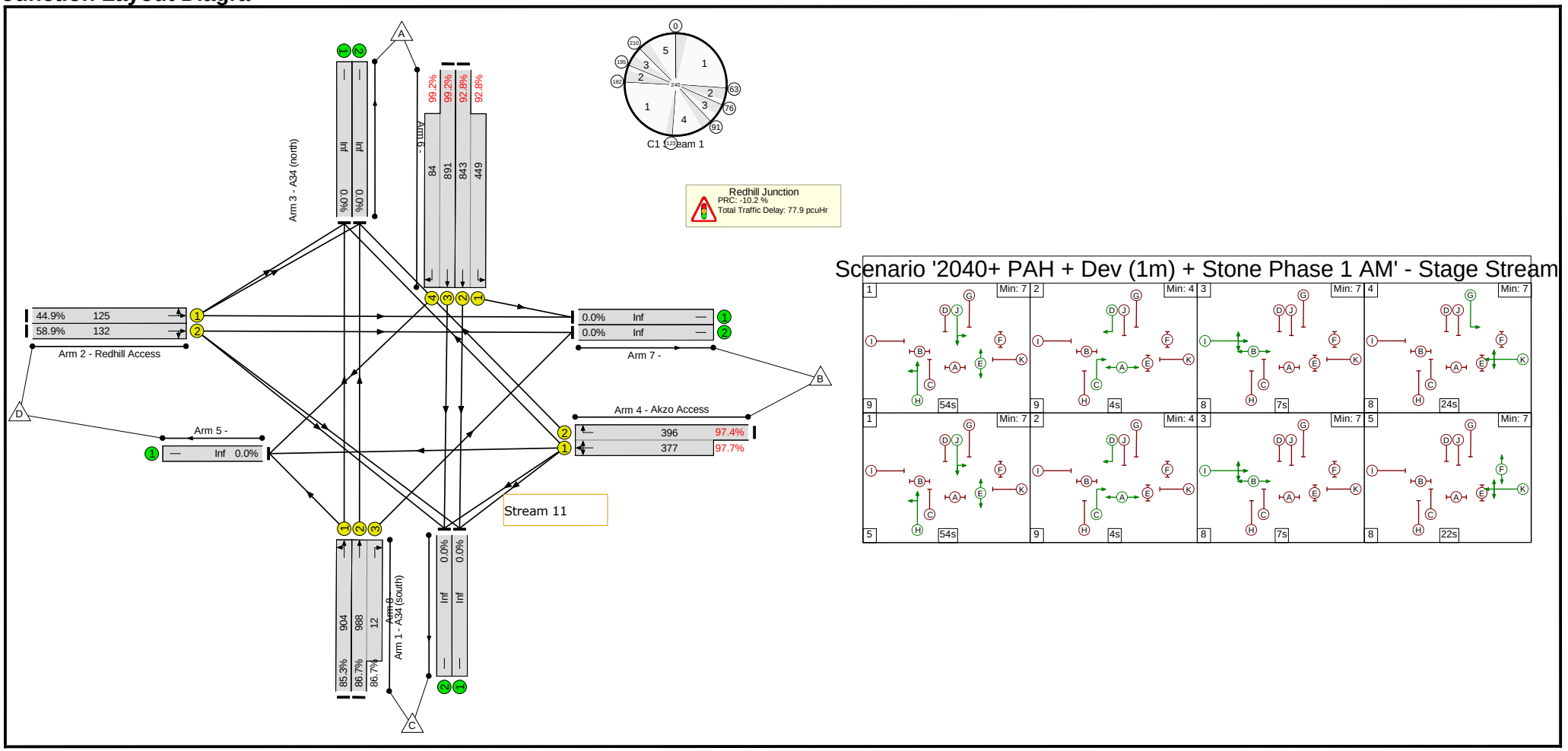
Stage	1	2	3	4	1	2	3	5
Duration	54	4	7	24	54	4	7	22
Change Point	0	63	76	91	123	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.2%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.2%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	112	-	771	1903	904	85.3%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	112:22	-	867	2105:1840	988+12	86.7 : 86.7%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	108:145	37	1200	2021:1636	843+449	92.8 : 92.8%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	108:22	-	967	2021:1753	891+84	99.2 : 99.2%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	46	-	754	1981:1884	396+377	97.4 : 97.7%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	573	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1253	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	956	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**41.6**	**36.3**	**0.0**	**77.9**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**41.6**	**36.3**	**0.0**	**77.9**	**-**	**-**	**-**	**-**
1/1	771	771	-	-	-	6.0	2.8	-	8.7	40.8	22.9	2.8	25.7
1/2+1/3	867	867	-	-	-	6.8	3.1	-	9.9	41.3	25.8	3.1	29.0
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.5	0.7	3.2
3/2+3/1	1200	1200	-	-	-	7.9	5.8	-	13.7	41.0	23.3	5.8	29.0
3/3+3/4	967	967	-	-	-	8.9	13.7	-	22.7	84.4	30.8	13.7	44.5
4/2+4/1	754	754	-	-	-	10.0	9.8	-	19.8	94.4	13.0	9.8	22.8
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	573	573	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1253	1253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	956	956	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

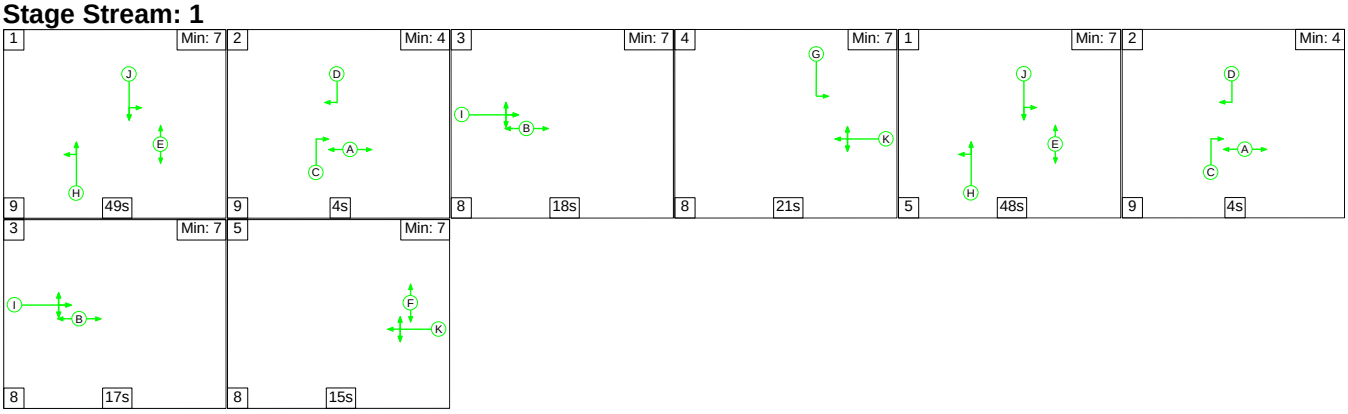
C1 Stream: 1 PRC for Signalled Lanes (%): -10.2 Total Delay for Signalled Lanes (pcuHr): 77.90 Cycle Time (s): 240
PRC Over All Lanes (%): -10.2 Total Delay Over All Lanes(pcuHr): 77.90

Full Input Data And Results

Scenario 10: '2040+ PAH + Dev (1m) + Stone Phase 1 PM' (FG12: '2040 + PAH + Development (1m) + Stone Phase 1 PM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

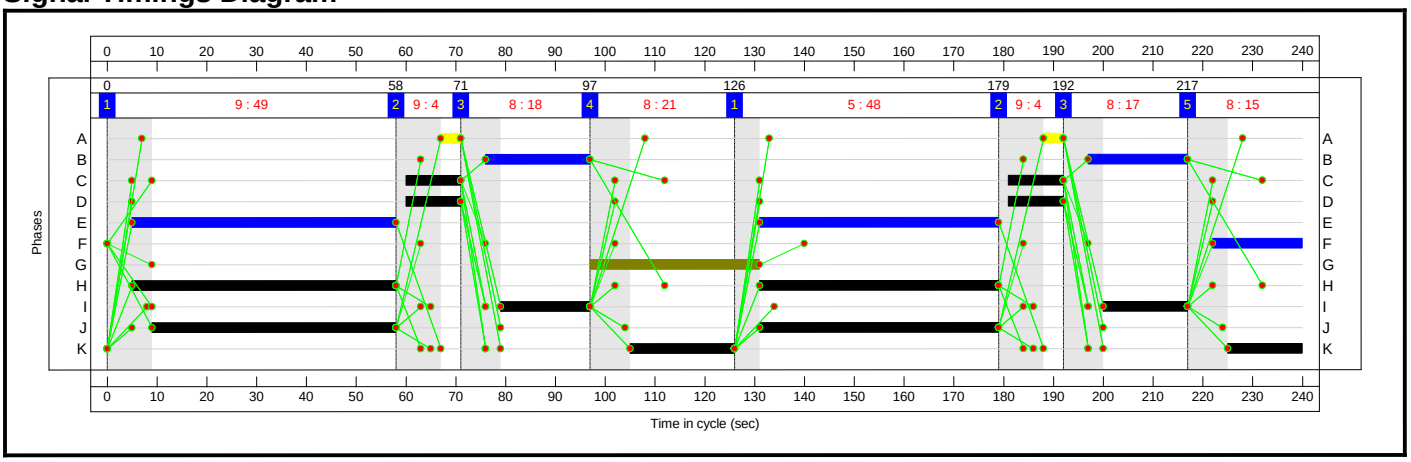


Stage Timings

Stage Stream: 1

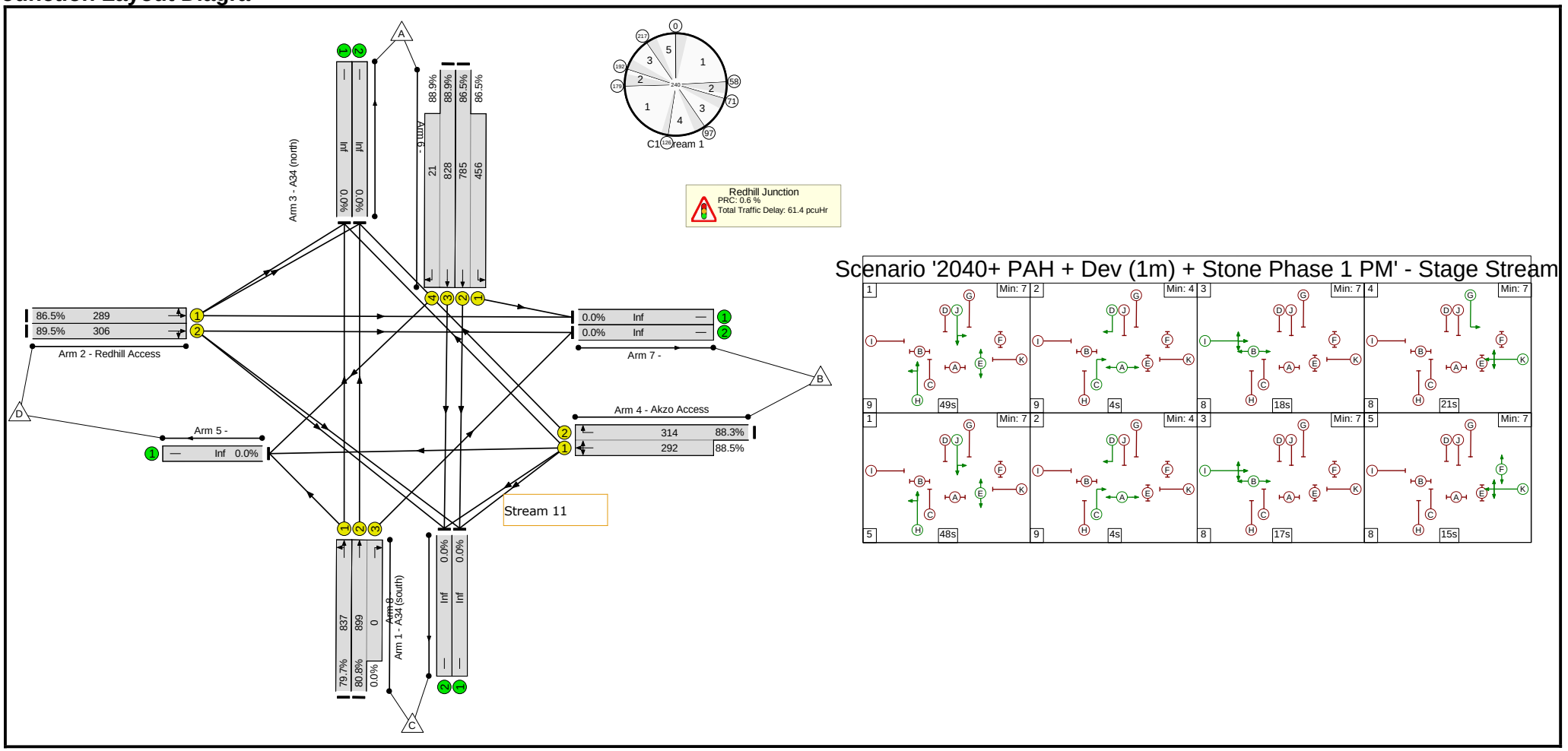
Stage	1	2	3	4	1	2	3	5
Duration	49	4	18	21	48	4	17	15
Change Point	0	58	71	97	126	179	192	217

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.5%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.5%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	101	-	667	1950	837	79.7%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	101:22	-	726	2105:1965	899+0	80.8 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	35	-	250	1875	289	86.5%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	35	-	274	1986	306	89.5%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	97:131	34	1074	2021:1636	785+456	86.5 : 86.5%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	97:22	-	755	2021:1753	828+21	88.9 : 88.9%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	36	-	535	1981:1842	314+292	88.3 : 88.5%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1043	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	895	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**40.8**	**20.6**	**0.0**	**61.4**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**40.8**	**20.6**	**0.0**	**61.4**	**-**	**-**	**-**	**-**
1/1	667	667	-	-	-	5.5	1.9	-	7.4	40.2	20.2	1.9	22.1
1/2+1/3	726	726	-	-	-	6.0	2.1	-	8.1	40.2	22.2	2.1	24.2
2/1	250	250	-	-	-	3.4	2.8	-	6.2	89.8	8.1	2.8	10.9
2/2	274	274	-	-	-	3.8	3.5	-	7.3	95.8	9.0	3.5	12.5
3/2+3/1	1074	1074	-	-	-	7.8	3.1	-	10.9	36.4	20.4	3.1	23.5
3/3+3/4	755	755	-	-	-	6.9	3.7	-	10.6	50.8	23.3	3.7	27.1
4/2+4/1	535	535	-	-	-	7.4	3.5	-	10.8	72.8	9.2	3.5	12.7
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1043	1043	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	838	838	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	895	895	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

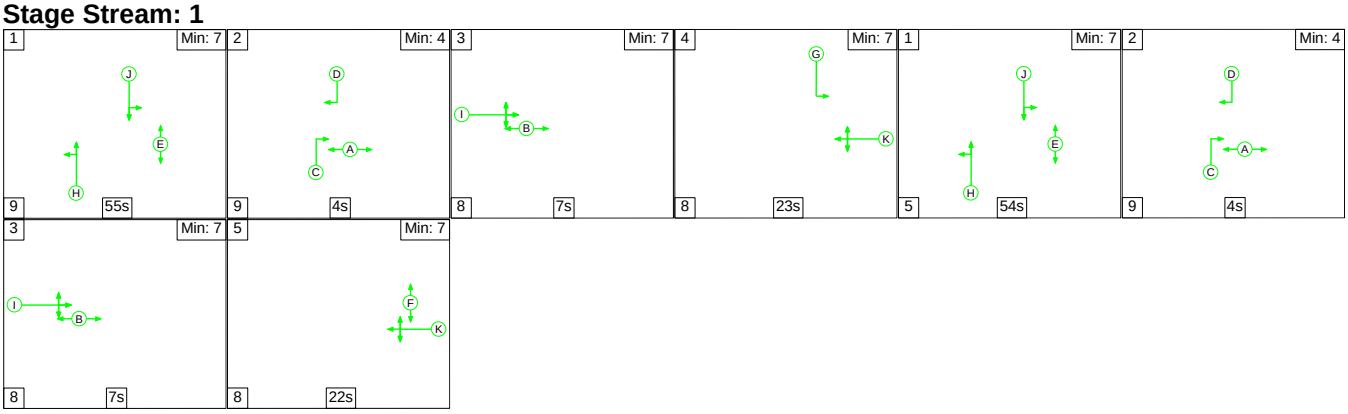
C1 Stream: 1 PRC for Signalled Lanes (%): 0.6 Total Delay for Signalled Lanes (pcuHr): 61.38 Cycle Time (s): 240
PRC Over All Lanes (%): 0.6 Total Delay Over All Lanes(pcuHr): 61.38

Full Input Data And Results

Scenario 11: '2040+ PAH + Dev (1.7m) + Stone Phase 1 AM' (FG13: '2040 + PAH + Development (1.7m) + Stone Phase 1 AM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

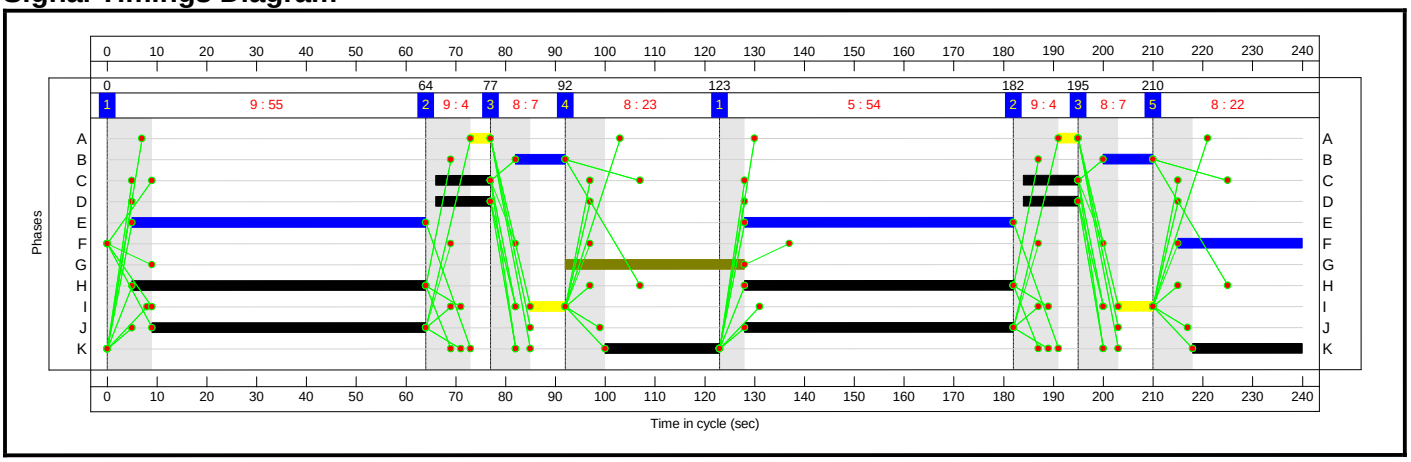


Stage Timings

Stage Stream: 1

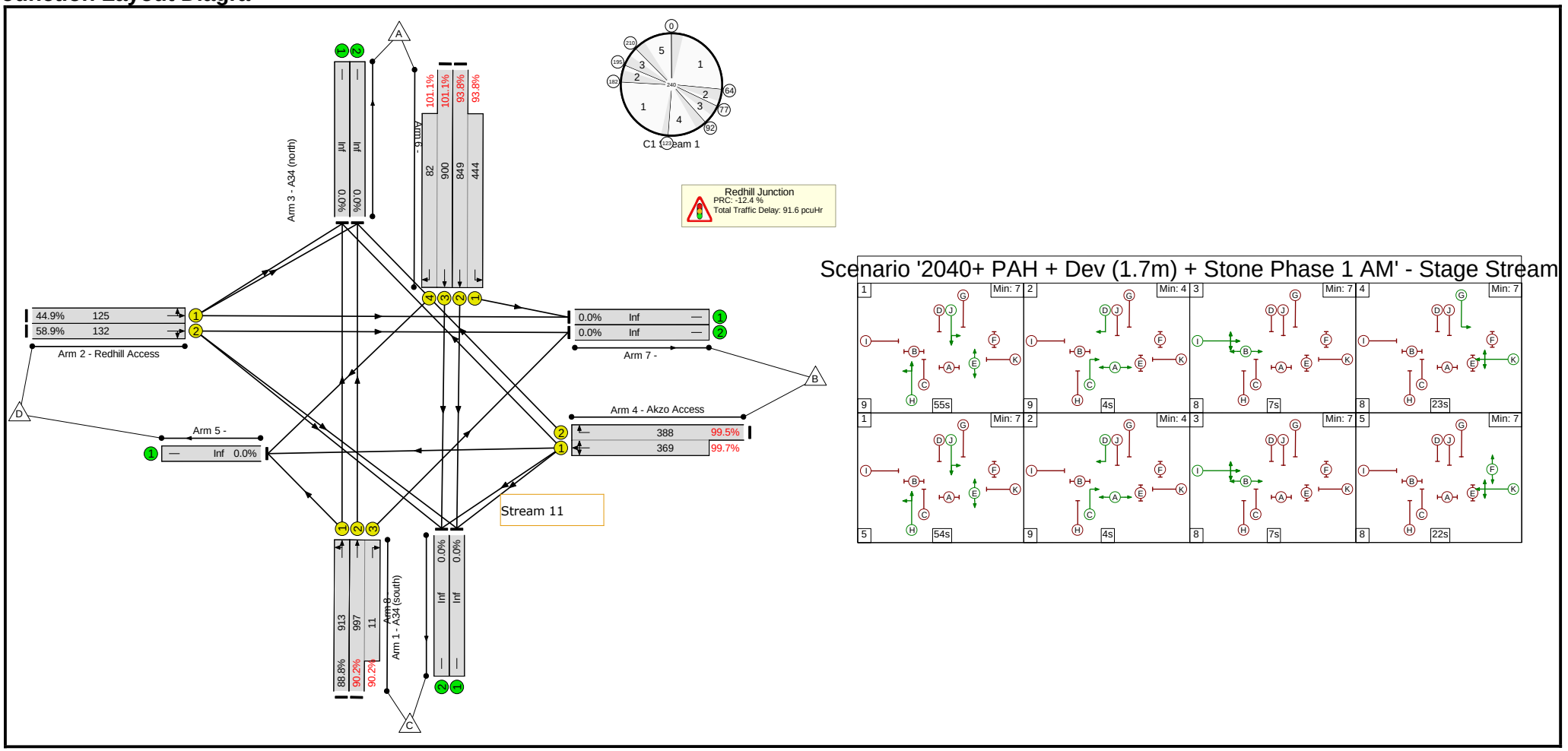
Stage	1	2	3	4	1	2	3	5
Duration	55	4	7	23	54	4	7	22
Change Point	0	64	77	92	123	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Scenario '2040+ PAH + Dev (1.7m) + Stone Phase 1 AM' - Stage Stream

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.1%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.1%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	113	-	811	1906	913	88.8%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	113:22	-	909	2105:1840	997+11	90.2 : 90.2%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	109:145	36	1214	2021:1636	849+444	93.8 : 93.8%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	109:22	-	993	2021:1753	900+82	101.1 : 101.1%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	45	-	754	1981:1884	388+369	99.5 : 99.7%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1295	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	982	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**44.2**	**47.4**	**0.0**	**91.6**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**44.2**	**47.4**	**0.0**	**91.6**	**-**	**-**	**-**	**-**
1/1	811	811	-	-	-	6.4	3.7	-	10.1	44.7	24.6	3.7	28.3
1/2+1/3	909	909	-	-	-	7.3	4.2	-	11.5	45.6	27.6	4.2	31.8
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.6	0.7	3.3
3/2+3/1	1214	1214	-	-	-	8.0	6.5	-	14.5	43.0	24.8	6.5	31.4
3/3+3/4	993	983	-	-	-	10.5	18.8	-	29.3	106.2	34.2	18.8	53.0
4/2+4/1	754	754	-	-	-	10.1	13.0	-	23.1	110.5	13.1	13.0	26.1
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1295	1295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	972	972	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

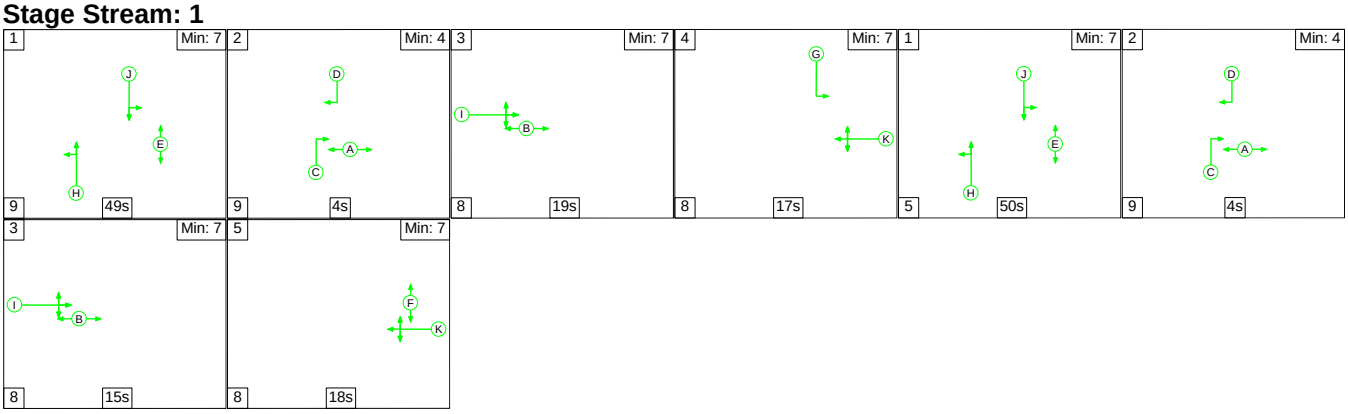
C1 Stream: 1 PRC for Signalled Lanes (%): -12.4 Total Delay for Signalled Lanes (pcuHr): 91.64 Cycle Time (s): 240
PRC Over All Lanes (%): -12.4 Total Delay Over All Lanes(pcuHr): 91.64

Full Input Data And Results

Scenario 12: '2040+ PAH + Dev (1.7m) + Stone Phase 1 PM' (FG14: '2040 + PAH + Development (1.7m) + Stone Phase 1 PM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

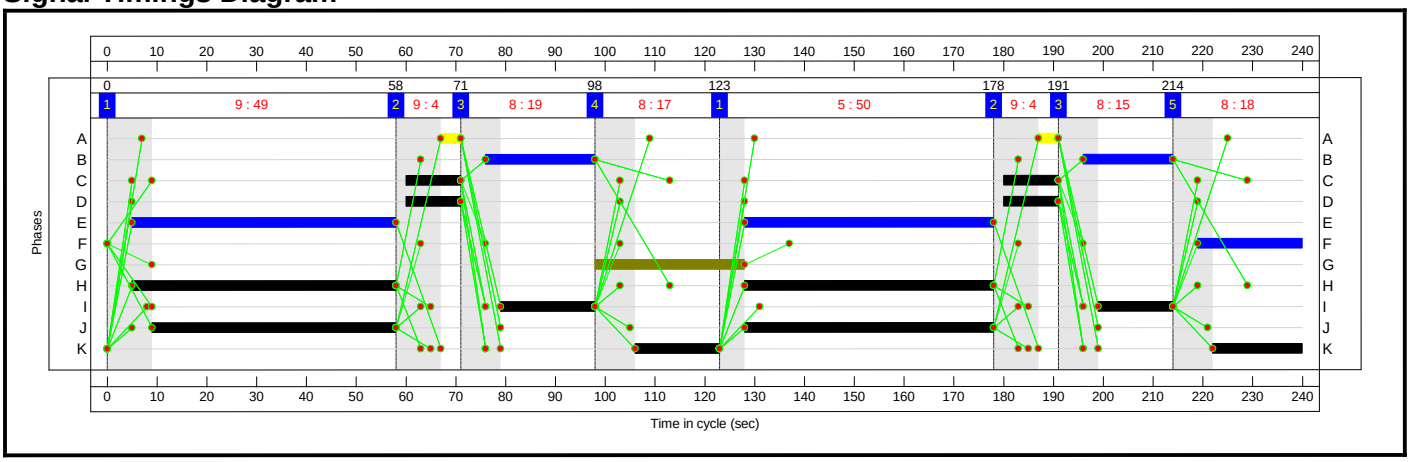


Stage Timings

Stage Stream: 1

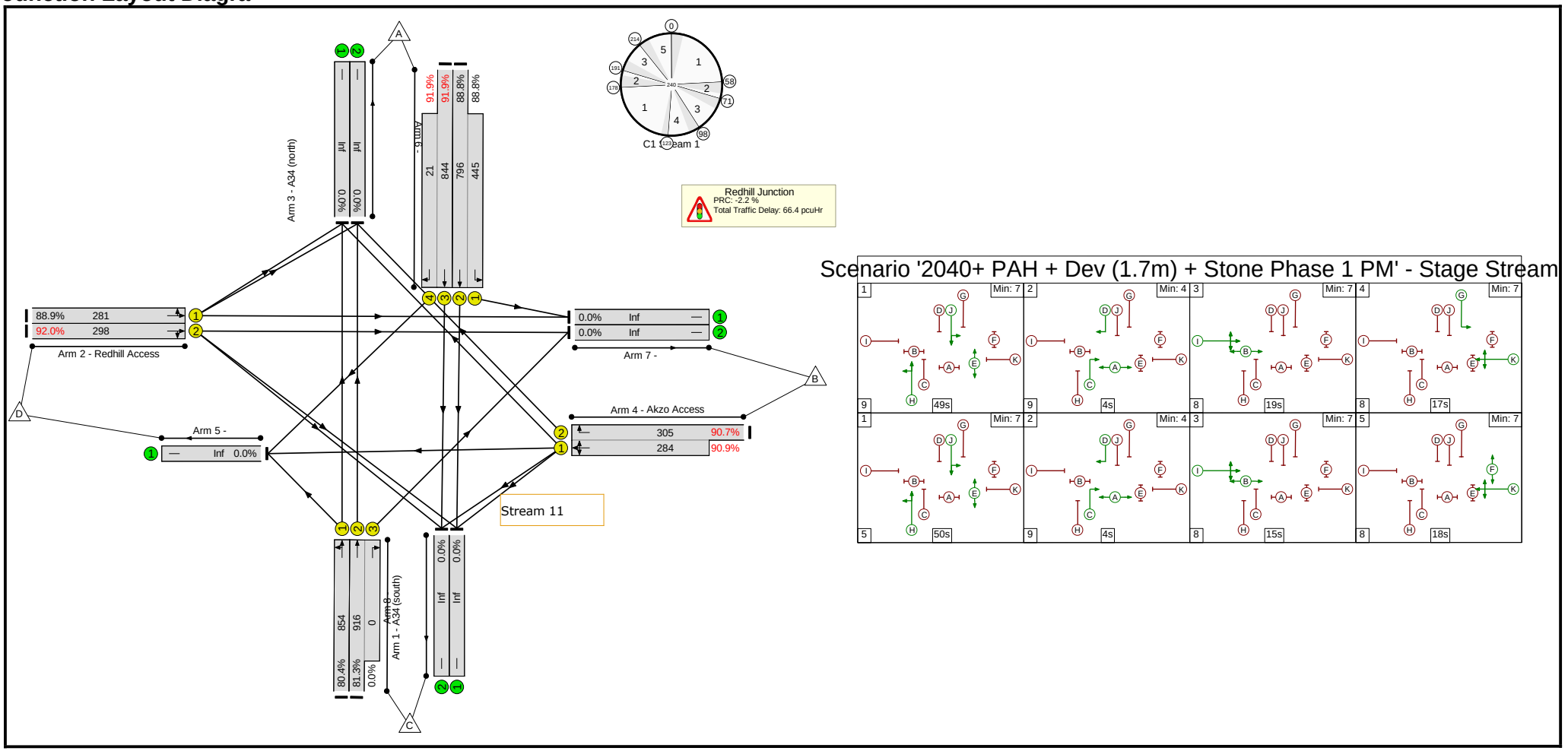
Stage	1	2	3	4	1	2	3	5
Duration	49	4	19	17	50	4	15	18
Change Point	0	58	71	98	123	178	191	214

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Scenario '2040+ PAH + Dev (1.7m) + Stone Phase 1 PM' - Stage Stream

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.0%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.0%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	103	-	686	1951	854	80.4%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	103:22	-	745	2105:1965	916+0	81.3 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	34	-	250	1875	281	88.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	34	-	274	1986	298	92.0%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	99:129	30	1102	2021:1636	796+445	88.8 : 88.8%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	99:22	-	795	2021:1753	844+21	91.9 : 91.9%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	35	-	535	1981:1842	305+284	90.7 : 90.9%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	837	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1062	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	935	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**41.7**	**24.6**	**0.0**	**66.4**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**41.7**	**24.6**	**0.0**	**66.4**	**-**	**-**	**-**	**-**
1/1	686	686	-	-	-	5.6	2.0	-	7.6	39.8	20.2	2.0	22.2
1/2+1/3	745	745	-	-	-	6.1	2.1	-	8.2	39.7	22.1	2.1	24.3
2/1	250	250	-	-	-	3.5	3.3	-	6.8	97.6	8.3	3.3	11.6
2/2	274	274	-	-	-	3.8	4.2	-	8.1	105.9	9.1	4.2	13.4
3/2+3/1	1102	1102	-	-	-	8.0	3.8	-	11.8	38.5	21.0	3.8	24.8
3/3+3/4	795	795	-	-	-	7.3	5.0	-	12.3	55.6	24.5	5.0	29.5
4/2+4/1	535	535	-	-	-	7.4	4.3	-	11.7	78.6	9.4	4.3	13.6
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	837	837	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1062	1062	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	935	935	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

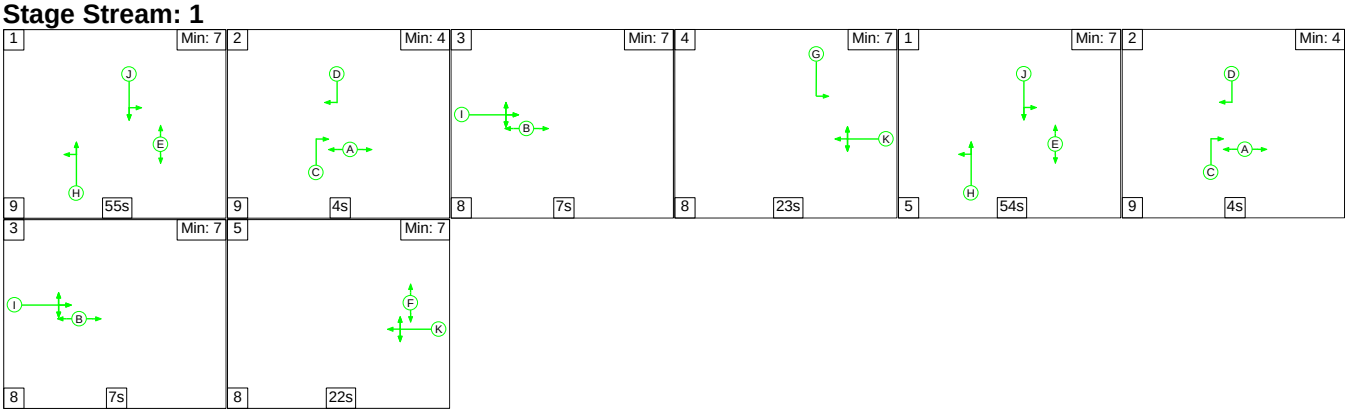
C1 Stream: 1 PRC for Signalled Lanes (%): -2.2 Total Delay for Signalled Lanes (pcuHr): 66.38 Cycle Time (s): 240
PRC Over All Lanes (%): -2.2 Total Delay Over All Lanes(pcuHr): 66.38

Full Input Data And Results

Scenario 13: '2040+ PAH + Dev (1m) + Stone Total AM' (FG15: '2040 + PAH + Development (1m) + Stone Total AM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

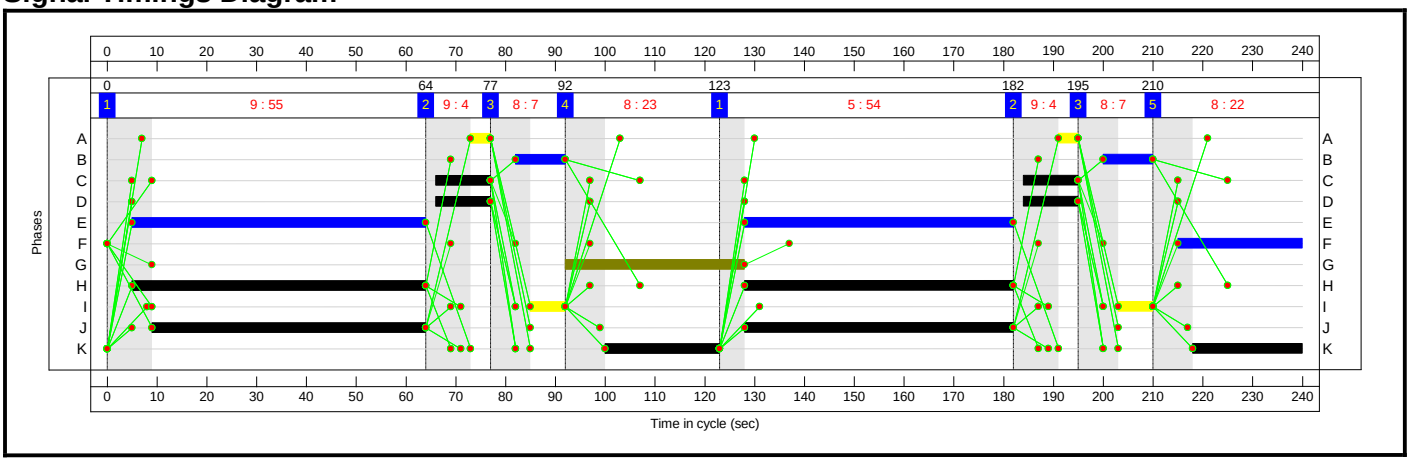


Stage Timings

Stage Stream: 1

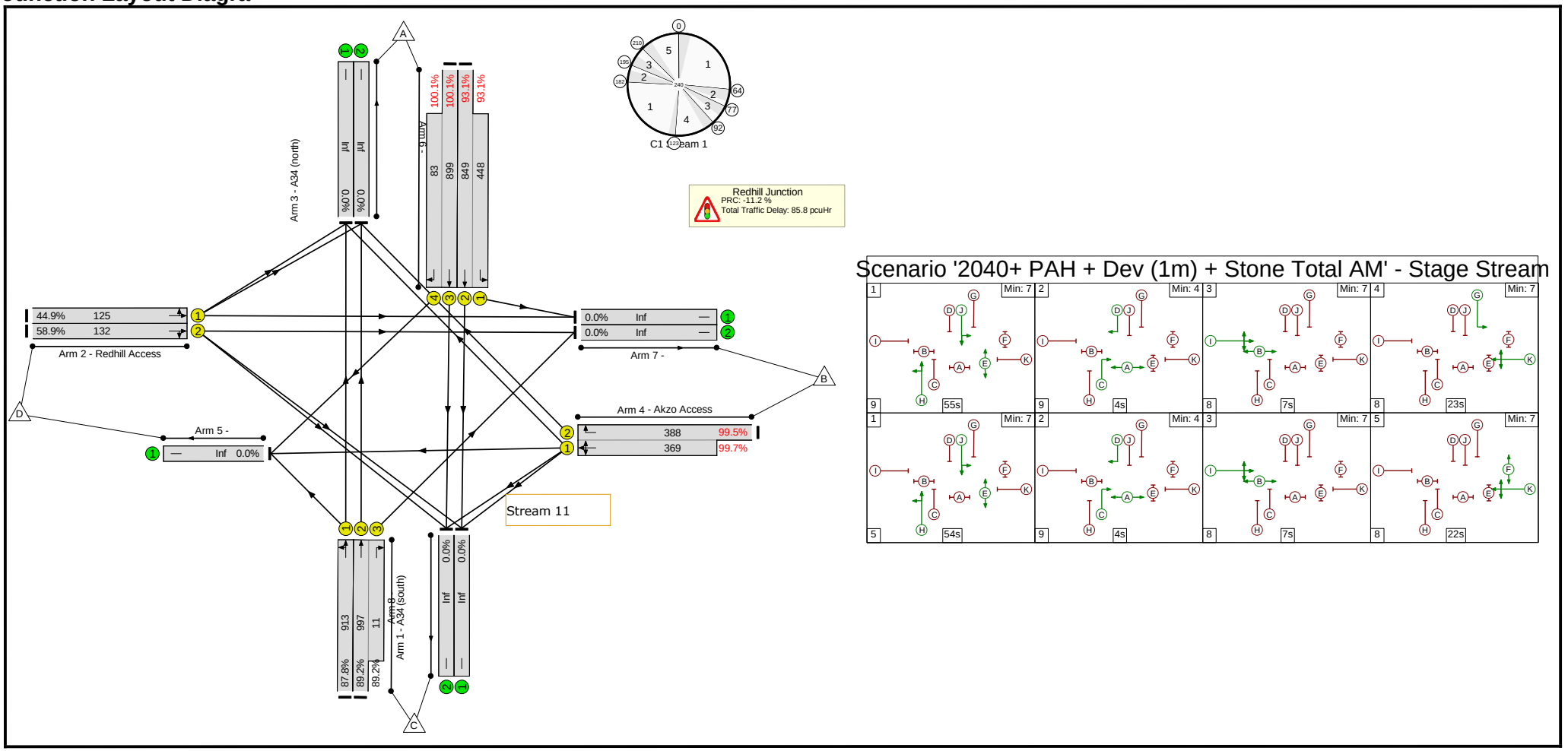
Stage	1	2	3	4	1	2	3	5
Duration	55	4	7	23	54	4	7	22
Change Point	0	64	77	92	123	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.1%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.1%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	113	-	801	1905	913	87.8%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	113:22	-	899	2105:1840	997+11	89.2 : 89.2%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	109:145	36	1207	2021:1636	849+448	93.1 : 93.1%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	109:22	-	983	2021:1753	899+83	100.1 : 100.1%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	45	-	754	1981:1884	388+369	99.5 : 99.7%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	603	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1285	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	861	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	972	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**42.7**	**43.1**	**0.0**	**85.8**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**42.7**	**43.1**	**0.0**	**85.8**	**-**	**-**	**-**	**-**
1/1	801	801	-	-	-	6.2	3.4	-	9.6	43.3	24.0	3.4	27.4
1/2+1/3	899	899	-	-	-	7.1	3.9	-	11.0	44.0	27.0	3.9	30.9
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.6	0.7	3.3
3/2+3/1	1207	1207	-	-	-	7.9	5.9	-	13.8	41.2	23.8	5.9	29.8
3/3+3/4	983	982	-	-	-	9.3	15.9	-	25.1	92.0	32.0	15.9	47.8
4/2+4/1	754	754	-	-	-	10.1	13.0	-	23.1	110.5	13.1	13.0	26.1
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	603	603	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1285	1285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	861	861	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	971	971	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

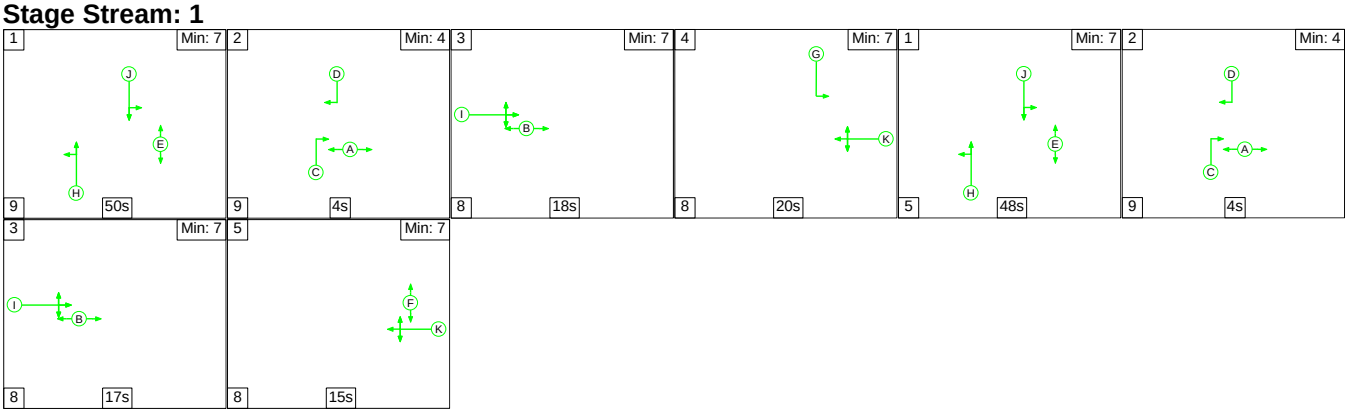
C1 Stream: 1 PRC for Signalled Lanes (%): -11.2 Total Delay for Signalled Lanes (pcuHr): 85.80 Cycle Time (s): 240
PRC Over All Lanes (%): -11.2 Total Delay Over All Lanes(pcuHr): 85.80

Full Input Data And Results

Scenario 14: '2040+ PAH + Dev (1m) + Stone Total PM' (FG16: '2040 + PAH + Development (1m) + Stone Total PM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

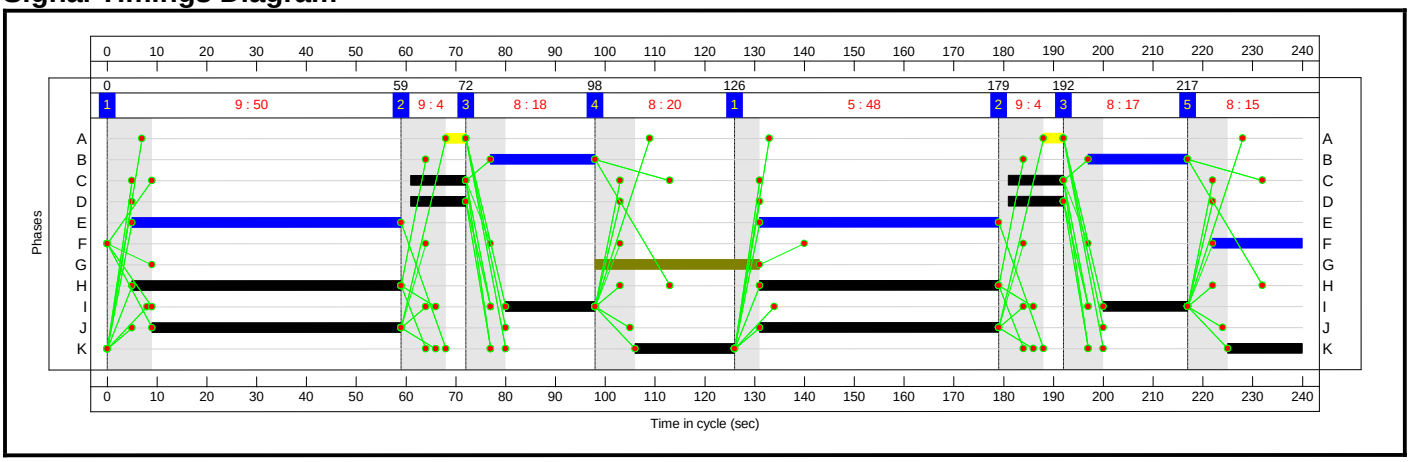


Stage Timings

Stage Stream: 1

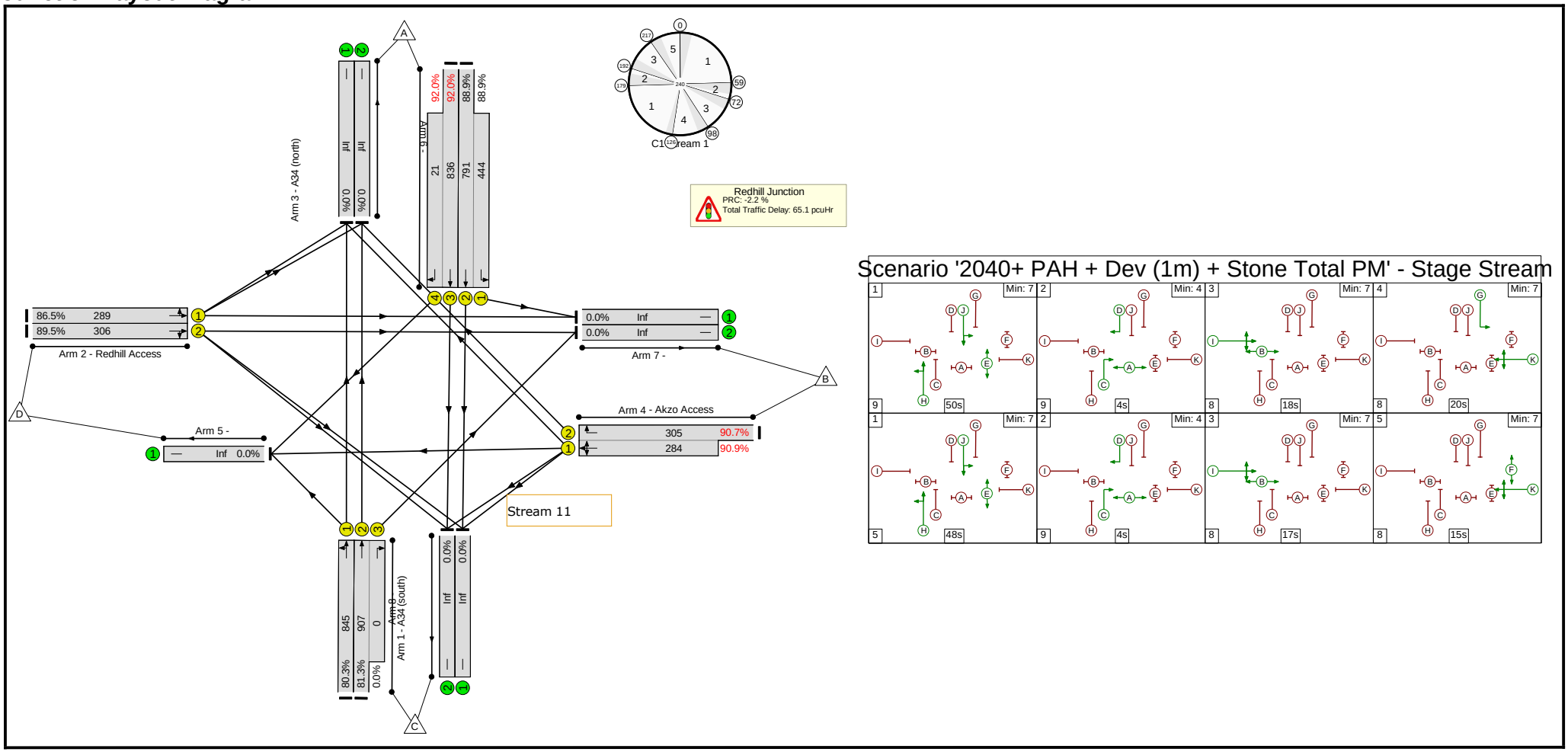
Stage	1	2	3	4	1	2	3	5
Duration	50	4	18	20	48	4	17	15
Change Point	0	59	72	98	126	179	192	217

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.0%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.0%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	102	-	679	1951	845	80.3%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	102:22	-	738	2105:1965	907+0	81.3 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	35	-	250	1875	289	86.5%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	35	-	274	1986	306	89.5%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	98:131	33	1098	2021:1636	791+444	88.9 : 88.9%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	98:22	-	788	2021:1753	836+21	92.0 : 92.0%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	35	-	535	1981:1842	305+284	90.7 : 90.9%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	830	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1055	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	928	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**41.6**	**23.5**	**0.0**	**65.1**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**41.6**	**23.5**	**0.0**	**65.1**	**-**	**-**	**-**	**-**
1/1	679	679	-	-	-	5.6	2.0	-	7.6	40.2	20.4	2.0	22.4
1/2+1/3	738	738	-	-	-	6.1	2.1	-	8.2	40.2	22.3	2.1	24.5
2/1	250	250	-	-	-	3.4	2.8	-	6.2	89.8	8.1	2.8	10.9
2/2	274	274	-	-	-	3.8	3.5	-	7.3	95.8	9.0	3.5	12.5
3/2+3/1	1098	1098	-	-	-	8.0	3.8	-	11.8	38.6	21.1	3.8	24.9
3/3+3/4	788	788	-	-	-	7.3	5.0	-	12.3	56.2	24.5	5.0	29.5
4/2+4/1	535	535	-	-	-	7.4	4.3	-	11.7	78.6	9.4	4.3	13.6
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	830	830	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1055	1055	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	928	928	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

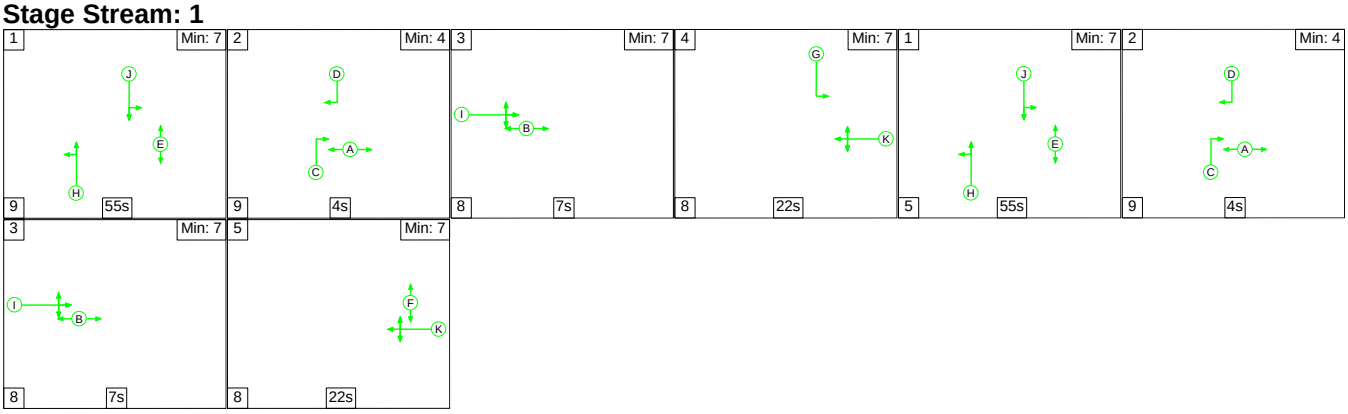
C1 Stream: 1 PRC for Signalled Lanes (%): -2.2 Total Delay for Signalled Lanes (pcuHr): 65.10 Cycle Time (s): 240
PRC Over All Lanes (%): -2.2 Total Delay Over All Lanes(pcuHr): 65.10

Full Input Data And Results

Scenario 15: '2040+ PAH + Dev (1.7m) + Stone Total AM' (FG17: '2040 + PAH + Development (1.7m) + Stone Total AM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

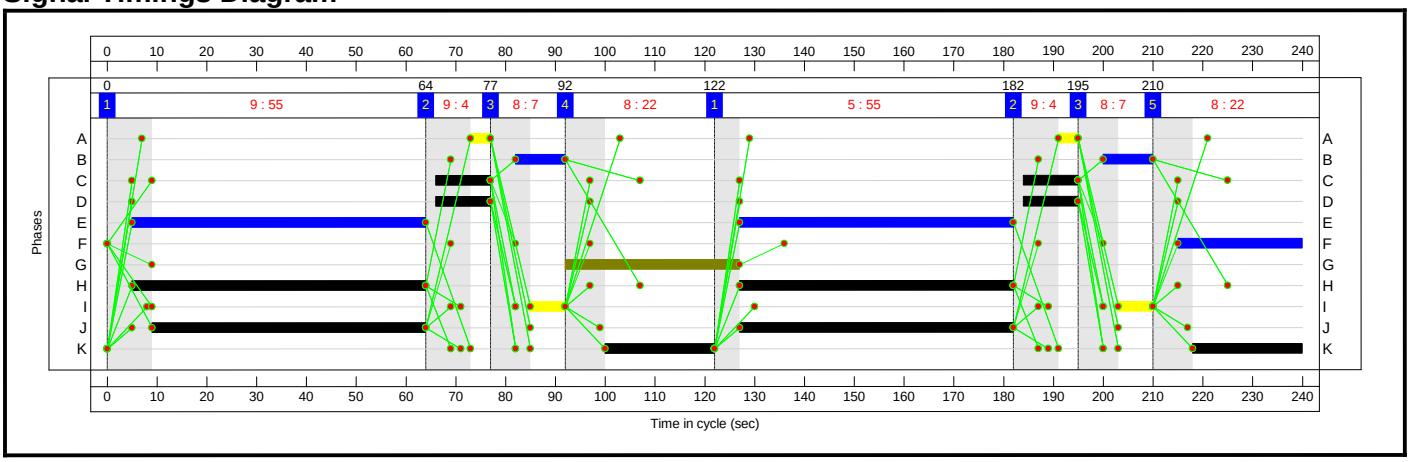


Stage Timings

Stage Stream: 1

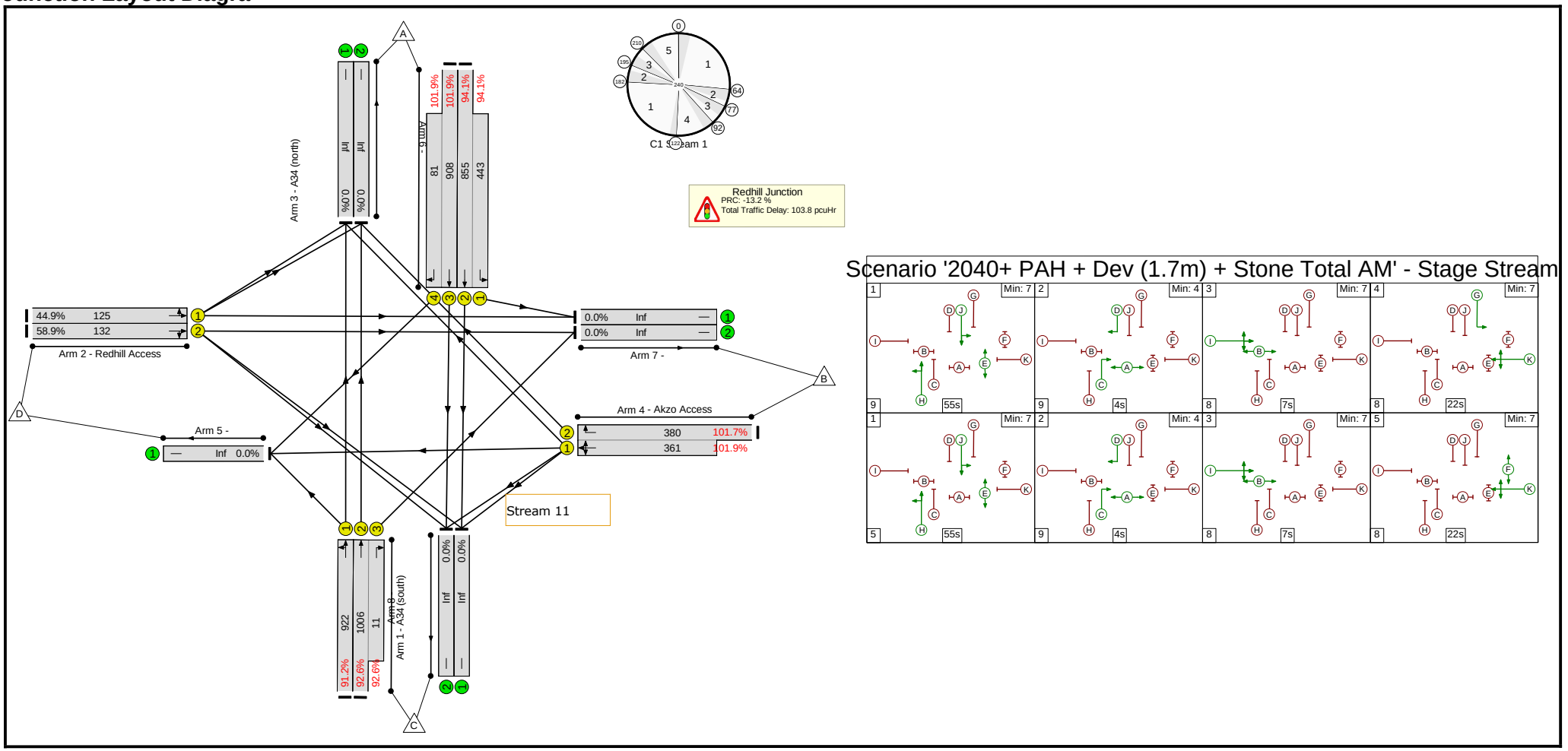
Stage	1	2	3	4	1	2	3	5
Duration	55	4	7	22	55	4	7	22
Change Point	0	64	77	92	122	182	195	210

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.9%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.9%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	114	-	841	1908	922	91.2%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	114:22	-	941	2105:1840	1006+11	92.6 : 92.6%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	110:145	35	1222	2021:1636	855+443	94.1 : 94.1%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	110:22	-	1008	2021:1753	908+81	101.9 : 101.9%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	44	-	754	1981:1884	380+361	101.7 : 101.9%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1327	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	454	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	876	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	997	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**47.2**	**56.6**	**0.0**	**103.8**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**47.2**	**56.6**	**0.0**	**103.8**	**-**	**-**	**-**	**-**
1/1	841	841	-	-	-	6.7	4.6	-	11.3	48.5	25.7	4.6	30.3
1/2+1/3	941	941	-	-	-	7.6	5.4	-	13.1	49.9	29.1	5.4	34.6
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.6	0.7	3.3
3/2+3/1	1222	1222	-	-	-	8.0	6.8	-	14.8	43.6	25.9	6.8	32.7
3/3+3/4	1008	990	-	-	-	11.4	21.2	-	32.6	116.4	36.4	21.2	57.6
4/2+4/1	754	741	-	-	-	11.5	17.4	-	28.9	138.2	13.5	17.4	30.9
5/1	589	589	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	641	641	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1321	1321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	875	875	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	979	979	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

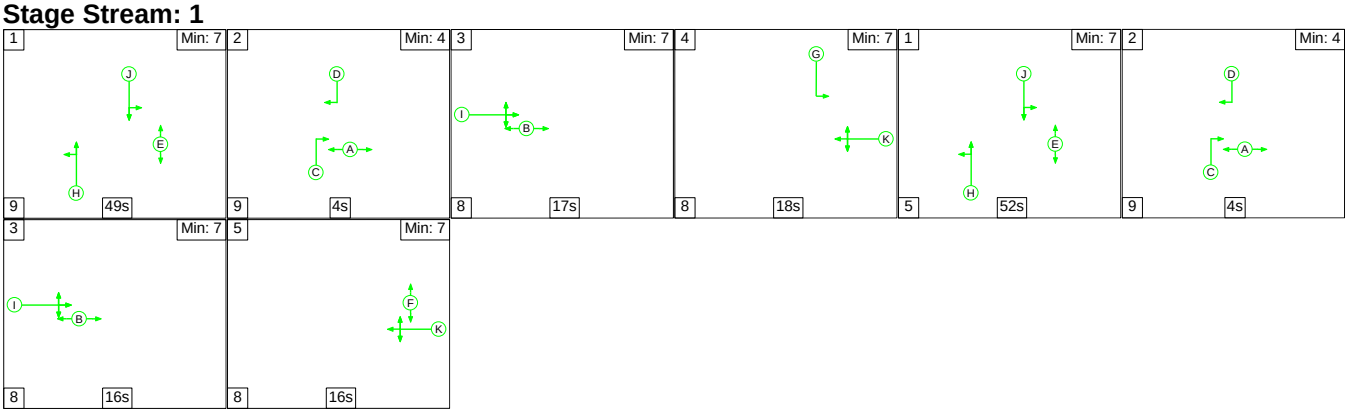
C1 Stream: 1 PRC for Signalled Lanes (%): -13.2 Total Delay for Signalled Lanes (pcuHr): 103.85 Cycle Time (s): 240
PRC Over All Lanes (%): -13.2 Total Delay Over All Lanes(pcuHr): 103.85

Full Input Data And Results

Scenario 16: '2040+ PAH + Dev (1.7m) + Stone Total PM' (FG18: '2040 + PAH + Development (1.7m) + Stone Total PM', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

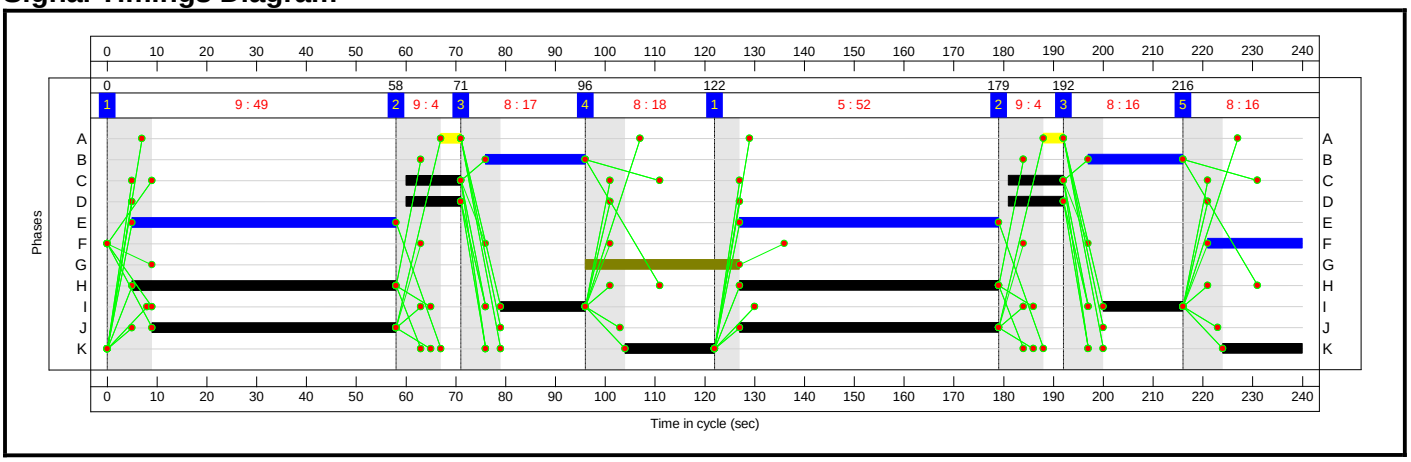


Stage Timings

Stage Stream: 1

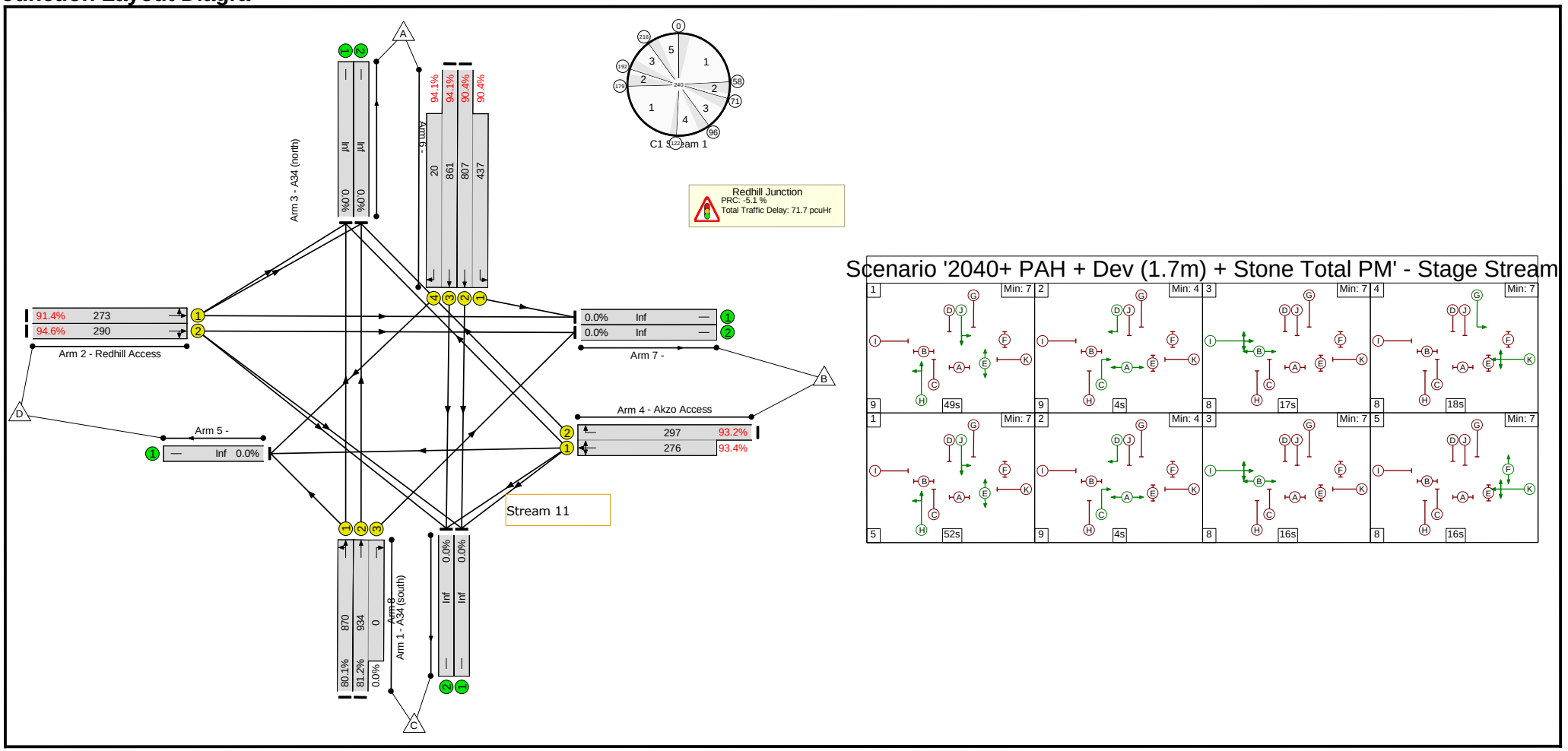
Stage	1	2	3	4	1	2	3	5
Duration	49	4	17	18	52	4	16	16
Change Point	0	58	71	96	122	179	192	216

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.6%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.6%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	105	-	697	1951	870	80.1%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	105:22	-	758	2105:1965	934+0	81.2 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	33	-	250	1875	273	91.4%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	33	-	274	1986	290	94.6%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	101:132	31	1125	2021:1636	807+437	90.4 : 90.4%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	101:22	-	829	2021:1753	861+20	94.1 : 94.1%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	34	-	535	1981:1842	297+276	93.2 : 93.4%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	848	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1075	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	565	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	969	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**42.2**	**29.5**	**0.0**	**71.7**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**42.2**	**29.5**	**0.0**	**71.7**	**-**	**-**	**-**	**-**
1/1	697	697	-	-	-	5.6	2.0	-	7.5	38.9	20.3	2.0	22.3
1/2+1/3	758	758	-	-	-	6.1	2.1	-	8.2	38.9	22.3	2.1	24.4
2/1	250	250	-	-	-	3.5	4.0	-	7.5	107.8	8.2	4.0	12.2
2/2	274	274	-	-	-	3.9	5.2	-	9.1	119.7	9.1	5.2	14.3
3/2+3/1	1125	1125	-	-	-	8.1	4.4	-	12.5	39.9	21.9	4.4	26.3
3/3+3/4	829	829	-	-	-	7.6	6.4	-	14.0	60.7	26.1	6.4	32.4
4/2+4/1	535	535	-	-	-	7.5	5.4	-	12.9	86.9	9.2	5.4	14.6
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	848	848	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1075	1075	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	565	565	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	889	889	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	969	969	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

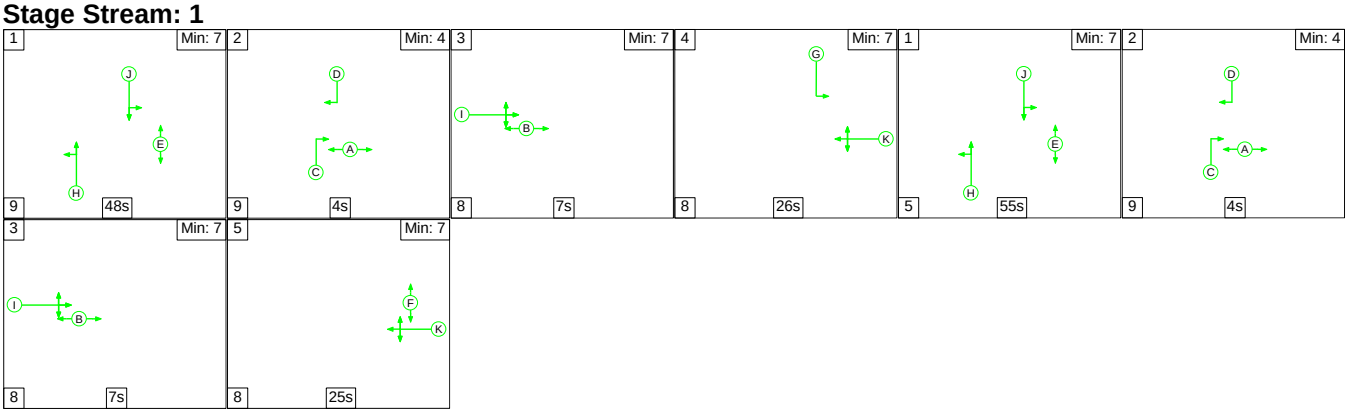
C1 Stream: 1 PRC for Signalled Lanes (%): -5.1 Total Delay for Signalled Lanes (pcuHr): 71.66 Cycle Time (s): 240
PRC Over All Lanes (%): -5.1 Total Delay Over All Lanes(pcuHr): 71.66

Full Input Data And Results

Scenario 17: '2040 PAH + Dev (1m) AM_A513 Light Vehs through Resi' (FG19: '2040 + PAH + Development (1m) AM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

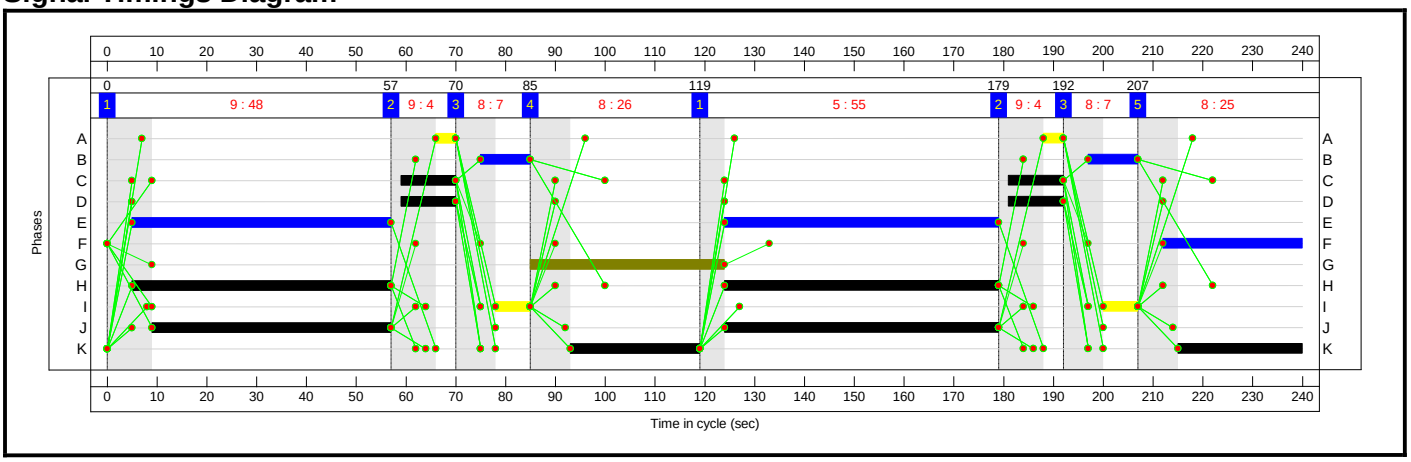


Stage Timings

Stage Stream: 1

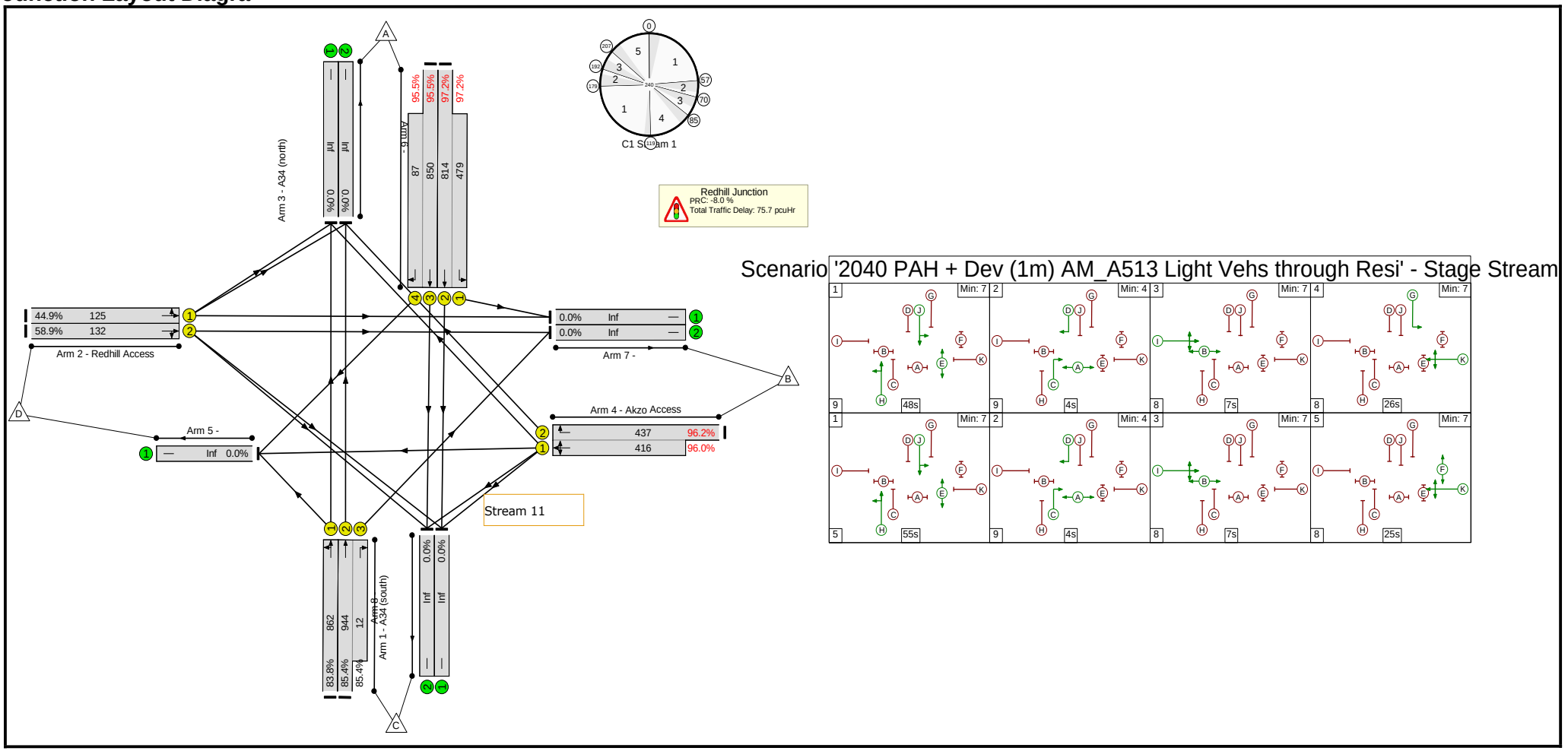
Stage	1	2	3	4	1	2	3	5
Duration	48	4	7	26	55	4	7	25
Change Point	0	57	70	85	119	179	192	207

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Scenario '2040 PAH + Dev (1m) AM_A513 Light Vehs through Resi' - Stage Stream

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	107	-	723	1899	862	83.8%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	107:22	-	816	2105:1840	944+12	85.4 : 85.4%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	103:142	39	1257	2021:1636	814+479	97.2 : 97.2%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	103:22	-	895	2021:1753	850+87	95.5 : 95.5%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	51	-	820	1981:1882	437+416	96.2 : 96.0%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	556	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	503	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	884	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**42.4**	**33.3**	**0.0**	**75.7**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**42.4**	**33.3**	**0.0**	**75.7**	**-**	**-**	**-**	**-**
1/1	723	723	-	-	-	5.8	2.5	-	8.3	41.3	21.3	2.5	23.8
1/2+1/3	816	816	-	-	-	6.7	2.8	-	9.5	41.7	24.1	2.8	26.9
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.8	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.6	0.7	3.3
3/2+3/1	1257	1257	-	-	-	9.0	10.9	-	19.9	56.9	27.3	10.9	38.2
3/3+3/4	895	895	-	-	-	8.4	7.7	-	16.1	64.8	27.5	7.7	35.2
4/2+4/1	820	820	-	-	-	10.5	8.3	-	18.8	82.5	14.0	8.3	22.3
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	556	556	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	503	503	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	884	884	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

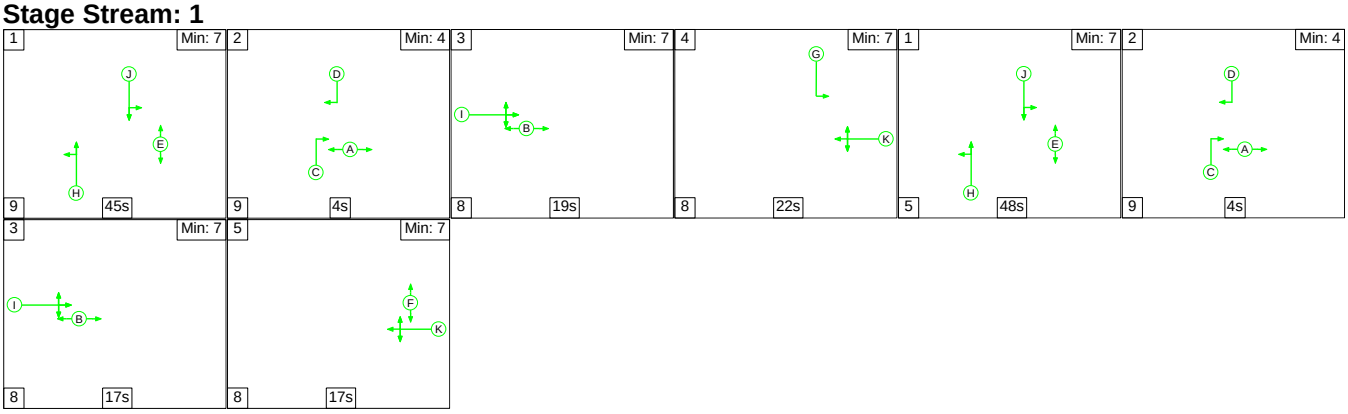
C1 Stream: 1 PRC for Signalled Lanes (%): -8.0 Total Delay for Signalled Lanes (pcuHr): 75.66 Cycle Time (s): 240
PRC Over All Lanes (%): -8.0 Total Delay Over All Lanes(pcuHr): 75.66

Full Input Data And Results

Scenario 18: '2040 PAH + Dev (1m) PM_A513 Light Vehs through Resi' (FG20: '2040 + PAH + Development (1m) PM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

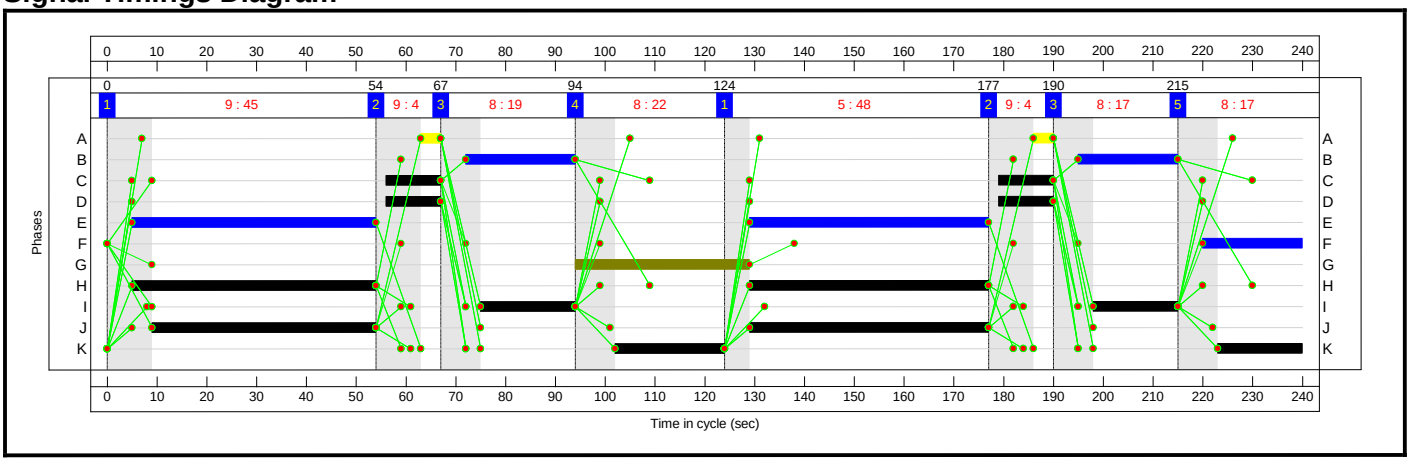


Stage Timings

Stage Stream: 1

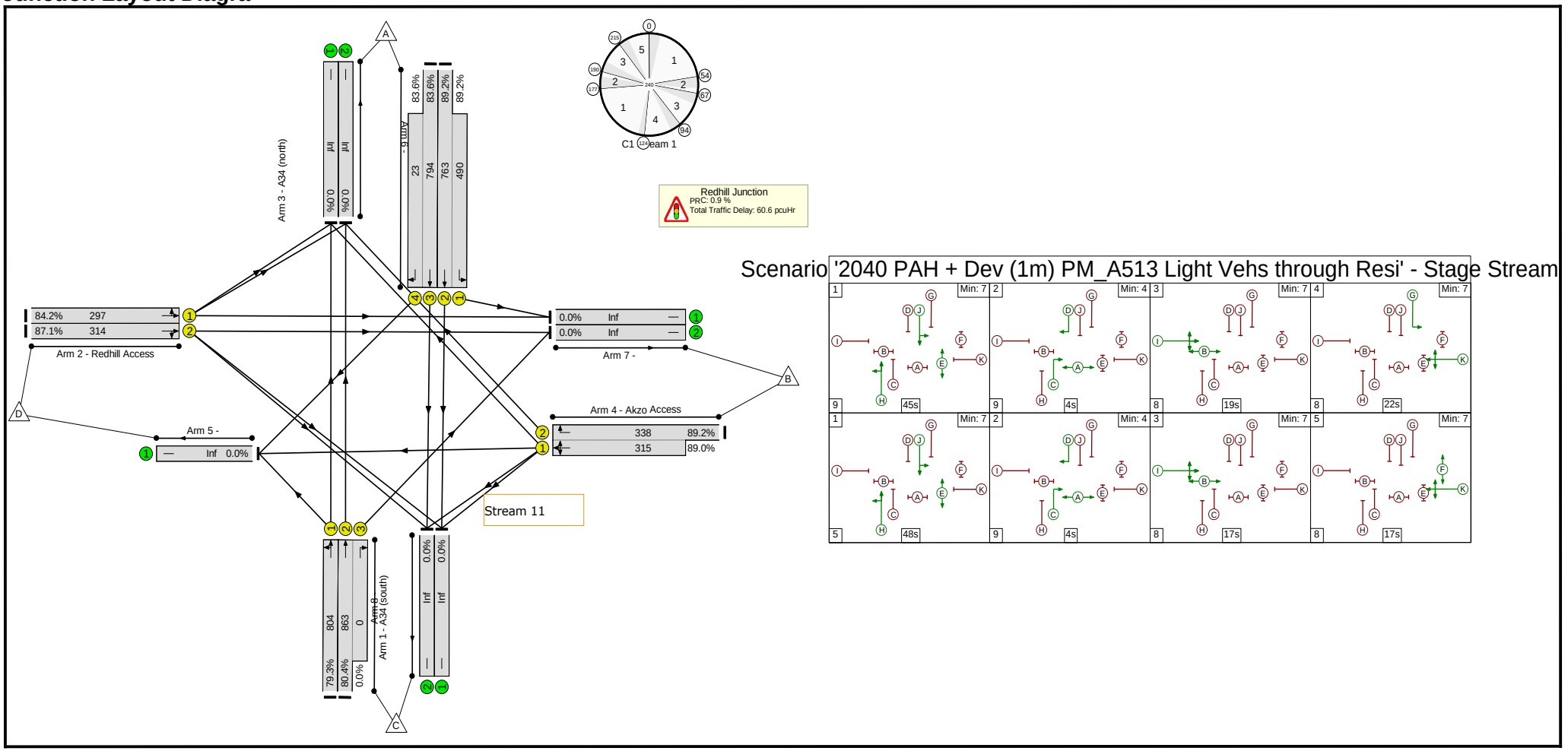
Stage	1	2	3	4	1	2	3	5
Duration	45	4	19	22	48	4	17	17
Change Point	0	54	67	94	124	177	190	215

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.2%**
Redhill Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.2%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	97	-	638	1950	804	79.3%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	97:22	-	694	2105:1965	863+0	80.4 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	36	-	250	1875	297	84.2%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	36	-	274	1986	314	87.1%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	93:128	35	1117	2021:1636	763+490	89.2 : 89.2%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	93:22	-	683	2021:1753	794+23	83.6 : 83.6%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	39	-	582	1981:1842	338+315	89.2 : 89.0%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	811	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1036	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	607	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	839	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	823	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**41.3**	**19.3**	**0.0**	**60.6**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**41.3**	**19.3**	**0.0**	**60.6**	**-**	**-**	**-**	**-**
1/1	638	638	-	-	-	5.5	1.9	-	7.3	41.4	19.3	1.9	21.2
1/2+1/3	694	694	-	-	-	6.0	2.0	-	8.0	41.4	21.2	2.0	23.2
2/1	250	250	-	-	-	3.4	2.4	-	5.8	83.9	8.2	2.4	10.6
2/2	274	274	-	-	-	3.8	3.0	-	6.7	88.2	9.1	3.0	12.0
3/2+3/1	1117	1117	-	-	-	8.5	3.9	-	12.4	39.9	21.0	3.9	24.9
3/3+3/4	683	683	-	-	-	6.3	2.5	-	8.7	46.1	20.4	2.5	22.8
4/2+4/1	582	582	-	-	-	7.9	3.7	-	11.6	71.6	10.0	3.7	13.7
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	811	811	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1036	1036	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	607	607	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	839	839	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	823	823	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

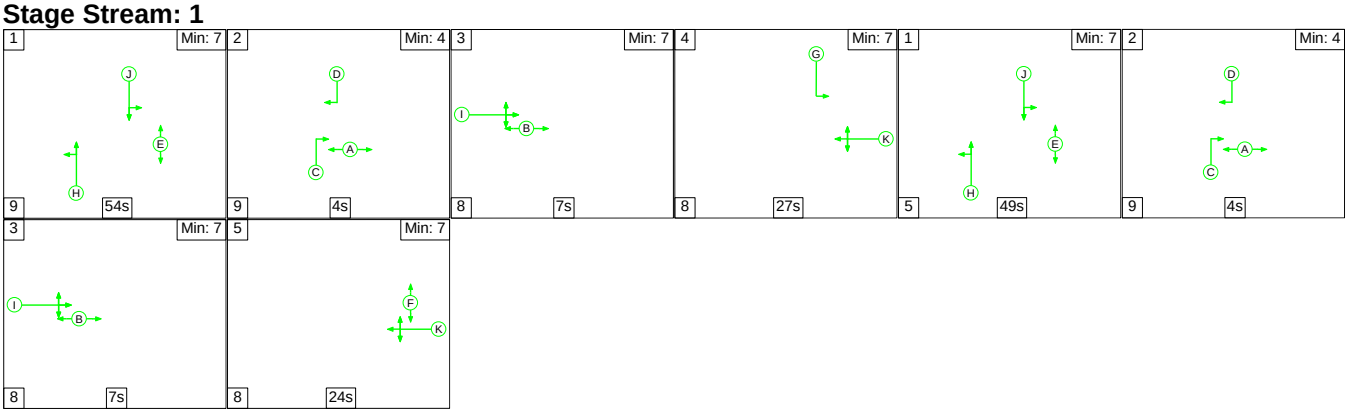
C1 Stream: 1 PRC for Signalled Lanes (%): 0.9 Total Delay for Signalled Lanes (pcuHr): 60.57 Cycle Time (s): 240
PRC Over All Lanes (%): 0.9 Total Delay Over All Lanes(pcuHr): 60.57

Full Input Data And Results

Scenario 19: '2040 PAH + Dev (1.7m) AM_A513 Light Vehs through Resi' (FG21: '2040 + PAH + Development (1.7m) AM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

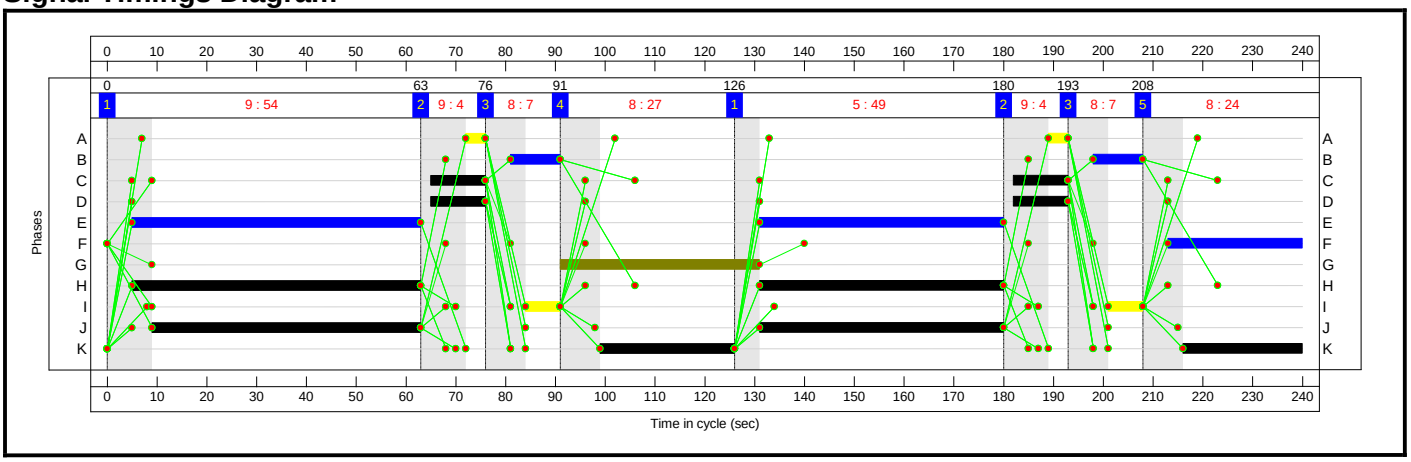


Stage Timings

Stage Stream: 1

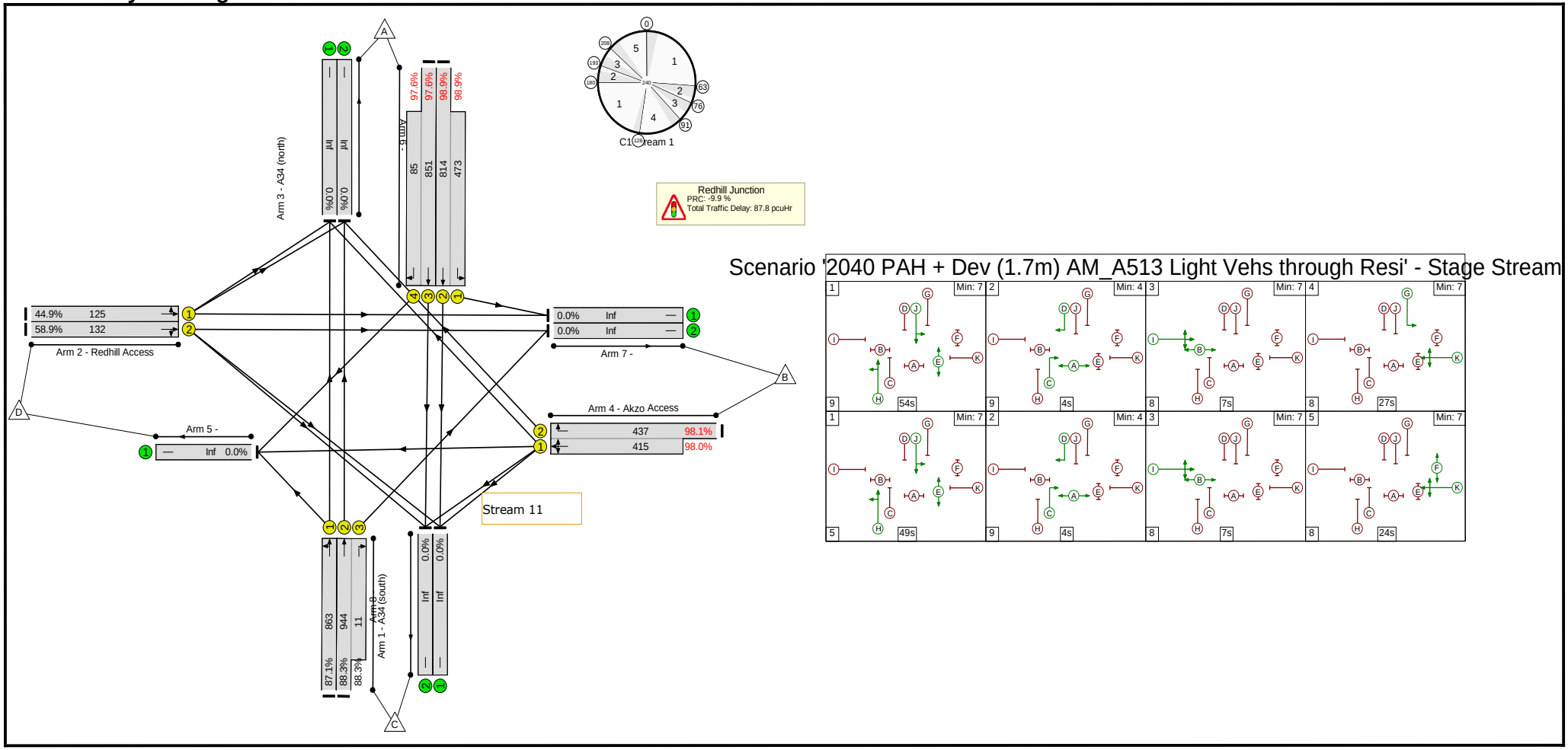
Stage	1	2	3	4	1	2	3	5
Duration	54	4	7	27	49	4	7	24
Change Point	0	63	76	91	126	180	193	208

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Scenario '2040 PAH + Dev (1.7m) AM_A513 Light Vehs through Resi' - Stage Stream

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.9%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.9%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	107	-	752	1901	863	87.1%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	107:22	-	844	2105:1840	944+11	88.3 : 88.3%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	14	-	56	1870	125	44.9%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	14	-	78	1986	132	58.9%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	103:143	40	1273	2021:1636	814+473	98.9 : 98.9%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	103:22	-	914	2021:1753	851+85	97.6 : 97.6%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	51	-	836	1981:1881	437+415	98.1 : 98.0%
5/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1273	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	505	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	10	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	876	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	903	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**44.0**	**43.8**	**0.0**	**87.8**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**44.0**	**43.8**	**0.0**	**87.8**	**-**	**-**	**-**	**-**
1/1	752	752	-	-	-	6.2	3.2	-	9.4	44.9	23.0	3.2	26.2
1/2+1/3	844	844	-	-	-	7.0	3.5	-	10.6	45.1	25.8	3.5	29.4
2/1	56	56	-	-	-	0.8	0.4	-	1.2	79.9	1.8	0.4	2.2
2/2	78	78	-	-	-	1.2	0.7	-	1.9	86.7	2.6	0.7	3.3
3/2+3/1	1273	1273	-	-	-	9.3	14.6	-	23.9	67.5	28.5	14.6	43.0
3/3+3/4	914	914	-	-	-	8.7	10.5	-	19.2	75.7	28.2	10.5	38.7
4/2+4/1	836	836	-	-	-	10.8	10.8	-	21.7	93.3	14.9	10.8	25.7
5/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1273	1273	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	505	505	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	876	876	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

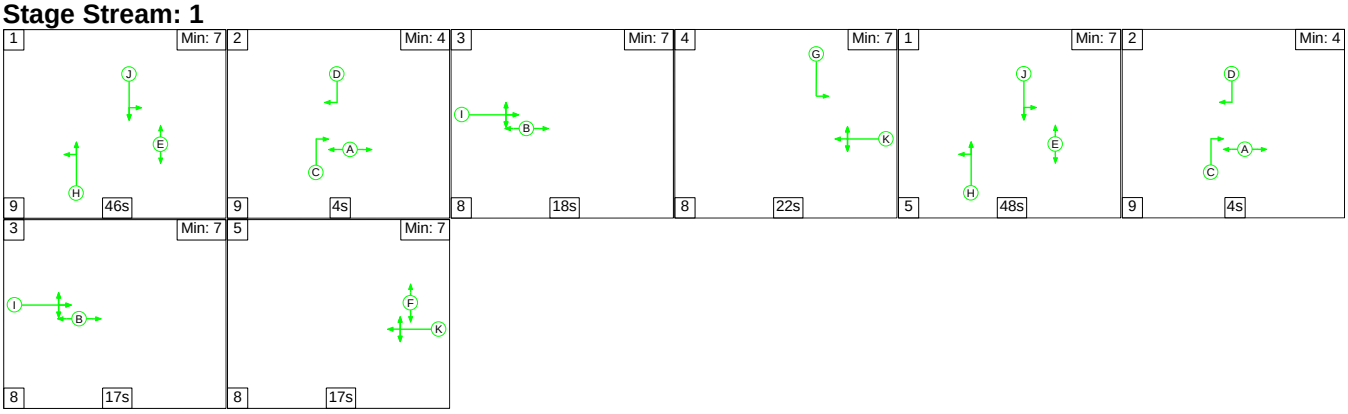
C1 Stream: 1 PRC for Signalled Lanes (%): -9.9 Total Delay for Signalled Lanes (pcuHr): 87.82 Cycle Time (s): 240
PRC Over All Lanes (%): -9.9 Total Delay Over All Lanes(pcuHr): 87.82

Full Input Data And Results

Scenario 20: '2040 PAH + Dev (1.7m) PM_A513 Light Vehs through Resi' (FG22: '2040 + PAH + Development (1.7m) PM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Staging Plan Diagram

Stage Stream: 1

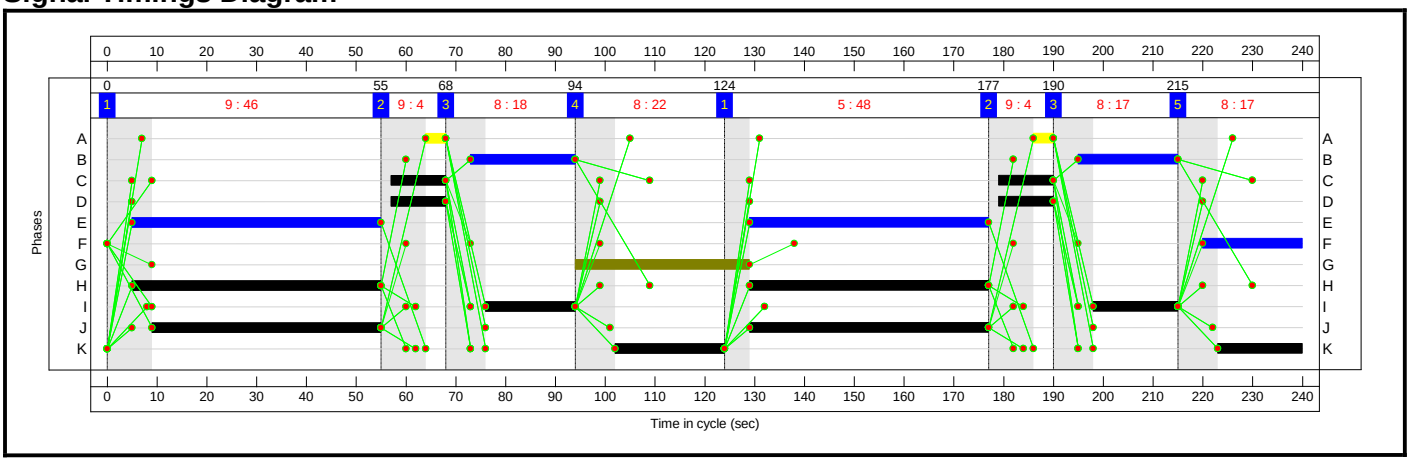


Stage Timings

Stage Stream: 1

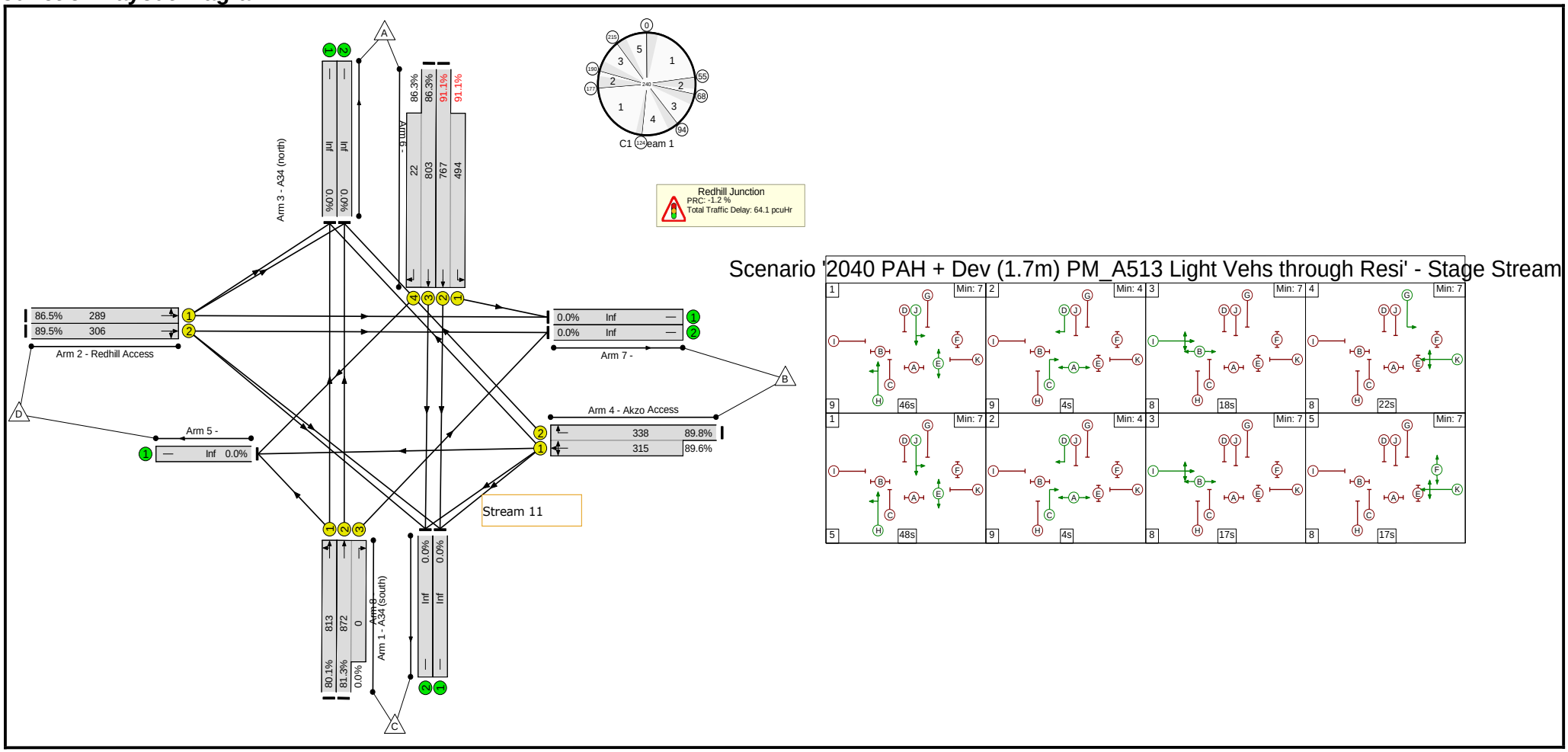
Stage	1	2	3	4	1	2	3	5
Duration	46	4	18	22	48	4	17	17
Change Point	0	55	68	94	124	177	190	215

Signal Timings Diagram



Full Input Data And Results

Junction Layout Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Business Park (Committed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.1%**
Redhill Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.1%**
1/1	A34 (south) Left Ahead	U	1	N/A	H		2	98	-	651	1950	813	80.1%
1/2+1/3	A34 (south) Ahead Right	U	1	N/A	H C		2	98:22	-	709	2105:1965	872+0	81.3 : 0.0%
2/1	Redhill Access Left Ahead	U	1	N/A	I		2	35	-	250	1875	289	86.5%
2/2	Redhill Access Ahead Right	U	1	N/A	I		2	35	-	274	1986	306	89.5%
3/2+3/1	A34 (north) Left Ahead	U	1	N/A	J	G	2	94:129	35	1149	2021:1636	767+494	91.1 : 91.1%
3/3+3/4	A34 (north) Right Ahead	U	1	N/A	J D		2	94:22	-	712	2021:1753	803+22	86.3 : 86.3%
4/2+4/1	Akzo Access Ahead Right Left	U	1	N/A	K		2	39	-	586	1981:1842	338+315	89.8 : 89.6%
5/1		U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	826	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	1053	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	858	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	852	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Business Park (Committed Layout)	**-**	**-**	**0**	**0**	**0**	**42.1**	**22.0**	**0.0**	**64.1**	**-**	**-**	**-**	**-**
Redhill Junction	**-**	**-**	**0**	**0**	**0**	**42.1**	**22.0**	**0.0**	**64.1**	**-**	**-**	**-**	**-**
1/1	651	651	-	-	-	5.6	2.0	-	7.5	41.6	19.7	2.0	21.7
1/2+1/3	709	709	-	-	-	6.1	2.1	-	8.2	41.7	21.7	2.1	23.8
2/1	250	250	-	-	-	3.4	2.8	-	6.2	89.9	8.2	2.8	11.0
2/2	274	274	-	-	-	3.8	3.5	-	7.3	95.8	9.1	3.5	12.6
3/2+3/1	1149	1149	-	-	-	8.7	4.7	-	13.5	42.2	21.6	4.7	26.3
3/3+3/4	712	712	-	-	-	6.6	3.0	-	9.6	48.5	21.5	3.0	24.5
4/2+4/1	586	586	-	-	-	7.9	3.9	-	11.8	72.8	10.0	3.9	14.0
5/1	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	1053	1053	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	858	858	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -1.2 Total Delay for Signalled Lanes (pcuHr): 64.15 Cycle Time (s): 240
PRC Over All Lanes (%): -1.2 Total Delay Over All Lanes(pcuHr): 64.15

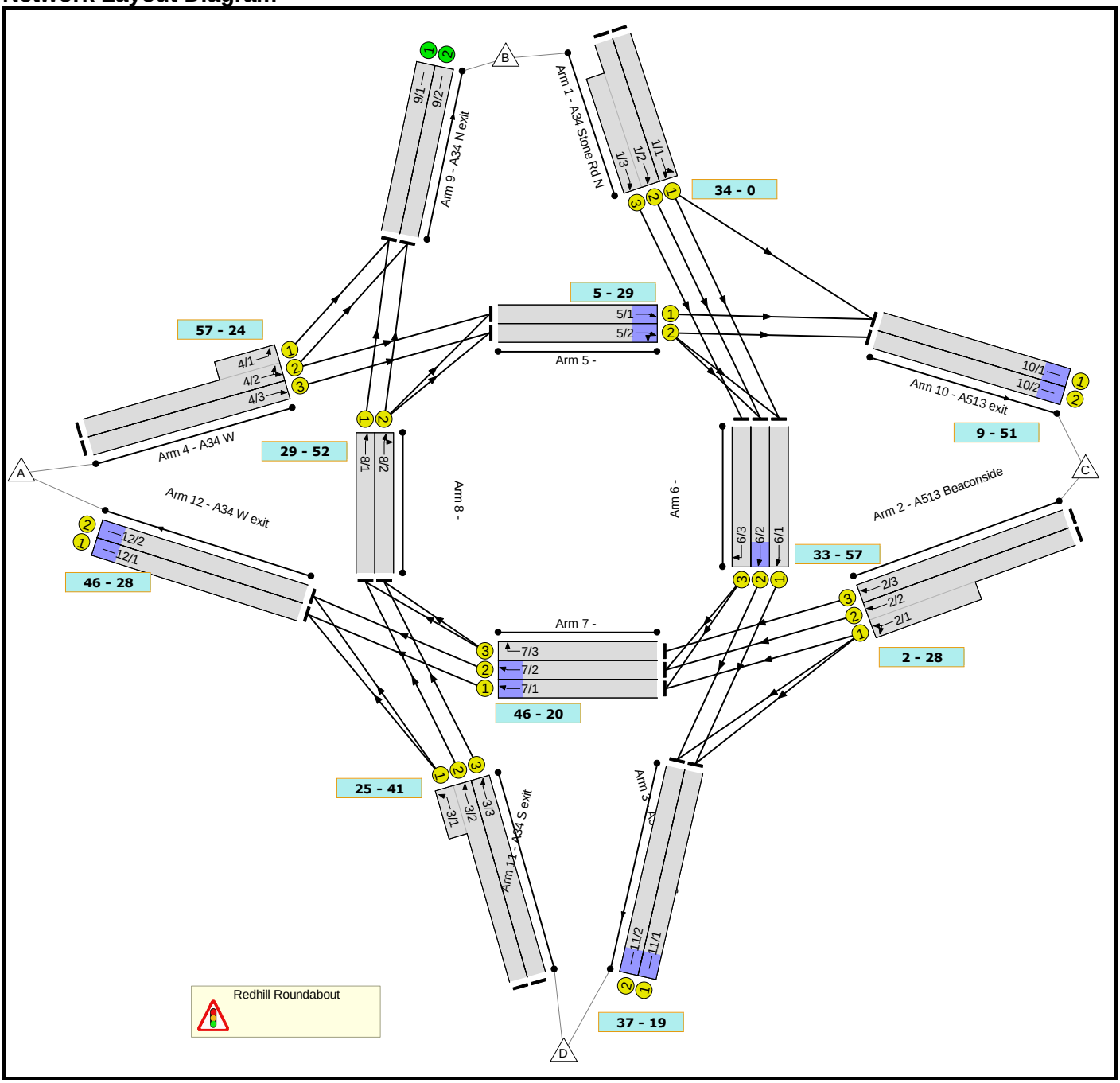
APPENDIX F: LinSig Output Data (Redhill Roundabout)

Full Input Data And Results

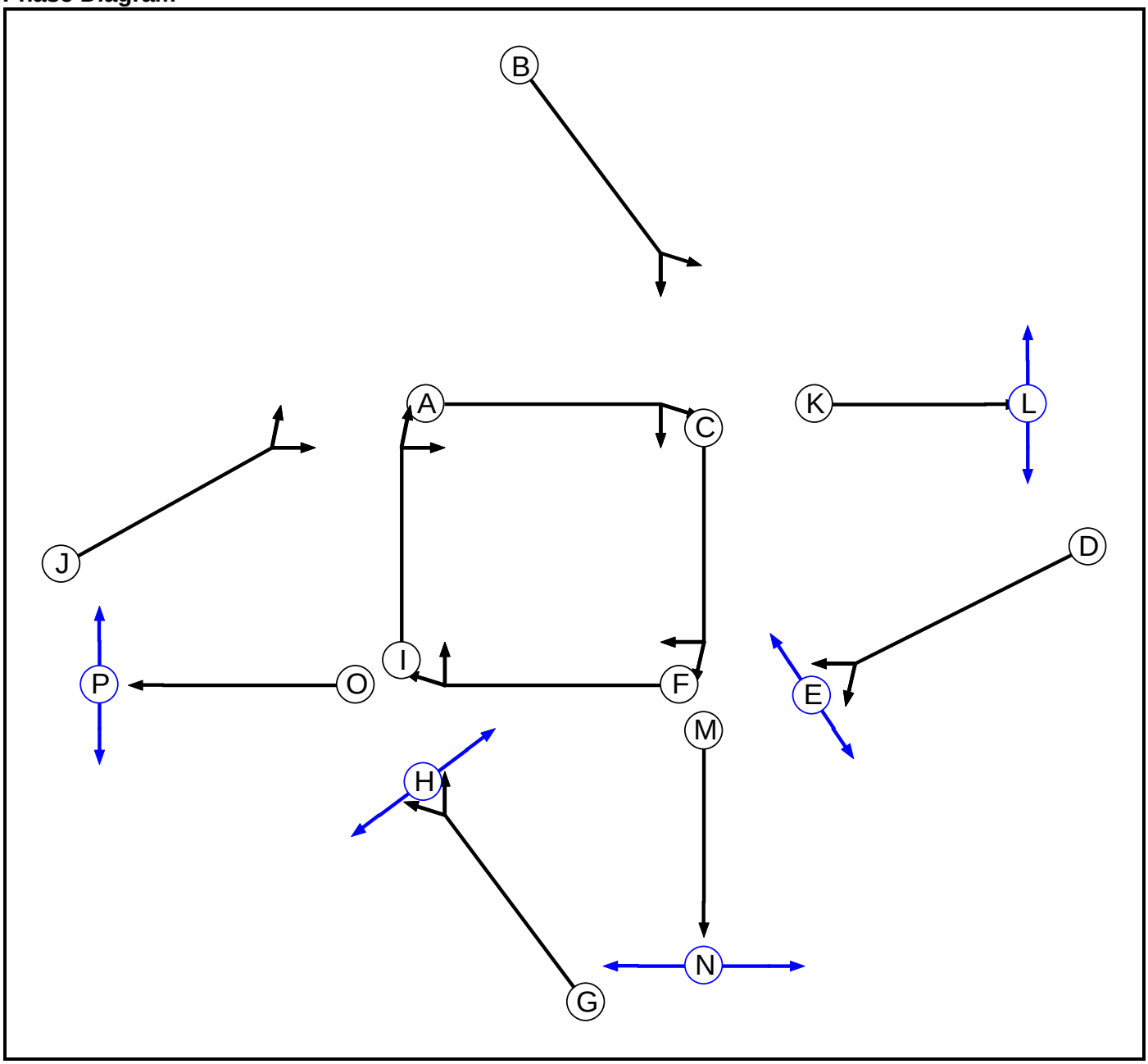
User and Project Details

Project:	**Stafford North Business Park**
Title:	**Redhill Roundabout (Committed Proposed Layout)**
Location:	Stafford
Additional detail:	
File name:	Redhill Roundabout (Signals) - Revised v2.lsg3x
Author:	[redacted]
Company:	BWB
Address:	Birmingham

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	0
D	Traffic	2		7	7
E	Pedestrian	2		5	5
F	Traffic	3		7	2
G	Traffic	3		7	7
H	Pedestrian	3		5	5
I	Traffic	4		7	2
J	Traffic	4		7	7
K	Traffic	5		7	7
L	Pedestrian	5		5	5
M	Traffic	6		7	7
N	Pedestrian	6		5	5
O	Traffic	7		7	7
P	Pedestrian	7		5	5

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A		5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	5		-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-		5	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	5		5	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	12		-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-		5	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	5		5	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	10		-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-		5	-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	5		-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-		5	-	-	-	-
L	-	-	-	-	-	-	-	-	-	-	8		-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-	-		5	-	-
N	-	-	-	-	-	-	-	-	-	-	-	-	8		-	-
O	-	-	-	-	-	-	-	-	-	-	-	-	-	-		5
P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	

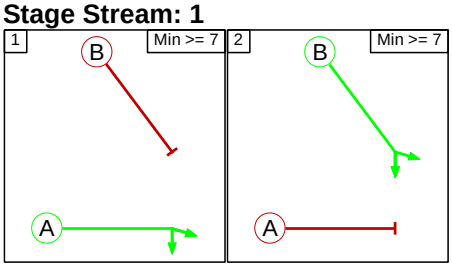
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C E
2	2	D
3	1	F H
3	2	G
4	1	I
4	2	J
5	1	K
5	2	L
6	1	M
6	2	N
7	1	O
7	2	P

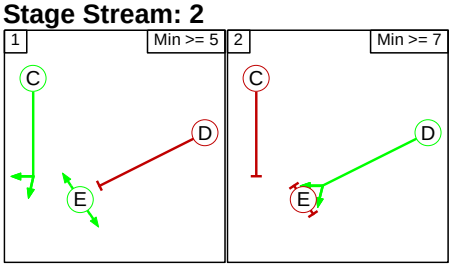
Full Input Data And Results

Stage Diagram

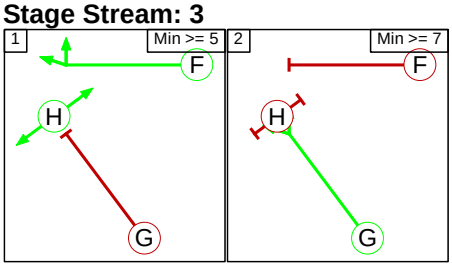
Stage Stream: 1



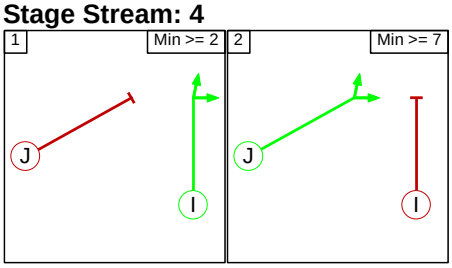
Stage Stream: 2



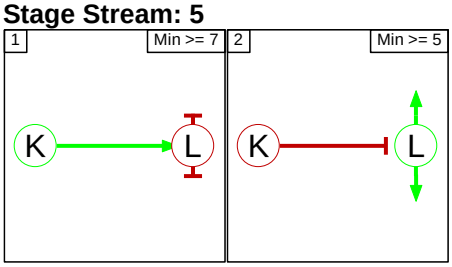
Stage Stream: 3



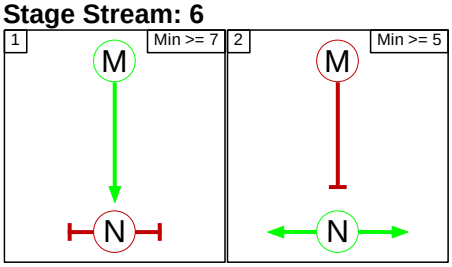
Stage Stream: 4



Stage Stream: 5

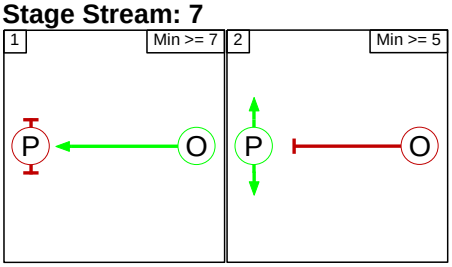


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	7	7

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	F	Losing	5	5

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	I	Losing	5	5

Stage Stream: 5

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 6

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 7

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		12
	2	5	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		10
	2	5	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		10
	2	5	

Stage Stream: 5

	To Stage		
		1	2
From Stage	1		5
	2	8	

Stage Stream: 6

	To Stage		
		1	2
From Stage	1		5
	2	8	

Stage Stream: 7

	To Stage		
		1	2
From Stage	1		5
	2	8	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Redhill Roundabout
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: Redhill Roundabout

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A34 Stone Rd N)	U	B	2	3	60.0	User	1900	-	-	-	-	-
1/2 (A34 Stone Rd N)	U	B	2	3	60.0	User	1900	-	-	-	-	-
1/3 (A34 Stone Rd N)	U	B	2	3	15.0	User	1900	-	-	-	-	-
2/1 (A513 Beaconside)	U	D	2	3	9.0	User	1900	-	-	-	-	-
2/2 (A513 Beaconside)	U	D	2	3	60.0	User	1900	-	-	-	-	-
2/3 (A513 Beaconside)	U	D	2	3	60.0	User	1900	-	-	-	-	-
3/1 (A34 Stone Rd S)	U	G	2	3	4.0	User	1900	-	-	-	-	-
3/2 (A34 Stone Rd S)	U	G	2	3	60.0	User	1900	-	-	-	-	-
3/3 (A34 Stone Rd S)	U	G	2	3	60.0	User	1900	-	-	-	-	-
4/1 (A34 W)	U	J	2	3	5.0	User	1900	-	-	-	-	-
4/2 (A34 W)	U	J	2	3	60.0	User	1900	-	-	-	-	-
4/3 (A34 W)	U	J	2	3	60.0	User	1900	-	-	-	-	-
5/1	U	A	2	3	9.4	User	1900	-	-	-	-	-
5/2	U	A	2	3	9.4	User	1900	-	-	-	-	-
6/1	U	C	2	3	7.3	User	1900	-	-	-	-	-
6/2	U	C	2	3	7.3	User	1900	-	-	-	-	-
6/3	U	C	2	3	7.3	User	1900	-	-	-	-	-
7/1	U	F	2	3	9.7	User	1900	-	-	-	-	-
7/2	U	F	2	3	9.7	User	1900	-	-	-	-	-
7/3	U	F	2	3	9.7	User	1900	-	-	-	-	-
8/1	U	I	2	3	9.9	User	1900	-	-	-	-	-
8/2	U	I	2	3	9.9	User	1900	-	-	-	-	-
9/1 (A34 N exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A34 N exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

10/1 (A513 exit)	U	K	2	3	8.5	User	1900	-	-	-	-	-
10/2 (A513 exit)	U	K	2	3	8.5	User	1900	-	-	-	-	-
11/1 (A34 S exit)	U	M	2	3	7.8	User	1900	-	-	-	-	-
11/2 (A34 S exit)	U	M	2	3	7.8	User	1900	-	-	-	-	-
12/1 (A34 W exit)	U	O	2	3	13.2	User	1900	-	-	-	-	-
12/2 (A34 W exit)	U	O	2	3	13.2	User	1900	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2040 Base AM'	08:00	09:00	01:00	
2: '2040 Base PM'	17:00	18:00	01:00	
3: '2040 Base + PAH AM'	08:00	09:00	01:00	
4: '2040 Base + PAH PM'	17:00	18:00	01:00	
5: '2033 + PAH + Dev (AM)'	08:00	09:00	01:00	
6: '2033 + PAH + Dev (PM)'	08:00	09:00	01:00	
7: '2040 + PAH + Dev (1m) AM'	08:00	09:00	01:00	
8: '2040 + PAH + Dev (1m) PM'	17:00	18:00	01:00	
9: '2040 + PAH + Dev (1.7m) AM'	08:00	09:00	01:00	
10: '2040 + PAH + Dev (1.7m) PM'	17:00	18:00	01:00	
11: '2040 + PAH + Dev (1m) + Stone Phase 1 AM'	08:00	09:00	01:00	
12: '2040 + PAH + Dev (1m) + Stone Phase 1 PM'	17:00	18:00	01:00	
13: '2040 + PAH + Dev (1.7m) + Stone Phase 1 AM'	08:00	09:00	01:00	
14: '2040 + PAH + Dev (1.7m) + Stone Phase 1 PM'	17:00	18:00	01:00	
15: '2040 + PAH + Dev (1m) + Stone Total AM'	08:00	09:00	01:00	
16: '2040 + PAH + Dev (1m) + Stone Total PM'	17:00	18:00	01:00	
17: '2040 + PAH + Dev (1.7m) + Stone Total AM'	08:00	09:00	01:00	
18: '2040 + PAH + Dev (1.7m) + Stone Total PM'	17:00	18:00	01:00	
19: '2040 + PAH + Dev (1m) AM_A513 Light Vehs through Resi'	08:00	09:00	01:00	
20: '2040 + PAH + Dev (1m) PM_A513 Light Vehs through Resi'	17:00	18:00	01:00	
21: '2040 + PAH + Dev (1.7m) AM_A513 Light Vehs through Resi'	08:00	09:00	01:00	
22: '2040 + PAH + Dev (1.7m) PM_A513 Light Vehs through Resi'	17:00	18:00	01:00	

Scenario 1: '2040 Base AM' (FG1: '2040 Base AM', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	538	568	40	1146
	B	613	0	19	823	1455
	C	752	69	0	261	1082
	D	40	657	49	0	746
	Tot.	1405	1264	636	1124	4429

Traffic Lane Flows

Lane	Scenario 1: 2040 Base AM
Junction: Redhill Roundabout	
1/1	425
1/2 (with short)	1030(In) 417(Out)
1/3 (short)	613
2/1 (short)	537
2/2 (with short)	1013(In) 476(Out)
2/3	69
3/1 (short)	40
3/2 (with short)	381(In) 341(Out)
3/3	365
4/1 (short)	396
4/2 (with short)	792(In) 396(Out)
4/3	354
5/1	302
5/2	355
6/1	427
6/2	436
6/3	613
7/1	633
7/2	732
7/3	69
8/1	381
8/2	394
9/1	777
9/2	487
10/1	321
10/2	315
11/1	558
11/2	566
12/1	662
12/2	743

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 2: '2040 Base PM' (FG2: '2040 Base PM', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	468	727	16	1211
	B	626	0	44	788	1458
	C	571	33	0	263	867
	D	144	642	90	0	876
	Tot.	1341	1143	861	1067	4412

Traffic Lane Flows

Lane	Scenario 2: 2040 Base PM
Junction: Redhill Roundabout	
1/1	435
1/2 (with short)	1023(In) 397(Out)
1/3 (short)	626
2/1 (short)	492
2/2 (with short)	834(In) 342(Out)
2/3	33
3/1 (short)	144
3/2 (with short)	488(In) 344(Out)
3/3	388
4/1 (short)	397
4/2 (with short)	795(In) 398(Out)
4/3	416
5/1	399
5/2	434
6/1	396
6/2	408
6/3	626
7/1	575
7/2	622
7/3	33
8/1	373
8/2	392
9/1	770
9/2	373
10/1	443
10/2	418
11/1	532
11/2	535
12/1	663
12/2	678

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 3: '2040 Base + PAH AM' (FG3: '2040 Base + PAH AM', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	579	568	40	1187
	B	640	0	26	830	1496
	C	752	89	0	261	1102
	D	40	679	49	0	768
	Tot.	1432	1347	643	1131	4553

Traffic Lane Flows

Lane	Scenario 3: 2040 Base + PAH AM
Junction: Redhill Roundabout	
1/1	582
1/2 (with short)	914(In) 274(Out)
1/3 (short)	640
2/1 (short)	532
2/2 (with short)	1013(In) 481(Out)
2/3	89
3/1 (short)	40
3/2 (with short)	392(In) 352(Out)
3/3	376
4/1 (short)	395
4/2 (with short)	790(In) 395(Out)
4/3	397
5/1	259
5/2	398
6/1	556
6/2	314
6/3	640
7/1	651
7/2	741
7/3	89
8/1	402
8/2	415
9/1	797
9/2	550
10/1	285
10/2	358
11/1	634
11/2	497
12/1	680
12/2	752

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 4: '2040 Base + PAH PM' (FG4: '2040 Base + PAH PM', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	493	727	16	1236
	B	659	0	63	807	1529
	C	571	42	0	263	876
	D	144	648	90	0	882
	Tot.	1374	1183	880	1086	4523

Traffic Lane Flows

Lane	Scenario 4: 2040 Base + PAH PM
Junction: Redhill Roundabout	
1/1	461
1/2 (with short)	1068(In) 409(Out)
1/3 (short)	659
2/1 (short)	437
2/2 (with short)	834(In) 397(Out)
2/3	42
3/1 (short)	144
3/2 (with short)	489(In) 345(Out)
3/3	393
4/1 (short)	403
4/2 (with short)	806(In) 403(Out)
4/3	430
5/1	394
5/2	439
6/1	405
6/2	418
6/3	659
7/1	580
7/2	650
7/3	42
8/1	380
8/2	400
9/1	783
9/2	400
10/1	457
10/2	423
11/1	543
11/2	543
12/1	681
12/2	693

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 5: '2040 + PAH + Dev (1m) AM_A513 Light Vehs through Resi' (FG19: '2040 + PAH + Dev (1m) AM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	704	568	40	1312
	B	831	0	34	887	1752
	C	752	103	0	261	1116
	D	40	735	49	0	824
	Tot.	1623	1542	651	1188	5004

Traffic Lane Flows

Lane	Scenario 5: 2040 + PAH + Dev (1m) AM_A513 Light Vehs through Resi
Junction: Redhill Roundabout	
1/1	615
1/2 (with short)	1137(In) 306(Out)
1/3 (short)	831
2/1 (short)	514
2/2 (with short)	1013(In) 499(Out)
2/3	103
3/1 (short)	40
3/2 (with short)	419(In) 379(Out)
3/3	405
4/1 (short)	434
4/2 (with short)	867(In) 433(Out)
4/3	445
5/1	212
5/2	445
6/1	581
6/2	346
6/3	831
7/1	772
7/2	811
7/3	103
8/1	435
8/2	452
9/1	869
9/2	673
10/1	246
10/2	405
11/1	690
11/2	498
12/1	799
12/2	824

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 6: '2040 + PAH + Dev (1m) PM_A513 Light Vehs through Resi' (FG20: '2040 + PAH + Dev (1m) PM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	639	727	16	1382
	B	743	0	73	854	1670
	C	571	51	0	263	885
	D	144	676	90	0	910
	Tot.	1458	1366	890	1133	4847

Traffic Lane Flows

Lane	Scenario 6: 2040 + PAH + Dev (1m) PM_A513 Light Vehs through Resi
Junction: Redhill Roundabout	
1/1	547
1/2 (with short)	1123(In) 380(Out)
1/3 (short)	743
2/1 (short)	420
2/2 (with short)	834(In) 414(Out)
2/3	51
3/1 (short)	144
3/2 (with short)	500(In) 356(Out)
3/3	410
4/1 (short)	452
4/2 (with short)	905(In) 453(Out)
4/3	477
5/1	355
5/2	478
6/1	478
6/2	392
6/3	743
7/1	647
7/2	667
7/3	51
8/1	399
8/2	418
9/1	851
9/2	515
10/1	428
10/2	462
11/1	569
11/2	564
12/1	729
12/2	729

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 7: '2040 + PAH + Dev (1.7m) AM_A513 Light Vehs through Resi' (FG21: '2040 + PAH + Dev (1.7m) AM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	743	568	40	1351
	B	857	0	39	894	1790
	C	752	113	0	261	1126
	D	40	753	49	0	842
	Tot.	1649	1609	656	1195	5109

Traffic Lane Flows

Lane	Scenario 7: 2040 + PAH + Dev (1.7m) AM_A513 Light Vehs through Resi
Junction: Redhill Roundabout	
1/1	695
1/2 (with short)	1095(In) 238(Out)
1/3 (short)	857
2/1 (short)	517
2/2 (with short)	1013(In) 496(Out)
2/3	113
3/1 (short)	40
3/2 (with short)	427(In) 387(Out)
3/3	415
4/1 (short)	459
4/2 (with short)	919(In) 460(Out)
4/3	432
5/1	225
5/2	432
6/1	656
6/2	278
6/3	857
7/1	773
7/2	836
7/3	113
8/1	451
8/2	464
9/1	910
9/2	699
10/1	264
10/2	392
11/1	671
11/2	524
12/1	804
12/2	845

Lane Saturation Flows

Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 8: '2040 + PAH + Dev (1.7m) PM_A513 Light Vehs through Resi' (FG22: '2040 + PAH + Dev (1.7m) PM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	663	727	16	1406
	B	775	0	79	872	1726
	C	571	56	0	263	890
	D	144	681	90	0	915
	Tot.	1490	1400	896	1151	4937

Traffic Lane Flows

Lane	Scenario 8: 2040 + PAH + Dev (1.7m) PM_A513 Light Vehs through Resi
Junction: Redhill Roundabout	
1/1	586
1/2 (with short)	1140(In) 365(Out)
1/3 (short)	775
2/1 (short)	455
2/2 (with short)	834(In) 379(Out)
2/3	56
3/1 (short)	144
3/2 (with short)	503(In) 359(Out)
3/3	412
4/1 (short)	469
4/2 (with short)	939(In) 470(Out)
4/3	467
5/1	366
5/2	467
6/1	508
6/2	380
6/3	775
7/1	638
7/2	708
7/3	56
8/1	405
8/2	422
9/1	874
9/2	526
10/1	445
10/2	451
11/1	578
11/2	573
12/1	737
12/2	753

Lane Saturation Flows

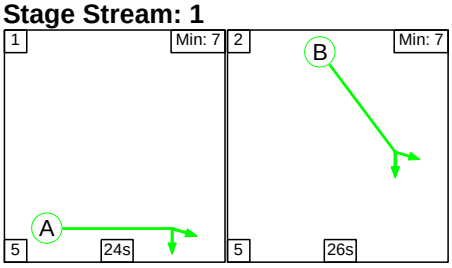
Junction: Redhill Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A34 Stone Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (A34 Stone Rd N Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (A34 Stone Rd N Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (A513 Beaconside Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (A513 Beaconside Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (A513 Beaconside Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
3/1 (A34 Stone Rd S Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (A34 Stone Rd S Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (A34 Stone Rd S Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (A34 W Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (A34 W Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (A34 W Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1	This lane uses a directly entered Saturation Flow						1900	1900
5/2	This lane uses a directly entered Saturation Flow						1900	1900
6/1	This lane uses a directly entered Saturation Flow						1900	1900
6/2	This lane uses a directly entered Saturation Flow						1900	1900
6/3	This lane uses a directly entered Saturation Flow						1900	1900
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	This lane uses a directly entered Saturation Flow						1900	1900
8/2	This lane uses a directly entered Saturation Flow						1900	1900
9/1 (A34 N exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A34 N exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A513 exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (A513 exit Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (A34 S exit Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

11/2 (A34 S exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A34 W exit Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (A34 W exit Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

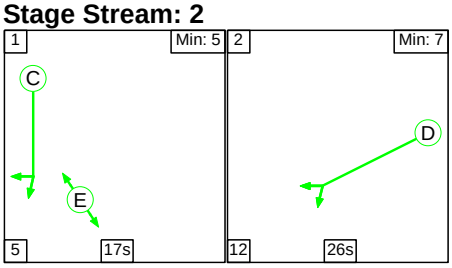
Scenario 1: '2040 Base AM' (FG1: '2040 Base AM', Plan 1: 'Peds')

Stage Sequence Diagram

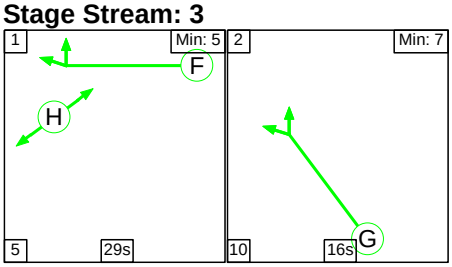
Stage Stream: 1



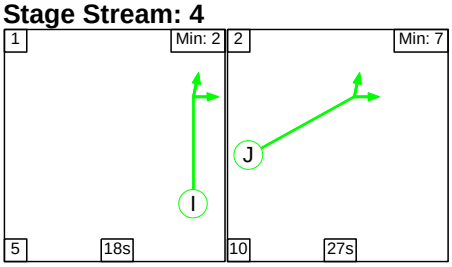
Stage Stream: 2



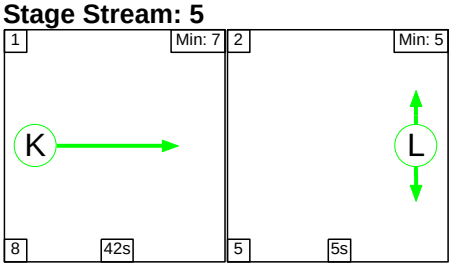
Stage Stream: 3



Stage Stream: 4

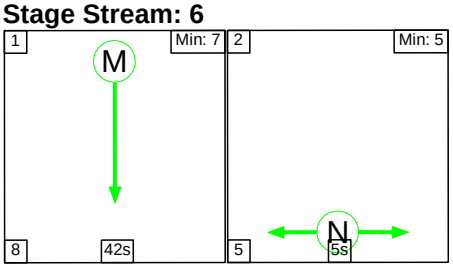


Stage Stream: 5

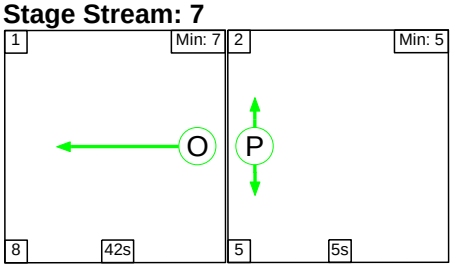


Full Input Data And Results

Stage Stream: 6



Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	26
Change Point	0	29

Stage Stream: 2

Stage	1	2
Duration	17	26
Change Point	28	50

Stage Stream: 3

Stage	1	2
Duration	29	16
Change Point	41	15

Stage Stream: 4

Stage	1	2
Duration	18	27
Change Point	24	47

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

Stage Stream: 6

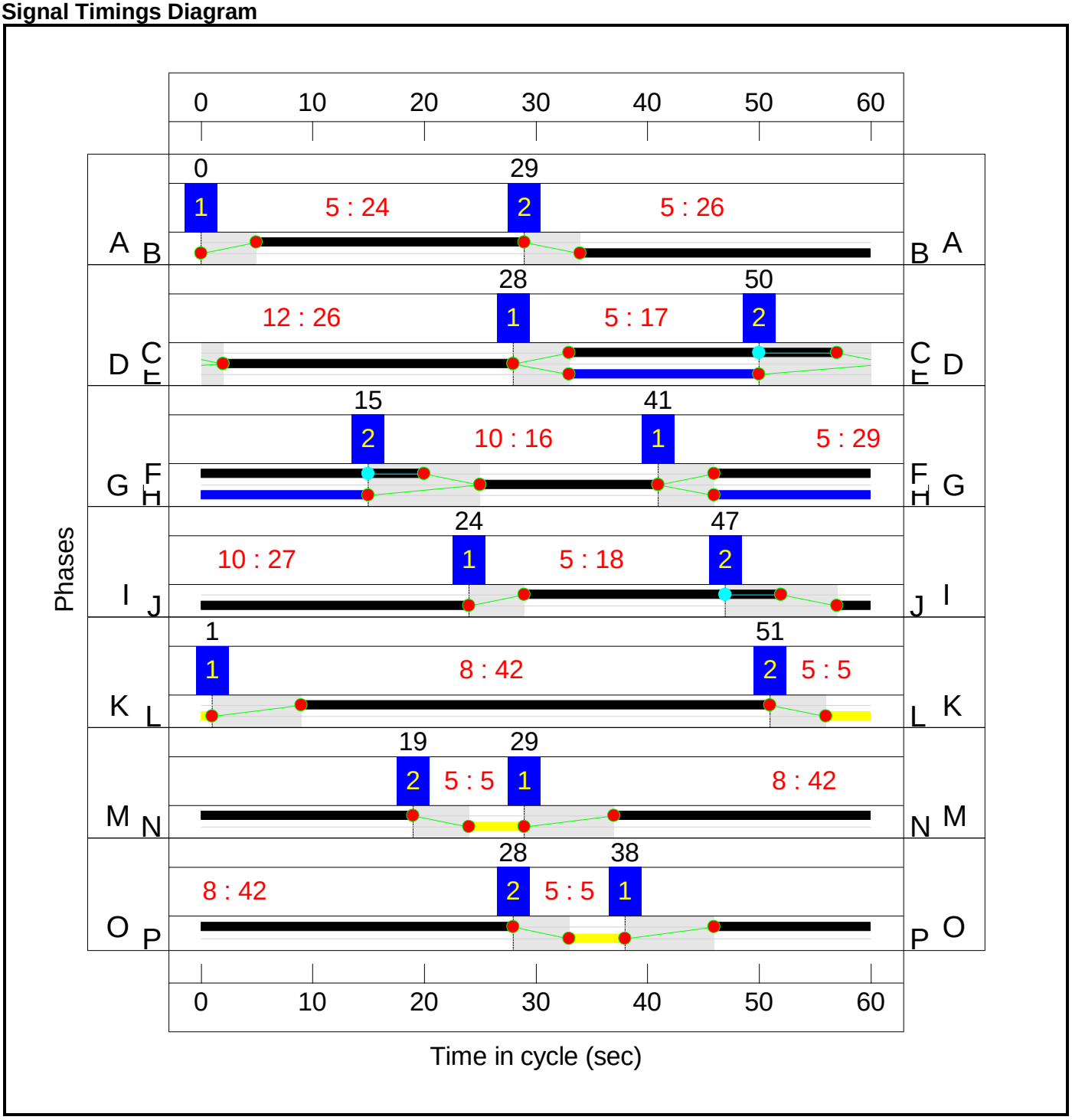
Stage	1	2
Duration	42	5
Change Point	29	19

Full Input Data And Results

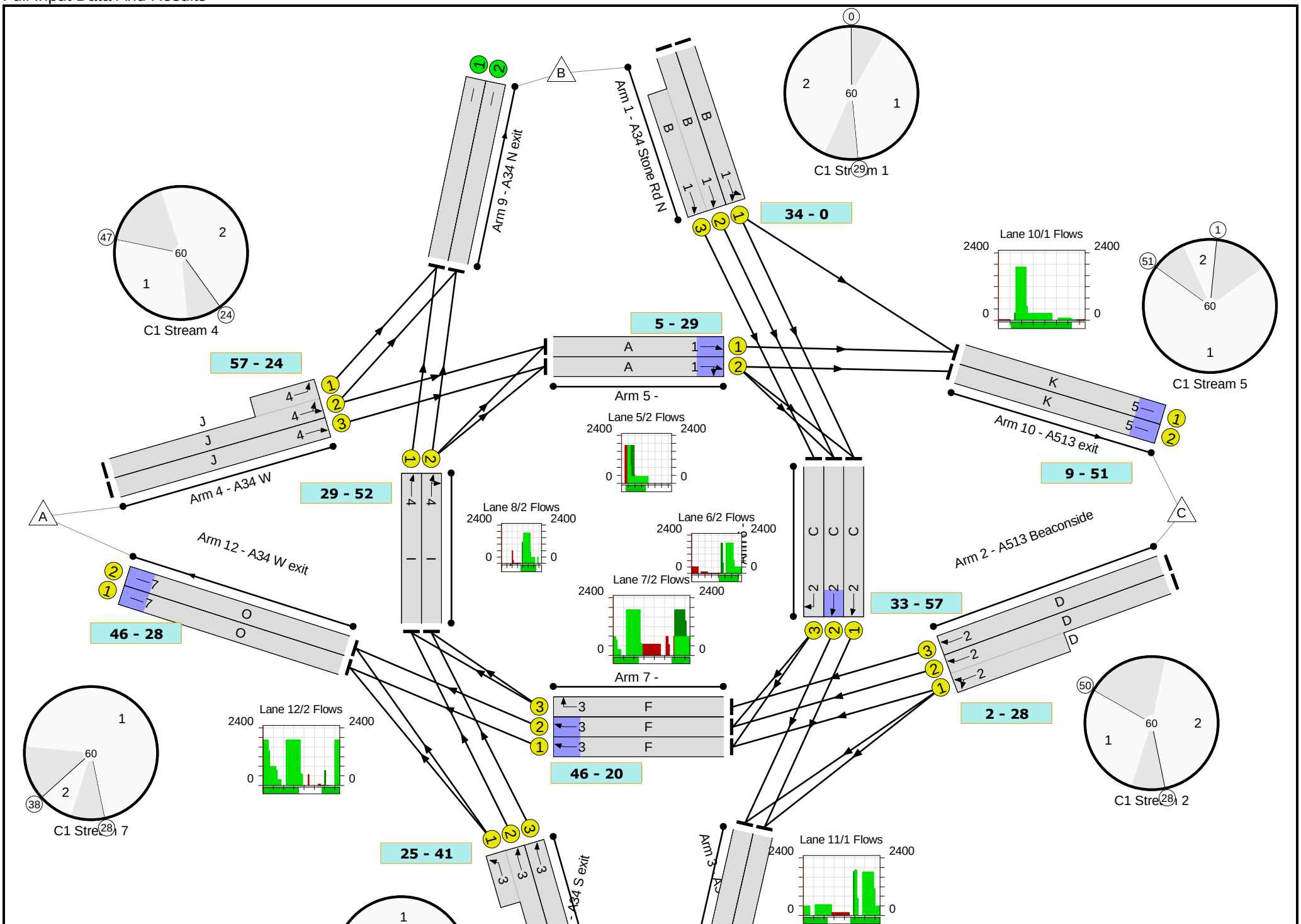
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	38	28

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.4%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.4%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	26	-	425	1900	855	49.7%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	26	-	1030	1900:1900	582+855	71.7 : 71.7%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	26	-	1013	1900:1900	627+708	75.9 : 75.9%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	26	-	69	1900	855	8.1%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	16	-	381	1900:1900	495+58	68.9 : 68.9%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	16	-	365	1900	538	67.8%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	27	-	792	1900:1900	601+601	65.9 : 65.9%
4/3	A34 W Ahead	U	4	N/A	J		1	27	-	354	1900	887	39.9%
5/1	Ahead	U	1	N/A	A		1	24	-	302	1900	792	38.1%
5/2	Right Ahead	U	1	N/A	A		1	24	-	355	1900	792	44.8%
6/1	Ahead	U	2	N/A	C		1	24	-	427	1900	792	53.9%
6/2	Ahead	U	2	N/A	C		1	24	-	436	1900	792	55.1%
6/3	Right	U	2	N/A	C		1	24	-	613	1900	792	77.4%
7/1	Ahead	U	3	N/A	F		1	34	-	633	1900	1108	57.1%
7/2	Ahead	U	3	N/A	F		1	34	-	732	1900	1108	66.0%
7/3	Right	U	3	N/A	F		1	34	-	69	1900	1108	6.2%
8/1	Ahead	U	4	N/A	I		1	23	-	381	1900	760	50.1%
8/2	Right Ahead	U	4	N/A	I		1	23	-	394	1900	760	51.8%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	777	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	487	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	321	1900	1362	23.6%
10/2	A513 exit	U	5	N/A	K		1	42	-	315	1900	1362	23.1%
11/1	A34 S exit	U	6	N/A	M		1	42	-	558	1900	1362	41.0%
11/2	A34 S exit	U	6	N/A	M		1	42	-	566	1900	1362	41.6%
12/1	A34 W exit	U	7	N/A	O		1	42	-	662	1900	1362	48.6%
12/2	A34 W exit	U	7	N/A	O		1	42	-	743	1900	1362	54.6%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**20.5**	**15.2**	**0.0**	**35.7**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**20.5**	**15.2**	**0.0**	**35.7**	**-**	**-**	**-**	**-**
1/1	425	425	-	-	-	1.4	0.5	-	1.9	15.9	5.0	0.5	5.5
1/2+1/3	1030	1030	-	-	-	3.6	1.3	-	4.9	17.1	8.2	1.3	9.4
2/2+2/1	1013	1013	-	-	-	3.5	1.6	-	5.0	17.9	6.9	1.6	8.4
2/3	69	69	-	-	-	0.2	0.0	-	0.2	11.7	0.7	0.0	0.7
3/2+3/1	381	381	-	-	-	2.0	1.1	-	3.1	29.0	5.1	1.1	6.2
3/3	365	365	-	-	-	1.9	1.0	-	3.0	29.3	5.4	1.0	6.4
4/2+4/1	792	792	-	-	-	2.4	1.0	-	3.3	15.2	4.4	1.0	5.4
4/3	354	354	-	-	-	1.0	0.3	-	1.4	13.9	3.8	0.3	4.2
5/1	302	302	-	-	-	0.5	0.3	-	0.8	9.2	3.7	0.3	4.0
5/2	355	355	-	-	-	0.2	0.4	-	0.6	6.2	4.1	0.4	4.6
6/1	427	427	-	-	-	0.6	0.6	-	1.2	9.9	1.3	0.6	1.8
6/2	436	436	-	-	-	0.6	0.6	-	1.2	9.9	1.2	0.6	1.9
6/3	613	613	-	-	-	0.7	1.7	-	2.4	14.2	1.4	1.7	3.0
7/1	633	633	-	-	-	0.6	0.7	-	1.2	7.1	4.3	0.7	5.0
7/2	732	732	-	-	-	0.8	1.0	-	1.8	8.7	4.2	1.0	5.2
7/3	69	69	-	-	-	0.1	0.0	-	0.1	6.0	0.3	0.0	0.3
8/1	381	381	-	-	-	0.1	0.5	-	0.6	5.8	0.5	0.5	1.0
8/2	394	394	-	-	-	0.1	0.5	-	0.6	5.6	0.4	0.5	0.9
9/1	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	487	487	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	321	321	-	-	-	0.0	0.2	-	0.2	1.9	0.1	0.2	0.2
10/2	315	315	-	-	-	0.0	0.2	-	0.2	1.7	0.0	0.2	0.2
11/1	558	558	-	-	-	0.1	0.3	-	0.4	2.8	0.5	0.3	0.9

Full Input Data And Results

11/2	566	566	-	-	-	0.1	0.4	-	0.4	2.8	0.5	0.4	0.9
12/1	662	662	-	-	-	0.1	0.5	-	0.6	3.0	0.5	0.5	0.9
12/2	743	743	-	-	-	0.0	0.6	-	0.6	3.1	0.2	0.6	0.8

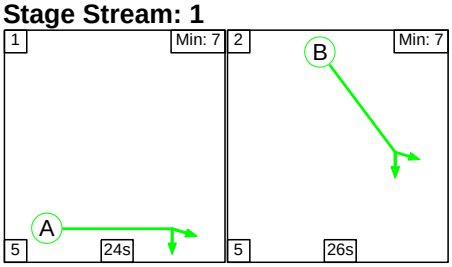
C1	Stream: 1	PRC for Signalled Lanes (%):	25.5	Total Delay for Signalled Lanes (pcuHr):	8.15	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	16.2	Total Delay for Signalled Lanes (pcuHr):	10.06	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	30.7	Total Delay for Signalled Lanes (pcuHr):	9.17	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	36.6	Total Delay for Signalled Lanes (pcuHr):	5.93	Cycle Time (s):	60
C1	Stream: 5	PRC for Signalled Lanes (%):	281.8	Total Delay for Signalled Lanes (pcuHr):	0.32	Cycle Time (s):	60
C1	Stream: 6	PRC for Signalled Lanes (%):	116.5	Total Delay for Signalled Lanes (pcuHr):	0.88	Cycle Time (s):	60
C1	Stream: 7	PRC for Signalled Lanes (%):	64.9	Total Delay for Signalled Lanes (pcuHr):	1.18	Cycle Time (s):	60
		PRC Over All Lanes (%):	16.2	Total Delay Over All Lanes(pcuHr):	35.69		

Full Input Data And Results

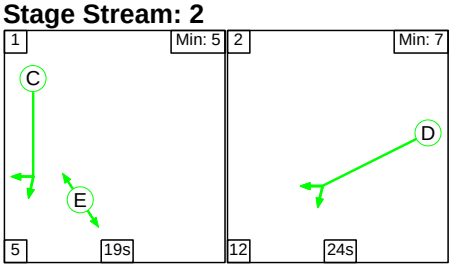
Scenario 2: '2040 Base PM' (FG2: '2040 Base PM', Plan 1: 'Peds')

Stage Sequence Diagram

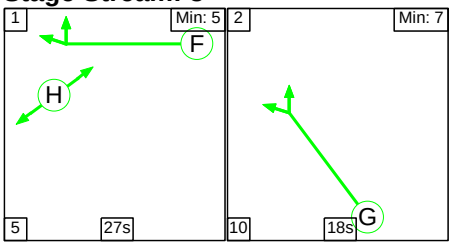
Stage Stream: 1



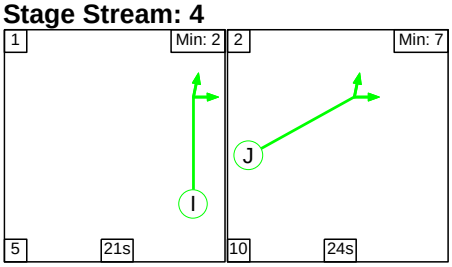
Stage Stream: 2



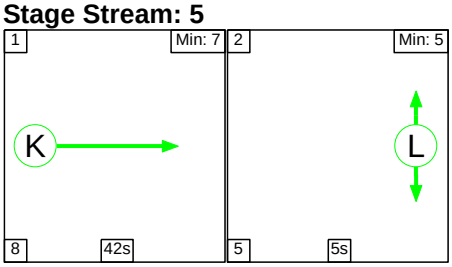
Stage Stream: 3



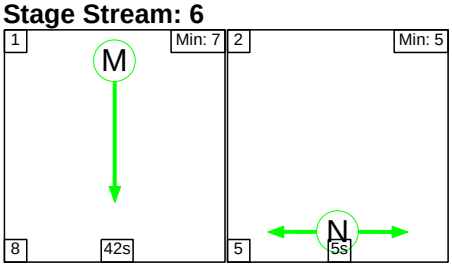
Stage Stream: 4



Stage Stream: 5

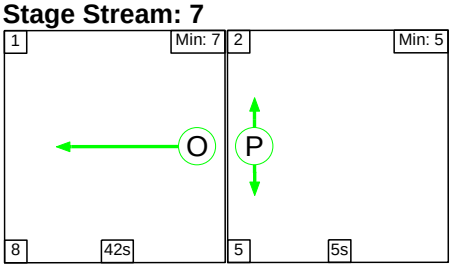


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	26
Change Point	0	29

Stage Stream: 2

Stage	1	2
Duration	19	24
Change Point	27	51

Stage Stream: 3

Stage	1	2
Duration	27	18
Change Point	42	14

Stage Stream: 4

Stage	1	2
Duration	21	24
Change Point	24	50

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

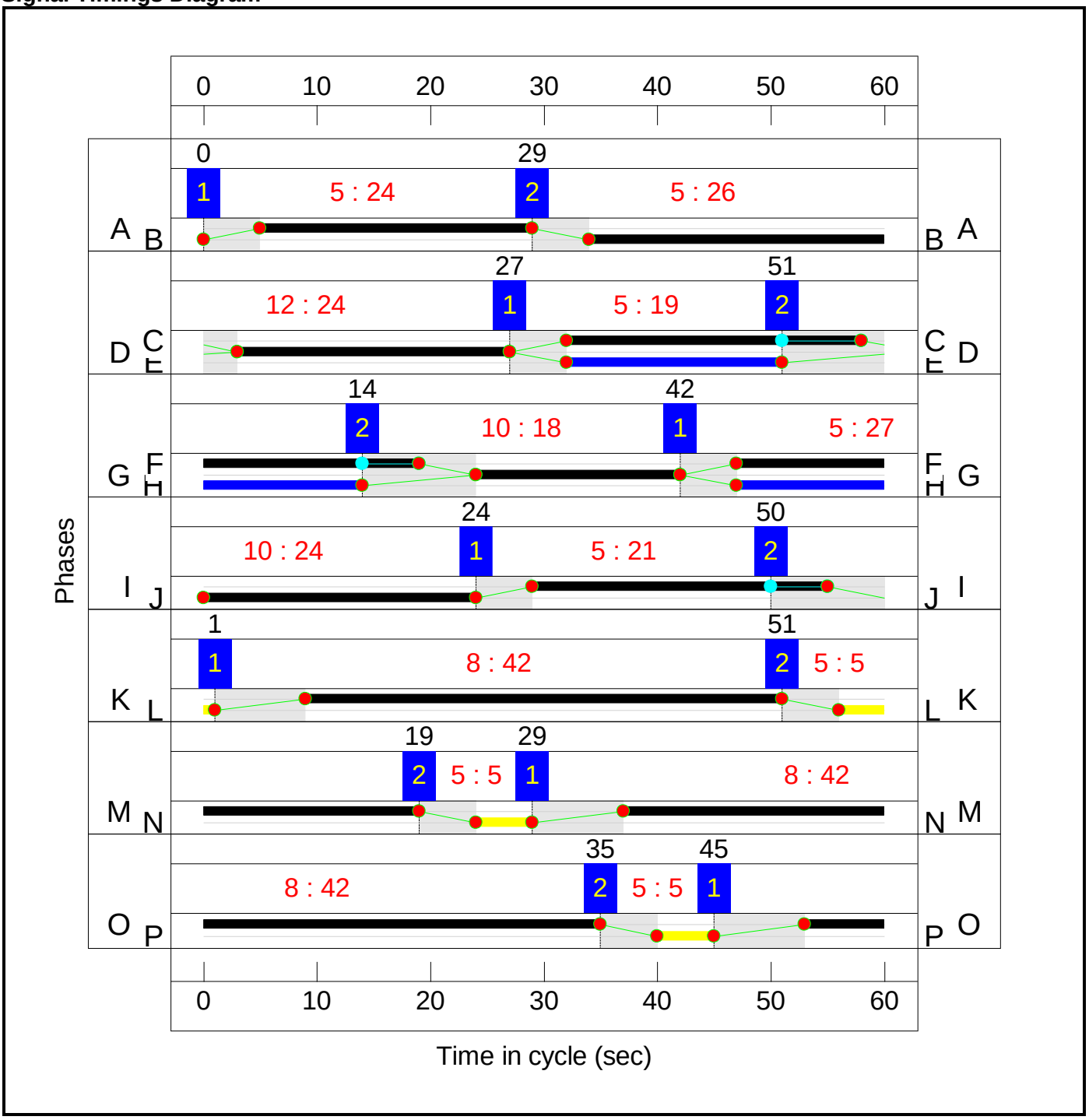
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	29	19

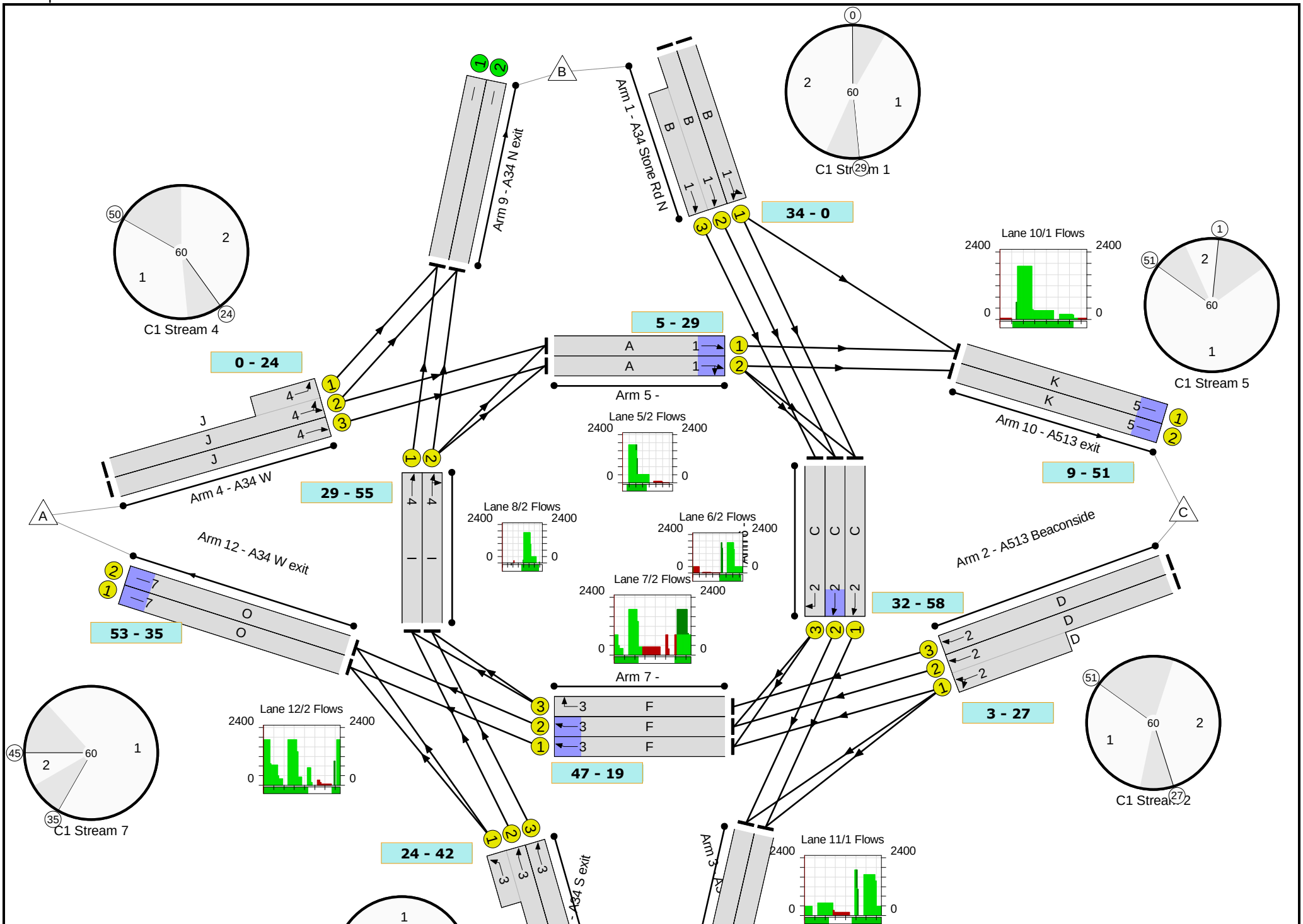
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	45	35

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.2%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.2%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	26	-	435	1900	855	50.9%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	26	-	1023	1900:1900	542+855	73.2 : 73.2%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	24	-	834	1900:1900	479+689	71.4 : 71.4%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	24	-	33	1900	792	4.2%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	18	-	488	1900:1900	486+203	70.8 : 70.8%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	18	-	388	1900	602	64.5%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	24	-	795	1900:1900	554+552	71.9 : 71.9%
4/3	A34 W Ahead	U	4	N/A	J		1	24	-	416	1900	792	52.5%
5/1	Ahead	U	1	N/A	A		1	24	-	399	1900	792	50.4%
5/2	Right Ahead	U	1	N/A	A		1	24	-	434	1900	792	54.8%
6/1	Ahead	U	2	N/A	C		1	26	-	396	1900	855	46.3%
6/2	Ahead	U	2	N/A	C		1	26	-	408	1900	855	47.7%
6/3	Right	U	2	N/A	C		1	26	-	626	1900	855	73.2%
7/1	Ahead	U	3	N/A	F		1	32	-	575	1900	1045	55.0%
7/2	Ahead	U	3	N/A	F		1	32	-	622	1900	1045	59.5%
7/3	Right	U	3	N/A	F		1	32	-	33	1900	1045	3.2%
8/1	Ahead	U	4	N/A	I		1	26	-	373	1900	855	43.6%
8/2	Right Ahead	U	4	N/A	I		1	26	-	392	1900	855	45.8%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	770	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	373	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	443	1900	1362	32.5%
10/2	A513 exit	U	5	N/A	K		1	42	-	418	1900	1362	30.7%
11/1	A34 S exit	U	6	N/A	M		1	42	-	532	1900	1362	39.1%
11/2	A34 S exit	U	6	N/A	M		1	42	-	535	1900	1362	39.3%
12/1	A34 W exit	U	7	N/A	O		1	42	-	663	1900	1362	48.7%
12/2	A34 W exit	U	7	N/A	O		1	42	-	678	1900	1362	49.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**20.8**	**14.6**	**0.0**	**35.5**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**20.8**	**14.6**	**0.0**	**35.5**	**-**	**-**	**-**	**-**
1/1	435	435	-	-	-	1.4	0.5	-	1.9	16.0	5.1	0.5	5.6
1/2+1/3	1023	1023	-	-	-	3.6	1.4	-	5.0	17.5	8.5	1.4	9.9
2/2+2/1	834	834	-	-	-	3.1	1.2	-	4.3	18.6	6.4	1.2	7.7
2/3	33	33	-	-	-	0.1	0.0	-	0.1	12.9	0.3	0.0	0.3
3/2+3/1	488	488	-	-	-	2.3	1.2	-	3.5	25.6	5.2	1.2	6.4
3/3	388	388	-	-	-	1.9	0.9	-	2.8	26.0	5.5	0.9	6.4
4/2+4/1	795	795	-	-	-	2.9	1.3	-	4.1	18.7	4.9	1.3	6.1
4/3	416	416	-	-	-	1.5	0.6	-	2.1	17.9	5.1	0.6	5.6
5/1	399	399	-	-	-	0.6	0.5	-	1.1	9.9	2.9	0.5	3.4
5/2	434	434	-	-	-	0.2	0.6	-	0.8	6.4	0.3	0.6	0.9
6/1	396	396	-	-	-	0.4	0.4	-	0.8	7.6	0.8	0.4	1.3
6/2	408	408	-	-	-	0.4	0.5	-	0.9	7.9	0.9	0.5	1.4
6/3	626	626	-	-	-	0.6	1.4	-	2.0	11.4	1.2	1.4	2.6
7/1	575	575	-	-	-	0.7	0.6	-	1.3	8.1	4.4	0.6	5.0
7/2	622	622	-	-	-	0.7	0.7	-	1.4	8.2	3.8	0.7	4.5
7/3	33	33	-	-	-	0.0	0.0	-	0.1	6.6	0.1	0.0	0.1
8/1	373	373	-	-	-	0.1	0.4	-	0.5	4.5	0.4	0.4	0.8
8/2	392	392	-	-	-	0.0	0.4	-	0.4	4.0	0.1	0.4	0.5
9/1	770	770	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	373	373	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	443	443	-	-	-	0.0	0.2	-	0.3	2.2	0.2	0.2	0.4
10/2	418	418	-	-	-	0.0	0.2	-	0.2	1.9	0.0	0.2	0.2
11/1	532	532	-	-	-	0.1	0.3	-	0.4	2.9	0.5	0.3	0.8

Full Input Data And Results

11/2	535	535	-	-	-	0.1	0.3	-	0.4	2.9	0.5	0.3	0.8
12/1	663	663	-	-	-	0.1	0.5	-	0.5	3.0	0.4	0.5	0.9
12/2	678	678	-	-	-	0.0	0.5	-	0.5	2.9	0.3	0.5	0.8

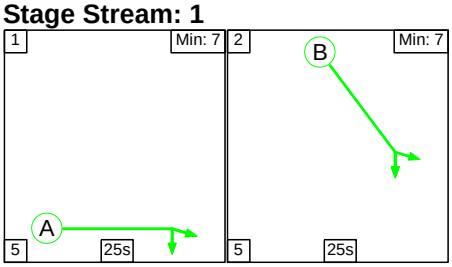
C1	Stream: 1 PRC for Signalled Lanes (%):	22.9	Total Delay for Signalled Lanes (pcuHr):	8.78	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	22.9	Total Delay for Signalled Lanes (pcuHr):	8.13	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	27.0	Total Delay for Signalled Lanes (pcuHr):	9.05	Cycle Time (s):	60
C1	Stream: 4 PRC for Signalled Lanes (%):	25.2	Total Delay for Signalled Lanes (pcuHr):	7.08	Cycle Time (s):	60
C1	Stream: 5 PRC for Signalled Lanes (%):	176.6	Total Delay for Signalled Lanes (pcuHr):	0.49	Cycle Time (s):	60
C1	Stream: 6 PRC for Signalled Lanes (%):	129.1	Total Delay for Signalled Lanes (pcuHr):	0.86	Cycle Time (s):	60
C1	Stream: 7 PRC for Signalled Lanes (%):	80.8	Total Delay for Signalled Lanes (pcuHr):	1.09	Cycle Time (s):	60
	PRC Over All Lanes (%):	22.9	Total Delay Over All Lanes(pcuHr):	35.48		

Full Input Data And Results

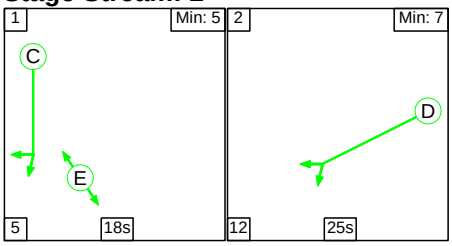
Scenario 3: '2040 Base + PAH AM' (FG3: '2040 Base + PAH AM', Plan 1: 'Peds')

Stage Sequence Diagram

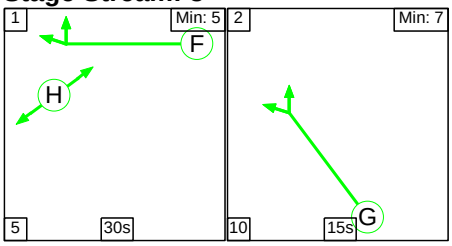
Stage Stream: 1



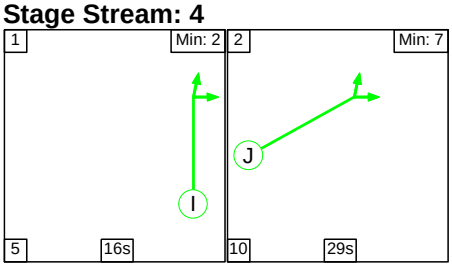
Stage Stream: 2



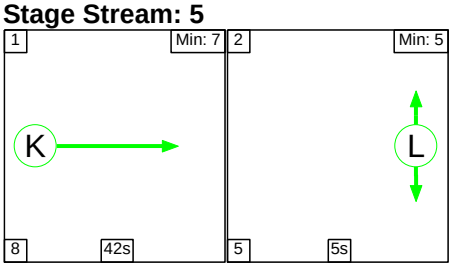
Stage Stream: 3



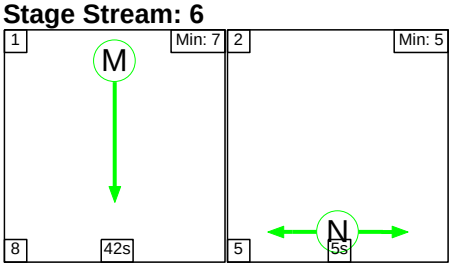
Stage Stream: 4



Stage Stream: 5

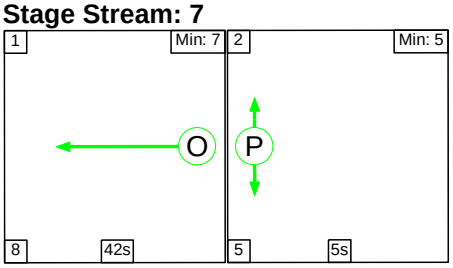


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	25
Change Point	0	30

Stage Stream: 2

Stage	1	2
Duration	18	25
Change Point	30	53

Stage Stream: 3

Stage	1	2
Duration	30	15
Change Point	43	18

Stage Stream: 4

Stage	1	2
Duration	16	29
Change Point	25	46

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

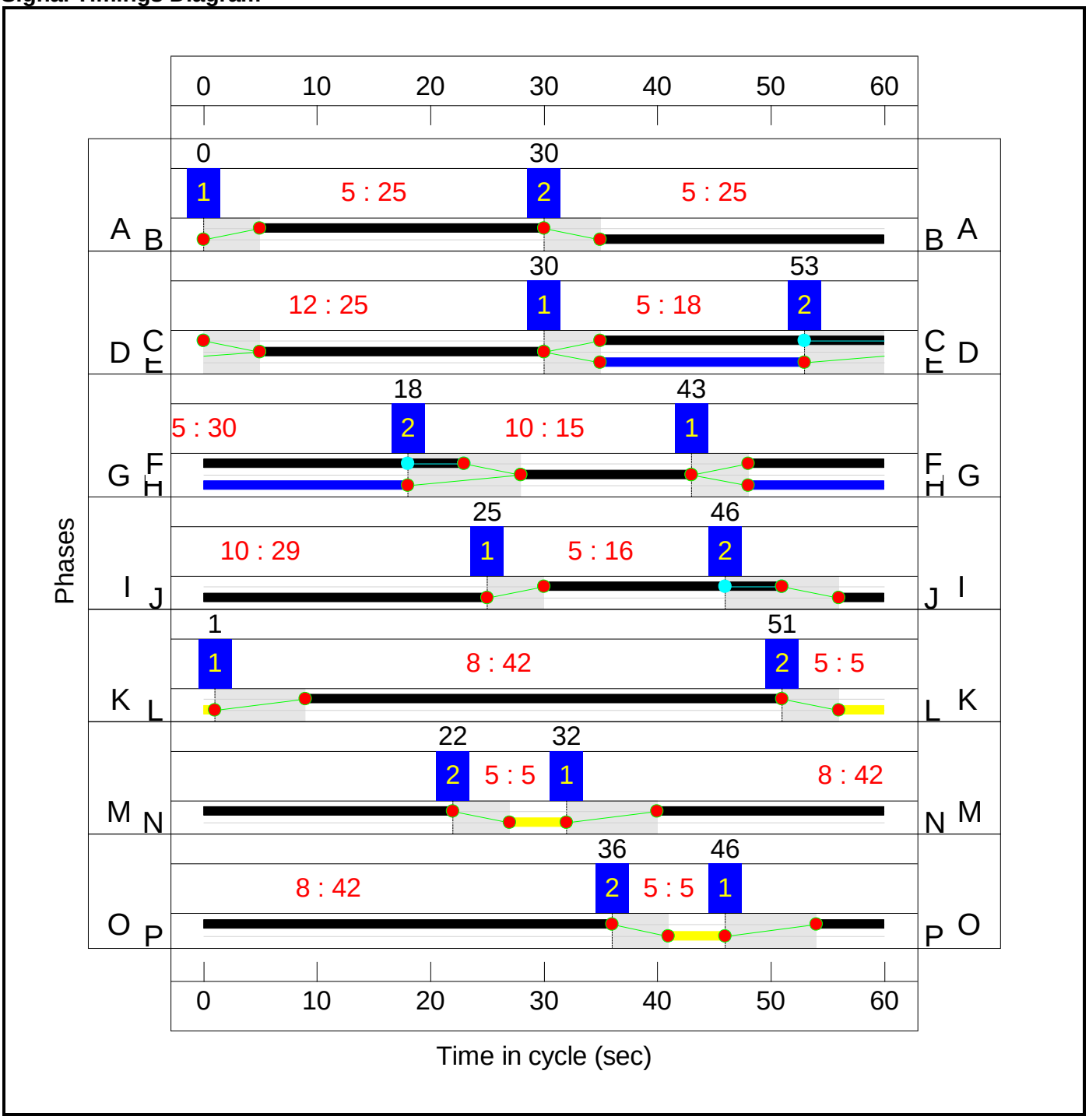
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	32	22

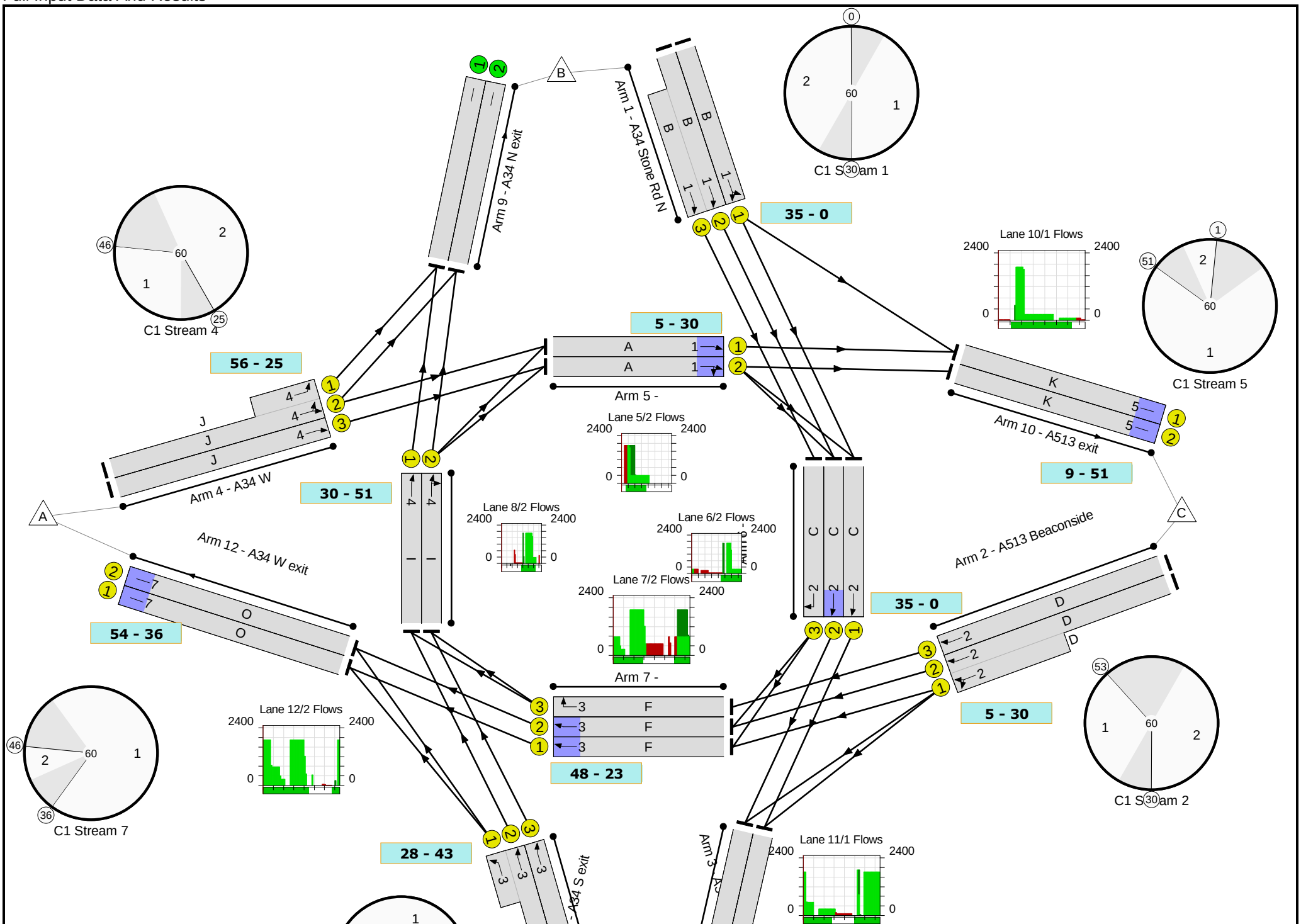
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	46	36

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.7%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.7%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	25	-	582	1900	823	70.7%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	25	-	914	1900:1900	352+823	77.7 : 77.7%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	25	-	1013	1900:1900	624+690	77.1 : 77.1%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	25	-	89	1900	823	10.8%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	15	-	392	1900:1900	467+53	75.3 : 75.3%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	15	-	376	1900	507	74.2%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	29	-	790	1900:1900	632+632	62.5 : 62.5%
4/3	A34 W Ahead	U	4	N/A	J		1	29	-	397	1900	950	41.8%
5/1	Ahead	U	1	N/A	A		1	25	-	259	1900	823	31.5%
5/2	Right Ahead	U	1	N/A	A		1	25	-	398	1900	823	48.3%
6/1	Ahead	U	2	N/A	C		1	25	-	556	1900	823	67.5%
6/2	Ahead	U	2	N/A	C		1	25	-	314	1900	823	38.1%
6/3	Right	U	2	N/A	C		1	25	-	640	1900	823	77.7%
7/1	Ahead	U	3	N/A	F		1	35	-	651	1900	1140	57.1%
7/2	Ahead	U	3	N/A	F		1	35	-	741	1900	1140	65.0%
7/3	Right	U	3	N/A	F		1	35	-	89	1900	1140	7.8%
8/1	Ahead	U	4	N/A	I		1	21	-	402	1900	697	57.7%
8/2	Right Ahead	U	4	N/A	I		1	21	-	415	1900	697	59.6%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	797	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	550	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	285	1900	1362	20.9%
10/2	A513 exit	U	5	N/A	K		1	42	-	358	1900	1362	26.3%
11/1	A34 S exit	U	6	N/A	M		1	42	-	634	1900	1362	46.6%
11/2	A34 S exit	U	6	N/A	M		1	42	-	497	1900	1362	36.5%
12/1	A34 W exit	U	7	N/A	O		1	42	-	680	1900	1362	49.9%
12/2	A34 W exit	U	7	N/A	O		1	42	-	752	1900	1362	55.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**21.1**	**17.7**	**0.0**	**38.8**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**21.1**	**17.7**	**0.0**	**38.8**	**-**	**-**	**-**	**-**
1/1	582	582	-	-	-	2.2	1.2	-	3.4	21.3	7.9	1.2	9.1
1/2+1/3	914	914	-	-	-	3.4	1.7	-	5.2	20.3	9.1	1.7	10.8
2/2+2/1	1013	1013	-	-	-	3.7	1.7	-	5.4	19.1	6.9	1.7	8.6
2/3	89	89	-	-	-	0.3	0.1	-	0.3	12.6	0.9	0.1	0.9
3/2+3/1	392	392	-	-	-	2.1	1.5	-	3.6	33.4	5.4	1.5	6.9
3/3	376	376	-	-	-	2.1	1.4	-	3.5	33.6	5.6	1.4	7.0
4/2+4/1	790	790	-	-	-	2.1	0.8	-	2.9	13.2	4.1	0.8	4.9
4/3	397	397	-	-	-	1.0	0.4	-	1.4	12.7	4.1	0.4	4.4
5/1	259	259	-	-	-	0.4	0.2	-	0.6	8.9	3.1	0.2	3.3
5/2	398	398	-	-	-	0.3	0.5	-	0.8	7.0	4.6	0.5	5.1
6/1	556	556	-	-	-	0.4	1.0	-	1.4	9.4	0.8	1.0	1.8
6/2	314	314	-	-	-	0.4	0.3	-	0.7	8.3	1.0	0.3	1.4
6/3	640	640	-	-	-	0.5	1.7	-	2.2	12.3	0.9	1.7	2.6
7/1	651	651	-	-	-	0.6	0.7	-	1.2	6.7	4.4	0.7	5.0
7/2	741	741	-	-	-	0.7	0.9	-	1.6	8.0	3.8	0.9	4.7
7/3	89	89	-	-	-	0.1	0.0	-	0.1	5.6	0.3	0.0	0.4
8/1	402	402	-	-	-	0.2	0.7	-	0.9	8.2	0.8	0.7	1.5
8/2	415	415	-	-	-	0.2	0.7	-	0.9	7.9	0.6	0.7	1.4
9/1	797	797	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	550	550	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	285	285	-	-	-	0.0	0.1	-	0.2	2.1	0.2	0.1	0.3
10/2	358	358	-	-	-	0.0	0.2	-	0.2	1.8	0.0	0.2	0.2
11/1	634	634	-	-	-	0.1	0.4	-	0.5	2.8	0.3	0.4	0.7

Full Input Data And Results

11/2	497	497	-	-	-	0.2	0.3	-	0.4	3.2	0.7	0.3	1.0
12/1	680	680	-	-	-	0.0	0.5	-	0.5	2.7	0.2	0.5	0.7
12/2	752	752	-	-	-	0.0	0.6	-	0.6	3.0	0.1	0.6	0.7

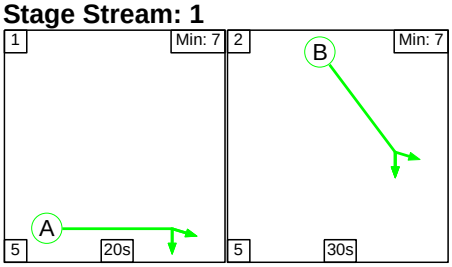
C1	Stream: 1 PRC for Signalled Lanes (%):	15.8	Total Delay for Signalled Lanes (pcuHr):	10.02	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	15.8	Total Delay for Signalled Lanes (pcuHr):	10.05	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	19.5	Total Delay for Signalled Lanes (pcuHr):	10.14	Cycle Time (s):	60
C1	Stream: 4 PRC for Signalled Lanes (%):	44.1	Total Delay for Signalled Lanes (pcuHr):	6.14	Cycle Time (s):	60
C1	Stream: 5 PRC for Signalled Lanes (%):	242.3	Total Delay for Signalled Lanes (pcuHr):	0.34	Cycle Time (s):	60
C1	Stream: 6 PRC for Signalled Lanes (%):	93.3	Total Delay for Signalled Lanes (pcuHr):	0.94	Cycle Time (s):	60
C1	Stream: 7 PRC for Signalled Lanes (%):	63.0	Total Delay for Signalled Lanes (pcuHr):	1.14	Cycle Time (s):	60
	PRC Over All Lanes (%):	15.8	Total Delay Over All Lanes(pcuHr):	38.76		

Full Input Data And Results

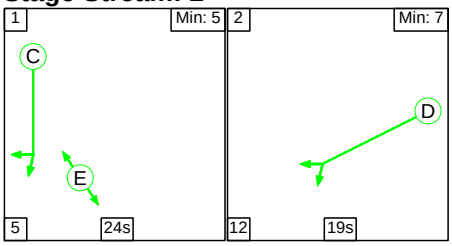
Scenario 4: '2040 Base + PAH PM' (FG4: '2040 Base + PAH PM', Plan 1: 'Peds')

Stage Sequence Diagram

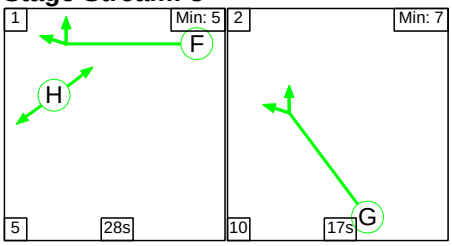
Stage Stream: 1



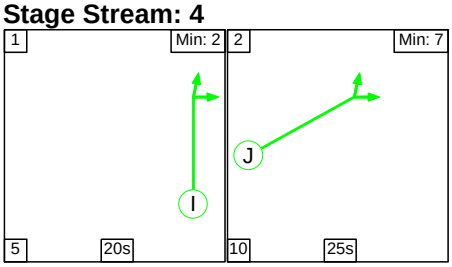
Stage Stream: 2



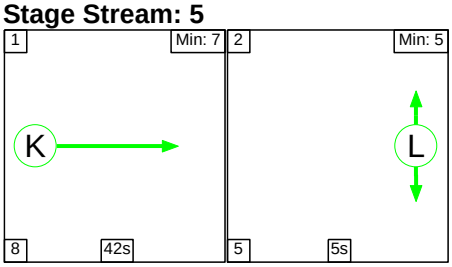
Stage Stream: 3



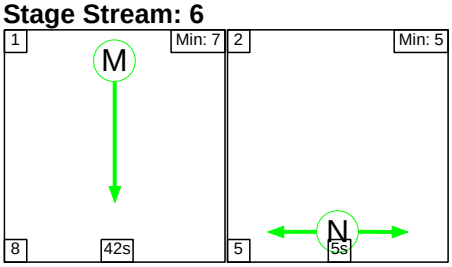
Stage Stream: 4



Stage Stream: 5

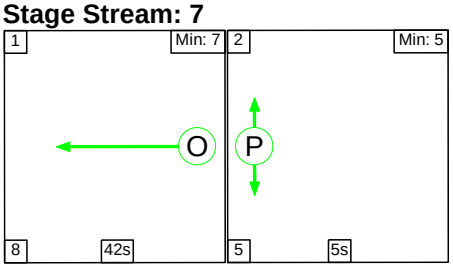


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	30
Change Point	0	25

Stage Stream: 2

Stage	1	2
Duration	24	19
Change Point	12	41

Stage Stream: 3

Stage	1	2
Duration	28	17
Change Point	50	23

Stage Stream: 4

Stage	1	2
Duration	20	25
Change Point	26	51

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

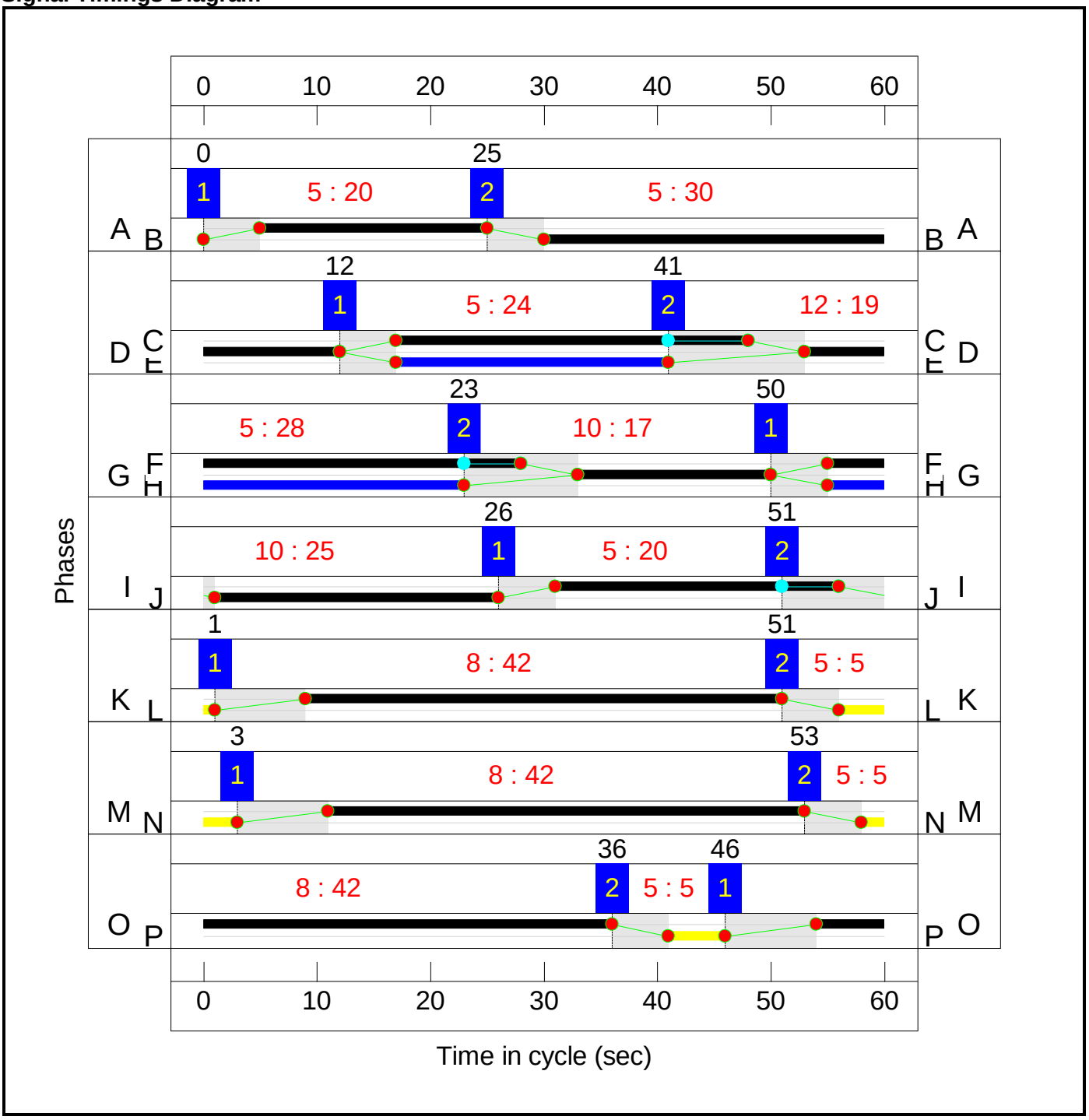
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	3	53

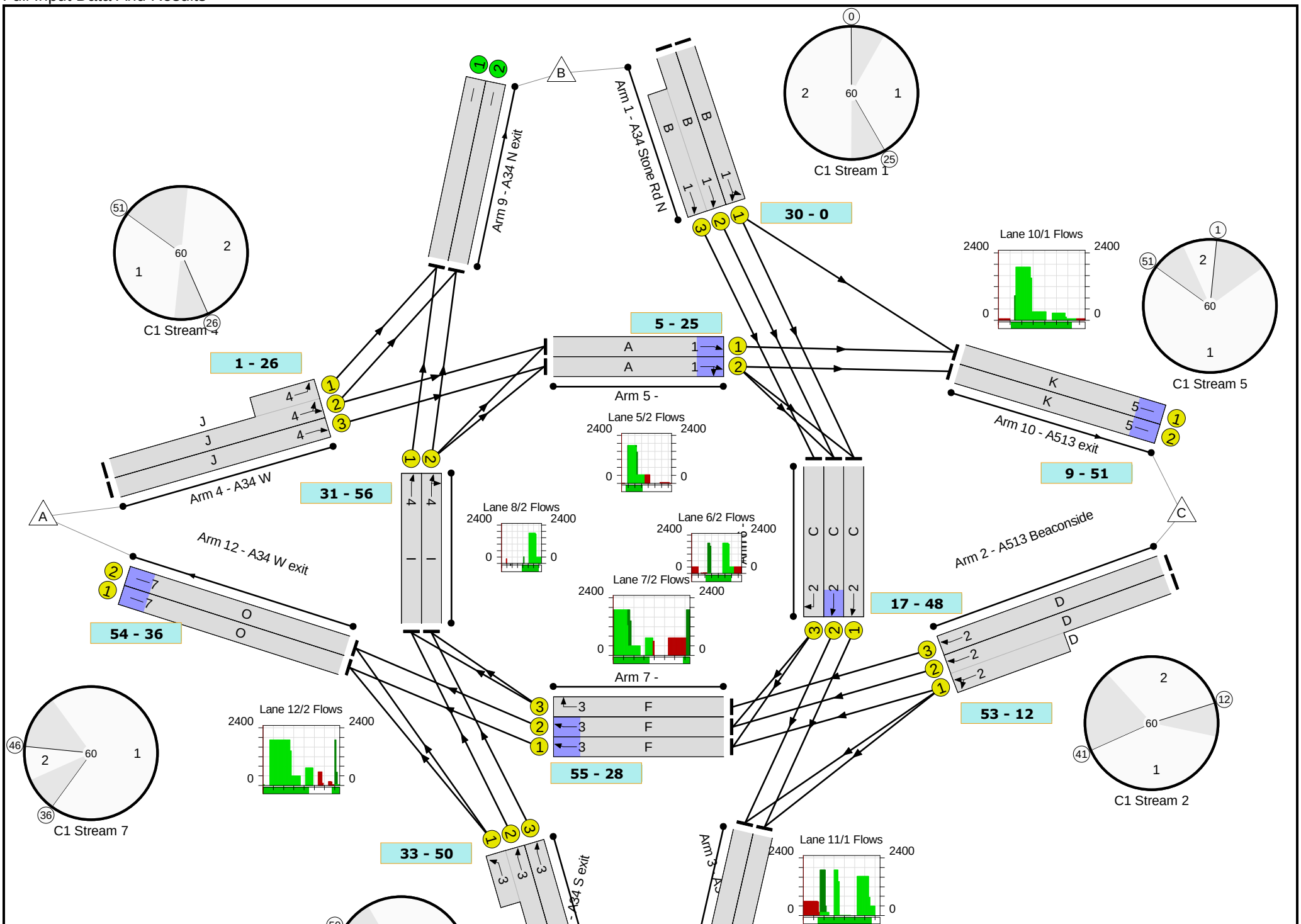
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	46	36

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.4%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.4%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	30	-	461	1900	982	47.0%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	30	-	1068	1900:1900	595+959	68.7 : 68.7%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	19	-	834	1900:1900	536+590	74.1 : 74.1%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	19	-	42	1900	633	6.6%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	17	-	489	1900:1900	463+193	74.4 : 74.4%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	17	-	393	1900	570	68.9%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	25	-	806	1900:1900	569+569	70.8 : 70.8%
4/3	A34 W Ahead	U	4	N/A	J		1	25	-	430	1900	823	52.2%
5/1	Ahead	U	1	N/A	A		1	20	-	394	1900	665	59.2%
5/2	Right Ahead	U	1	N/A	A		1	20	-	439	1900	665	66.0%
6/1	Ahead	U	2	N/A	C		1	31	-	405	1900	1013	40.0%
6/2	Ahead	U	2	N/A	C		1	31	-	418	1900	1013	41.3%
6/3	Right	U	2	N/A	C		1	31	-	659	1900	1013	65.0%
7/1	Ahead	U	3	N/A	F		1	33	-	580	1900	1077	53.9%
7/2	Ahead	U	3	N/A	F		1	33	-	650	1900	1077	60.4%
7/3	Right	U	3	N/A	F		1	33	-	42	1900	1077	3.9%
8/1	Ahead	U	4	N/A	I		1	25	-	380	1900	823	46.2%
8/2	Right Ahead	U	4	N/A	I		1	25	-	400	1900	823	48.6%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	457	1900	1362	33.6%
10/2	A513 exit	U	5	N/A	K		1	42	-	423	1900	1362	31.1%
11/1	A34 S exit	U	6	N/A	M		1	42	-	543	1900	1362	39.9%
11/2	A34 S exit	U	6	N/A	M		1	42	-	543	1900	1362	39.9%
12/1	A34 W exit	U	7	N/A	O		1	42	-	681	1900	1362	50.0%
12/2	A34 W exit	U	7	N/A	O		1	42	-	693	1900	1362	50.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**24.1**	**15.0**	**0.0**	**39.1**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**24.1**	**15.0**	**0.0**	**39.1**	**-**	**-**	**-**	**-**
1/1	461	461	-	-	-	1.2	0.4	-	1.6	12.7	4.9	0.4	5.3
1/2+1/3	1068	1068	-	-	-	3.0	1.1	-	4.1	13.7	8.1	1.1	9.1
2/2+2/1	834	834	-	-	-	4.0	1.4	-	5.4	23.2	6.2	1.4	7.6
2/3	42	42	-	-	-	0.2	0.0	-	0.2	16.7	0.5	0.0	0.5
3/2+3/1	489	489	-	-	-	2.4	1.4	-	3.8	28.2	5.4	1.4	6.8
3/3	393	393	-	-	-	2.0	1.1	-	3.1	28.6	5.7	1.1	6.8
4/2+4/1	806	806	-	-	-	2.7	1.2	-	3.9	17.6	4.8	1.2	6.0
4/3	430	430	-	-	-	1.5	0.5	-	2.0	17.0	5.1	0.5	5.7
5/1	394	394	-	-	-	0.8	0.7	-	1.5	13.8	3.5	0.7	4.2
5/2	439	439	-	-	-	0.5	1.0	-	1.5	12.3	0.9	1.0	1.8
6/1	405	405	-	-	-	0.7	0.3	-	1.0	9.0	2.0	0.3	2.3
6/2	418	418	-	-	-	0.7	0.4	-	1.0	9.0	2.0	0.4	2.4
6/3	659	659	-	-	-	1.4	0.9	-	2.4	12.9	3.6	0.9	4.5
7/1	580	580	-	-	-	1.1	0.6	-	1.7	10.4	6.3	0.6	6.9
7/2	650	650	-	-	-	0.7	0.8	-	1.5	8.1	3.5	0.8	4.3
7/3	42	42	-	-	-	0.0	0.0	-	0.0	1.7	0.0	0.0	0.0
8/1	380	380	-	-	-	0.2	0.4	-	0.7	6.2	0.6	0.4	1.0
8/2	400	400	-	-	-	0.0	0.5	-	0.5	4.6	0.1	0.5	0.6
9/1	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	457	457	-	-	-	0.0	0.3	-	0.3	2.3	0.2	0.3	0.5
10/2	423	423	-	-	-	0.0	0.2	-	0.2	1.9	0.0	0.2	0.2
11/1	543	543	-	-	-	0.3	0.3	-	0.6	4.2	2.2	0.3	2.5

Full Input Data And Results

11/2	543	543	-	-	-	0.3	0.3	-	0.6	4.0	1.9	0.3	2.3
12/1	681	681	-	-	-	0.3	0.5	-	0.8	4.1	1.6	0.5	2.1
12/2	693	693	-	-	-	0.1	0.5	-	0.6	3.3	0.7	0.5	1.2

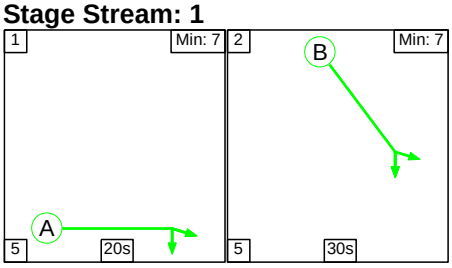
C1	Stream: 1	PRC for Signalled Lanes (%):	30.9	Total Delay for Signalled Lanes (pcuHr):	8.71	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	21.5	Total Delay for Signalled Lanes (pcuHr):	9.99	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	20.9	Total Delay for Signalled Lanes (pcuHr):	10.10	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	27.1	Total Delay for Signalled Lanes (pcuHr):	7.14	Cycle Time (s):	60
C1	Stream: 5	PRC for Signalled Lanes (%):	168.2	Total Delay for Signalled Lanes (pcuHr):	0.52	Cycle Time (s):	60
C1	Stream: 6	PRC for Signalled Lanes (%):	125.7	Total Delay for Signalled Lanes (pcuHr):	1.24	Cycle Time (s):	60
C1	Stream: 7	PRC for Signalled Lanes (%):	76.8	Total Delay for Signalled Lanes (pcuHr):	1.41	Cycle Time (s):	60
		PRC Over All Lanes (%):	20.9	Total Delay Over All Lanes(pcuHr):	39.12		

Full Input Data And Results

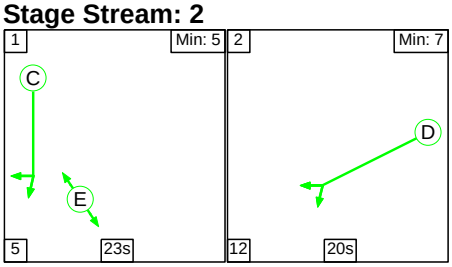
Scenario 5: '2040 + PAH + Dev (1m) AM_A513 Light Vehs through Resi' (FG19: '2040 + PAH + Dev (1m) AM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Stage Sequence Diagram

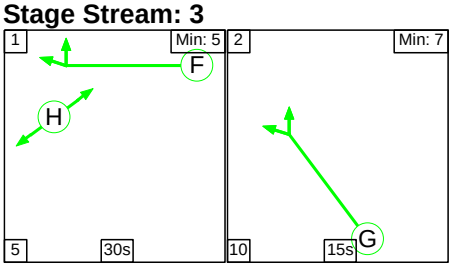
Stage Stream: 1



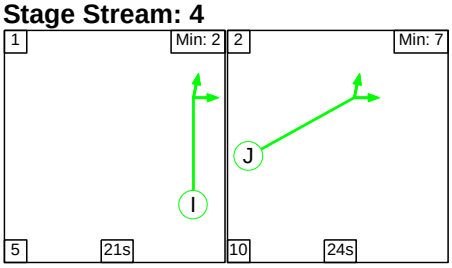
Stage Stream: 2



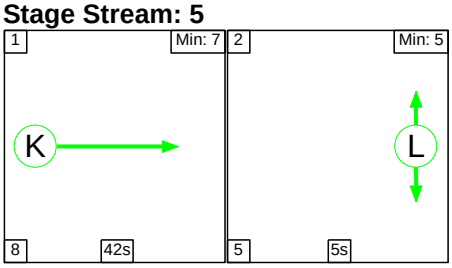
Stage Stream: 3



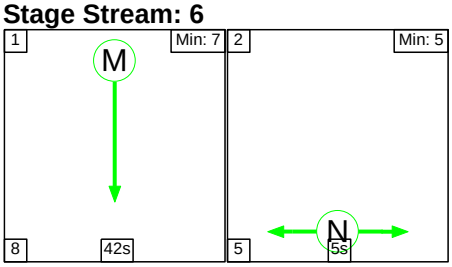
Stage Stream: 4



Stage Stream: 5

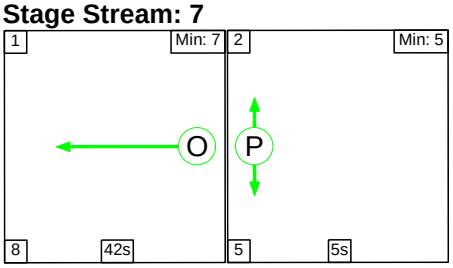


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	30
Change Point	0	25

Stage Stream: 2

Stage	1	2
Duration	23	20
Change Point	21	49

Stage Stream: 3

Stage	1	2
Duration	30	15
Change Point	38	13

Stage Stream: 4

Stage	1	2
Duration	21	24
Change Point	23	49

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

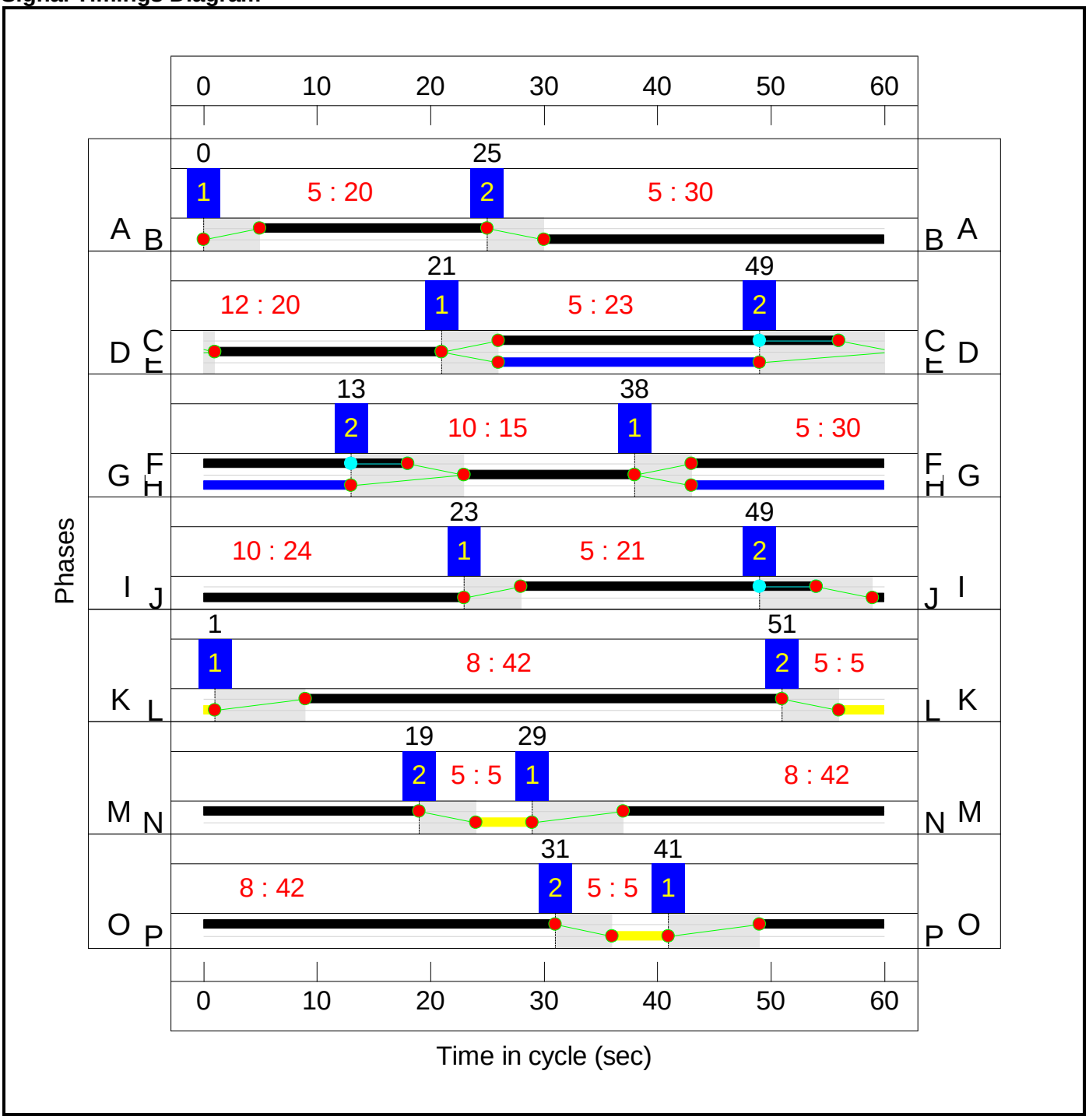
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	29	19

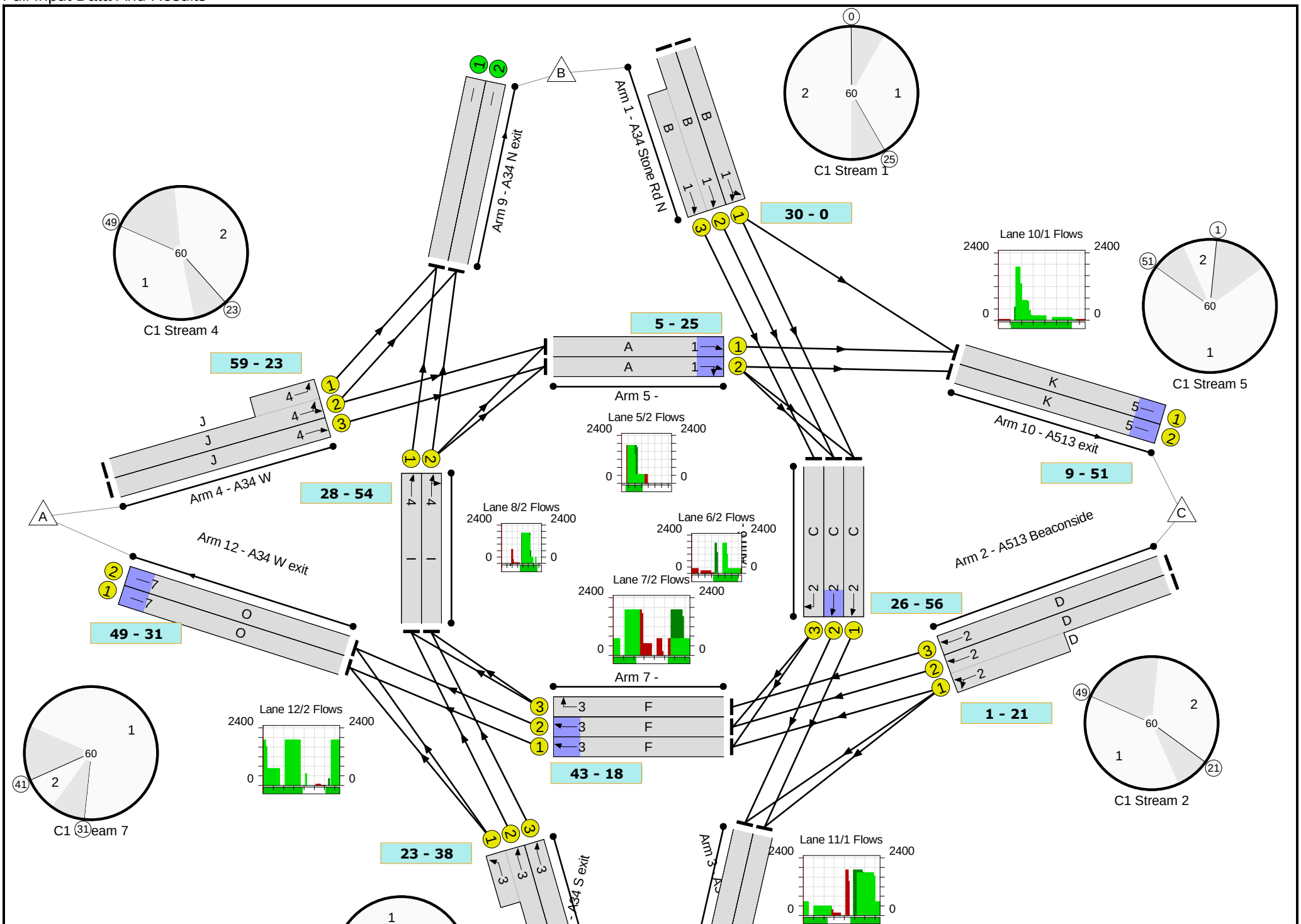
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	41	31

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	30	-	615	1900	982	62.6%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	30	-	1137	1900:1900	357+969	85.7 : 85.7%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	20	-	1013	1900:1900	587+604	85.1 : 85.1%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	20	-	103	1900	665	15.5%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	15	-	419	1900:1900	469+50	80.8 : 80.8%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	15	-	405	1900	507	79.9%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	24	-	867	1900:1900	552+554	78.4 : 78.4%
4/3	A34 W Ahead	U	4	N/A	J		1	24	-	445	1900	792	56.2%
5/1	Ahead	U	1	N/A	A		1	20	-	212	1900	665	31.9%
5/2	Right Ahead	U	1	N/A	A		1	20	-	445	1900	665	66.9%
6/1	Ahead	U	2	N/A	C		1	30	-	581	1900	982	59.2%
6/2	Ahead	U	2	N/A	C		1	30	-	346	1900	982	35.2%
6/3	Right	U	2	N/A	C		1	30	-	831	1900	982	84.7%
7/1	Ahead	U	3	N/A	F		1	35	-	772	1900	1140	67.7%
7/2	Ahead	U	3	N/A	F		1	35	-	811	1900	1140	71.1%
7/3	Right	U	3	N/A	F		1	35	-	103	1900	1140	9.0%
8/1	Ahead	U	4	N/A	I		1	26	-	435	1900	855	50.9%
8/2	Right Ahead	U	4	N/A	I		1	26	-	452	1900	855	52.9%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	869	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	673	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	246	1900	1362	18.1%
10/2	A513 exit	U	5	N/A	K		1	42	-	405	1900	1362	29.7%
11/1	A34 S exit	U	6	N/A	M		1	42	-	690	1900	1362	50.7%
11/2	A34 S exit	U	6	N/A	M		1	42	-	498	1900	1362	36.6%
12/1	A34 W exit	U	7	N/A	O		1	42	-	799	1900	1362	58.7%
12/2	A34 W exit	U	7	N/A	O		1	42	-	824	1900	1362	60.5%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**26.1**	**23.8**	**0.0**	**50.0**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**26.1**	**23.8**	**0.0**	**50.0**	**-**	**-**	**-**	**-**
1/1	615	615	-	-	-	1.8	0.8	-	2.6	15.3	7.2	0.8	8.0
1/2+1/3	1137	1137	-	-	-	3.6	2.9	-	6.5	20.6	11.8	2.9	14.7
2/2+2/1	1013	1013	-	-	-	4.9	2.8	-	7.6	27.1	7.6	2.8	10.3
2/3	103	103	-	-	-	0.4	0.1	-	0.5	16.6	1.2	0.1	1.3
3/2+3/1	419	419	-	-	-	2.3	2.0	-	4.4	37.5	6.0	2.0	8.0
3/3	405	405	-	-	-	2.3	1.9	-	4.2	37.6	6.2	1.9	8.1
4/2+4/1	867	867	-	-	-	3.2	1.8	-	5.0	20.7	6.4	1.8	8.2
4/3	445	445	-	-	-	1.6	0.6	-	2.3	18.5	5.6	0.6	6.2
5/1	212	212	-	-	-	0.5	0.2	-	0.7	11.6	1.5	0.2	1.8
5/2	445	445	-	-	-	0.4	1.0	-	1.4	11.3	0.9	1.0	1.9
6/1	581	581	-	-	-	0.6	0.7	-	1.3	8.4	1.5	0.7	2.2
6/2	346	346	-	-	-	0.5	0.3	-	0.7	7.5	1.4	0.3	1.7
6/3	831	831	-	-	-	1.0	2.7	-	3.7	15.9	2.2	2.7	4.9
7/1	772	772	-	-	-	1.0	1.0	-	2.1	9.6	7.1	1.0	8.2
7/2	811	811	-	-	-	1.1	1.2	-	2.3	10.2	4.8	1.2	6.0
7/3	103	103	-	-	-	0.1	0.0	-	0.1	4.7	0.3	0.0	0.3
8/1	435	435	-	-	-	0.2	0.5	-	0.7	6.0	4.8	0.5	5.3
8/2	452	452	-	-	-	0.2	0.6	-	0.7	5.9	7.0	0.6	7.5
9/1	869	869	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	673	673	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	246	246	-	-	-	0.0	0.1	-	0.1	2.0	0.1	0.1	0.2
10/2	405	405	-	-	-	0.0	0.2	-	0.2	1.9	0.0	0.2	0.2
11/1	690	690	-	-	-	0.2	0.5	-	0.7	3.8	1.7	0.5	2.2

Full Input Data And Results

11/2	498	498	-	-	-	0.3	0.3	-	0.5	3.9	1.8	0.3	2.1
12/1	799	799	-	-	-	0.0	0.7	-	0.7	3.3	0.2	0.7	0.9
12/2	824	824	-	-	-	0.0	0.8	-	0.8	3.4	0.1	0.8	0.8

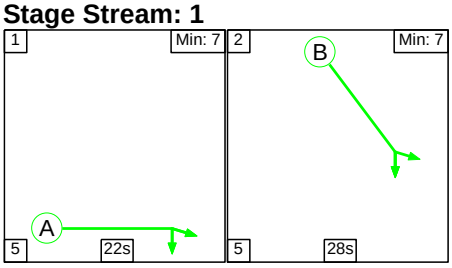
C1	Stream: 1 PRC for Signalled Lanes (%):	5.0	Total Delay for Signalled Lanes (pcuHr):	11.19	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	5.8	Total Delay for Signalled Lanes (pcuHr):	13.84	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	11.4	Total Delay for Signalled Lanes (pcuHr):	13.09	Cycle Time (s):	60
C1	Stream: 4 PRC for Signalled Lanes (%):	14.8	Total Delay for Signalled Lanes (pcuHr):	8.73	Cycle Time (s):	60
C1	Stream: 5 PRC for Signalled Lanes (%):	202.6	Total Delay for Signalled Lanes (pcuHr):	0.34	Cycle Time (s):	60
C1	Stream: 6 PRC for Signalled Lanes (%):	77.6	Total Delay for Signalled Lanes (pcuHr):	1.28	Cycle Time (s):	60
C1	Stream: 7 PRC for Signalled Lanes (%):	48.7	Total Delay for Signalled Lanes (pcuHr):	1.50	Cycle Time (s):	60
	PRC Over All Lanes (%):	5.0	Total Delay Over All Lanes(pcuHr):	49.98		

Full Input Data And Results

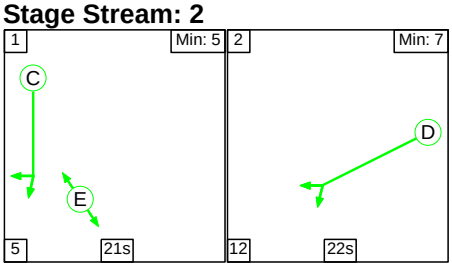
Scenario 6: '2040 + PAH + Dev (1m) PM_A513 Light Vehs through Resi' (FG20: '2040 + PAH + Dev (1m) PM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Stage Sequence Diagram

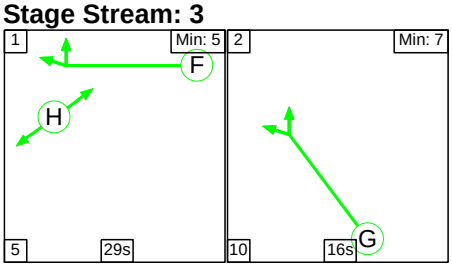
Stage Stream: 1



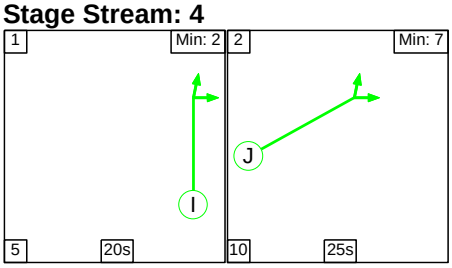
Stage Stream: 2



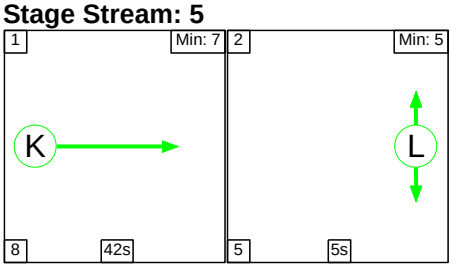
Stage Stream: 3



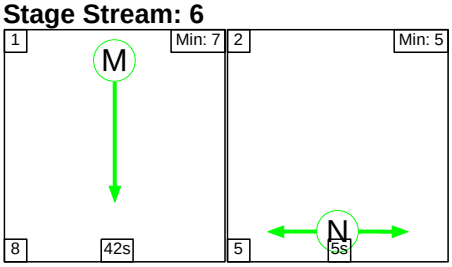
Stage Stream: 4



Stage Stream: 5

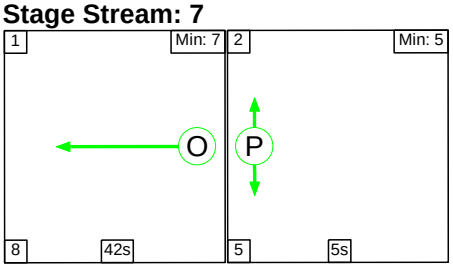


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	28
Change Point	0	27

Stage Stream: 2

Stage	1	2
Duration	21	22
Change Point	26	52

Stage Stream: 3

Stage	1	2
Duration	29	16
Change Point	40	14

Stage Stream: 4

Stage	1	2
Duration	20	25
Change Point	24	49

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

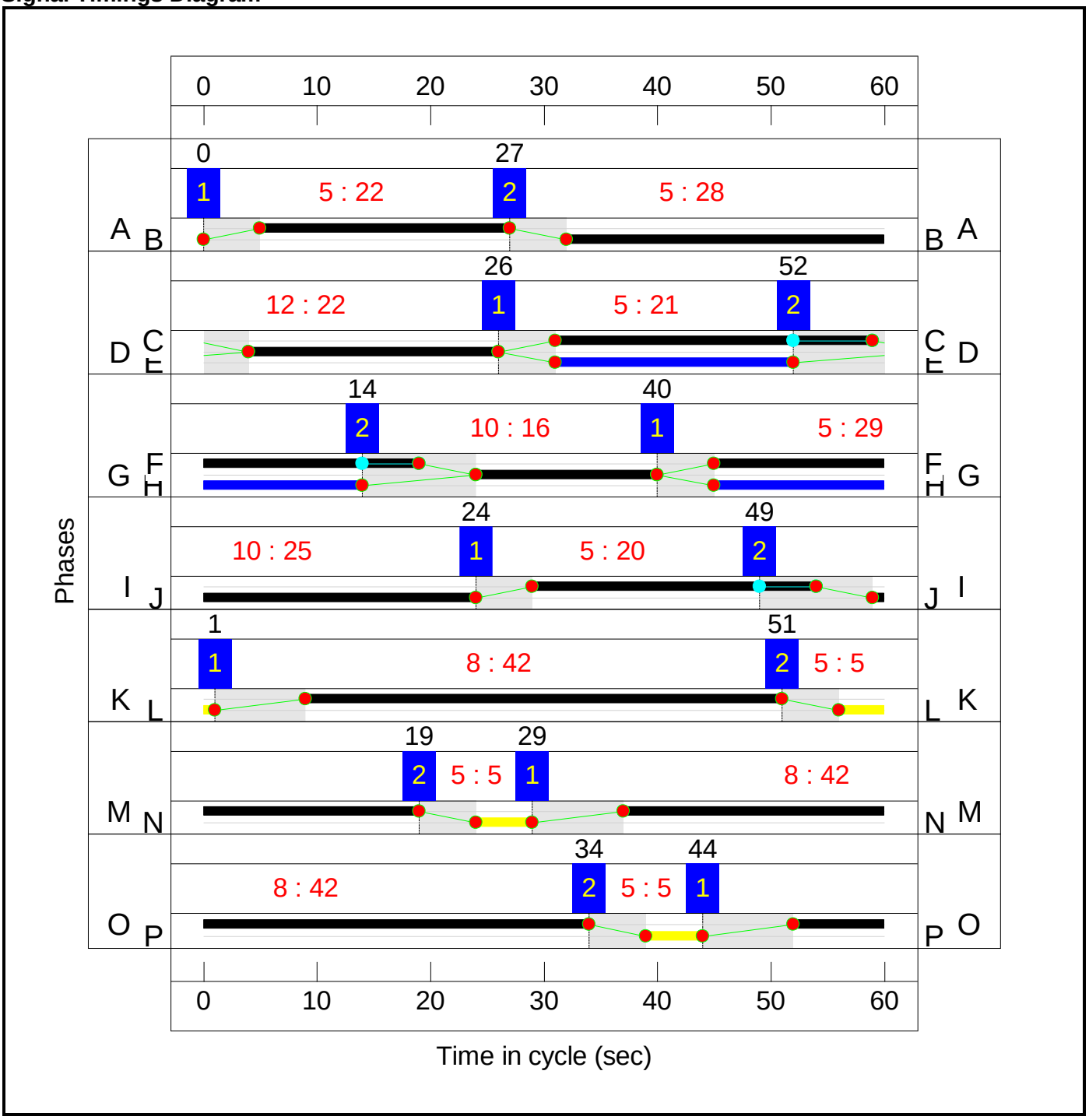
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	29	19

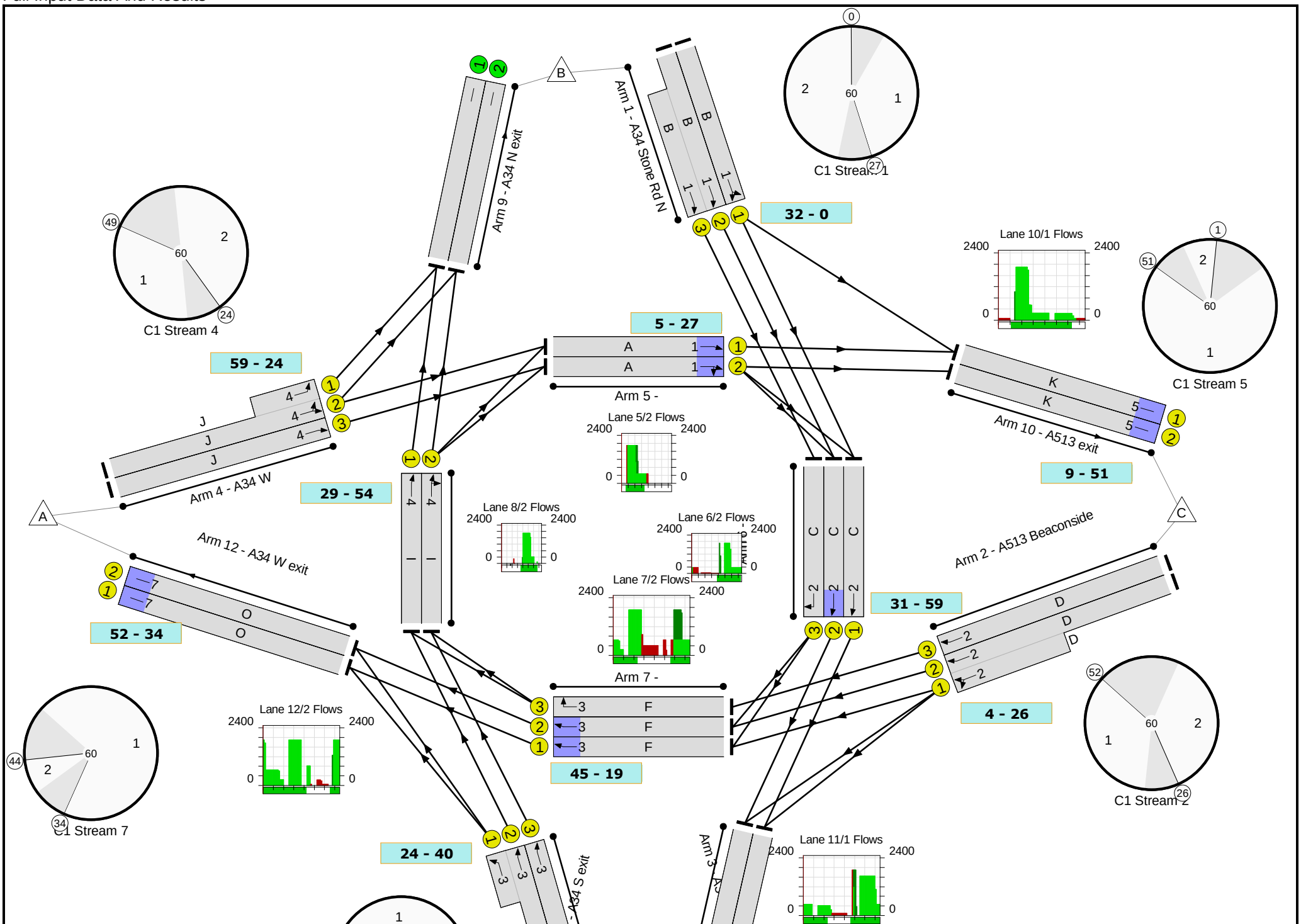
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	44	34

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	28	-	547	1900	918	59.6%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	28	-	1123	1900:1900	470+918	80.9 : 80.9%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	22	-	834	1900:1900	627+636	66.1 : 66.1%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	22	-	51	1900	728	7.0%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	16	-	500	1900:1900	443+179	80.4 : 80.4%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	16	-	410	1900	538	76.2%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	25	-	905	1900:1900	569+568	79.5 : 79.5%
4/3	A34 W Ahead	U	4	N/A	J		1	25	-	477	1900	823	57.9%
5/1	Ahead	U	1	N/A	A		1	22	-	355	1900	728	48.7%
5/2	Right Ahead	U	1	N/A	A		1	22	-	478	1900	728	65.6%
6/1	Ahead	U	2	N/A	C		1	28	-	478	1900	918	52.1%
6/2	Ahead	U	2	N/A	C		1	28	-	392	1900	918	42.7%
6/3	Right	U	2	N/A	C		1	28	-	743	1900	918	80.9%
7/1	Ahead	U	3	N/A	F		1	34	-	647	1900	1108	58.4%
7/2	Ahead	U	3	N/A	F		1	34	-	667	1900	1108	60.2%
7/3	Right	U	3	N/A	F		1	34	-	51	1900	1108	4.6%
8/1	Ahead	U	4	N/A	I		1	25	-	399	1900	823	48.5%
8/2	Right Ahead	U	4	N/A	I		1	25	-	418	1900	823	50.8%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	851	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	515	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	428	1900	1362	31.4%
10/2	A513 exit	U	5	N/A	K		1	42	-	462	1900	1362	33.9%
11/1	A34 S exit	U	6	N/A	M		1	42	-	569	1900	1362	41.8%
11/2	A34 S exit	U	6	N/A	M		1	42	-	564	1900	1362	41.4%
12/1	A34 W exit	U	7	N/A	O		1	42	-	729	1900	1362	53.5%
12/2	A34 W exit	U	7	N/A	O		1	42	-	729	1900	1362	53.5%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**23.1**	**19.2**	**0.0**	**42.3**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**23.1**	**19.2**	**0.0**	**42.3**	**-**	**-**	**-**	**-**
1/1	547	547	-	-	-	1.7	0.7	-	2.4	16.1	6.5	0.7	7.3
1/2+1/3	1123	1123	-	-	-	3.8	2.1	-	5.9	18.8	10.3	2.1	12.4
2/2+2/1	834	834	-	-	-	3.4	1.0	-	4.4	18.8	5.5	1.0	6.5
2/3	51	51	-	-	-	0.2	0.0	-	0.2	14.4	0.5	0.0	0.6
3/2+3/1	500	500	-	-	-	2.6	2.0	-	4.6	33.0	5.9	2.0	7.9
3/3	410	410	-	-	-	2.2	1.6	-	3.8	33.3	6.2	1.6	7.7
4/2+4/1	905	905	-	-	-	3.2	1.9	-	5.1	20.3	6.8	1.9	8.7
4/3	477	477	-	-	-	1.7	0.7	-	2.4	18.0	6.0	0.7	6.6
5/1	355	355	-	-	-	0.8	0.5	-	1.3	13.1	3.8	0.5	4.3
5/2	478	478	-	-	-	0.3	0.9	-	1.3	9.6	0.8	0.9	1.8
6/1	478	478	-	-	-	0.4	0.5	-	0.9	7.1	0.9	0.5	1.4
6/2	392	392	-	-	-	0.4	0.4	-	0.7	6.7	0.8	0.4	1.2
6/3	743	743	-	-	-	0.6	2.1	-	2.7	13.0	1.2	2.1	3.3
7/1	647	647	-	-	-	0.5	0.7	-	1.2	6.8	4.9	0.7	5.6
7/2	667	667	-	-	-	0.7	0.8	-	1.5	7.9	3.5	0.8	4.2
7/3	51	51	-	-	-	0.1	0.0	-	0.1	5.8	0.2	0.0	0.2
8/1	399	399	-	-	-	0.1	0.5	-	0.6	5.3	4.3	0.5	4.7
8/2	418	418	-	-	-	0.0	0.5	-	0.5	4.6	0.1	0.5	0.6
9/1	851	851	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	515	515	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	428	428	-	-	-	0.0	0.2	-	0.3	2.3	0.3	0.2	0.5
10/2	462	462	-	-	-	0.0	0.3	-	0.3	2.0	0.0	0.3	0.3
11/1	569	569	-	-	-	0.1	0.4	-	0.4	2.8	0.8	0.4	1.2

Full Input Data And Results

11/2	564	564	-	-	-	0.1	0.4	-	0.5	3.1	1.4	0.4	1.8
12/1	729	729	-	-	-	0.1	0.6	-	0.7	3.2	0.5	0.6	1.0
12/2	729	729	-	-	-	0.1	0.6	-	0.6	3.1	0.4	0.6	0.9

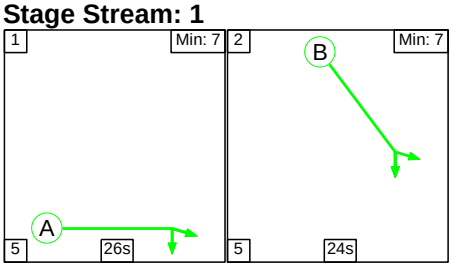
C1	Stream: 1	PRC for Signalled Lanes (%):	11.2	Total Delay for Signalled Lanes (pcuHr):	10.86	Cycle Time (s):	60	
C1	Stream: 2	PRC for Signalled Lanes (%):	11.2	Total Delay for Signalled Lanes (pcuHr):	8.90	Cycle Time (s):	60	
C1	Stream: 3	PRC for Signalled Lanes (%):	12.0	Total Delay for Signalled Lanes (pcuHr):	11.15	Cycle Time (s):	60	
C1	Stream: 4	PRC for Signalled Lanes (%):	13.1	Total Delay for Signalled Lanes (pcuHr):	8.61	Cycle Time (s):	60	
C1	Stream: 5	PRC for Signalled Lanes (%):	165.3	Total Delay for Signalled Lanes (pcuHr):	0.54	Cycle Time (s):	60	
C1	Stream: 6	PRC for Signalled Lanes (%):	115.4	Total Delay for Signalled Lanes (pcuHr):	0.93	Cycle Time (s):	60	
C1	Stream: 7	PRC for Signalled Lanes (%):	68.1	Total Delay for Signalled Lanes (pcuHr):	1.28	Cycle Time (s):	60	
		PRC Over All Lanes (%):	11.2	Total Delay Over All Lanes(pcuHr):	42.27			

Full Input Data And Results

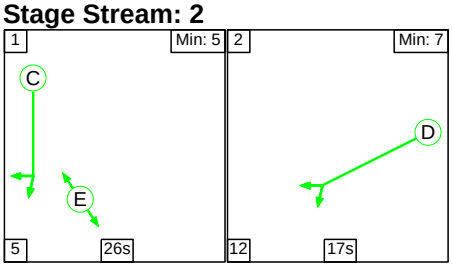
Scenario 7: '2040 + PAH + Dev (1.7m) AM_A513 Light Vehs through Resi' (FG21: '2040 + PAH + Dev (1.7m) AM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Stage Sequence Diagram

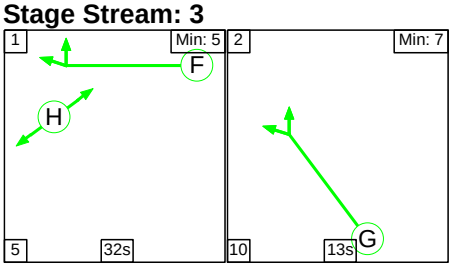
Stage Stream: 1



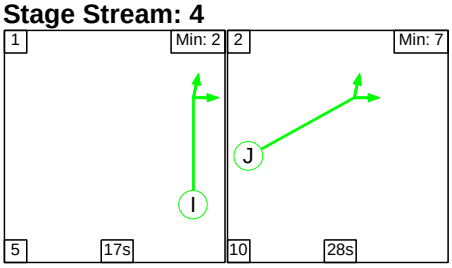
Stage Stream: 2



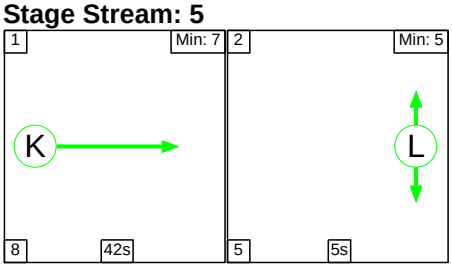
Stage Stream: 3



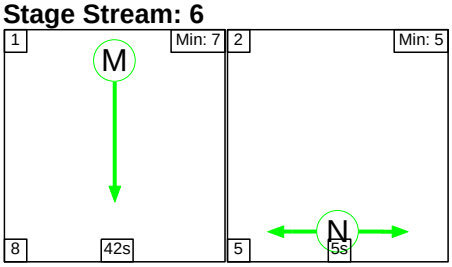
Stage Stream: 4



Stage Stream: 5

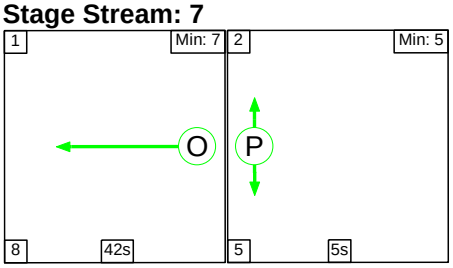


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	24
Change Point	0	31

Stage Stream: 2

Stage	1	2
Duration	26	17
Change Point	36	7

Stage Stream: 3

Stage	1	2
Duration	32	13
Change Point	16	53

Stage Stream: 4

Stage	1	2
Duration	17	28
Change Point	49	11

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	46	36

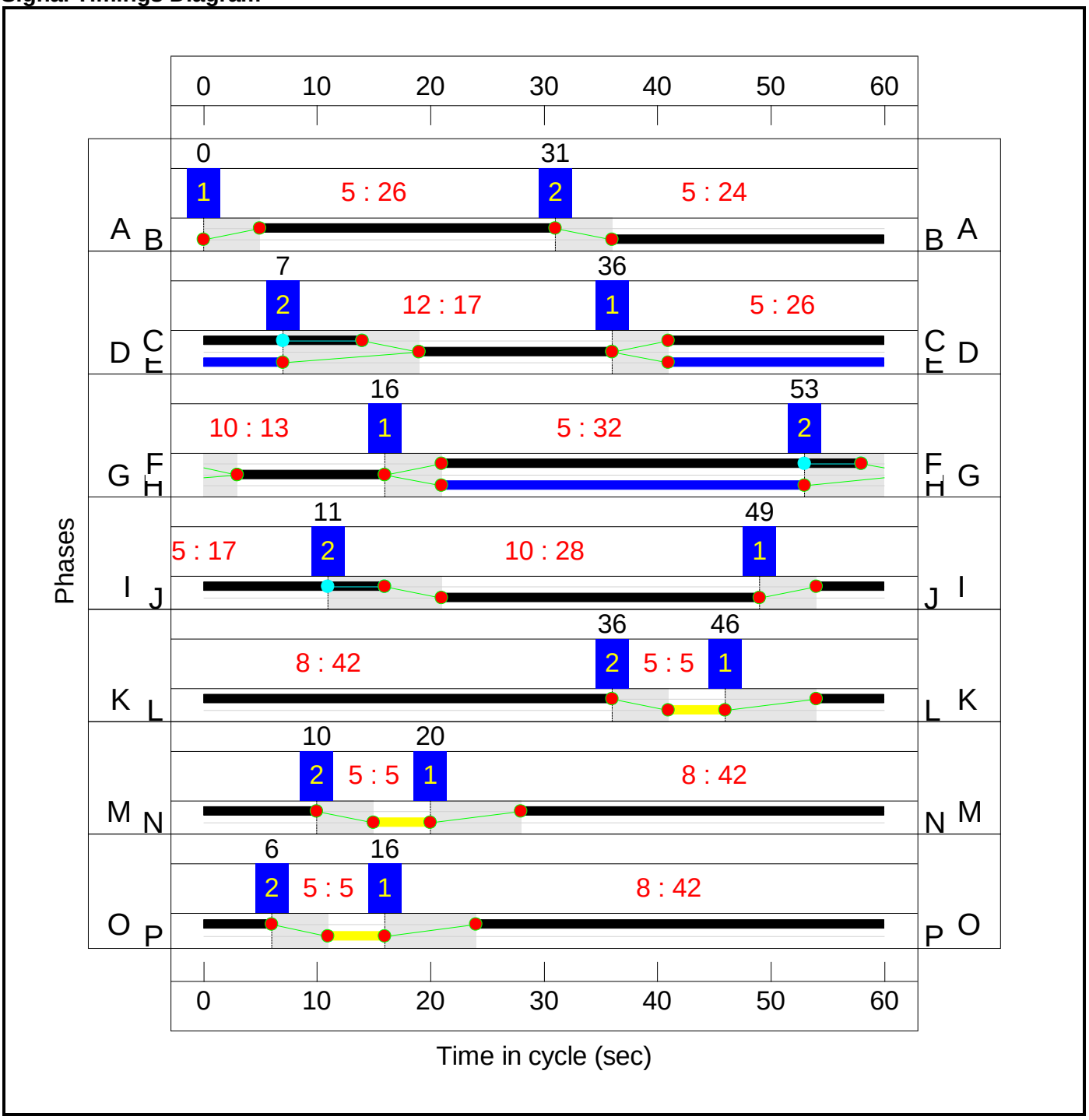
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	20	10

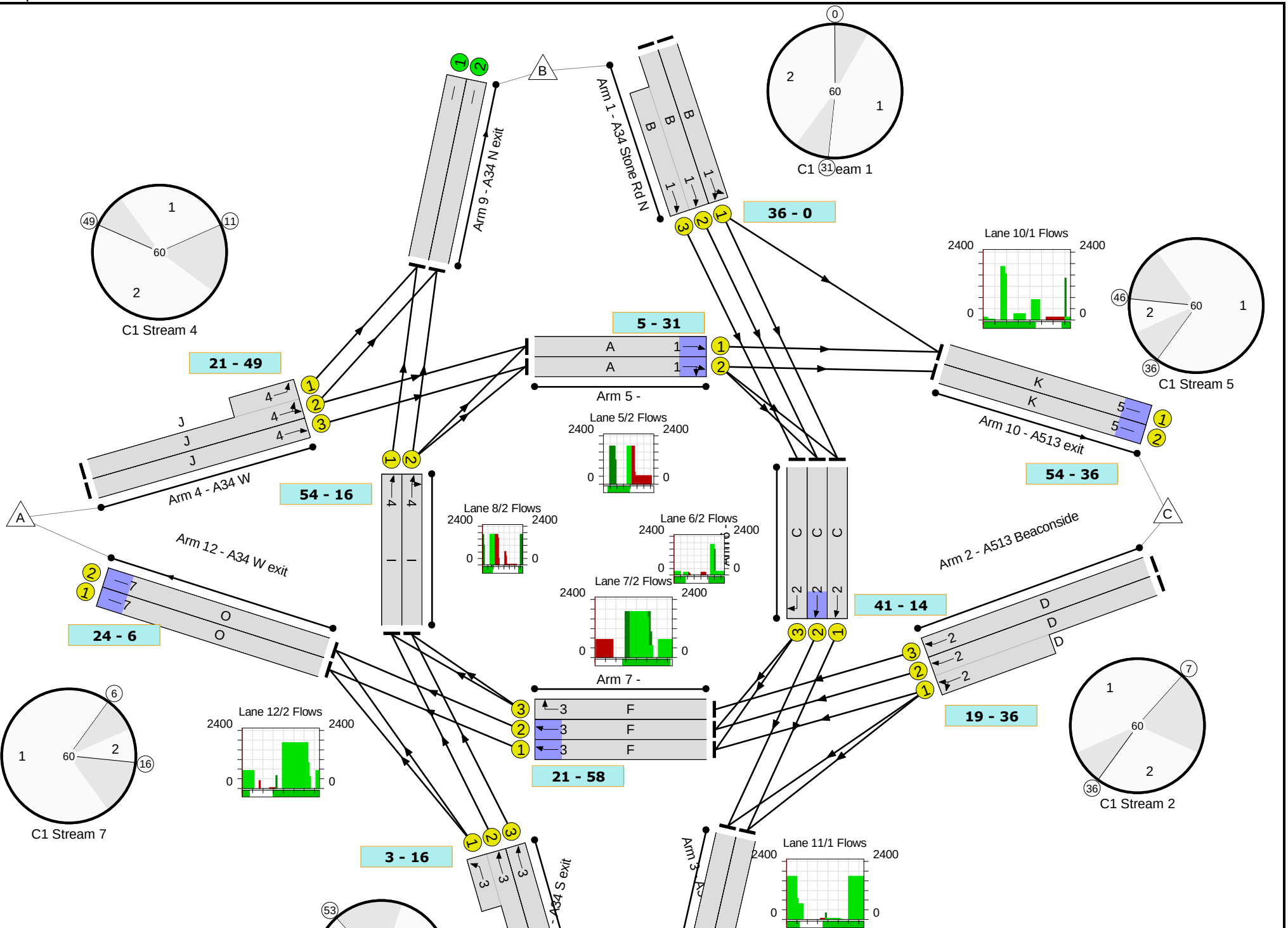
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	16	6

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	-	-	**N/A**	-	-		-	-	-	-	-	-	**108.3%**
Redhill Roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**108.3%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	24	-	695	1900	792	87.8%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	24	-	1095	1900:1900	220+792	108.3 : 108.3%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	17	-	1013	1900:1900	534+556	93.0 : 93.0%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	17	-	113	1900	570	19.8%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	13	-	427	1900:1900	412+43	93.9 : 93.9%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	13	-	415	1900	443	93.6%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	28	-	919	1900:1900	617+616	74.6 : 74.6%
4/3	A34 W Ahead	U	4	N/A	J		1	28	-	432	1900	918	47.0%
5/1	Ahead	U	1	N/A	A		1	26	-	225	1900	855	26.3%
5/2	Right Ahead	U	1	N/A	A		1	26	-	432	1900	855	50.5%
6/1	Ahead	U	2	N/A	C		1	33	-	656	1900	1077	60.9%
6/2	Ahead	U	2	N/A	C		1	33	-	278	1900	1077	25.8%
6/3	Right	U	2	N/A	C		1	33	-	857	1900	1077	73.5%
7/1	Ahead	U	3	N/A	F		1	37	-	773	1900	1203	61.0%
7/2	Ahead	U	3	N/A	F		1	37	-	836	1900	1203	67.3%
7/3	Right	U	3	N/A	F		1	37	-	113	1900	1203	9.4%
8/1	Ahead	U	4	N/A	I		1	22	-	451	1900	728	61.9%
8/2	Right Ahead	U	4	N/A	I		1	22	-	464	1900	728	63.7%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	910	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	699	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	264	1900	1362	19.4%
10/2	A513 exit	U	5	N/A	K		1	42	-	392	1900	1362	28.8%
11/1	A34 S exit	U	6	N/A	M		1	42	-	671	1900	1362	49.3%
11/2	A34 S exit	U	6	N/A	M		1	42	-	524	1900	1362	38.5%
12/1	A34 W exit	U	7	N/A	O		1	42	-	804	1900	1362	56.2%
12/2	A34 W exit	U	7	N/A	O		1	42	-	845	1900	1362	60.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**34.1**	**78.5**	**0.0**	**112.6**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**34.1**	**78.5**	**0.0**	**112.6**	**-**	**-**	**-**	**-**
1/1	695	695	-	-	-	3.1	3.4	-	6.5	33.5	10.6	3.4	14.0
1/2+1/3	1095	1030	-	-	-	6.2	47.5	-	53.7	176.6	14.7	47.5	62.2
2/2+2/1	1013	1013	-	-	-	5.6	5.7	-	11.4	40.5	8.2	5.7	13.9
2/3	113	113	-	-	-	0.5	0.1	-	0.6	19.6	1.4	0.1	1.5
3/2+3/1	427	427	-	-	-	2.6	5.5	-	8.1	68.6	6.5	5.5	12.0
3/3	415	415	-	-	-	2.6	5.3	-	7.9	68.7	6.7	5.3	12.0
4/2+4/1	919	919	-	-	-	2.7	1.5	-	4.1	16.3	5.5	1.5	7.0
4/3	432	432	-	-	-	1.2	0.4	-	1.7	14.1	4.8	0.4	5.2
5/1	225	225	-	-	-	0.8	0.2	-	1.0	15.6	2.0	0.2	2.2
5/2	432	432	-	-	-	1.9	0.5	-	2.4	20.2	4.0	0.5	4.5
6/1	656	656	-	-	-	0.0	0.8	-	0.8	4.3	0.0	0.8	0.8
6/2	278	278	-	-	-	0.1	0.2	-	0.3	3.6	0.4	0.2	0.5
6/3	792	792	-	-	-	0.0	1.4	-	1.4	6.3	0.0	1.4	1.4
7/1	734	734	-	-	-	1.4	0.8	-	2.2	10.7	5.4	0.8	6.2
7/2	810	810	-	-	-	1.0	1.0	-	2.0	8.9	3.2	1.0	4.3
7/3	113	113	-	-	-	0.0	0.1	-	0.1	1.7	0.0	0.1	0.1
8/1	451	451	-	-	-	1.9	0.8	-	2.8	22.0	3.5	0.8	4.3
8/2	464	464	-	-	-	2.0	0.9	-	2.9	22.3	3.5	0.9	4.4
9/1	910	910	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	699	699	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	264	264	-	-	-	0.0	0.1	-	0.2	2.3	0.4	0.1	0.5
10/2	392	392	-	-	-	0.0	0.2	-	0.2	1.9	0.0	0.2	0.2
11/1	671	671	-	-	-	0.0	0.5	-	0.5	2.6	0.1	0.5	0.5

Full Input Data And Results

11/2	524	524	-	-	-	0.1	0.3	-	0.5	3.1	2.1	0.3	2.4
12/1	765	765	-	-	-	0.1	0.6	-	0.7	3.4	0.5	0.6	1.1
12/2	819	819	-	-	-	0.0	0.8	-	0.8	3.4	0.1	0.8	0.9

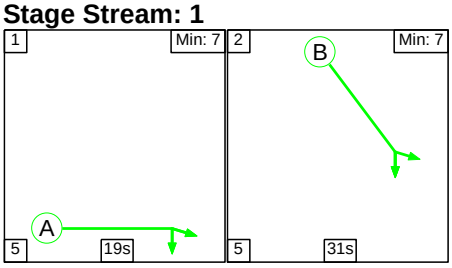
C1	Stream: 1 PRC for Signalled Lanes (%):	-20.3	Total Delay for Signalled Lanes (pcuHr):	63.58	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	-3.3	Total Delay for Signalled Lanes (pcuHr):	14.43	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	-4.3	Total Delay for Signalled Lanes (pcuHr):	20.29	Cycle Time (s):	60
C1	Stream: 4 PRC for Signalled Lanes (%):	20.7	Total Delay for Signalled Lanes (pcuHr):	11.47	Cycle Time (s):	60
C1	Stream: 5 PRC for Signalled Lanes (%):	212.6	Total Delay for Signalled Lanes (pcuHr):	0.37	Cycle Time (s):	60
C1	Stream: 6 PRC for Signalled Lanes (%):	82.6	Total Delay for Signalled Lanes (pcuHr):	0.94	Cycle Time (s):	60
C1	Stream: 7 PRC for Signalled Lanes (%):	49.6	Total Delay for Signalled Lanes (pcuHr):	1.49	Cycle Time (s):	60
	PRC Over All Lanes (%):	-20.3	Total Delay Over All Lanes(pcuHr):	112.56		

Full Input Data And Results

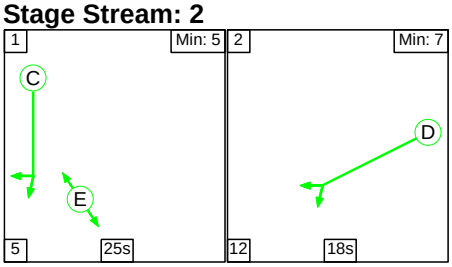
Scenario 8: '2040 + PAH + Dev (1.7m) PM_A513 Light Vehs through Resi' (FG22: '2040 + PAH + Dev (1.7m) PM_A513 Light Vehs through Resi', Plan 1: 'Peds')

Stage Sequence Diagram

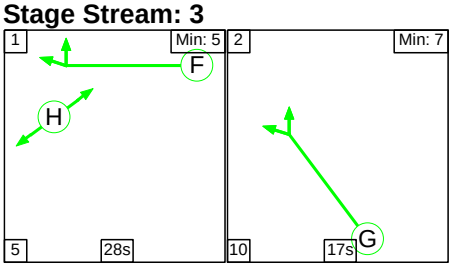
Stage Stream: 1



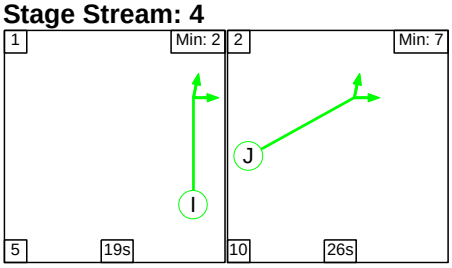
Stage Stream: 2



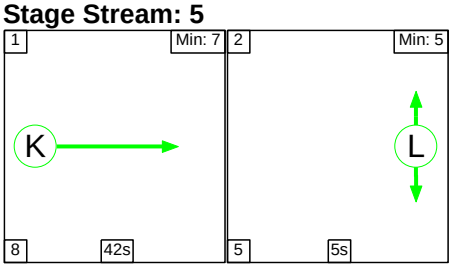
Stage Stream: 3



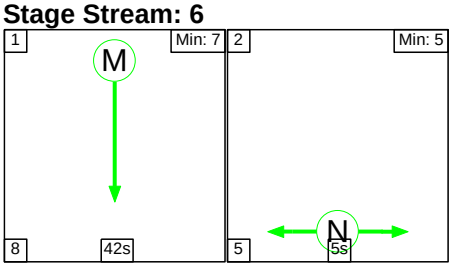
Stage Stream: 4



Stage Stream: 5

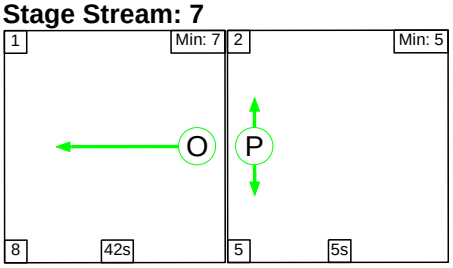


Stage Stream: 6



Full Input Data And Results

Stage Stream: 7



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	31
Change Point	0	24

Stage Stream: 2

Stage	1	2
Duration	25	18
Change Point	21	51

Stage Stream: 3

Stage	1	2
Duration	28	17
Change Point	43	16

Stage Stream: 4

Stage	1	2
Duration	19	26
Change Point	26	50

Stage Stream: 5

Stage	1	2
Duration	42	5
Change Point	1	51

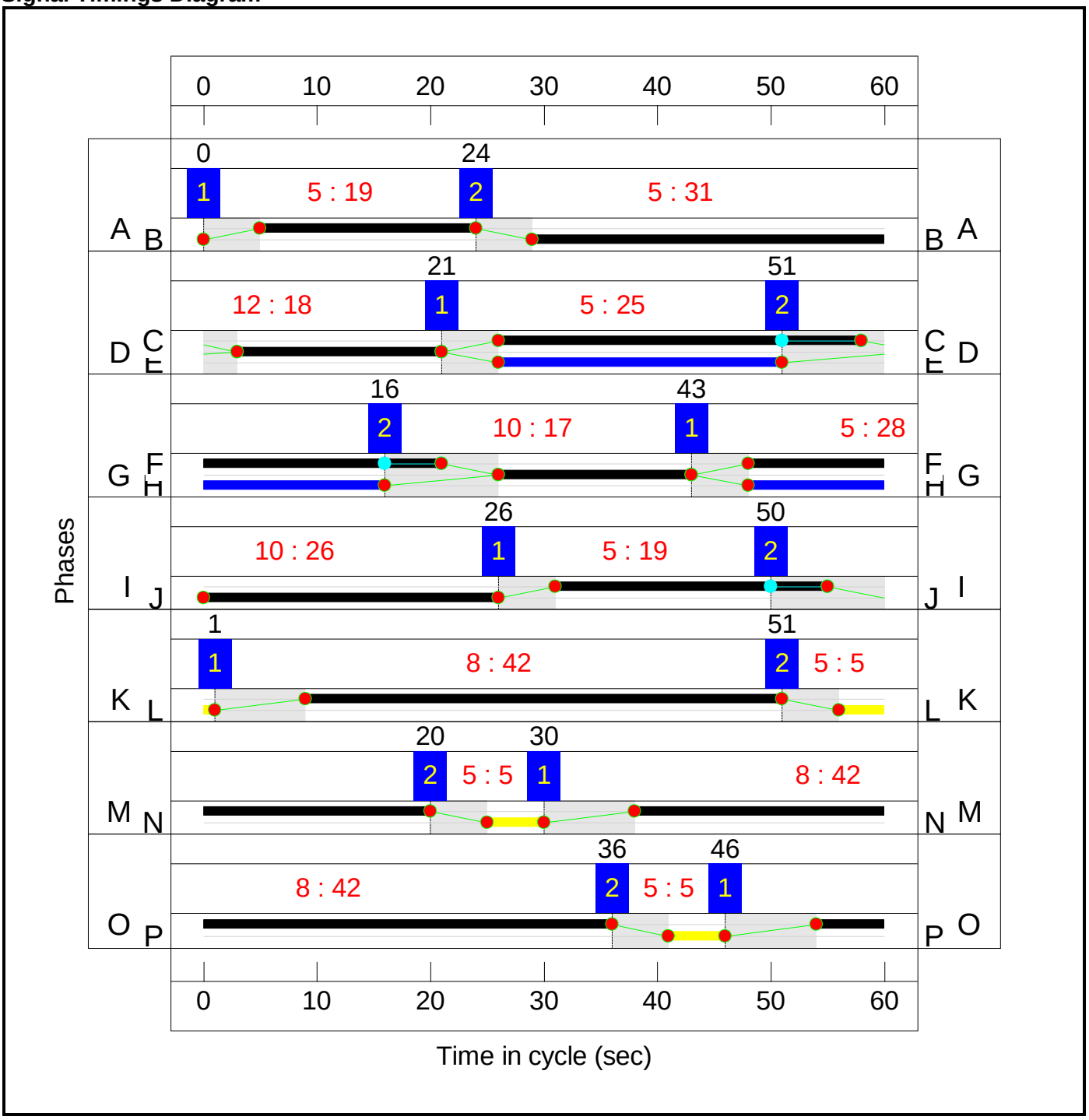
Stage Stream: 6

Stage	1	2
Duration	42	5
Change Point	30	20

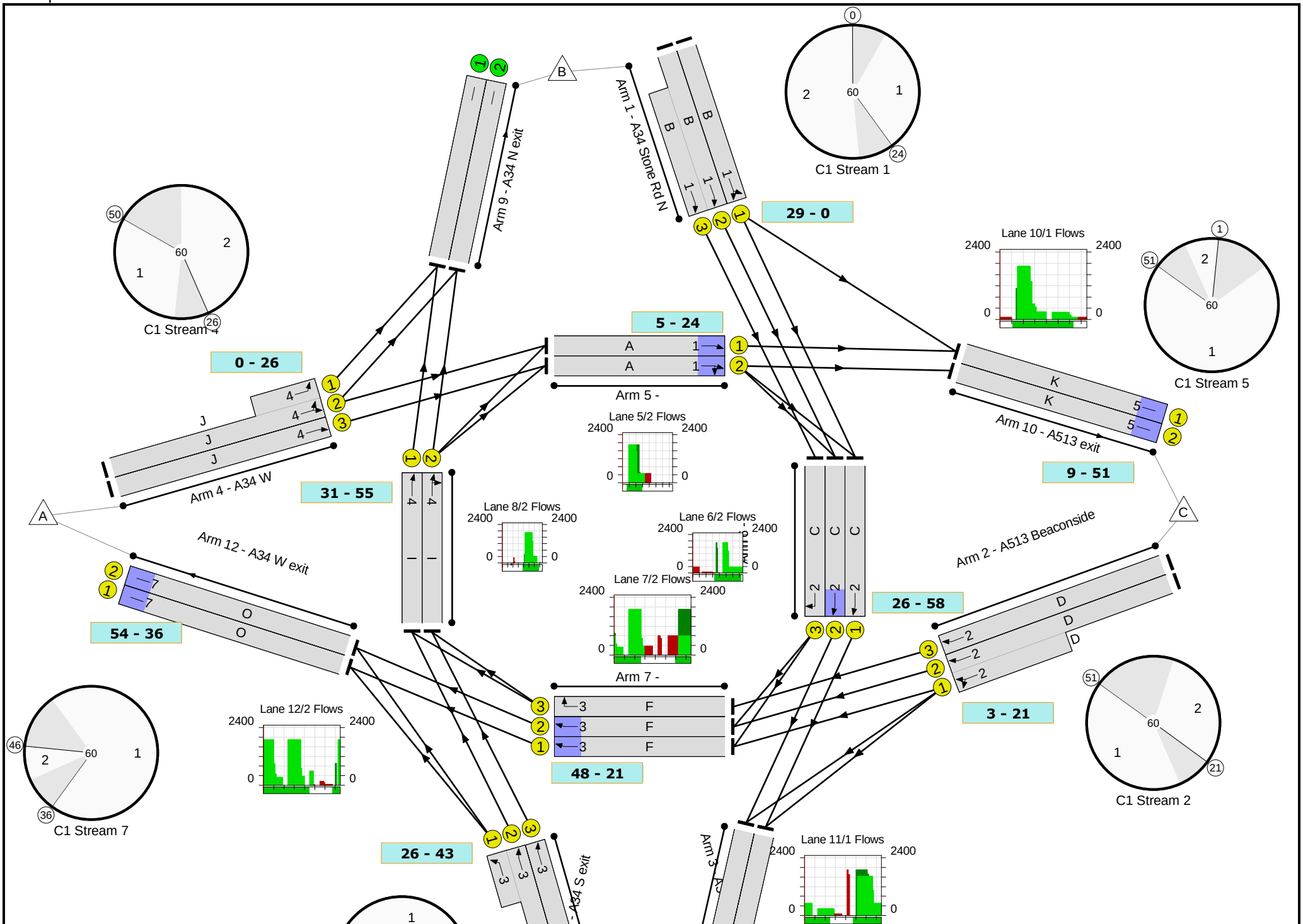
Stage Stream: 7

Stage	1	2
Duration	42	5
Change Point	46	36

Signal Timings Diagram



Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.3%**
Redhill Roundabout	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.3%**
1/1	A34 Stone Rd N Ahead Left	U	1	N/A	B		1	31	-	586	1900	1013	57.8%
1/2+1/3	A34 Stone Rd N Ahead	U	1	N/A	B		1	31	-	1140	1900:1900	464+986	78.6 : 78.6%
2/2+2/1	A513 Beaconside Ahead Left	U	2	N/A	D		1	18	-	834	1900:1900	479+575	79.2 : 79.2%
2/3	A513 Beaconside Ahead	U	2	N/A	D		1	18	-	56	1900	602	9.3%
3/2+3/1	A34 Stone Rd S Ahead Left	U	3	N/A	G		1	17	-	503	1900:1900	466+187	77.0 : 77.0%
3/3	A34 Stone Rd S Ahead	U	3	N/A	G		1	17	-	412	1900	570	72.3%
4/2+4/1	A34 W Ahead Left	U	4	N/A	J		1	26	-	939	1900:1900	585+584	80.3 : 80.3%
4/3	A34 W Ahead	U	4	N/A	J		1	26	-	467	1900	855	54.6%
5/1	Ahead	U	1	N/A	A		1	19	-	366	1900	633	57.8%
5/2	Right Ahead	U	1	N/A	A		1	19	-	467	1900	633	73.7%
6/1	Ahead	U	2	N/A	C		1	32	-	508	1900	1045	48.6%
6/2	Ahead	U	2	N/A	C		1	32	-	380	1900	1045	36.4%
6/3	Right	U	2	N/A	C		1	32	-	775	1900	1045	74.2%
7/1	Ahead	U	3	N/A	F		1	33	-	638	1900	1077	59.3%
7/2	Ahead	U	3	N/A	F		1	33	-	708	1900	1077	65.8%
7/3	Right	U	3	N/A	F		1	33	-	56	1900	1077	5.2%
8/1	Ahead	U	4	N/A	I		1	24	-	405	1900	792	51.2%
8/2	Right Ahead	U	4	N/A	I		1	24	-	422	1900	792	53.3%

Full Input Data And Results

9/1	A34 N exit	U	N/A	N/A	-		-	-	-	874	Inf	Inf	0.0%
9/2	A34 N exit	U	N/A	N/A	-		-	-	-	526	Inf	Inf	0.0%
10/1	A513 exit	U	5	N/A	K		1	42	-	445	1900	1362	32.7%
10/2	A513 exit	U	5	N/A	K		1	42	-	451	1900	1362	33.1%
11/1	A34 S exit	U	6	N/A	M		1	42	-	578	1900	1362	42.4%
11/2	A34 S exit	U	6	N/A	M		1	42	-	573	1900	1362	42.1%
12/1	A34 W exit	U	7	N/A	O		1	42	-	737	1900	1362	54.1%
12/2	A34 W exit	U	7	N/A	O		1	42	-	753	1900	1362	55.3%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Redhill Roundabout (Committed Proposed Layout)	**-**	**-**	**0**	**0**	**0**	**24.3**	**19.4**	**0.0**	**43.7**	**-**	**-**	**-**	**-**
Redhill Roundabout	**-**	**-**	**0**	**0**	**0**	**24.3**	**19.4**	**0.0**	**43.7**	**-**	**-**	**-**	**-**
1/1	586	586	-	-	-	1.5	0.7	-	2.2	13.7	6.5	0.7	7.2
1/2+1/3	1140	1140	-	-	-	3.2	1.8	-	5.0	15.8	10.1	1.8	11.9
2/2+2/1	834	834	-	-	-	4.2	1.9	-	6.0	26.1	6.7	1.9	8.6
2/3	56	56	-	-	-	0.2	0.1	-	0.3	17.8	0.7	0.1	0.7
3/2+3/1	503	503	-	-	-	2.5	1.6	-	4.1	29.6	5.8	1.6	7.4
3/3	412	412	-	-	-	2.1	1.3	-	3.4	30.0	6.1	1.3	7.3
4/2+4/1	939	939	-	-	-	3.2	2.0	-	5.2	19.8	7.1	2.0	9.1
4/3	467	467	-	-	-	1.6	0.6	-	2.2	16.7	5.6	0.6	6.2
5/1	366	366	-	-	-	1.0	0.7	-	1.7	16.7	3.9	0.7	4.6
5/2	467	467	-	-	-	0.7	1.4	-	2.1	16.3	0.9	1.4	2.3
6/1	508	508	-	-	-	0.4	0.5	-	0.9	6.2	1.0	0.5	1.5
6/2	380	380	-	-	-	0.3	0.3	-	0.6	5.9	0.9	0.3	1.2
6/3	775	775	-	-	-	0.6	1.4	-	2.0	9.5	1.5	1.4	2.9
7/1	638	638	-	-	-	1.0	0.7	-	1.7	9.5	7.3	0.7	8.0
7/2	708	708	-	-	-	0.8	1.0	-	1.7	8.8	4.9	1.0	5.8
7/3	56	56	-	-	-	0.0	0.0	-	0.1	4.1	0.1	0.0	0.1
8/1	405	405	-	-	-	0.2	0.5	-	0.7	6.3	4.4	0.5	4.9
8/2	422	422	-	-	-	0.0	0.6	-	0.6	5.2	0.2	0.6	0.7
9/1	874	874	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	526	526	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	445	445	-	-	-	0.1	0.2	-	0.3	2.4	0.3	0.2	0.5
10/2	451	451	-	-	-	0.0	0.2	-	0.2	2.0	0.0	0.2	0.2
11/1	578	578	-	-	-	0.2	0.4	-	0.6	3.4	1.6	0.4	1.9

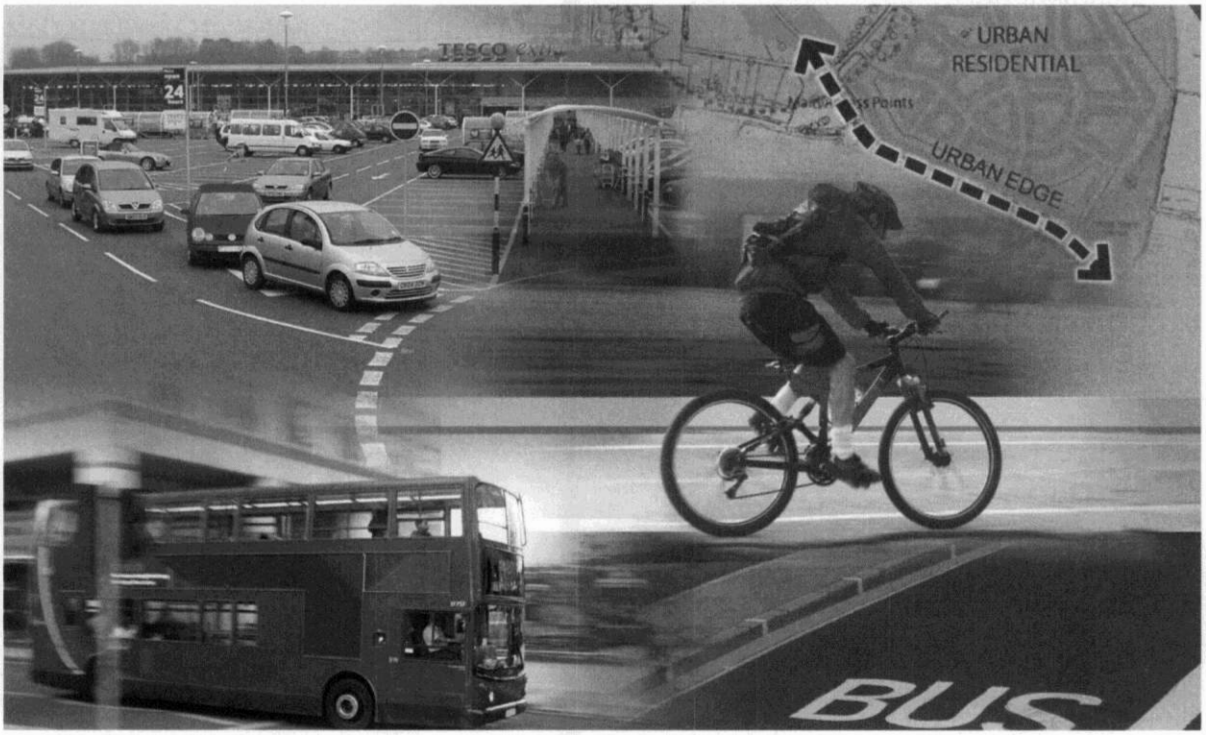
Full Input Data And Results

11/2	573	573	-	-	-	0.3	0.4	-	0.6	4.1	1.8	0.4	2.2
12/1	737	737	-	-	-	0.1	0.6	-	0.7	3.3	0.6	0.6	1.2
12/2	753	753	-	-	-	0.0	0.6	-	0.7	3.1	0.3	0.6	0.9

C1	Stream: 1 PRC for Signalled Lanes (%):	14.5	Total Delay for Signalled Lanes (pcuHr):	11.04	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	13.6	Total Delay for Signalled Lanes (pcuHr):	9.86	Cycle Time (s):	60
C1	Stream: 3 PRC for Signalled Lanes (%):	16.8	Total Delay for Signalled Lanes (pcuHr):	11.05	Cycle Time (s):	60
C1	Stream: 4 PRC for Signalled Lanes (%):	12.1	Total Delay for Signalled Lanes (pcuHr):	8.63	Cycle Time (s):	60
C1	Stream: 5 PRC for Signalled Lanes (%):	171.7	Total Delay for Signalled Lanes (pcuHr):	0.54	Cycle Time (s):	60
C1	Stream: 6 PRC for Signalled Lanes (%):	112.0	Total Delay for Signalled Lanes (pcuHr):	1.20	Cycle Time (s):	60
C1	Stream: 7 PRC for Signalled Lanes (%):	62.7	Total Delay for Signalled Lanes (pcuHr):	1.33	Cycle Time (s):	60
	PRC Over All Lanes (%):	12.1	Total Delay Over All Lanes(pcuHr):	43.67		

APPENDIX G: 2012 Traffic Flow Extracts

Waterman



Walton Hill, Stone

Addendum Transport Assessment

February 2013

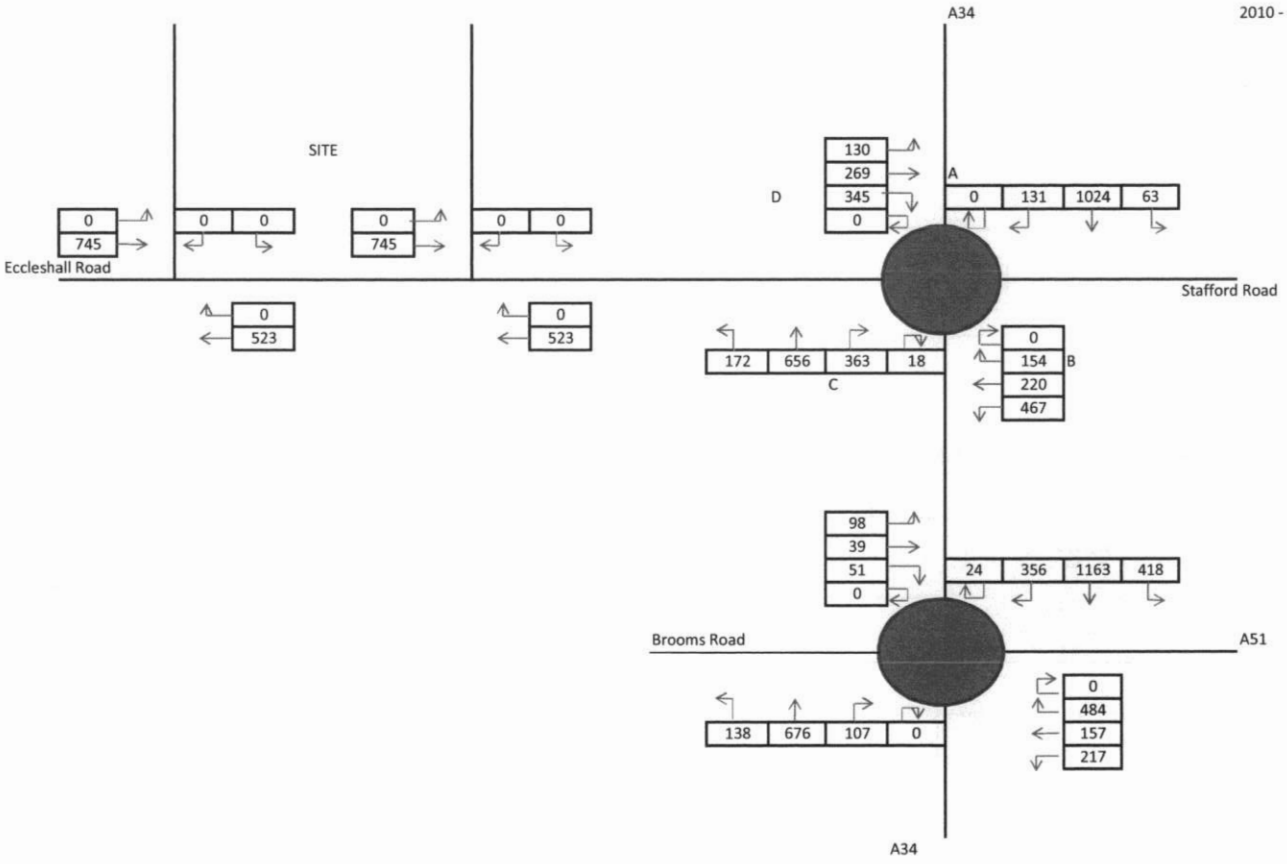
Waterman Transport & Development Limited

[redacted]

60 years of INNOVATION 2012

Waterman Boreham
Transport Planning

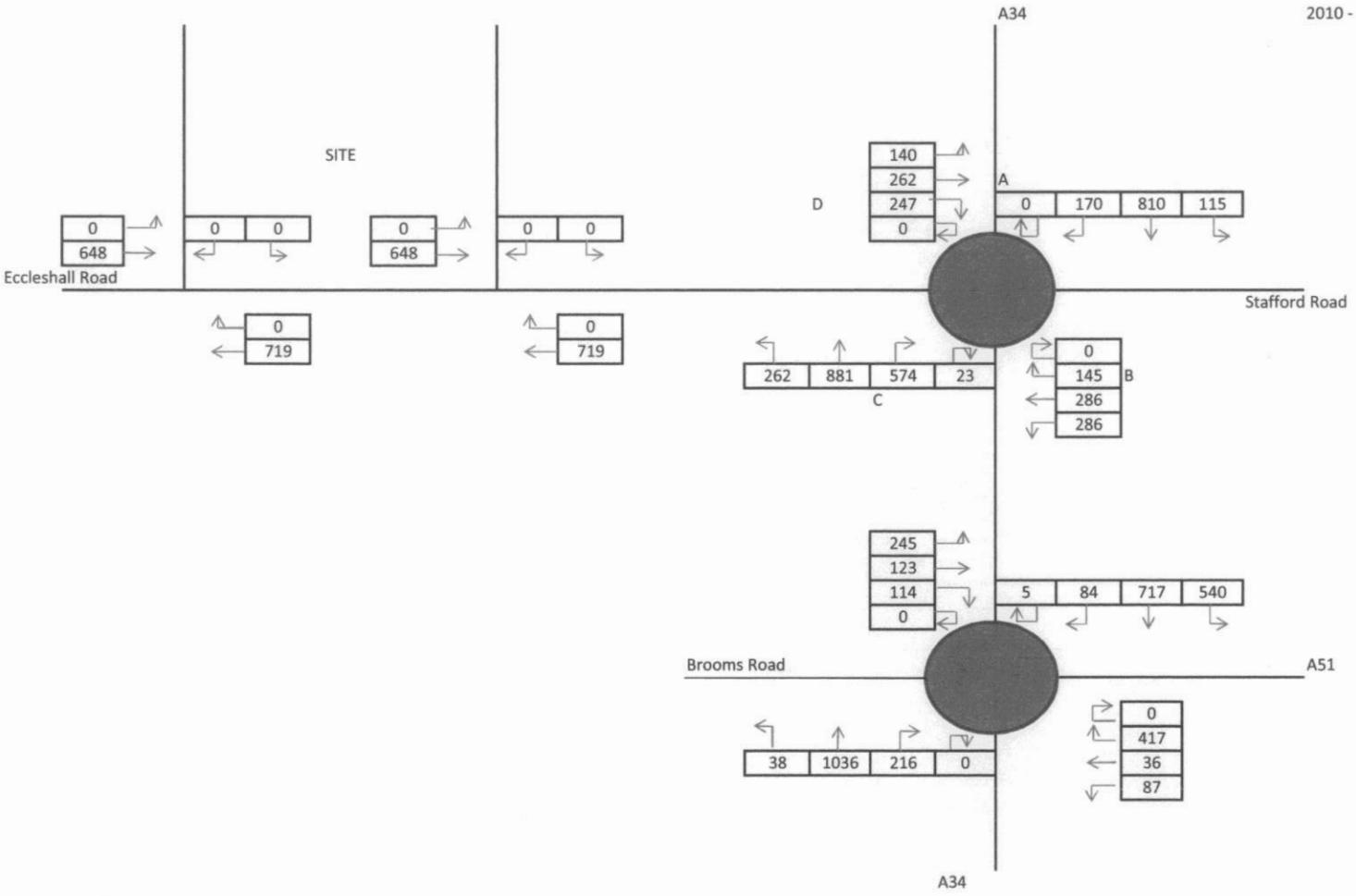
Base 2012 Traffic Flows - AM Peak Hour
TRN10069



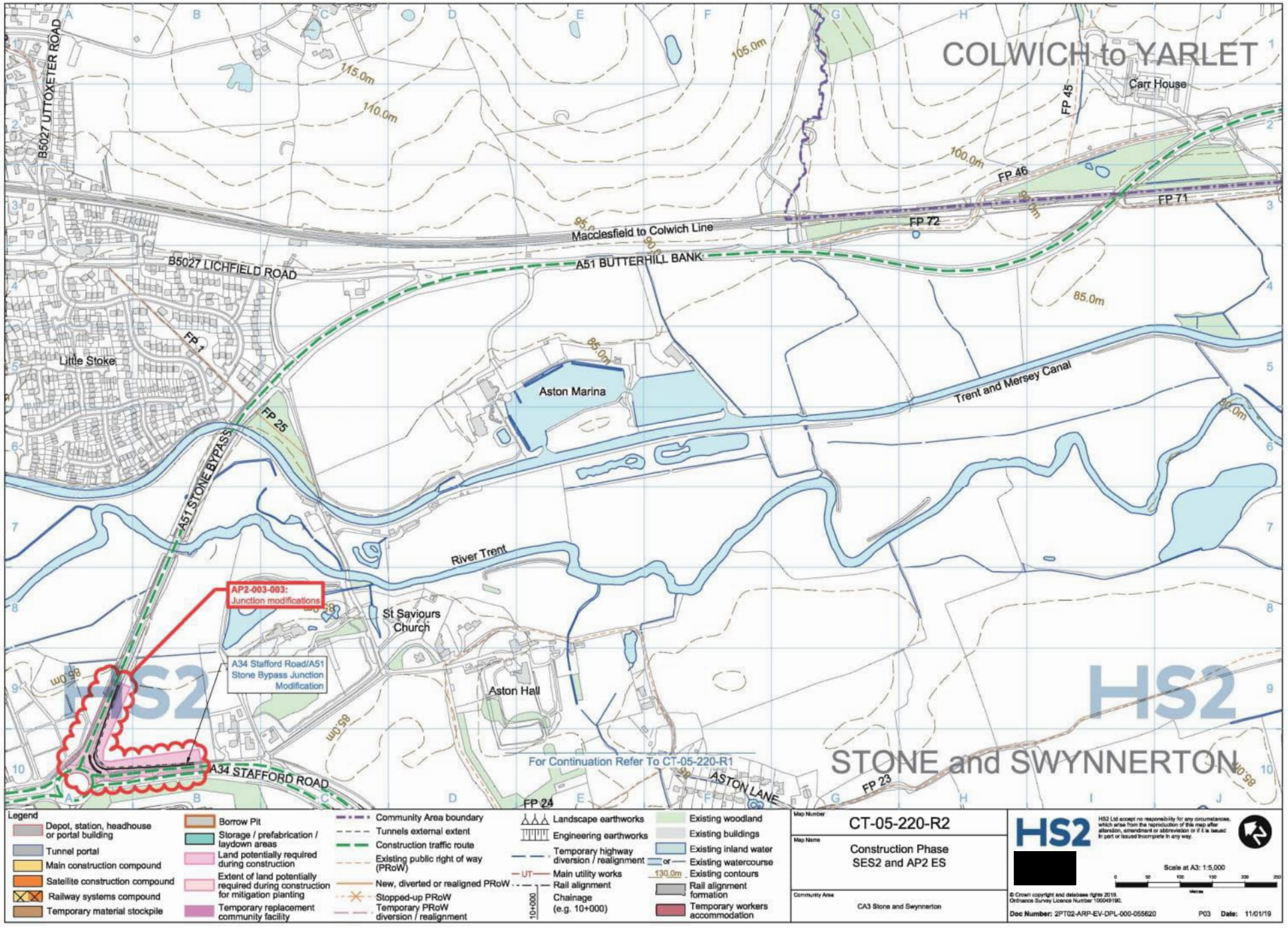
Waterman Boreham
Transport Planning

Base 2012 Traffic Flows - PM Peak Hour
TRN10069

2010 - 2012 Growth Factor - 1.02



APPENDIX H: HS2 Aston Roundabout Improvements


COLWICH to YARLET
STONE and SWYNNERTON
B5027 UTTOXETER ROAD
B5027 LICHFIELD ROAD
A51 BUTTERHILL BANK
Macclesfield to Colwich Line
A51 STONE BYPASS
Trent and Mersey Canal
River Trent
Little Stoke
Aston Marina
Carr House
St Saviours Church
Aston Hall
ASTON LANE
A34 STAFFORD ROAD
FP 1
FP 23
FP 24
FP 25
FP 45
FP 46
FP 71
FP 72
AP2-003-003: Junction modifications
A34 Stafford Road/A51 Stone Bypass Junction Modification
For Continuation Refer To CT-05-220-R1
Legend
Depot, station, headhouse or portal building
Tunnel portal
Main construction compound
Satellite construction compound
Railway systems compound
Temporary material stockpile
Borrow Pit
Storage / prefabrication / laydown areas
Land potentially required during construction
Extent of land potentially required during construction for mitigation planting
Temporary replacement community facility
Community Area boundary
Tunnels external extent
Construction traffic route
Existing public right of way (PRoW)
New, diverted or realigned PRoW
Stopped-up PRoW
Temporary PRoW diversion / realignment
Landscape earthworks
Engineering earthworks
Temporary highway diversion / realignment
Main utility works
Rail alignment
Chainage (e.g. 10+000)
Existing woodland
Existing buildings
Existing inland water
Existing watercourse
Existing contours
Rail alignment formation
Temporary workers accommodation
Map Number
CT-05-220-R2
Map Name
Construction Phase
SES2 and AP2 ES
Community Area
CA3 Stone and Swynnerton
HS2
Scale at A3: 1:5,000
Doc Number: 2PT02-ARP-EV-DPL-000-055620
P03
Date: 11/01/19

Appendix 5 – Parameters Plan

Rev	Date	By	Description
-			

Plot 3
3.18 Ha / 7.86 Ac
Approx. 157k sqft

Plot 4
9.03 Ha / 22.32 Ac
Approx. 445k sqft

Plot 2
8.98 Ha / 22.20 Ac
Approx. 450k sqft

Plot 1
8.93 Ha / 22.08 Ac
Approx. 370k sqft

Protected Employment Land

- Draft Council Allocation Land
  31.61 Ha / 78.12 Ac
- Hidderley Land Ownership
  58.54 Ha / 144.67 Ac
- Gross Developable Area
  40.79 Ha / 100.81 Ac
- Net Developable Area
  30.14 Ha / 74.48 Ac
- Green Infrastructure
  25.76 Ha / 63.67 Ac

NOTE:

Layout subject to assessment of Visual Impact, Levels, Retaining solutions, Ecology and Arboriculture

N

SGP
Architects + Masterplanners

[redacted]

Stafford North Business Park
Land to the West

Drawing Name:
Full Site Parameters Plan

Drawing Stage:	FEASIBILITY
Suitability:	S0 - Work In Progress
SGP File Ref:	19-138-004-SGP-STE-XX-DR-A-001008

SGP Project No:	Date:	Drawn:	Team:	Scale:	Rev:
19-138-004	07/12/2022	JS	JN	1:2000 @ A1	-

Drawing Number:

Project Code	Originator	Volume	Level	Type	Role	Number
19138-04	SGP	STE	XX	DR	A	001008

Appendix 6 - Illustrative Masterplan

Rev	Date	By	Description
A	07/12/2022	JS	Green Infrastructure added

Draft Council Allocation Land
31.61 Ha / 78.12 Ac
Hidderley Land Ownership
58.54 Ha / 144.67 Ac
Gross Developable Area
40.79 Ha / 100.81 Ac
Net Developable Area
30.14 Ha / 74.48 Ac
Green Infrastructure
25.76 Ha / 63.67 Ac

Area Schedule

Total GIA: **1,427,000sqft (132,572m²)**

NOTE:

Layout subject to assessment of Visual Impact, Levels, Retaining solutions, Ecology and Arboriculture

N

SGP
Architects + Masterplanners

Stafford North Business Park
Land to the West

Drawing Name:
Site Footprint

Drawing Stage:	FEASIBILITY
Suitability:	S0 - Work In Progress
SGP File Ref:	19-138-004-SGP-STE-XX-DR-A-001006

SGP Project No:	Date:	Drawn:	Team:	Scale:	Rev:
19-138-004	24/11/2022	JS	JN	1:2000 @ A1	A

Drawing Number:
19138-04-SGP-STE-XX-DR-A-001006
Project Code Originator Volume Level Type Role Number

Appendix 8 – Initial Heritage Appraisal

[redacted]

[redacted]

[redacted]

By email only

9th December 2022

Dear Stacey

BSA2253 Land North West of Stone Road, Stafford – Appraisal of Heritage and Archaeology Implications

I write further to your recent request for an appraisal of the archaeological and heritage interest of your site north west of Stone Road, Stafford which is allocated for commercial development.

Archaeological and heritage appraisal has been completed remotely for the site by BSA Heritage Limited, following their full assessment and investigation of the adjacent 'Pets at Home' development. Background research including fresh consultation with the Staffordshire Historic Environment Record (HER) and online sources indicates low archaeological potential and no conflict with heritage assets.

The closest designated heritage assets to the site include the scheduled and listed remains of a chapel to the south west, a Grade II listed milestone on the west side of the dualled Stone Road to the south east and a Grade II listed cottage in Whitgreave to the north. All lie nearly a kilometre from the site.

Neither these assets, nor any other designated asset would be harmed through change to their setting given distance and context. The historic landscape of the site is of no special interest and has been compromised by the construction of the M6 to the west and commercial development to the south and east. Retention of surviving hedgerows as far as is practical would accord with current policy.

There is no indication of early activity within the site or a wider study area surrounding it. HER records confirm vestiges of medieval ridge and furrow may survive, but also that the area was agricultural in that period, forming the fields of more distant settlements.

Other records reflect the area's post-medieval agricultural use, including field boundaries, the sites of isolated farm buildings and numerous marl pits. These latter, where earth was extracted to enrich surrounding fields, often survive, but are of negligible heritage interest, as are vestiges of other agricultural features.

Low archaeological potential is also indicated by the negative results of recent fieldwork completed ahead of development in recent decades, with the site to the south east subject to geophysical survey and a watching brief, but with nothing of note revealed.

Future development would be supported by fuller desk based assessment, a site walkover and subsequent fieldwork, but there is no indication that the site could not be developed in accordance with policy and guidance.

I trust this appraisal is useful, but please let me know if you have any queries or require further information.

Yours sincerely

[redacted]

Ben Stephenson
Director

JLL

[redacted]

Peter Leaver
Director

[redacted]

About JLL

JLL (NYSE: JLL) is a leading professional services firm that specializes in real estate and investment management. AFortune 500 company, JLL helps real estate owners, occupiers and investors achieve their business ambitions. In 2016, JLL had revenue of $6.8 billion and fee revenue of $5.8 billion and, on behalf of clients, managed 4.4 billion square feet, or 409 million square meters, and completed sales acquisitions and finance transactions of approximately $136 billion. At year-end 2016, JLL had nearly 300 corporate off ices, operations in over 80 countries and a global workforce of more than 77,000. As of December 31, 2016, LaSalle Investment Management has $60.1 billion of real estate under asset management. JLL is the brand name, and a registered trademark, of Jones Lang LaSalle Incorporated.

About JLL Research

JLL's research team delivers intelligence, analysis and insight through market-leading reports and services that illuminate today's commercial real estate dynamics and identify tomorrow's challenges and opportunities. Our more than 400 global research professionals track and analyze economic and property trends and forecast future conditions in over 60 countries, producing unrivalled local and global perspectives. Our research and expertise, fueled by real-time information and innovative thinking around the world, creates a competitive advantage for our clients and drives successful strategies and optimal real estate decisions.

www.jll.com