

The Lighthouse Green Fuels Order

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Abbreviations

Abbreviation	In full
AADT	Annual Average Daily Traffic
CCUS	Carbon Capture Usage and Storage
CIHT	Chartered Institution of Highways and Transportation
CHP	Combined Heat and Power
CTMP	Construction Traffic Management Plan
CWTP	Construction Worker Travel Plan
DfT	Department for Transport
DESNZ	Departments for Energy, Security & Net Zero
ECP	England Coast Path
ES	Environmental Statement
fCTMP	Framework Construction Traffic Management Plan
fCWTP	Framework Construction Worker Travel Plan
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
ISEP	Institute of Sustainability & Environmental Professionals
LGV	Light Goods Vehicle
MHCLG	Ministry of Housing, Communities and Local Government
MSOA	Middle Layer Super Output Area
NCN	National Cycle Network
NMU	Non-Motorised User
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PPG	Planning Practice Guidance
PRC	Practical Reserve Capacity
PRoW	Public Right of Way
RCBC	Redcar and Cleavland Borough Council
RSPB	RSPB (Royal Society for the Protection of Birds)
SAF	Sustainable Aviation Fuel
SRN	Strategic Road Network
STBC	Stockton-on-Tees Borough Council
TA	Transport Assessment
TAG	Transport Analysis Guidance

TEMPro

Trip End Model Presentation Program

TTWA

Travel To Work Area

WCH

Walking, Cycling and Horse Riding users

1 Introduction

1.1 Purpose of document

1.1.1 This Transport Assessment (TA) has been prepared to identify, assess and propose mitigation where necessary in relation to the traffic impact of the Proposed Development. The assessment only considers the impact upon the public highway.

1.1.2 This document should be read in conjunction with the following:

- **Chapter 18: Traffic and Transport (ES Volume I, Application Document Ref. 6.1);**
- Framework Construction Worker Travel Plan (fCWTP) (Annex C to this TA); and
- **Appendix 18D: Framework Construction Traffic Management Plan (fCTMP) (ES Volume III, Application Document Ref. 6.3).**

1.1.3 The issues identified for consideration in this assessment are as follows:

- a description of current baseline conditions;
- analysis of accidents within the Study Area and formulation of mitigation measures;
- calculation of the likely profile of traffic generation through the construction period and the identification of peak development flows;
- distribution and assignment of construction and operational traffic;
- identification of other committed developments in the Study Area and that have been taken account of as part of the assessment; and
- network capacity and impact analysis of construction and operational phases.

1.2 Proposed Development

1.2.1 This section sets out the details of the Proposed Development, including access and relevant planning policies.

Proposed Development description

1.2.2 The Proposed Development comprises the construction, operation (including maintenance) and decommissioning of a Sustainable Aviation Fuel (SAF) Production Facility, as well as the provision of a 200MWe Combined Heat and Power (CHP) plant in Teesside. The Proposed Development is described in **Chapter 4: Proposed Development and**

Chapter 5: Construction Programme and Management (ES Volume I, Application Document Ref. 6.1).

- 1.2.3 The Main Site access will be from Seal Sands Roundabout, with all construction workers using this access from either the A178 Seaton Carew Road from the north and the A1046 Port Clarence Road from the south.
- 1.2.4 Heavy Goods Vehicles (HGVs) will access the Main Site from the strategic road network via the A19 Wolviston Interchange then using the A1185 to Seal Sands Roundabout.

2 Planning policy context and other guidance

2.1.1 This section outlines the relevant planning policy relating to traffic and transport. This traffic and transport guidance is detailed below.

2.2 National planning policy

Overarching National Policy Statement for Energy (NPS EN-1 and EN-3), 2025

2.2.1 The Overarching National Policy Statement for Energy (NPS EN-1 and EN-3) produced by the Departments for Energy, Security & Net Zero (DESNZ) [Ref 1] contains the government's policy for the delivery of major energy infrastructure

2.2.2 Section 5.14 of the NPS EN-1 (duplicated in EN-3 paragraph 2.10.114) outlines the planning policy for traffic and transport, including guidance on undertaking relevant parts of the Environmental Impact Assessment (EIA) (which has been considered in this assessment). The most relevant paragraphs for the transport assessment are paragraphs 5.14.5, 5.14.6, 5.14.8 , 5.14.21 and 5.14.22 respectively, which state:

"If a project is likely to have significant transport implications, the applicant's ES should include a vision for transport and an assessment of transport impacts"

"The DfT's Transport Analysis Guidance (TAG) and Welsh Governments WelTAG provides guidance on modelling and assessing the impacts of transport schemes."

"The applicant should prepare a travel plan adopting a vision-led approach to identify demand management and monitoring and fall-back measures that proactively mitigate transport impacts by providing details of proposed measures to improve access by active, public and shared transport to:

- a) Reduce the need for parking associated with the proposal;*
- b) Contribute to decarbonisation of the transport network; and*
- c) Improve user travel options by offering genuine modal choice.*

2.2.3 For the Secretary of State decision making; *"Development consent should not be withheld provided that the applicant is willing to enter into planning obligations for funding new infrastructure or requirements can be imposed to mitigate transport impacts. In this situation the Secretary of State should apply appropriately limited weight to residual effects on the surrounding transport infrastructure."*

- 2.2.4 *“The Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision.”*

National Planning Policy Framework (2025)

- 2.2.5 The Ministry of Housing, Communities and Local Government (MHCLG) 2025 National Planning Policy Framework (NPPF) [Ref 2] sets out the UK Government’s national planning policies for England and provides guidance on their application. Section 9 contains policy statements which are relevant to traffic and transport, such as:

- Paragraph 109 “Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach.”
- Paragraph 109 (a) “making transport considerations an important part of early engagement with local communities.”
- Paragraph 110 “opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making”.

- 2.2.6 Paragraph 116 of the NPPF also identifies the only reason why development proposals should be prevented or refused on transports ground is *“if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network, following mitigation, would be severe, taking into account all reasonable future scenarios.”*

- 2.2.7 The TA accords with NPPF by considering and evidencing the transport impacts and identifying mitigation to ensure the residual impacts on the transport networks are not acceptable.

2.3 Regional transport policy

Tees Valley Strategic Transport Plan (2020)

- 2.3.1 The Tees Valley Strategic Transport Plan [Ref 3] is a comprehensive plan outlining the long-term transportation strategies and infrastructure improvements for the Tees Valley region up until 2030.

2.4 Local transport planning policy

Stockton-on-Tees Borough Council Local Plan (2019)

- 2.4.1 The Stockton-on-Tees Borough Council (STBC) Local Plan [Ref 4], adopted 30 January 2019, sets out a framework for the delivery of sustainable

transport opportunities and associated infrastructure (Policy TI1) which outlines the goal for new development stating:

“The Council will require, as appropriate, a Transport Statement or Transport Assessment and a Travel Plan.”

and

“The Council and its partners will seek to ensure that all new development, where appropriate, which generate significant movements are located where the need to travel can be minimised”.

This is to be achieved by:

- a) *“Sufficient accessible, and convenient operational and non-operational parking for vehicles and cycles is provided*
- b) *Appropriate infrastructure is provided which supports Travel Demand Management to reduce travel by the private car and incentivises the use of sustainable transport options.”*

[Redcar and Cleveland Local Plan \(2018\)](#)

- 2.4.2 The Redcar and Cleveland Borough Council (RCBC) Local Plan [Ref 5] was adopted in 2018 and sets out the vision and development strategy for the borough until 2032. For transport related matters Policy TA1 states:
- 2.4.3 *“The Council and its partners will ensure that the transport requirements of new development, commensurate to the scale and type of development, are taken into account and seek to promote sustainable travel to minimise environmental impacts and support residents’ health and wellbeing.”*
- 2.4.4 Proposals will be supported if they:
 - a) *“Improve transport choice and encourage travel to work and school by public transport, cycling and walking;*
 - b) *minimise the distance that people need to travel; and*
 - c) *where appropriate contribute positively to wider demand management measures to address congestion, environmental and safety issues.”*
- 2.4.5 Following, Policy TA2 states that, “The Council will work together with neighbouring authorities, the Tees Valley Combined Authority, Tees Valley Unlimited (the Local Enterprise Partnership), the Government, developers and transport providers to improve accessibility within and beyond the borough, which will support economic, tourism and regeneration objectives for both Redcar and Cleveland and the wider Tees Valley.”

- 2.4.6 “This will include working with Highways England to improve capacity to the A66, A1053 and A174, particularly Greystones roundabout.”

2.5 Guidance

[Strategic road network and the delivery of sustainable development, Department for Transport Circular \(2022\)](#)

- 2.5.1 This Department for Transport (DfT) Circular [Ref 6] sets out the way in which National Highways will engage with the development industry to assist in the delivery of sustainable development.
- 2.5.2 In the assessment of development proposals, Paragraph 48 advises that the transport assessment should start with a vision of what the development is seeking to achieve. In this instance, the Proposed Development is seeking to minimise the impacts associated with the construction of the Proposed Development on the local and strategic road network.
- 2.5.3 Paragraph 49 and Paragraph 50 also advises that trip generation on the Strategic Road Network (SRN) must be forecast and considered alongside other committed developments. Where there would be an unacceptable safety impact, or the residual cumulative impacts on the SRN would be severe, the developer must identify necessary transport improvements.

[DfT Guidance \(2014\) Travel Plans, Transport Assessments and Statements](#)

- 2.5.4 The Planning Practice Guidance (PPG) for Travel Plans, Transport Assessments and Statements [Ref 7], provides general guidelines for travel plans, transport assessments and statements. The guidance also contains statements which are relevant to traffic and transport and the assessment of impacts to this, such as:

“The scope and level of detail in a Transport Assessment or Statement will vary from site to site but the following should be considered when settling the scope of the proposed assessment:

- a) *Information about the Proposed Development, site layout, (particularly proposed transport access and layout across all modes of transport);*
- b) *Information about neighbouring uses, amenity and character, existing functional classification of the nearby road network;*
- c) *Data about existing public transport provision, including provision/ frequency of services and proposed public transport changes;*
- d) *A qualitative and quantitative description of the travel characteristics of the Proposed Development, including movements across all modes of transport that would result from the development and in the vicinity of the site;*

- e) *An assessment of trips from all directly relevant committed development in the area (i.e. development that there is a reasonable degree of certainty will proceed within the next 3 years);*
- f) *Data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network;*
- g) *An analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent 3-year period, or 5-year period if the proposed site has been identified as within a high accident area;*
- h) *An assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as air quality management areas or noise sensitive areas);*
- i) *Measures to improve the accessibility of the location (such as provision/enhancement of nearby footpath and cycle path linkages) where these are necessary to make the development acceptable in planning terms;*
- j) *A description of parking facilities in the area and the parking strategy of the development;*
- k) *Ways of encouraging environmental sustainability by reducing the need to travel; and*
- l) *Measures to mitigate the residual impacts of development (such as improvements to the public transport network, introducing walking and cycling facilities, physical improvements to existing roads.”*

[The Institute of Sustainability & Environmental Professionals, Environmental Assessment of Traffic and Movement](#)

2.5.5 The Institute of Sustainability & Environmental Professionals (ISEP (formerly known as the Institute of Environmental Management and Assessment (IEMA)) Guidelines: Environmental Assessment of Traffic and Movement [Ref 8] set out two broad rules of thumb which are applied as criteria and can be used to assist in delimiting the scale and extent of the environmental impact:

- Include highway links where traffic flows will increase by more than 30% (or the number of HGVs would increase by more than 30%); and

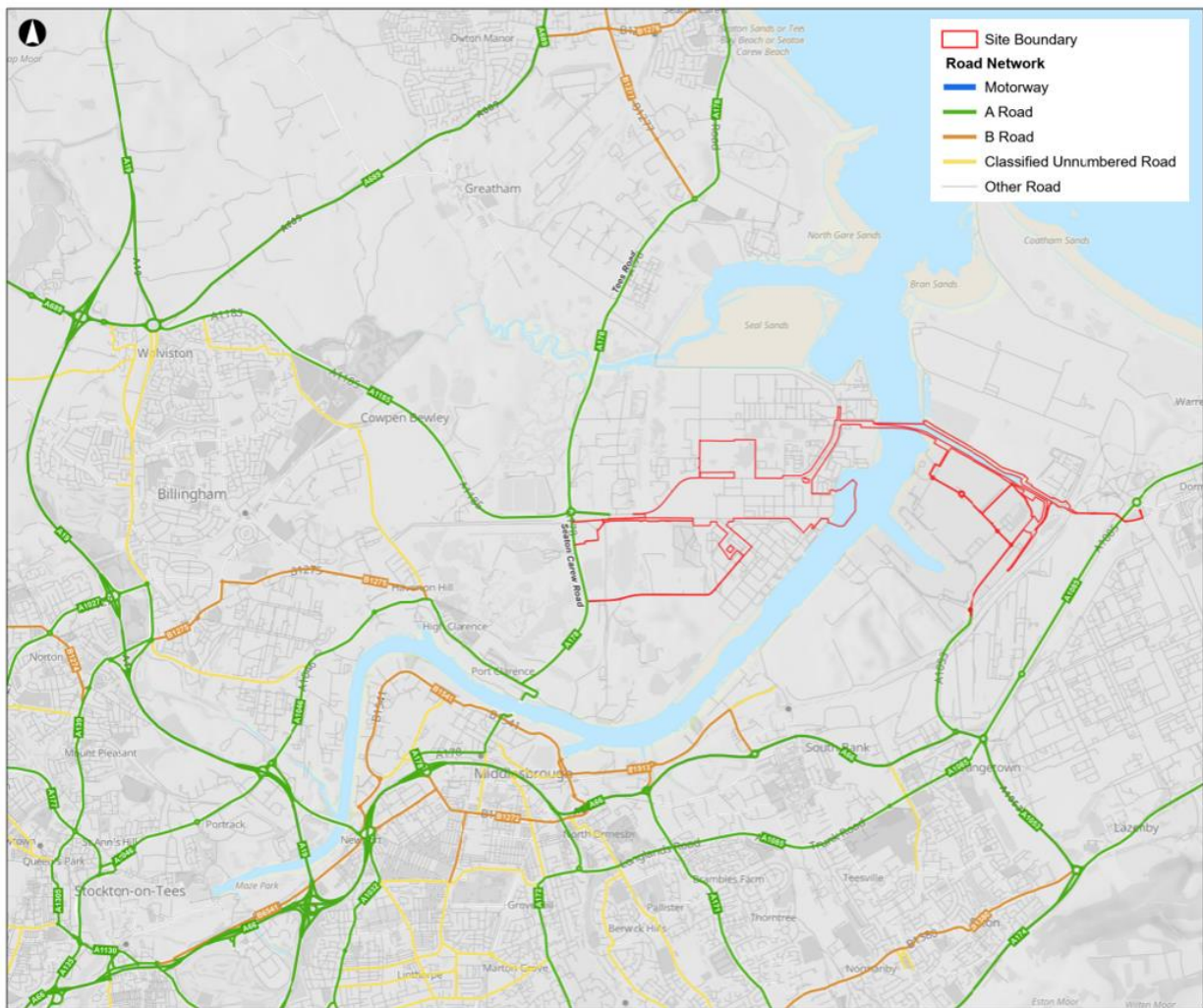
- Include highway links of high sensitivity where traffic flows have increased by 10% or more.

3 Existing conditions

- 3.1.1 This section describes the existing baseline transport conditions within the Proposed Development Study Area.

Local Highway Network

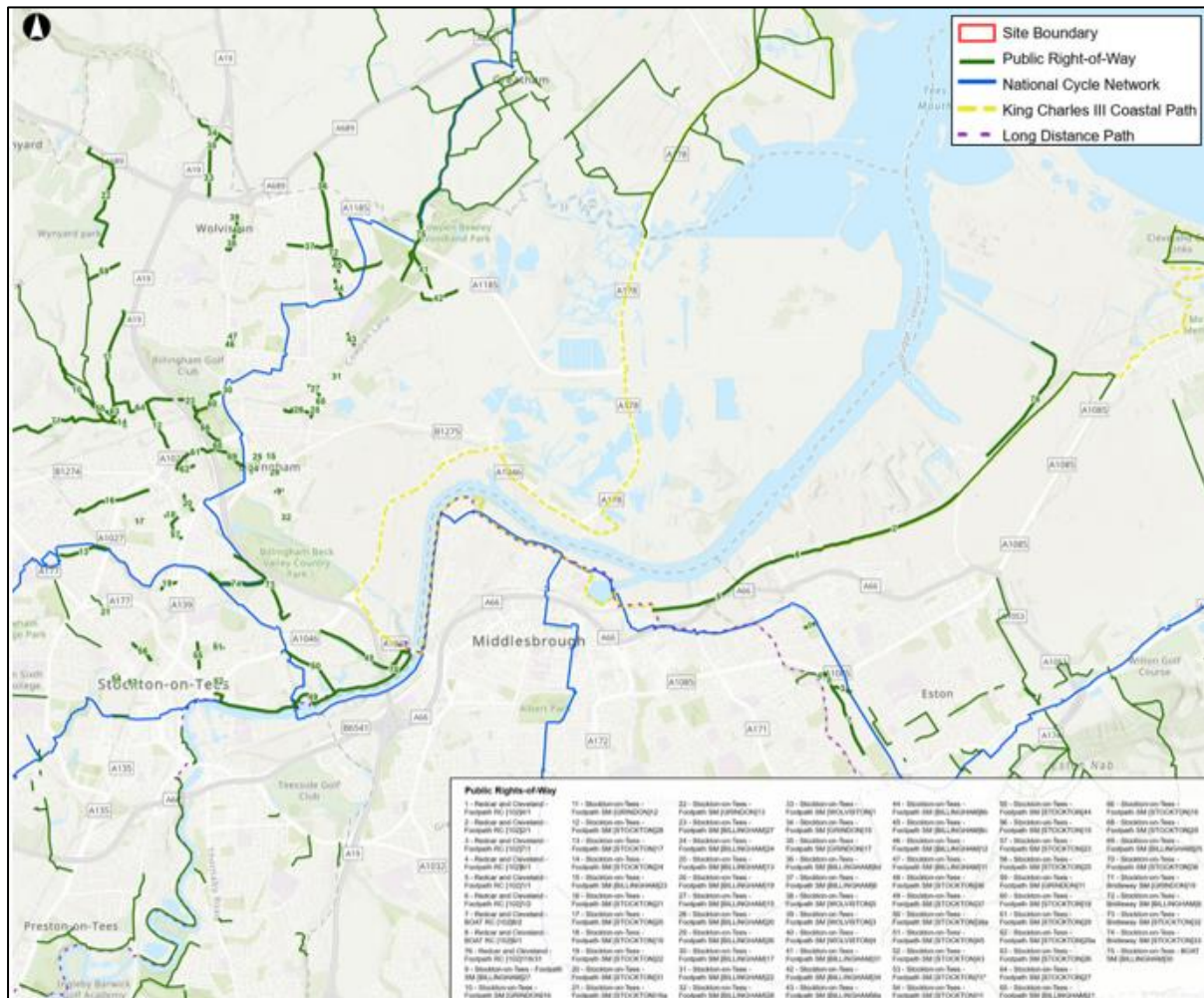
- 3.1.2 The Site is located in the industrial area of Seal Sands, approximately 5km east of Billingham town centre and 4km northeast of Middlesbrough town centre in Teesside. It is on the north bank of the River Tees and roughly 3km southwest of Teesmouth.
- 3.1.3 The Main Site is accessed from Seaton Carew Road (A178) via Seal Sands Roundabout, which connects the Site to the public highway network. The western arm of Seal Sands Roundabout links to the A1185 which connects to the trunk road network via the A689 and the A19 north of Billingham.
- 3.1.4 Seaton Carew Road runs north to Hartlepool and south to Port Clarence Road (A1046) off Seal Sands Roundabout. The A19 provides north south links to the SRN. The A19 links to Hartlepool, Peterlee and Sunderland to the north, and Thirsk and York and A1(m) to the south.
- 3.1.5 The Proposed Development has wider Connection Corridors running to Port Clarence Road (Dabholm Gut to the east and Wilton and Lackenby to the southeast). The Main Site is immediately bounded by the River Tees to the east and is surrounded by the Seal Sands industrial area.
- 3.1.6 At a local level for workers travelling to the Main Site, access to the Proposed Development is via the A1185 or the A178 Seaton Carew Road.
- 3.1.7 The Proposed Development location in relation to the surrounding area and road network is shown indicatively in Inset 3.1.



Inset 3.1 Proposed Development location and traffic Study Area

Accessibility

- 3.1.8 The accessibility of the Proposed Development has been reviewed with respect to opportunities for walking, cycling and the availability of public transport on the public highway network. This assessment therefore is taken from Seal Sands Road adjacent to its roundabout with Seaton Carew Road. Inset 3.2 shows the existing walking and cycling network in the local area.



Inset 3.2 Walking and cycling network

Walking

- 3.1.9 The document 'Providing for Journeys on Foot' from the Chartered Institution of Highways and Transportation (CIHT) [Ref 9] recommends a maximum walking distance of 2km for commuting to work.
- 3.1.10 The potential for walking to and from the Main Site is limited, as the available walking routes do not connect to any built-up areas. These routes within the 2km catchment extend partially north and south along Seaton Carew Road and northwest along the A1185.
- 3.1.11 Access to the Proposed Development is from the eastern arm of the Seal Sands roundabout which does not have footways. This arm is only public highway for a short distance and can only be used to access the private road to Seal Sands.
- 3.1.12 To the north of the A178, Seaton Carew Road/Huntsman Drive junction, there are footways in the immediate vicinity of the closest bus stops to the

Proposed Development. The footway on the western side of the A178, Seaton Carew Road is only present within the proximity of the bus layby. A desk study indicates that this footway is overgrown with vegetation.

- 3.1.13 The footway on the eastern side of the A178, Seaton Carew Road is part of the England Coast Path (ECP). Locally, the ECP comprises a mixture of sealed surfaced path, un-sealed and loose material surfacing. The route of the ECP in the local area is shown on **Figure 18.3: Walking and Cycling Active Travel Network (ES Volume II, Application Document Ref. 6.2)** and locally, runs between Hartlepool and Seaton Carew in the north and to Port Clarence and Middlesbrough to the south (via Haverton Hill Road and the A1032, Newport Bridge Approach Road).
- 3.1.14 In the wider Study Area, there are footways and streetlighting on all main routes that link the surrounding areas.

Cycling

- 3.1.15 In respect of acceptable cycle distances, the DfT Cycle Infrastructure Design Local Transport Note 1/20 [Ref 10] states that the majority of cycling trips are less than 5 miles (approximately 8km) in length.
- 3.1.16 In addition, the DfT Cycle Infrastructure Design Local Transport Note 1/20 [Ref 10] also states that:
- “Recent growth of cycling recorded in (...) towns and cities following programmes of investment have illustrated that there is significant potential for change in travel behaviour and that more people cycle for everyday journeys where acceptable conditions are provided. Two out of every three personal trips are less than five miles in length – an achievable distance to cycle for most people, with many shorter journeys also suitable for walking. For schoolchildren the opportunities are even greater”
- 3.1.17 The reachable areas in the 8km catchment area include Billingham, the outskirts of Stockton-on-Tees, Greatham, Seaton Carew and the suburbs of Middlesbrough including Ayresome.
- 3.1.18 Within the vicinity of the Main Site there is limited cycling infrastructure. There is no cycling infrastructure in place along the site access road, however, the A178, Seaton Carew Road in the vicinity of the access is classed as an advisory cycle route. To the north, the advisory route links to a traffic-free route that runs through Saltholme nature reserve and links to Port Clarence.
- 3.1.19 To the south, the advisory route continues on the A1046, Port Clarence Road through Port Clarence and to Billingham (via the B1275, Belasis

Avenue and Greenwood Road) and Cowpen Bewley (via Cowpen Bewley Road).

- 3.1.20 There is also a shared footway/cycleway along the A1046, Port Clarence Road through Port Clarence which continues on both sides of the carriageway along the majority of the A1046, Haverton Hill Road. The shared footway/cycleway links to a wider network of routes at the A19 Portrack Interchange, including National Cycle Network (NCN) 14 to the north that links to Billingham in the north and Stockton-on-Tees to the west and to NCN 1 within Middlesbrough to the south, via the A1032, Newport Bridge Approach Road. Locally, NCN 14 runs between Hartlepool and Seaton Carew in the north, through Stockton-on-Tees to Darlington and NCN 1 runs between Redcar, Middlesbrough and Stockton-on-Tees.
- 3.1.21 NCN 65 connects to the NCN 1 within Middlesbrough and locally, provides connections to residential areas to the south of Middlesbrough, including Linthorpe, Acklam and Hemlington.
- 3.1.22 The Teesdale Way can be accessed from the A1032, Newport Bridge Approach Road. To the east of the A1032 Newport Bridge Approach Road, the route mostly runs along the south bank of the River Tees through Middlesbrough and South Bank to Coatham Sands. To the west of the A1032, Newport Bridge Approach Road, the route mostly runs along the north bank of the River Tees through Stockton-on-Tees, Eaglescliffe and Yarm.
- 3.1.23 The Transporter Bridge, a Grade II listed structure, is designated as an advisory route providing connections to Teesdale Way, NCN 1 and NCN 65. Historically, the bridge operated as a cable-strung gondola, shuttling traffic across the river on demand.
- 3.1.24 However, the bridge is now in a state of disrepair, is closed, and requires multi-million-pound restoration. It is considered unlikely that the bridge will be repaired or reopened in the foreseeable future. As a result, it has not been considered a viable route.
- 3.1.25 The only NCN which may be impacted by the Proposed Development is NCN 14. The NCN 14 runs along the A139 and the Bypass Road, north east through Wolviston.

[Active travel and Public Rights of Way \(PRoW\)](#)

- 3.1.26 A desk-study has been undertaken to identify the PRoW within the Study Area which may need to be closed or diverted (temporarily or permanently) to manage any potential conflict between Non-Motorised Users (NMUs) and Proposed Development generated traffic.

3.1.27 There are five PRoW within 500m of the Proposed Development, including:

- Footpath 31 which runs along the route of the pipeline before heading south west towards Tees Dock Road and footpath 102/2A;
- Footpath 102/2A (102/2A/1 – 102/2A/2) runs approximately south west to north east in parallel to the internal Teesport private access road before connecting to footpath 102/2 (102/2/1 - 102/2/3);
- Footpath 102/2 (102/2/1 - 102/2/3) follows the alignment of a rail line in parallel to footpath 102/2 (102/2/1 - 102/2/3); and
- Bridleway 116/9 (116/9/1 - 116/9/2) follows the alignment of a rail line in parallel to footpath 102/02 (102/2/1 - 102/2/3).
- The King Charles 3rd Coastal Path.

3.1.28 More details on the PRoW in proximity the Site can be found in **Chapter 17: Socioeconomics (ES Volume I, Application Document Ref. 6.1)**. The area associated with the wastewater pipeline connection works (including the nearby PRoW's) and industrial gases south of the River Tees has been omitted from the Study Area due to the low number of construction and operational vehicle movements anticipated to be associated with the Proposed Development.

3.1.29 Across the wider Study Area, there are multiple PRoW that intersect road links, these include:

- Public Byway Ref. BY 30 which crosses the A1185 (Link 5), running between Billingham Cemetery in the south to Cowpen Bewley Woodland Park in the north;
- Footpath Ref. FP 8D which runs from Newton Bewley (within the Hartlepool local authority area), crosses the A1185 (Link 6) and runs south into residential estates to the north of Billingham;
- Public Footpath Ref. FP 1 which runs north from the A689 (Link 13) and connects to Public Footpath FP 15;
- Public Footpath Ref. FP 15 runs east/west crossing the A19 mainline (Link 15) at-grade in the west and the A19 mainline Off-Slip (Link 11) in the east;
- A PRoW which runs from the A19 mainline Off-Slip (Link 11) east to Newton Bewley (within the Hartlepool local authority area). It is not known if this PRoW connects directly to Public Footpath Ref. FP 15; and

- Public Footpath Ref. FP 27 runs to the east of Junction 9 and crosses the A1027 (Link 26), where it becomes FP 29. Public Footpath Ref. FP 29 wraps around the southern section of Junction 9, crossing the A19 mainline via a footbridge and links to a residential estate within Stockton-on-Tees.

3.1.30 **Figure 18.3: Walking and Cycling Active Travel Network (ES Volume II, Application Document Ref. 6.2)** includes an overview of the PRoW network for context.

Public transport

- 3.1.31 The CIHT document 'Buses in Urban Developments' [Ref 11] recommends a maximum walking distance of 400m to a bus stop.
- 3.1.32 The nearest bus stops to the Main Site are located on Seaton Carew Road, with the Seal Sands Roundabout stops situated north of Seal Sands Roundabout. Both the northbound and southbound bus stops are flagged by signage with the bus stop information displayed. Alternatively, the Community Fire Station stops are located approximately 250m south of Seal Sands Roundabout, also marked by signage.
- 3.1.33 Stagecoach Northeast operates several bus routes in this region. Notably, route 1 connects Middlesbrough Bus Station to Hartlepool High Tunstall. This service operates seven days a week, providing regular access to residential, industrial, and natural areas, including the RSPB (Royal Society for the Protection of Birds) Saltholme Reserve.
- 3.1.34 The nearest bus stops to the Site south of the River Tees are the International East Gate stops on Wilton Common Lane, just off the A1085 Steelhouse Gate Roundabout. Alternatively, the International West Gate stops are available for access from the A1053 Tees Dock Road.
- 3.1.35 The stops are serviced by bus routes 62 and 64, which operate between Middlesbrough and Redcar, managed by Arriva North East. Routes 62 and 64 offer a half-hourly service from Monday to Friday. The bus service frequencies are summarised in Table 3.1.

Table 3.1 Bus service frequency

Service	Route	Daytime frequency	
		Monday-Saturday	Sunday
1	Middlesbrough – Haverton Hill- Port Clarence – Hartlepool	2 buses per hour	1 bus per hour
62	Middlesbrough Bus Station, Stand 11 – Redcar Town Clock	2 buses per hour	No Sunday services
64	Middlesbrough – Grangetown	2 buses per hour	No Sunday services

Rail

- 3.1.36 There are no rail stations or sections of the railway within the vicinity of the Proposed Development. The closest train stations to the Proposed Development are Middlesbrough Train Station and Billingham Train Station.
- 3.1.37 Formerly, Middlesbrough Train Station, over 3km from the Site, was accessible via the Tees Transport Bridge. However, due to its closure in 2019 and uncertainty regarding the future reopening and its limited capacity, it does not provide a viable connection between Middlesbrough Train Station to the Site. The alternative walking route is over 10km from Middlesbrough Train Station and over 5km from Billingham Train Station via Cowpen Bowley Woodland to the Site. Therefore, as the nearest rail stations are not directly accessible by walking, travel from stations will be reliant on car, bus or cycle.

Accessibility summary

- 3.1.38 From the above, although the Main Site is reasonably well connected by alternative modes of travel, the nature of the construction work and associated working patterns means these are unlikely to represent a significant proportion of worker trips.

3.2 Road safety

- 3.2.1 This section of the report considers the road safety record of the local highway network based upon the most recent five-year period and identifies any areas of concern which may then be exacerbated by the addition of the traffic during the construction period of the Proposed Development.
- 3.2.2 Accident data has been acquired from the CrashMap [Ref 12] database. CrashMap functions as an online resource providing details on the location, date, and severity of recorded personal injury accidents across United Kingdom roads. Incidents are classified as 'Slight,' 'Serious,' or 'Fatal,' according to the level of injury sustained by the most severely affected individual. The baseline review is between 1 January 2020 and 31

December 2024 inclusive. This is the most up to date validated data available at the time of writing.

- 3.2.3 Table 3.2 below provides details of the baseline collision data, with focus on routes used or impacted by the Proposed Development.

Table 3.2 Collison summary for period 2020 to 2024 inclusive

Location	Severity			
	Slight	Serious	Fatal	Total
Seal Sands Roundabout/A1185	1	1	0	2
Seaton Carew Road	4	1	0	5
A1046 Port Clarence Road	0	3	0	3
Wolviston Interchange	12	0	0	12
A689 Roundabout	3	2	0	5
A689/A1185 Roundabout	5	1	0	6
B1275/Greenwood Rd Roundabout	1	0	0	1
A1046 (Clarence Street/Haverton Hill Road/Hope Street)	5	1	0	6
A1032 (Newport Bridge Approach Rd)	2	2	0	4
A19 Mainline (South of A19 Portrack Interchange)	11	2	0	13
A1046, Haverton Hill Road (West of A19 Portrack Interchange)	2	0	0	2
A19 Mainline (North of A19 Portrack Interchange)	6	0	0	6
Total	52	13	0	65

- 3.2.4 As shown below in Table 3.2, a total of 65 accidents has been reported on links within the Study Area between 2020 and 2024. Of these, 52 have been reported as having slight casualty injuries, 13 having serious injuries, and zero resulting in fatalities.
- 3.2.5 The analysis suggests that these incidents are likely attributable to driver error, such as failure to slow down in time. There is no evidence to suggest that these incidents are related to highway design.

3.3 Traffic baseline

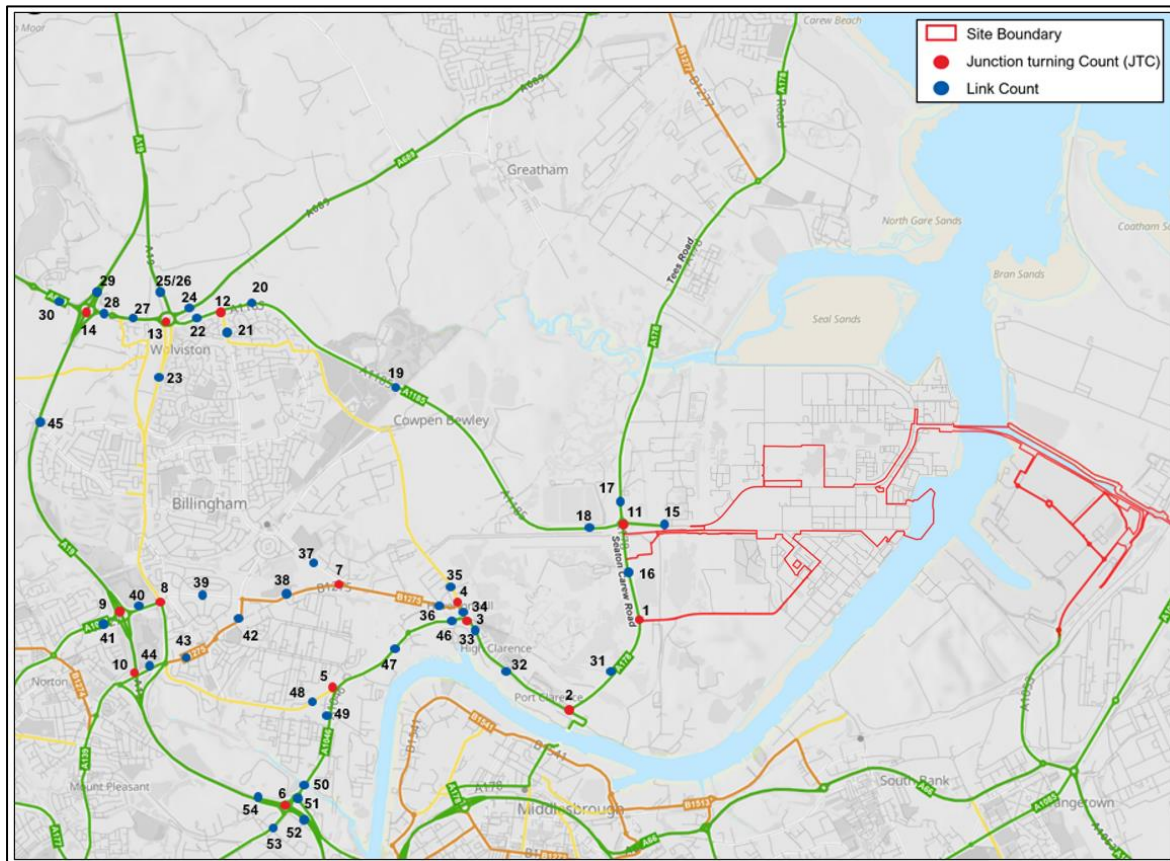
Introduction

- 3.3.1 This section sets out the baseline traffic flows that have been used within both this assessment as well as the accompanying ES Chapter (**Chapter 18: Traffic and Transport (ES Volume I, Application Document Ref. 6.1)**).

- 3.3.2 Publicly available traffic count data from the DfT has also been gathered. The baseline traffic flows have been derived from the commissioning of traffic flow surveys on highway links within the Study Area and from existing traffic counts available from an online database maintained by DfT.

Manual classified counts

- 3.3.3 To understand the existing conditions on the highway network, a series of traffic surveys has been undertaken, once in 2024 (to inform the Preliminary Environmental Information Report (PEIR) that was published for consultation) and in July 2025 traffic flows were collected from a series of traffic counts. These were collected for three key junctions on the main HGV route to the Proposed Development, featuring the following:
- Junction 1: A19/A689/A689 Coal Lane (Wolviston Interchange);
 - Junction 2: Car Park Access/A689; and
 - Junction 3: A19 Off Slip/A689 Stockton Road/A1185/Wolviston Road/A689/Wynyrd Park.
- 3.3.4 The locations of the 54 traffic survey locations are shown in Inset 3.3.



Inset 3.3 Location of survey data collection points

Baseline Trip End Model Presentation Program (TEMPro) growth factors

- 3.3.5 As some of the available traffic data is historic, to obtain the baseline traffic flows, TEMPro Growth Factors have been applied to the historic DfT traffic counts to uplift the figures to the 2025 base year for assessment.
- 3.3.6 For most locations this has resulted in the use of data from 2022 and 2024. For Links 21, 28, 29 and 34, only DfT traffic counts from 2009 were available. Annex D to this TA contains the DfT data and baseline traffic flows.
- 3.3.7 The growth factors have been compiled using the following criteria:
- Years: Base years of 2011 (earliest available), 2019, 2022 and 2024;
 - Area: Stockton-on-Tees;
 - Scenario: 'Core';
 - Trip End: Origin/Destination; and
 - Time Period: Average Day/Average Weekday.

3.3.8 The growth factors used to calculate the traffic baseline are shown in in Table 3.3.

Table 3.3 TEMPro Growth Factors

Period	Factor
2011-2025	1.0034
2019-2025	1.0497
2022-2025	1.0273

3.3.9 Table 3.4 below summarises the Annual Average Daily Traffic (AADT) count. The link column refers to the location of the counter.

Table 3.4 2025 Baseline Traffic Data

Link	Link Name	All vehicles (AADT)	HGV (AADT)	% HGVs
1	Site access road (East of Seal Sands Roundabout)	4,490	629	14%
2	A178 Seaton Carew Road (Between Huntsman Drive and A1185/A178, Seaton Carew Road)	8,146	362	4%
3	A178 Seaton Carew Road (North of Seal Sands Roundabout)	6,911	475	7%
4	A1185 (Between A1185/A178, Seaton Carew Road (Seal Sands Roundabout and Saltholme North Power Station)	4,950	986	20%
5	A1185 (Between Saltholme North Power Station and Cowpen Woodland)	4,950	986	20%
6	A1185 (Between Cowpen Woodland and Marsh House Avenue)	4,950	986	20%
7	Marsh House Avenue	9,170	228	2%
8	A1185 (Between Marsh House Avenue and A689, Stockton Road/A1185 Roundabout)	13,290	1,612	12%
9	Wolviston Road (south of the A689 Roundabout)	8,211	84	1%
10	A689 Stockton Road	30,520	1,248	4%
11	A19/Wynyard Park Southbound Off-Slip	3,946	294	7%
12	A19 Wolviston Interchange Northbound On-Slip	-	-	-
13	A689 (Between A689, Stockton Road/A1185 Roundabout and A689/Wolviston Services Roundabout)	33,563	2,694	8%
14	A689 (West of A689/Wolviston Services Roundabout)	33,563	2,694	8%

Link	Link Name	All vehicles (AADT)	HGV (AADT)	% HGVs
15	A19 Mainline (North of A19 Wolviston Interchange)	54,716	3,965	7%
16	A689 Coal Lane (West of A19 Wolviston Interchange)	19,692	1,688	9%
17	A178 Seaton Carew Road (Between Huntsman Drive and A1046 Port Clarence Road)	8,146	362	4%
18	A1046 Port Clarence Road (Adjacent to High Clarence Primary School)	8,146	362	4%
19	A1046 Clarence Street (East of A1046, Haverton Hill Road/B1275, Hope Street Junction)	8,146	362	4%
20	B1275 Hope Street (Between Haverton Hill Road/Clarence Street Junction and B1275 Robson Street)	8,146	362	4%
21	Hope Street (North of B1275, Robson Street (Belasis Avenue))	3,274	196	6%
22	B1275 Belasis Avenue	7,343	167	2%
23	Greenwood Road (North of B1275, Belasis Avenue/Greenwood Road/Coxwold Way Roundabout)	-	-	-
24	B1275 Belasis Avenue (Between Greenwood Road and Cowpen Lane)	7,343	167	2%
25	Central Avenue (Between Cowpen Lane and A1027/Wolviston Road/Central Avenue Double Roundabout)	7,343	167	2%
26	A1027 (Between A1027/Wolviston Road/Central Avenue Double Roundabout and A19 Norton Interchange)	7,343	167	2%
27	A1027 (West of A19 Norton Interchange)	31,970	211	1%
28	Cowpen Lane	10,407	407	4%
29	B1275 (Between Cowpen Lane and A139/A19 Southbound On-slip)	10,407	407	4%
30	A139	16,539	235	1%
31	A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange)	77,571	5,991	8%
32	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/Hope Street Junction and A1046/SUEZ EfW Roundabout)	14,445	1,081	7%
33	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/SUEZ EfW Roundabout and New Road)	14,445	1,081	7%
34	New Road	4,664	251	5%

Link	Link Name	All vehicles (AADT)	HGV (AADT)	% HGVs
35	A1046, Haverton Hill Road (Between New Road and Able UK Head Office Access)	14,445	1,081	7%
36	A1046, Haverton Hill Road (East of A19 Portrack Interchange)	14,445	1,081	7%
37	A1032, Newport Bridge Approach Road	18,042	634	4%
38	A19 Mainline (South of A19 Portrack Interchange)	110,155	6,999	6%
39	A1046, Haverton Hill Road (West of A19 Portrack Interchange)	27,236	958	4%
40	A19 Mainline (North of A19 Portrack Interchange)	98,111	5,794	6%

3.4 Future baseline conditions

3.4.1 To obtain the future baseline traffic flows, TEMPro Growth factors have been applied to the baseline 2025 traffic flows. The year 2030 has been assumed as the peak of construction for the Proposed Development.

3.4.2 The TEMPro growth factors used to uplift the data is shown below in Table 3.5.

Table 3.5 TEMPro Growth Factors (future baseline)

Period	Factor
2023- 2030	1.0478
2024-2030	1.0384
2025-2030	1.0292

3.4.3 The 2030 future baseline traffic flows are shown in Table 3.6 and included in the traffic flow diagrams attached in Annex A.

Table 3.6 2030 Future Baseline Traffic Flows (AADT)

Link	Link Name	All vehicles (AADT)	HGV (AADT)	% HGVs
1	Site access road (East of Seal Sands Roundabout)	4,662	653	14%
2	A178 Seaton Carew Road (Between Huntsman Drive and A1185/A178, Seaton Carew Road)	8,459	376	4%
3	A178 Seaton Carew Road (North of Seal Sands Roundabout)	7,176	493	7%

Link	Link Name	All vehicles (AADT)	HGV (AADT)	% HGVs
4	A1185 (Between A1185/A178, Seaton Carew Road (Seal Sands Roundabout and Saltholme North Power Station))	5,140	1,024	20%
5	A1185 (Between Saltholme North Power Station and Cowpen Woodland)	5,140	1,024	20%
6	A1185 (Between Cowpen Woodland and Marsh House Avenue)	5,140	1,024	20%
7	Marsh House Avenue	9,522	236	2%
8	A1185 (Between Marsh House Avenue and A689, Stockton Road/A1185 Roundabout)	13,800	1,674	12%
9	Wolviston Road (south of the A689 Roundabout)	8,526	87	1%
10	A689 Stockton Road	31,692	1,296	4%
11	A19/Wynyard Park Southbound Off-Slip	4,098	305	7%
12	A19 Wolviston Interchange Northbound On-Slip	-	-	-
13	A689 (Between A689, Stockton Road/A1185 Roundabout and A689/Wolviston Services Roundabout)	34,852	2,797	8%
14	A689 (West of A689/Wolviston Services Roundabout)	34,852	2,797	8%
15	A19 Mainline (North of A19 Wolviston Interchange)	56,817	4,117	7%
16	A689 Coal Lane (West of A19 Wolviston Interchange)	20,448	1,753	9%
17	A178 Seaton Carew Road (Between Huntsman Drive and A1046 Port Clarence Road)	8,459	376	4%
18	A1046 Port Clarence Road (Adjacent to High Clarence Primary School)	8,459	376	4%
19	A1046 Clarence Street (East of A1046, Haverton Hill Road/B1275, Hope Street Junction)	8,459	376	4%
20	B1275 Hope Street (Between Haverton Hill Road/Clarence Street Junction and B1275 Robson Street)	8,459	376	4%
21	Hope Street (North of B1275, Robson Street (Belasis Avenue))	3,400	203	6%
22	B1275 Belasis Avenue	7,625	174	2%
23	Greenwood Road (North of B1275, Belasis Avenue/Greenwood Road/Coxwold Way Roundabout)	-	-	-

Link	Link Name	All vehicles (AADT)	HGV (AADT)	% HGVs
24	B1275 Belasis Avenue (Between Greenwood Road and Cowpen Lane)	7,625	174	2%
25	Central Avenue (Between Cowpen Lane and A1027/Wolviston Road/Central Avenue Double Roundabout)	7,625	174	2%
26	A1027 (Between A1027/Wolviston Road/Central Avenue Double Roundabout and A19 Norton Interchange)	7,625	174	2%
27	A1027 (West of A19 Norton Interchange)	33,198	219	1%
28	Cowpen Lane	10,807	423	4%
29	B1275 (Between Cowpen Lane and A139/A19 Southbound On-slip)	10,807	423	4%
30	A139	17,174	244	1%
31	A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange)	80,550	6,221	8%
32	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/Hope Street Junction and A1046/SUEZ EfW Roundabout)	15,000	1,123	7%
33	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/SUEZ EfW Roundabout and New Road)	15,000	1,123	7%
34	New Road	4,843	261	5%
35	A1046, Haverton Hill Road (Between New Road and Able UK Head Office Access)	15,000	1,123	7%
36	A1046, Haverton Hill Road (East of A19 Portrack Interchange)	15,000	1,123	7%
37	A1032, Newport Bridge Approach Road	18,735	658	4%
38	A19 Mainline (South of A19 Portrack Interchange)	114,385	7,268	6%
39	A1046, Haverton Hill Road (West of A19 Portrack Interchange)	28,282	995	4%
40	A19 Mainline (North of A19 Portrack Interchange)	101,878	6,016	6%

4 Proposed Development trip generation

4.1 Construction phase trip generation

4.1.1 This Section sets out the expected vehicle trip generation associated with the Proposed Development during the construction phase.

Programme

4.1.2 The construction phase is anticipated to last approximately three to four years, from 2028 to 2031, with the construction phase expected to peak in 2030.

4.1.3 The outline Construction Programme for the Proposed Development can be seen in Inset 4.1. Further detail on the Construction Programme can be found in **Chapter 5: Construction Programme and Management (ES Volume I, Application Document Ref. 6.1).**

	2028				2029				2030				2031			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Quay Construction																
Preliminary Works and Site Preparation																
Civils (construction of the SAF production facility, CHP plant and related infrastructure)																
Module Deliveries																
Mechanical Installation																
Electrical and Instrumentation Installation																
Pipelines and Utilities																
Commissioning																
Operation																

Inset 4.1 Outline construction programme

Construction worker traffic generation

4.1.4 There will be around 2,200 workers travelling to the Main Site during the peak construction period; set out in the fCWTP in Annex C.

4.1.5 Using Office of National Statistics Census (2011) travel to work data, it was found that 23% of the construction workforce in the North East are based within the region and would travel from home, and therefore 77% of the workforce will need to be from outside of the North East area (i.e. transient workers) and will need to travel from local accommodation within the region.

- 4.1.6 All construction workers are assumed for assessment purposes to travel to and from Site by private car as a driver or passenger, with an average vehicle occupancy of 1 worker per car for workers living locally, and 2 workers per car for transient workers, as set out in the Net Zero Teesside Power TA (PINS ref: EN010103).
- 4.1.7 Therefore, 506 local workers will be travelling to Site with an average vehicle occupancy of 1 worker per vehicle, equating to 1,012 two-way vehicle trips per day across all activities.
- 4.1.8 From the remaining workforce, 1,694 transient workers will travel to site by private vehicle with an average vehicle occupancy of 2 workers per vehicle equating to 847 vehicles making 1,694 two-way vehicle trips per day.
- 4.1.9 In total, the construction phase is expected to generate around 2,706 two-way worker trips on the local highway network at the peak of construction (excluding HGVs). The Proposed Development will provide on-site parking to accommodate construction traffic at the Main Site.
- 4.1.10 A summary of the anticipated vehicle trip generation for construction traffic is shown in Table 4.1.

Table 4.1 Construction worker traffic generation (peak construction period)

Peak year of construction	Total workers per day	No of cars (local workers)	No of cars (transient workers)	Total vehicles	Total two-way trips
2030	2,200	506	847	1,353	2,706

Daily construction traffic profile

- 4.1.11 The arrival and departure of worker vehicles to and from the Site have been spread across the core working hours of weekdays between 07:00 to 19:00, Saturday 07:00 to 16:00 and Sunday 08:00 to 17:00, falling outside of regular network peak hours.
- 4.1.12 Table 4.2 below sets out the percentage of daily inbound and outbound trips on an hourly basis at the peak of construction. The profile is based upon other development applications of similar scale such as the H2Teesside (2024) and the count undertaken at the Ferrybridge Multifuel 2 construction site in 2017.
- 4.1.13 The daily arrival profile of construction worker traffic is also provided in Table 4.2, based on the total construction worker vehicle trips shown in Table 4.1, showing that a majority of the workforce is expected to arrive before the AM and PM peak hour.

Table 4.2 Construction worker vehicle arrival and departure profile

Hour beginning	% of daily inbound	% of daily outbound	Arrivals	Departures	Two-way
06:00	34%	2%	460	27	487
07:00	25%	2%	338	27	365
08:00	5%	2%	68	27	95
09:00	4%	2%	54	27	81
10:00	4%	3%	54	41	95
11:00	4%	3%	54	41	95
12:00	5%	4%	68	54	122
13:00	4%	4%	54	54	108
14:00	3%	3%	41	41	81
15:00	2%	3%	27	41	68
16:00	2%	5%	27	68	95
17:00	3%	15%	41	203	244
18:00	3%	35%	41	474	514
19:00	2%	16%	27	216	244
20:00	0%	1%	0	14	14
21:00	0%	0%	0	0	0

4.2 Construction HGV traffic generation

4.2.1 The forecast number of HGV movements generated by the Proposed Development has been provided by the Applicant and is informed by comparable energy developments, the construction programme duration, and anticipated material requirements.

4.2.2 The estimated peak HGV vehicle profile for the Proposed Development is provided in Table 4.3.

Table 4.3 Construction HGV arrival and departure profile

Hour beginning	% of daily inbound	% of daily outbound	Arrivals	Departures	Two-way
06:00	0%	0%	0	0	0
07:00	9%	9%	16	16	32
08:00	0%	0%	0	0	0

Hour beginning	% of daily inbound	% of daily outbound	Arrivals	Departures	Two-way
09:00	9%	9%	16	16	32
10:00	9%	9%	16	16	32
11:00	9%	9%	17	17	34
12:00	9%	9%	17	17	34
13:00	9%	9%	17	17	34
14:00	9%	9%	17	17	34
15:00	9%	9%	16	16	32
16:00	0%	0%	0	0	0
17:00	9%	9%	16	16	32
18:00	9%	9%	16	16	32
19:00	9%	9%	16	16	32
20:00	0%	0%	0	0	0
21:00	0%	0%	0	0	0

4.2.3 The **fCTMP (Appendix 18D in ES Volume III, Application Document Ref. 6.3)** provides details on how the HGV traffic generated by the construction phase will be managed.

4.3 [Trip distribution and vehicle assignment](#)

4.3.1 This section sets out the distribution of the construction workers and HGVs on the local highway network. The Proposed Development requires a large, specialised workforce for the construction of the Proposed Development and as such, some transient workers will be sourced from beyond the daily commutable catchment area.

4.3.2 Similar to other energy and industrial developments of this scale, the workforce will be made up of a split of local home-based workers and transient staff temporarily residing in local accommodation.

- 4.3.3 For this assessment it has been assumed that the majority of the workforce will be transient (77%) with the remaining (23%) of workers residing within the Middlesbrough and Stockton Travel To Work Area (TTWA).

Transient workforce

- 4.3.4 The 77% of transient workers will reside in temporary accommodation such as hotels and bed and breakfasts, within urban areas of Stockton, Hartlepool and Middlesbrough. The distribution of this workforce on the local highway network is based on the availability of accommodation within a 30-minute travel catchment of the Site.
- 4.3.5 This information has been obtained from the Visit Britain Accommodation Stock Audit (2016), the most recent audit available. Table 4.4 presents the distribution of the transient workforce, including the number of workers this equates to during the peak construction period. The distribution methodology is consistent with that used for construction workforce modelling for the Net Zero Teesside project, which was accepted by National Highways. Given the proximity of the Proposed Development to Net Zero Teesside, it is considered reasonable to use this approach.

Table 4.4 Transient worker distribution

District	Journey time in mins (round trip)	Distribution	Total peak daily workers	Total peak vehicle trips by private car
Hartlepool	34	16%	263	132
Middlesbrough	38	40%	681	340
Stockton-on-Tees	34	44%	750	375

- 4.3.6 The trips from the analysis were assigned to the highway network based on routing obtained from Google Maps. From the analysis, at the site access point on the eastern arm of Seal Sands roundabout, 15% of the vehicle movements would travel to/from the north, with the remaining 85% travelling to and from the south.

Local workforce

- 4.3.7 The remaining 23% of the construction workforce has been distributed using 2011 Census 'Location of usual residence and place of work by method of travel to work' data for the 'Driving Car or Van' category. The Middle Layer Super Output Area (MSOA) 'Stockton-on-Tees 003' has been adopted, as it includes the Main Site alongside surrounding industrial areas at Seal Sands and nearby residential areas of Port Clarence, Cowpen

Bewley and eastern Billingham. This is considered representative of the local area.

4.3.8 All MSOAs within the following Local Authority Areas were included in the trip distribution analysis:

- Stockton-on-Tees;
- Middlesbrough;
- Hartlepool;
- Redcar and Cleveland;
- Darlington;
- County Durham; and
- Hambleton.

4.3.9 The following Local Authority Areas were included at Local Authority Level in the trip distribution analysis:

- Gateshead;
- Newcastle upon Tyne;
- North Tyneside;
- Northumberland;
- South Tyneside;
- Sunderland;
- Richmondshire; and
- Scarborough.

4.3.10 Based on the trip distribution analysis, the trips were assigned to the highway network on the basis of routing predictions from Google Maps for journeys undertaken on Tuesdays and arriving at 07:00.

4.3.11 The analysis indicates that, at the Site access point at Seal Sands Roundabout, 8% of local worker trips will travel to/from the north, 28% from the west and the remaining 64% to/from the south.

4.3.1 A diagram of the distribution of peak construction worker vehicle movements to and from the site can be seen in the Peak Construction Traffic Flow Diagram in Annex A. The extent of the traffic Study Area has primarily been defined by the distribution and assignment of traffic associated with the construction phase of the Proposed Development, since

traffic and transport impacts are predicted to be greatest during the construction phase. The network to the south of the River Tees has been excluded from the Study Area due to the low number of both construction and operational traffic movements anticipated to be associated with the Proposed Development.

4.4 Peak construction traffic flows

4.4.1 The total peak construction traffic on each link is shown in Table 4.5.

Table 4.5 Construction traffic flows by route

Link	Link name	Transient workers (AADT)	Local workers (AADT)	Total (AADT)
1	Site access road (East of Seal Sands Roundabout)	1,694	1,012	2706
2	A178 Seaton Carew Road (Between Huntsman Drive and A1185/A178, Seaton Carew Road)	1,440	649	2089
3	A178 Seaton Carew Road (North of Seal Sands Roundabout)	254	81	335
4	A1185 (Between A1185/A178, Seaton Carew Road (Seal Sands Roundabout and Saltholme North Power Station))	0	282	282
5	A1185 (Between Saltholme North Power Station and Cowpen Woodland)	0	282	282
6	A1185 (Between Cowpen Woodland and Marsh House Avenue)	0	282	282
7	Marsh House Avenue	0	106	106
8	A1185 (Between Marsh House Avenue and A689, Stockton Road/A1185 Roundabout)	0	176	176
9	Wolviston Road (south of the A689 Roundabout)	0	2	2
10	A689 Stockton Road	0	7	7
11	A19/Wynyard Park Southbound Off-Slip	0	0	0
12	A19 Wolviston Interchange Northbound On-Slip	0	47	47

Link	Link name	Transient workers (AADT)	Local workers (AADT)	Total (AADT)
13	A689 (Between A689, Stockton Road/A1185 Roundabout and A689/Wolviston Services Roundabout)	0	120	120
14	A689 (West of A689/Wolviston Services Roundabout)	0	115	115
15	A19 Mainline (North of A19 Wolviston Interchange)	0	52	52
16	A689 Coal Lane (West of A19 Wolviston Interchange)	0	50	50
17	A178 Seaton Carew Road (Between Huntsman Drive and A1046 Port Clarence Road)	1,440	649	2089
18	A1046 Port Clarence Road (Adjacent to High Clarence Primary School)	1,440	645	2085
19	A1046 Clarence Street (East of A1046, Haverton Hill Road/B1275, Hope Street Junction)	1,440	645	2085
20	B1275 Hope Street (Between Haverton Hill Road/Clarence Street Junction and B1275 Robson Street)	0	483	483
21	Hope Street (North of B1275, Robson Street (Belasis Avenue))	0	13	13
22	B1275 Belasis Avenue	0	149	149
23	Greenwood Road (North of B1275, Belasis Avenue/Greenwood Road/Coxwold Way Roundabout)	0	35	35
24	B1275 Belasis Avenue (Between Greenwood Road and Cowpen Lane)	0	113	113
25	Central Avenue (Between Cowpen Lane and A1027/Wolviston Road/Central Avenue Double Roundabout)	0	16	16
26	A1027 (Between A1027/Wolviston Road/Central Avenue Double Roundabout and A19 Norton Interchange)	0	97	97

Link	Link name	Transient workers (AADT)	Local workers (AADT)	Total (AADT)
27	A1027 (West of A19 Norton Interchange)	0	75	75
28	Cowpen Lane	0	16	16
29	B1275 (Between Cowpen Lane and A139/A19 Southbound On-slip)	0	16	16
30	A139	0	58	58
31	A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange)	0	16	16
32	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/Hope Street Junction and A1046/SUEZ EfW Roundabout)	1,440	483	1923
33	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/SUEZ EfW Roundabout and New Road)	1,440	483	1923
34	New Road	0	52	52
35	A1046, Haverton Hill Road (Between New Road and Able UK Head Office Access)	1,440	431	1871
36	A1046, Haverton Hill Road (East of A19 Portrack Interchange)	1,440	431	1871
37	A1032, Newport Bridge Approach Road	0	152	152
38	A19 Mainline (South of A19 Portrack Interchange)	1,440	259	1699
39	A1046, Haverton Hill Road (West of A19 Portrack Interchange)	0	23	23
40	A19 Mainline (North of A19 Portrack Interchange)	0	15	15

Comparison to baseline

- 4.4.2 The assessment of the effects of the construction phase is based on the construction vehicle movements (including HGVs) set out in Table 4.5 above.

4.4.3 The percentage change in link flow on each route within the Study Area has been calculated to assess the impact the Proposed Development could have on the local highway network. Table 4.6 provides a summary of the 2030 Future Baseline traffic flows (2030 Base) and the total peak construction traffic.

Table 4.6 2030 base and proposed peak construction development two-way (AADT) traffic flows

Link	2030 baseline flow		Construction traffic		Percentage change (%)	
	Total HGVs	Total vehicles	Total vehicles	Total HGVs	Total vehicles	Total HGVs
1	4,662	653	3,066	360	66%	55%
2	8,459	376	2,089	0	25%	0%
3	7,176	493	335	0	5%	0%
4	5,140	1,024	642	360	12%	35%
5	5,140	1,024	642	360	12%	35%
6	5,140	1,024	642	360	12%	35%
7	9,522	236	106	0	1%	0%
8	13,800	1,674	536	360	4%	22%
9	8,526	87	2	0	0%	0%
10	31,692	1,296	7	0	0%	0%
11	4,098	305	0	0	0%	0%
12	-	-	69	22	-	-
13	34,852	2,797	455	335	1%	12%
14	34,852	2,797	450	335	1%	12%
15	56,817	4,117	74	22	0%	1%
16	20,448	1,753	187	137	1%	8%
17	8,459	376	2,089	0	25%	0%
18	8,459	376	2,085	0	25%	0%
19	8,459	376	2,085	0	25%	0%
20	8,459	376	483	0	6%	0%
21	3,400	203	13	0	0%	0%
22	7,625	174	149	0	2%	0%
23	-	-	35	0	-	-
24	7,625	174	113	0	1%	0%
25	7,625	174	16	0	0%	0%
26	7,625	174	97	0	1%	0%
27	33,198	219	75	0	0%	0%

Link	2030 baseline flow		Construction traffic		Percentage change (%)	
	Total HGVs	Total vehicles	Total vehicles	Total HGVs	Total vehicles	Total HGVs
28	10,807	423	16	0	0%	0%
29	10,807	423	16	0	0%	0%
30	17,174	244	58	0	0%	0%
31	80,550	6,221	196	180	0%	3%
32	15,000	1,123	1,923	0	13%	0%
33	15,000	1,123	1,923	0	13%	0%
34	4,843	261	52	0	1%	0%
35	15,000	1,123	1,871	0	12%	0%
36	15,000	1,123	1,871	0	12%	0%
37	18,735	658	152	0	1%	0%
38	114,385	7,268	1,699	0	1%	0%
39	28,282	995	23	0	0%	0%
40	101,878	6,016	15	0	0%	0%

4.5 Operational phase trip generation

- 4.5.1 This section sets out the expected trip generation during the operational phase.
- 4.5.2 The operational phase of the Proposed Development is due to commence in 2031 and is anticipated to employ in the region of 320 permanent members of staff.
- 4.5.3 It is anticipated that around 52 of those members of permanent staff will be working traditional office-hours in managerial, engineering support and administrative roles, with their expected working hours to be 09:00 – 17:00 Monday to Friday.
- 4.5.4 The SAF production facility, including the CHP Plant, will be operational 24/7 and staffed by personnel on a two 12-hour shift pattern. Each of the two shifts is anticipated to comprise 54 shift workers spread across the production plant operational units.
- 4.5.5 The shift pattern consists of a rolling program of 12 hour day/night shifts with breaks scheduled in between each block of shifts for days off and employees annual leave to be rostered in. Expected start times for day shifts are 06:30 – 18:30 and night shifts are 18:30 – 06:30. It is anticipated that personnel travelling to and from work will be arriving at/or departing from site up to 0.5 hour before/after their normal working hours.

- 4.5.6 In addition, there will be a maximum of 282 two-way HGV movements to/from the Site in the operational phase, associated with the import of some feedstock and processing materials and (as a worst case assumption for assessment) the export of all products (including SAF and naphtha), together with the removal of process by-products and waste materials. These include operational consumables and waste streams such as CHP ash and Air Pollution Control (APC) residues.
- 4.5.7 This estimate is based on 58 one-way HGV movements associated with export activities and 65 one-way movements associated with import activities. A 15% contingency allowance has been applied to estimate the worst-case scenario.
- 4.5.8 Notwithstanding that the Proposed Development includes provision for the transfer of products via pipeline connections to third-party infrastructure for onward export, no reliance has been placed on these alternative modes within the traffic assessment. The assumed HGV movements therefore represent a robust upper bound, accounting for a contingency in vehicle movements, and, assuming that export activities are undertaken entirely by road.

5 Cumulative developments

- 5.1.1 This section outlines the impacts of cumulative developments in the local area on the Proposed Development and the local highway network. A number of developments in proximity to the Study Area have been identified through a review of planning applications and associated available information.
- 5.1.2 The assessment of the potential cumulative developments considers the following:
- Routing: some proposals did not assign any development trips to the routes covered within the Study Area. These were not therefore included within the assessment of cumulative effects; and
 - Timescales - some of the potential cumulative developments are only at scoping stage or the development movements would not be on the network at the same time as the construction trips for the Proposed Development. As such, the traffic has not been included within the assessment of effects.
- 5.1.3 The nearby schemes considered to be included in the future cumulative assessment scenario are as follows:
- NSIP1: The Net Zero Teesside Project, Redcar (EN010103): This proposal, granted consent in 2024, is for the development of the construction and operation and decommissioning of a Carbon Capture Usage and Storage (CCUS) facility comprising a gas-fired generating station. The location of the development overlaps with the Study Area, but most of the traffic associated with this application is contained to the road network on the south side of the River Tees and has minimal to no interaction with traffic associated with the Proposed Development. Construction of the carbon capture pipeline on the north side of the River Tees is due to be completed before the start of the Proposed Development construction phase. NSIP1 traffic movements have therefore not been included in the cumulative assessment scenario.
 - NSIP3: York Potash Harbour Facilities Order (TR030002): This development involves the installation of wharf/jetty facilities on the south side of the River Tees with two ship loaders capable of loading bulk dry material at a rate of 12m tons per annum and associated dredging operations to create berth. This development was granted consent in late 2016, and as such all available information on the distribution of development traffic has been archived, but the traffic associated with this development will be contained on the south side of the River Tees with minimal interaction with traffic associated with the Proposed

Development. The development's traffic is therefore not included in the cumulative assessment scenario..

- NSIP8: H2NorthEast (EN0710005). The scheme is at scoping stage and has not yet been implemented. This remains a potential future committed development. Due to the limited availability of up-to-date, publicly accessible information on construction traffic generation and routing, it has not been possible to robustly quantify its specific traffic impacts for inclusion within the cumulative assessment.
- NSIP9: East Coast Hydrogen Teesside Pipeline (EN0710010). The scheme is at scoping stage and has not yet been implemented. This remains a potential future committed development. Due to the limited availability of up-to-date, publicly accessible information on construction traffic generation and routing, it has not been possible to robustly quantify its specific traffic impacts for inclusion within the cumulative assessment.

5.1.4 Other developments have been considered and excluded from the cumulative development scenario due to insufficient information at this stage – see **Chapter 22: Cumulative and Combined Effects (ES Volume I, Application Document Ref. 6.1)** for further information.

5.1.5 To conclude, the committed developments in proximity to the Proposed Development are not expected to generate a significant number of movements onto the local highway network and will likely not have any negative cumulative impacts on the local road network.

6 Junction assessment

6.1 Introduction

6.1.1 This section sets out the impact of the development on key junctions on the local highway network.

6.2 Traffic data

Peak hour

6.2.1 The network peak hours for this assessment have been identified as 07:15 - 08:15 (AM Peak hour) and 16:00-17:00 (PM Peak hour), based on the surveyed 2025 vehicle counts along the A19 Junction west of the site access.

Assessment years

6.2.2 The following scenarios have been considered within this assessment;

- 2025 Baseline ('Base');
- 2030 Baseline ('Future Baseline') plus Proposed Development Peak of Construction;
- 2031 Baseline plus Proposed Development Operation; and
- 2041 Baseline plus Proposed Development Operation.

6.2.3 Other development in the area is considered to be included within the TEMPro growth factors applied to the 2025 Baseline. This is considered robust for this assessment.

6.3 Junction impact assessment

Portrack Interchange (A1032 Newport Bridge Road/A1046 Haverton Hill/Loverose Street)

6.3.1 The assignment of traffic (for both construction and operation) to and from the Main Site showed that the majority of workforce trips will travel through Portrack Interchange. As a result, this junction was tested for changes in capacity with and without the construction and operational traffic.

6.3.2 Portrack Interchange is a busy signalised double roundabout in the heart of Stockton-on-Tees and intersects the A19 with Portrack Lane and Haverton Hill Road. The junction connects west into Stockton, and south into Middlesbrough via the A66. The A19 is accessed through the junction via four on/off slip roads. All major arms of the junction are signalised. The only non-signalised arm is a minor access into an aggregate supplier, which has very little base traffic recorded.

- 6.3.3 Portrack Interchange has been modelled using LinSig Version 3 software which assesses capacity and queuing for signalised junctions. The results from LinSig are reported as Practical Reserve Capacity (PRC). PRC is a ratio of the flow in the junction to the theoretical capacity of that junction, as a percentage. A positive result shows that there is more capacity available in the junction than traffic using it. Table 6.1 shows the Junction Modelling results.

Table 6.1 Portrack interchange junction modelling results (LinSig)

Scenario		Cycle time(s)	PRC (%)	Delay (PCUhr)
2025 Base	AM	60	37.2	45.44
	PM	60	37.9	37.87
2030 Base	AM	60	40.3	47.29
	PM	60	35.2	39.48
2030 Base + Construction	AM	70	16.2	57.68
	PM	70	27.6	44.25
2032 Base	AM	70	34.2	51.72
	PM	70	27.2	42.99
2032 Base + Operation	AM	70	32.8	49.03
	PM	70	26.8	43.94
2042 Base	AM	70	30.6	51.6
	PM	70	25.6	45.61
2042 Base + Operation	AM	70	28.8	53.84
	PM	70	20.5	47.41

- 6.3.4 The results of the LinSig modelling above show that in all scenarios the junction will operate with spare capacity in the AM and PM peaks. Given that traffic levels during the construction phase are higher, the junction shows a slight reduction in capacity for these 2030 scenarios compared to the others, however the junction can accommodate the traffic with positive PRC. Levels of delay are fairly consistent for all scenarios, with and without development traffic.
- 6.3.5 Overall, the junction can comfortably accommodate the traffic associated with the Proposed Development, for both the construction period and the operational period.

7 Measures to minimise impact of development

7.1 Introduction

- 7.1.1 Mitigation measures have been developed to minimise the impact of the Proposed Development on the local highway network during the construction.

7.2 Construction Worker Travel Plan

- 7.2.1 A CWTP is a management tool designed to minimise the impact of traffic on the environment by reducing congestion and improving air quality.
- 7.2.2 The objective of the CWTP is to identify effective measures and establish clear procedures that encourage construction workers to choose transportation options which reduce dependence on single-occupancy private vehicles. These measures will include the promotion of car sharing and dedicated construction staff buses.
- 7.2.3 Further details can be found in the Framework CWTP, provided in Annex C of this TA.

7.3 Construction Traffic Management Plan

- 7.3.1 The CTMP sets out a framework, and series of vehicle management actions or principles, that will help facilitate the safe operation of construction vehicles to, from, and within the limits of the construction boundary. The fCTMP also sets out ways to control the impact of HGVs on the local network during construction, such as scheduling deliveries outside of network peak hours. The final CTMP will be delivered and monitored as part of the construction process by the contractor.
- 7.3.2 Further details can be found in **Appendix 18D: Framework CTMP (ES Volume III, Application Document Ref. 6.3)**.

8 Summary and conclusion

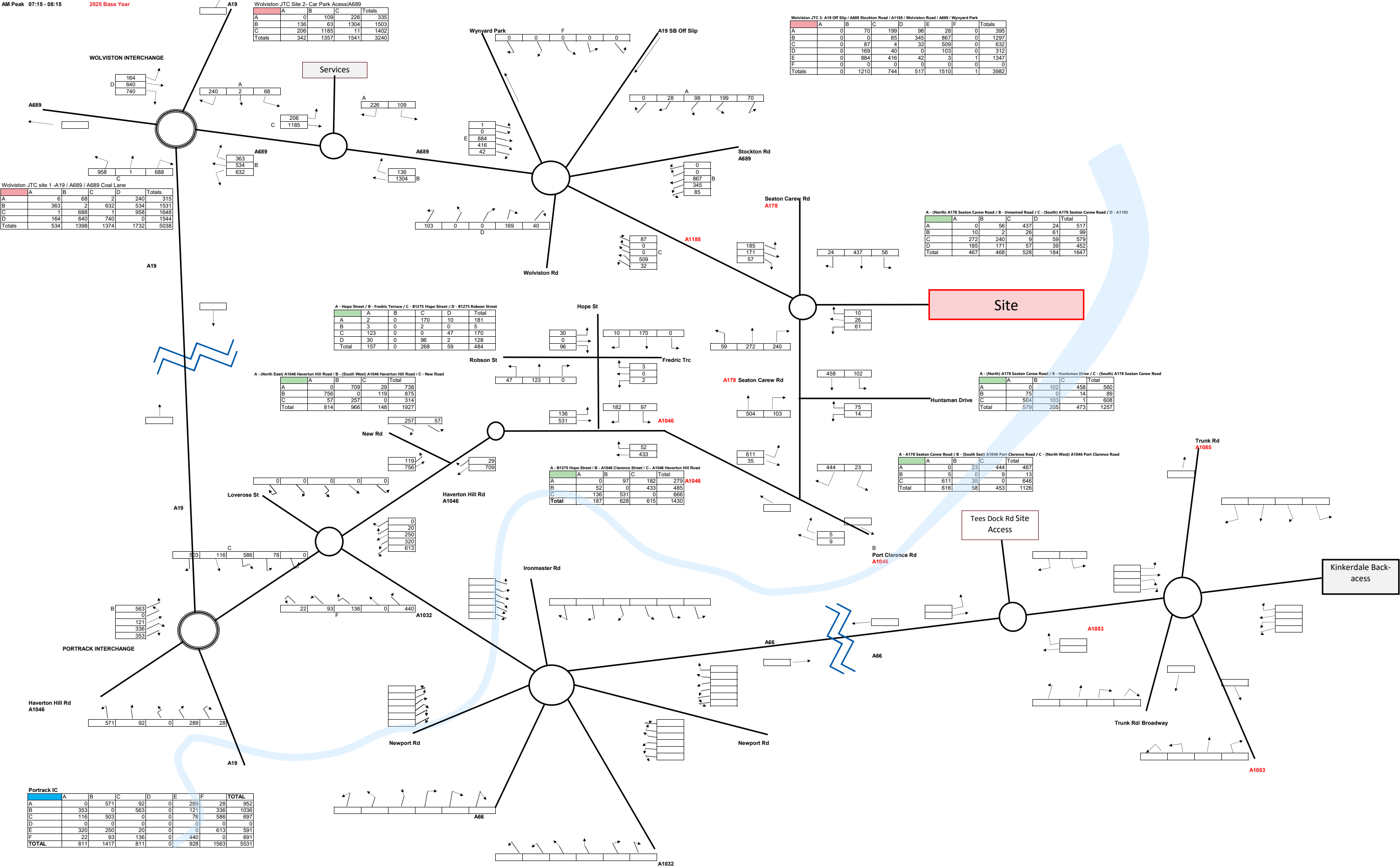
- 8.1.1 This TA has been prepared to support an Application for development consent for the Proposed Development.
- 8.1.2 The assessment outlines the development proposals, the baseline transport conditions and reviews the potential impacts of the development on the local transport network. A summary of the assessment shows:
- The Site is in a largely industrial area, and there is limited direct access to the Proposed Development by public transport and no direct train service close to the Site. Similarly, there is limited walking and cycling accessibility;
 - The traffic survey data was collected in two tranches, in June 2024 and June 2025. This data has been uplifted to a 2030 future baseline when construction is anticipated to peak;
 - The period with the greatest impact on the local highway network is during peak construction;
 - The distribution of construction traffic is primarily focused on routes to the south of the Site, with limited impacts on the wider highway network;
 - The assessment demonstrates that increases in traffic are generally localised and limited across the wider network, with the greatest changes occurring on key links in close proximity to the Site;
 - Junction capacity modelling at Portrack Interchange indicates that the junction continues to operate within capacity in all scenarios, with no significant adverse impacts; and
 - Any temporary impacts during the construction phase can be effectively managed through the implementation of the CTMP and CWTP.
- 8.1.3 Overall, the assessment demonstrates that the Proposed Development would not result in severe residual cumulative impacts on the highway network and would not have a detrimental impact on highway safety.
- 8.1.4 There are therefore no transport-related reasons why the Proposed Development should not be granted consent.

References

- Ref 1 Department for Energy Security and Net Zero. (2025). Overarching National Policy Statement for Energy (EN-1). Available online: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1-2025/overarching-national-policy-statement-for-energy-en-1-2025-accessible-webpage> [Accessed May 2026].
- Ref 2 Department for Levelling Up, Housing & Communities. (2024). National Planning Policy Framework (NPPF) 2024. Available online: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed May 2026].
- Ref 3 Tees Valley Combined Authority. (2020). Strategic Transport Plan 2020-2030. Available online: <https://teesvalley-ca.gov.uk/about/wp-content/uploads/sites/2/2023/07/STP-Main-Report-Design-Jan20-4.pdf> [Accessed May 2026].
- Ref 4 Stockton-on-Tees Borough Council. (2019). Local Plan. Available online: <https://www.stockton.gov.uk/local-plan> [Accessed May 2026].
- Ref 5 Redcar and Cleveland Borough Council. 2018. Local Plan. Available online: <https://www.redcar-cleveland.gov.uk/planning/local-plan/redcar-and-cleveland-local-plan>. [Accessed May 2026]
- Ref 6 Department for Transport and National Highways. (2013). Strategic Road network and the delivery of sustainable development (DfT Circular 01/2022). Available online: <https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development> [Accessed May 2026].
- Ref 7 Ministry of Housing, Communities & Local Government. (2014). Planning Practice Guidance Travel Plans, Transport Assessments and Statements. Available online: <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements> [Accessed May 2026].
- Ref 8 Institute of Sustainability & Environmental Professionals Environmental Assessment of Traffic and Movement (2023). Available online: ISEP - <https://www.isepglobal.org/resources/blogs/2023/07/12/iema-guidance-ea-of-traffic-and-movement/> [Accessed May 2026].
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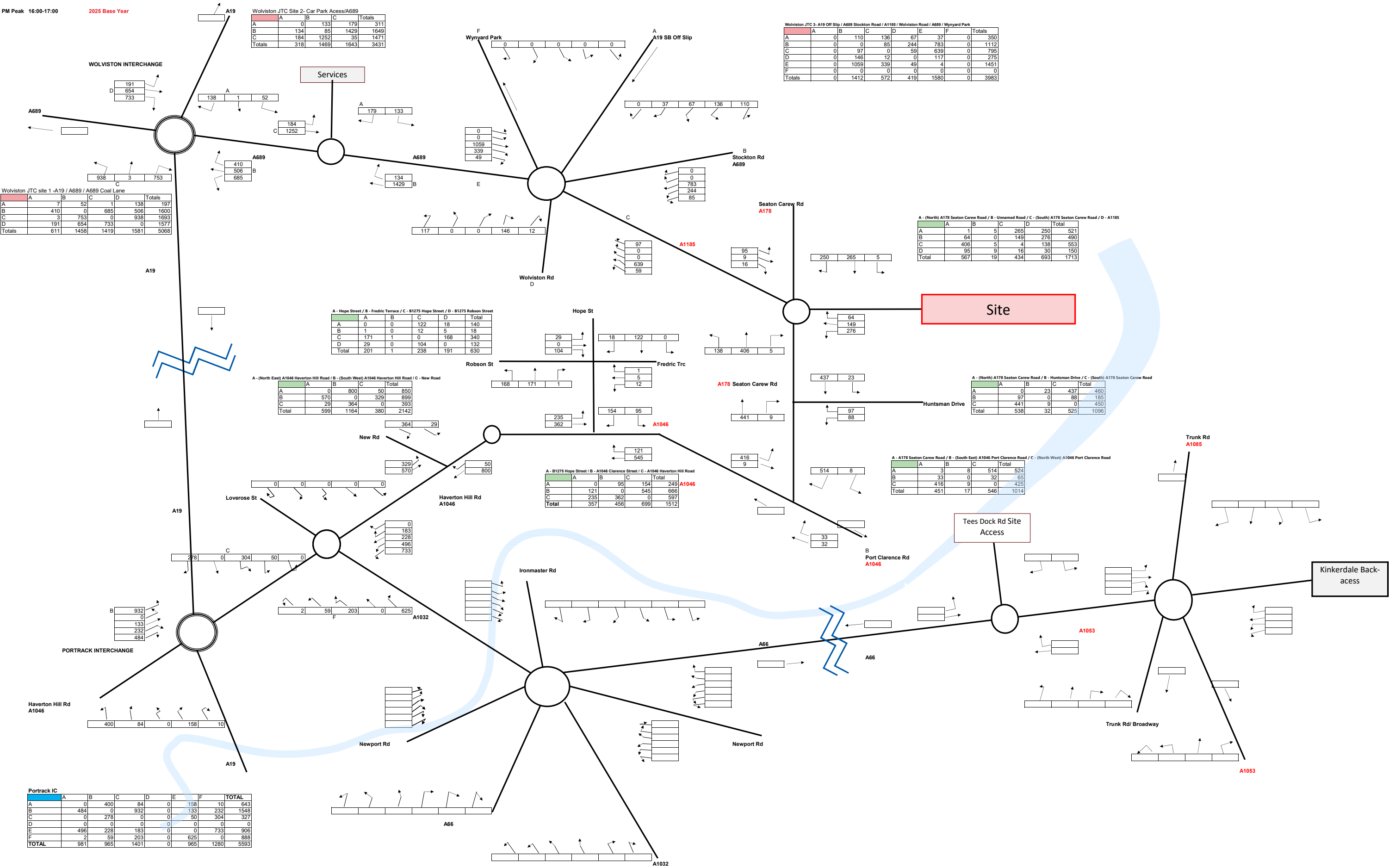
- Ref 10 Department for Transport. (2020). Cycle Infrastructure Design (LTN 1/20). Available online:
<https://assets.publishing.service.gov.uk/media/5ffa1f96d3bf7f65d9e35825/cycle-infrastructure-design-ltn-1-20.pdf> [Accessed May 2026].
- Ref 11 Chartered Institution of Highways and Transportation. (2018). Buses in Urban Developments. Available online:
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- Ref 12 CrashMap UK (2025). Available at <https://www.crashmap.co.uk/> [Accessed May 2026].

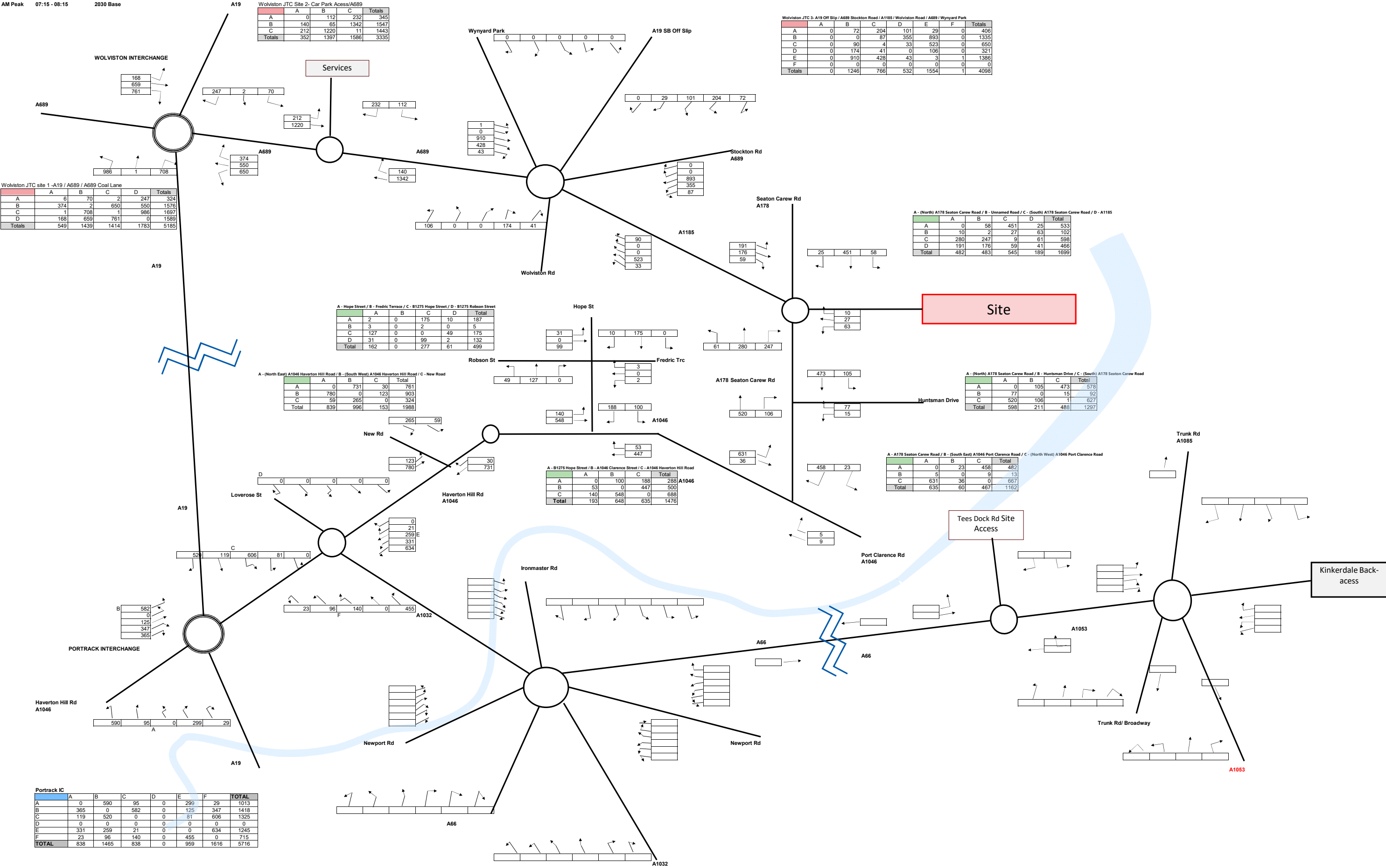
Annex A: Traffic flow diagrams



PM Peak 16:00-17:00

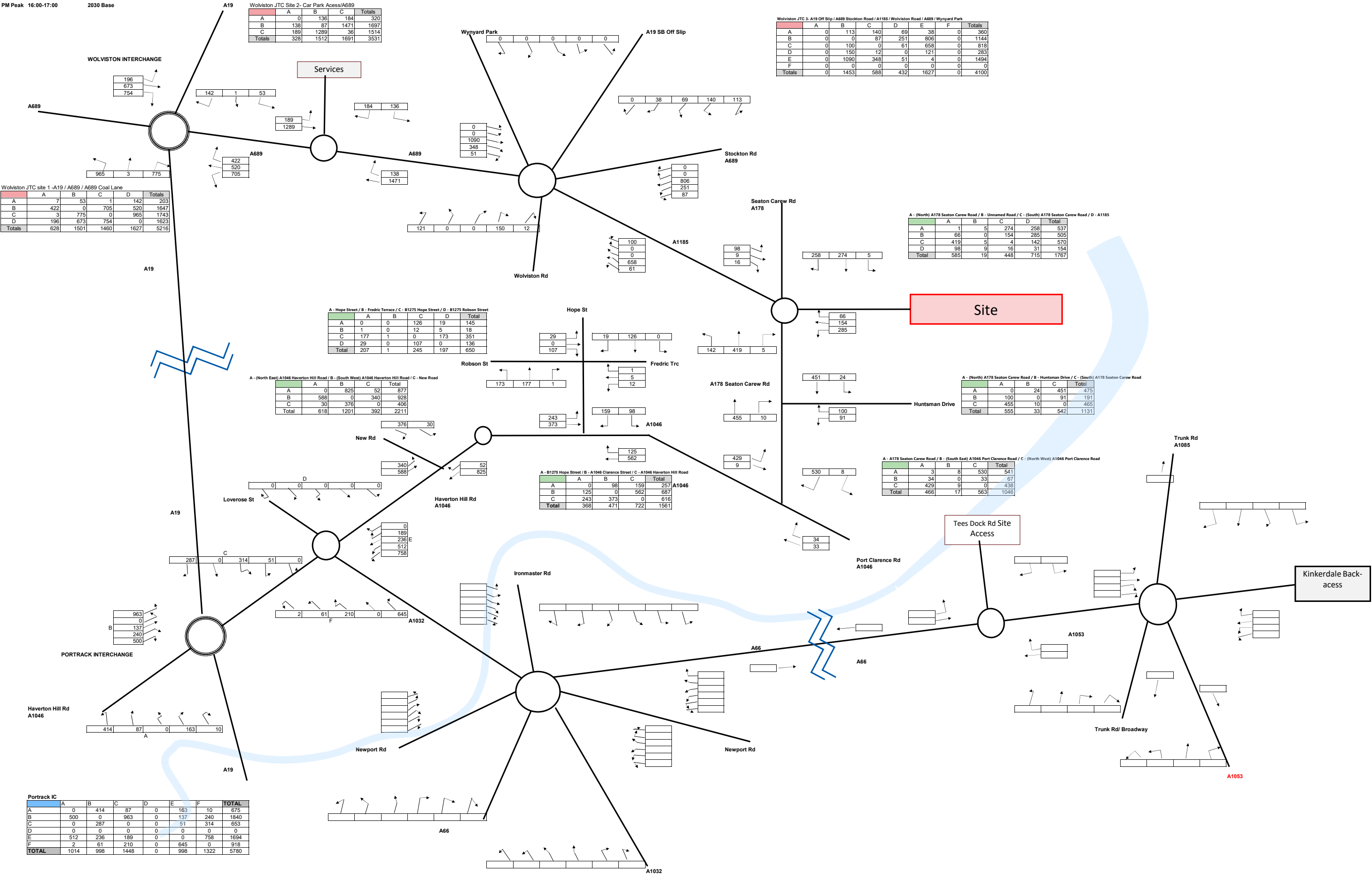
2025 Base Year





PM Peak 16:00-17:00

2030 Base

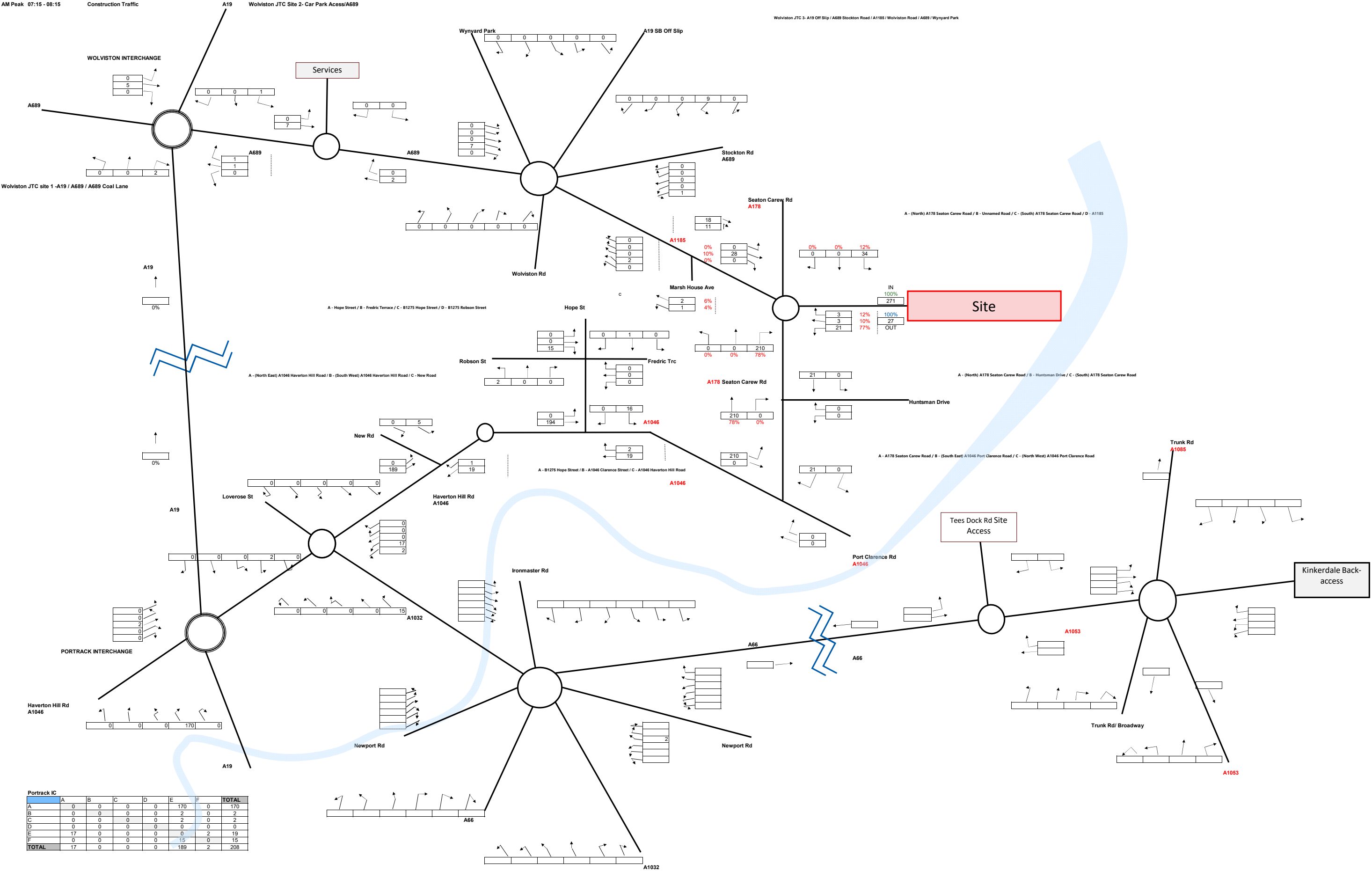


AM Peak 07:15 - 08:15

Construction Traffic

A19 Wolviston JTC Site 2- Car Park Access/A689

Wolviston JTC 3- A19 Off Slip / A689 Stockton Road / A1185 / Wolviston Road / A689 / Wynyard Park



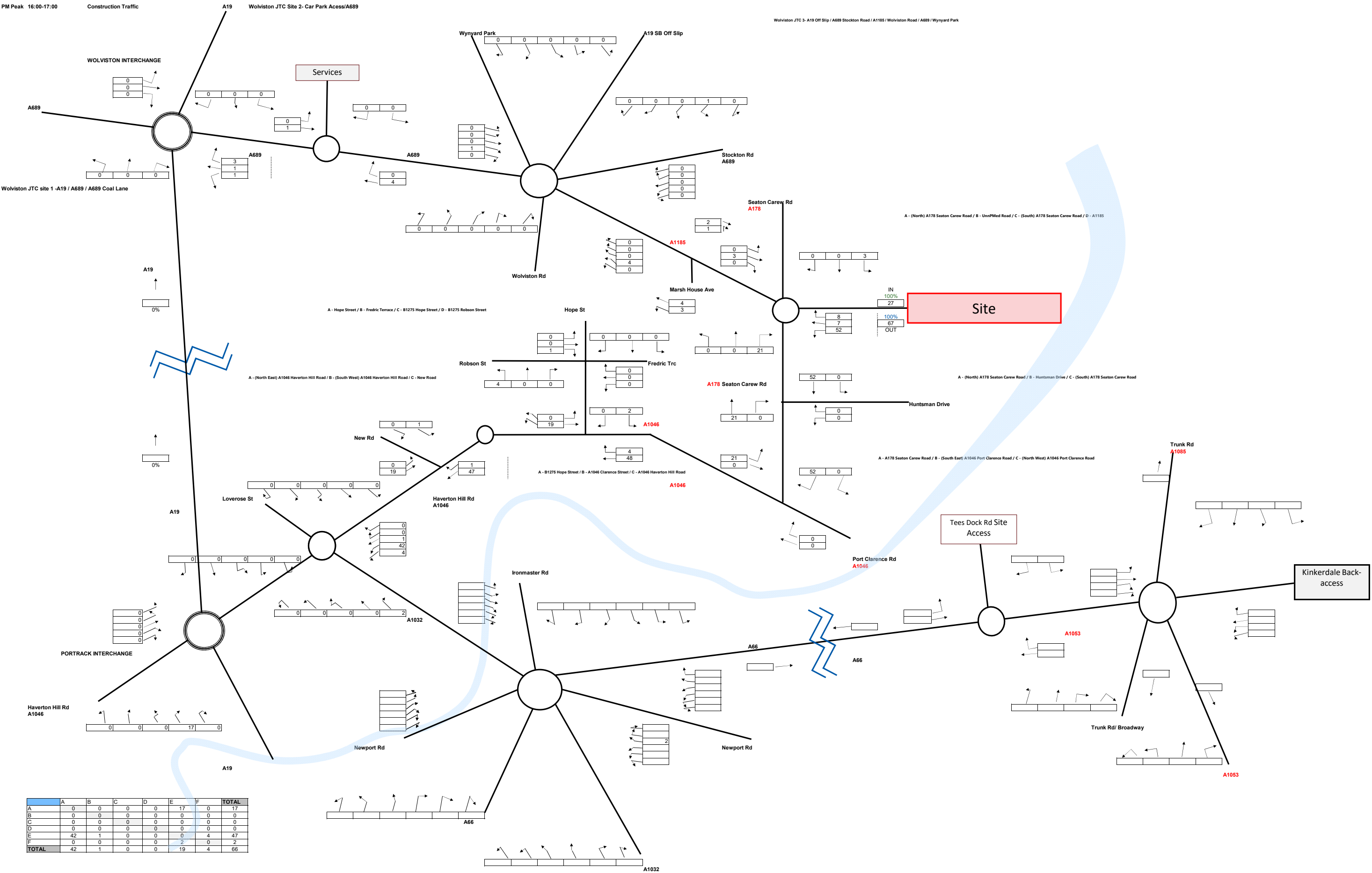
Portrack IC							
	A	B	C	D	E	F	TOTAL
A	0	0	0	0	170	0	170
B	0	0	0	0	2	0	2
C	0	0	0	0	2	0	2
D	0	0	0	0	0	0	0
E	17	0	0	0	0	2	19
F	0	0	0	0	15	0	15
TOTAL	17	0	0	0	189	2	208

PM Peak 16:00-17:00

Construction Traffic

A19 Wolviston JTC Site 2- Car Park Access/A689

Wolviston JTC 3- A19 Off Slip / A689 Stockton Road / A1185 / Wolviston Road / A689 / Wynyard Park



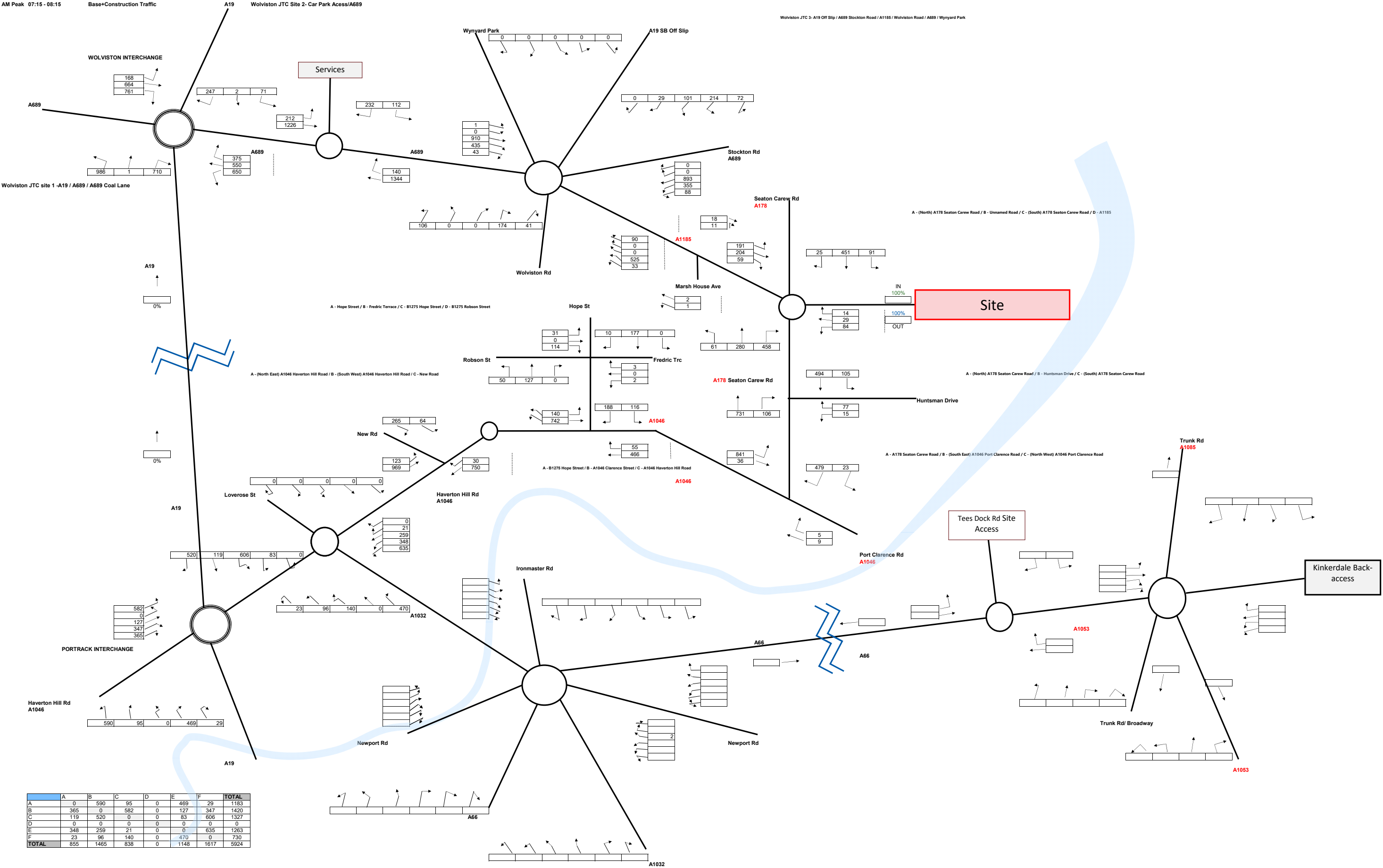
	A	B	C	D	E	F	TOTAL
A	0	0	0	0	17	0	17
B	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0
E	42	1	0	0	0	4	47
F	0	0	0	0	2	0	2
TOTAL	42	1	0	0	19	4	66

AM Peak 07:15 - 08:15

Base+Construction Traffic

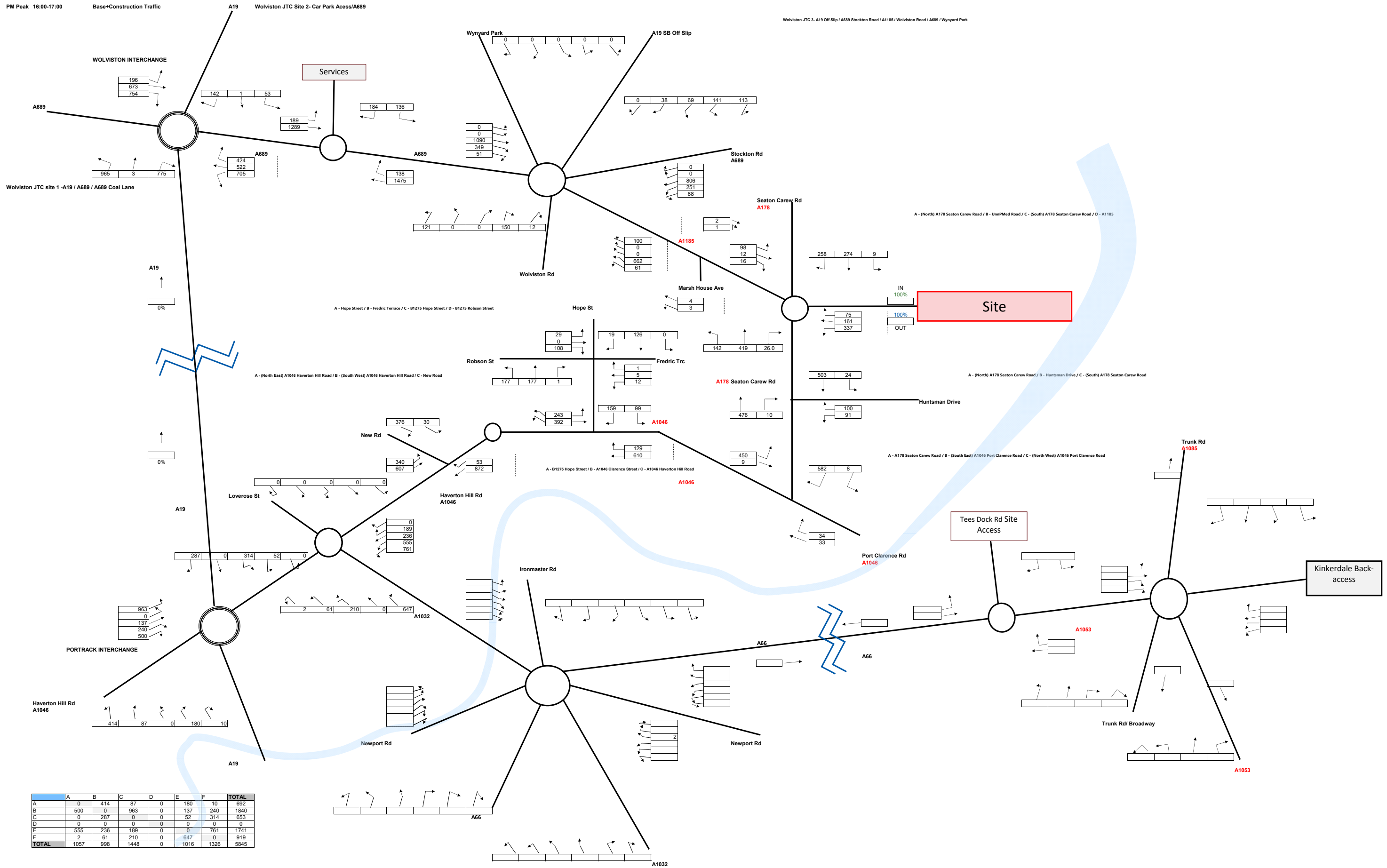
Wolviston JTC Site 2- Car Park Access/A689

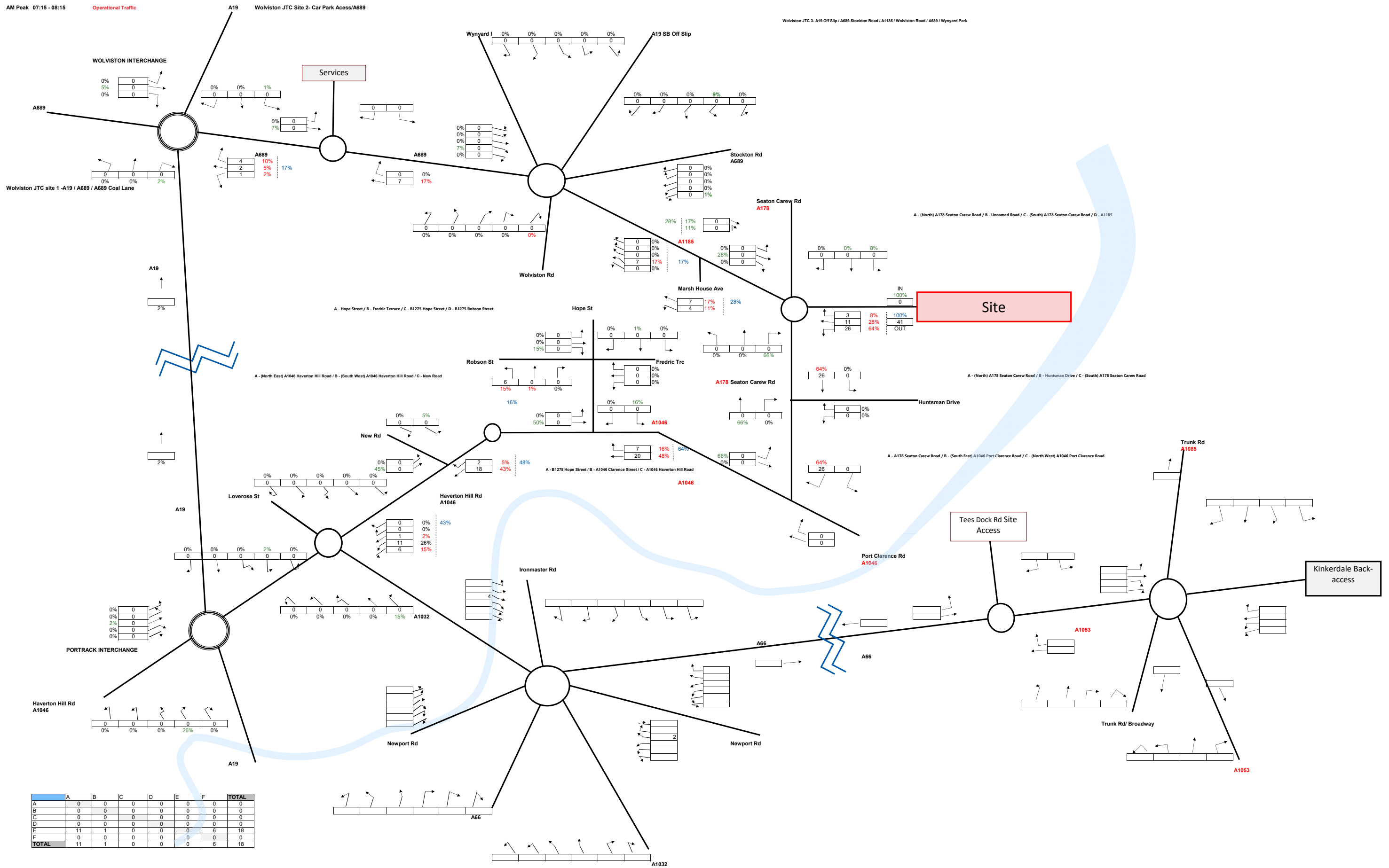
Wolviston JTC 3- A19 Off Slip / A689 Stockton Road / A1185 / Wolviston Road / A689 / Wynyard Park

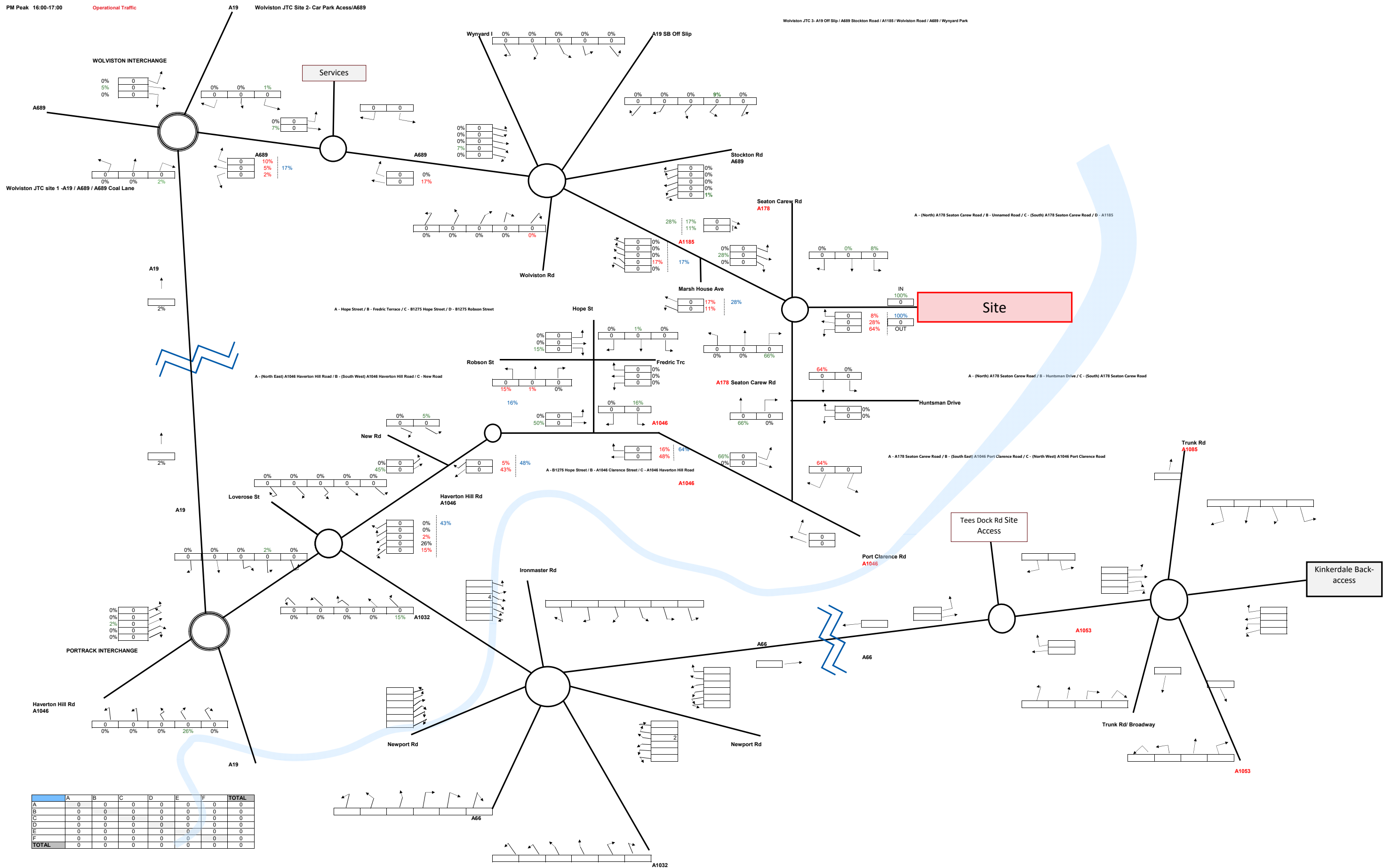


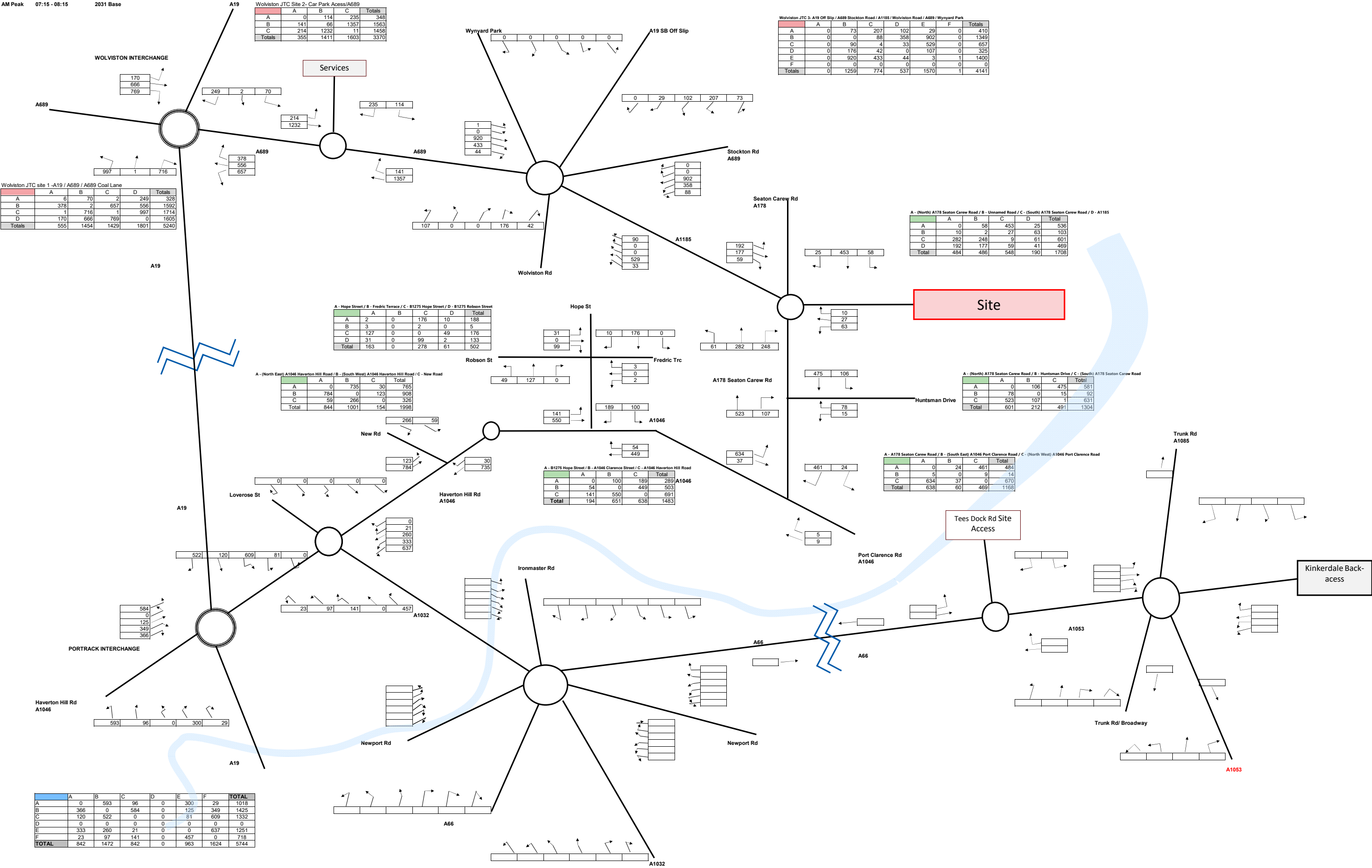
Base+Construction Traffic

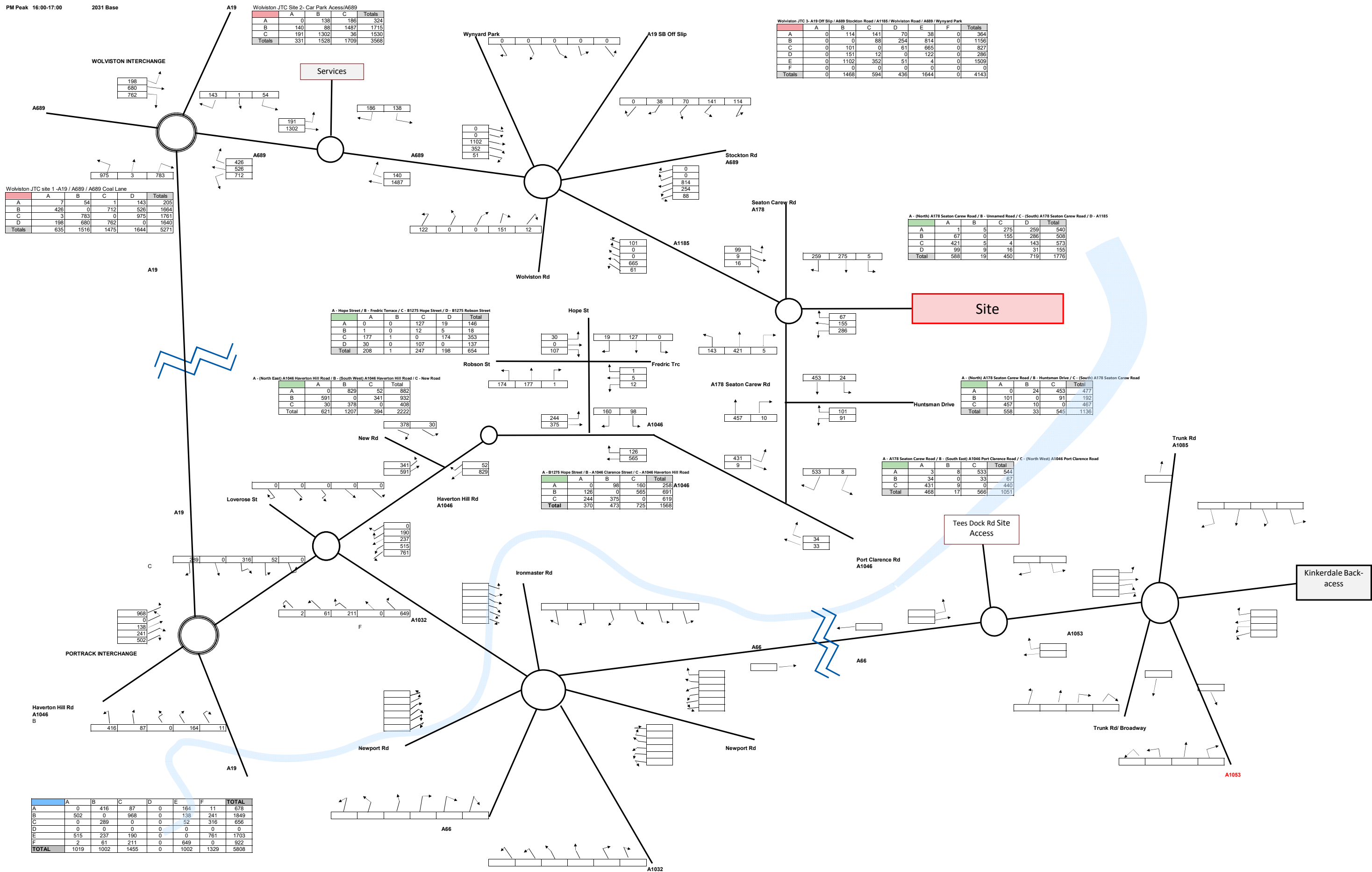
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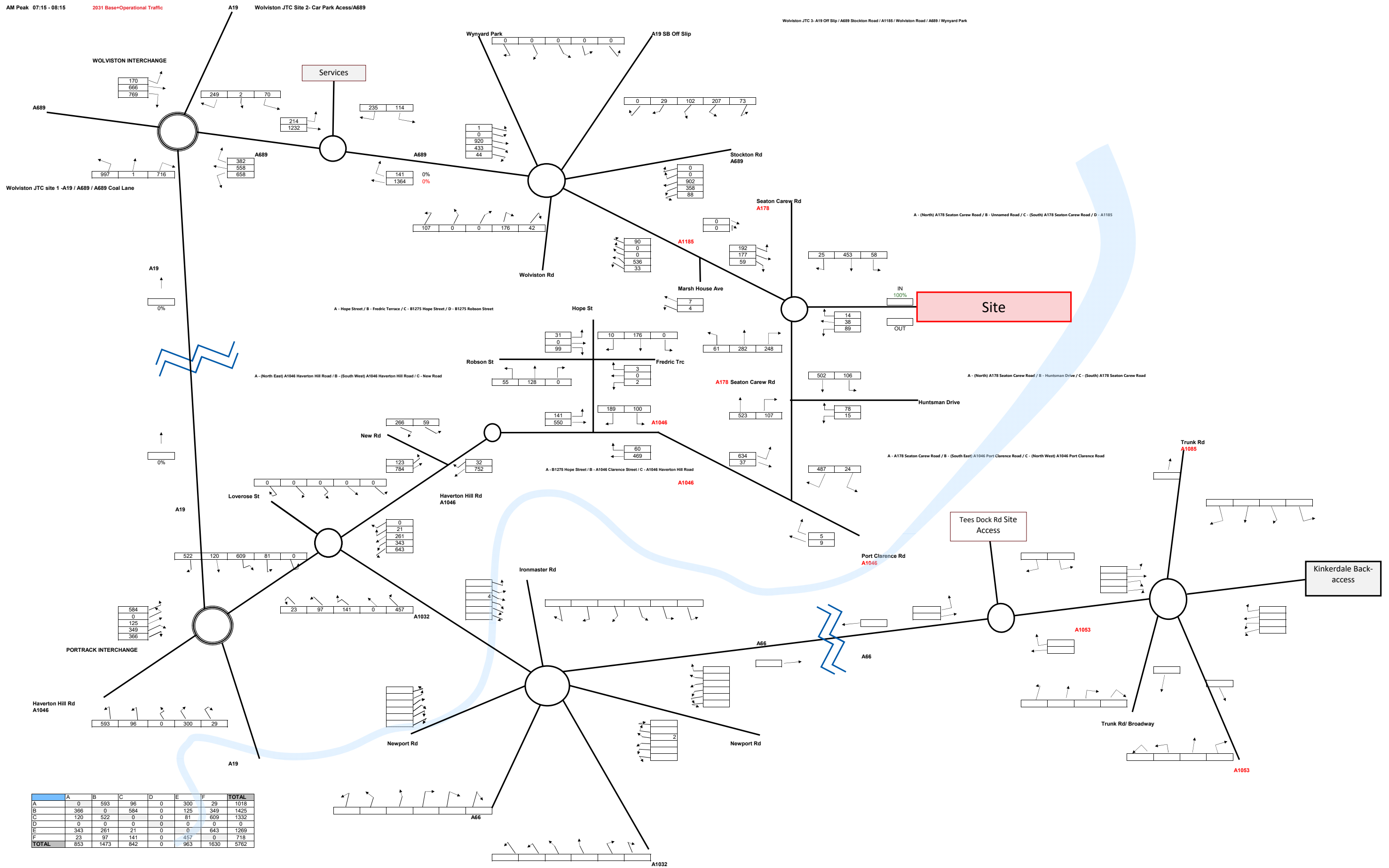




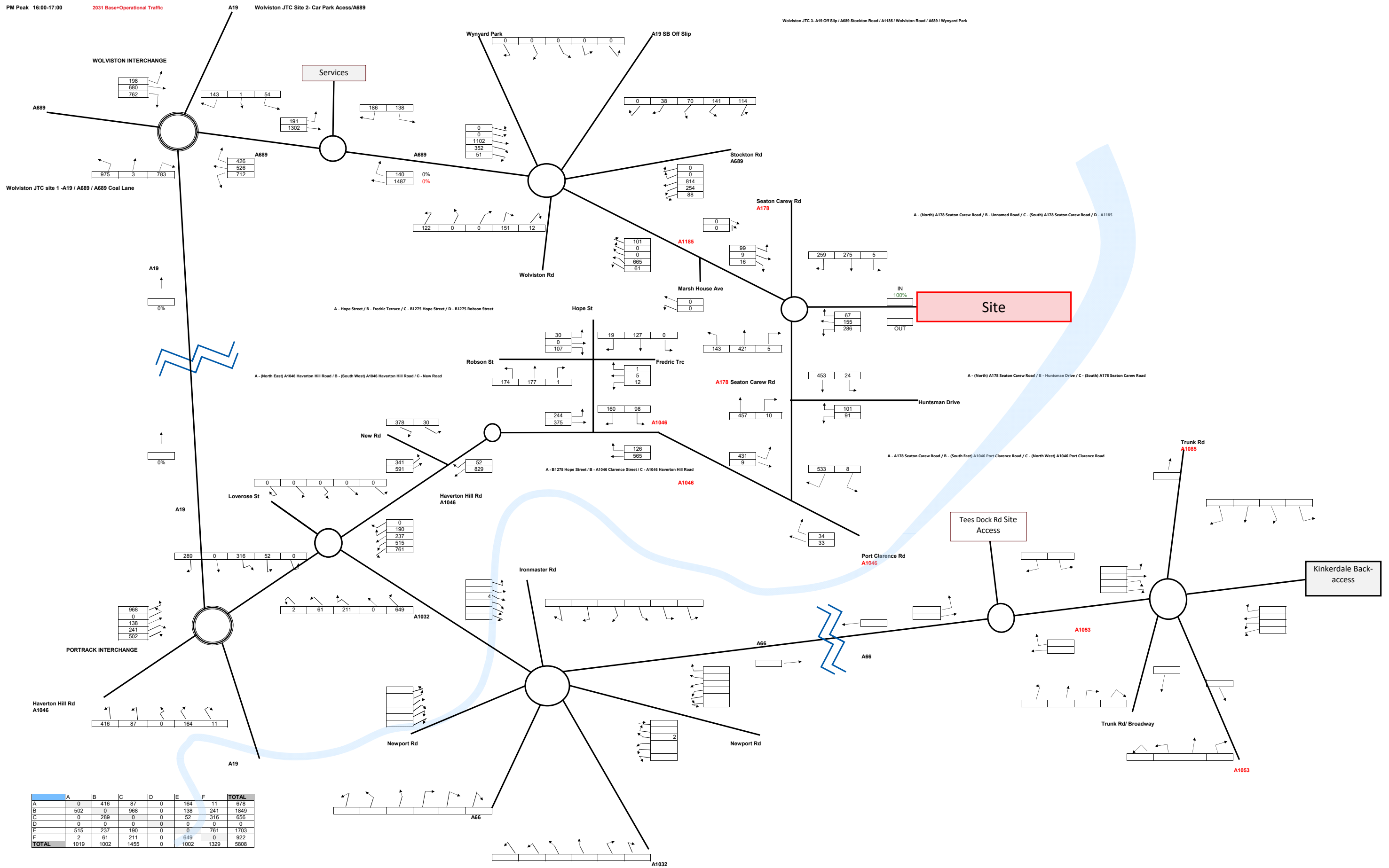




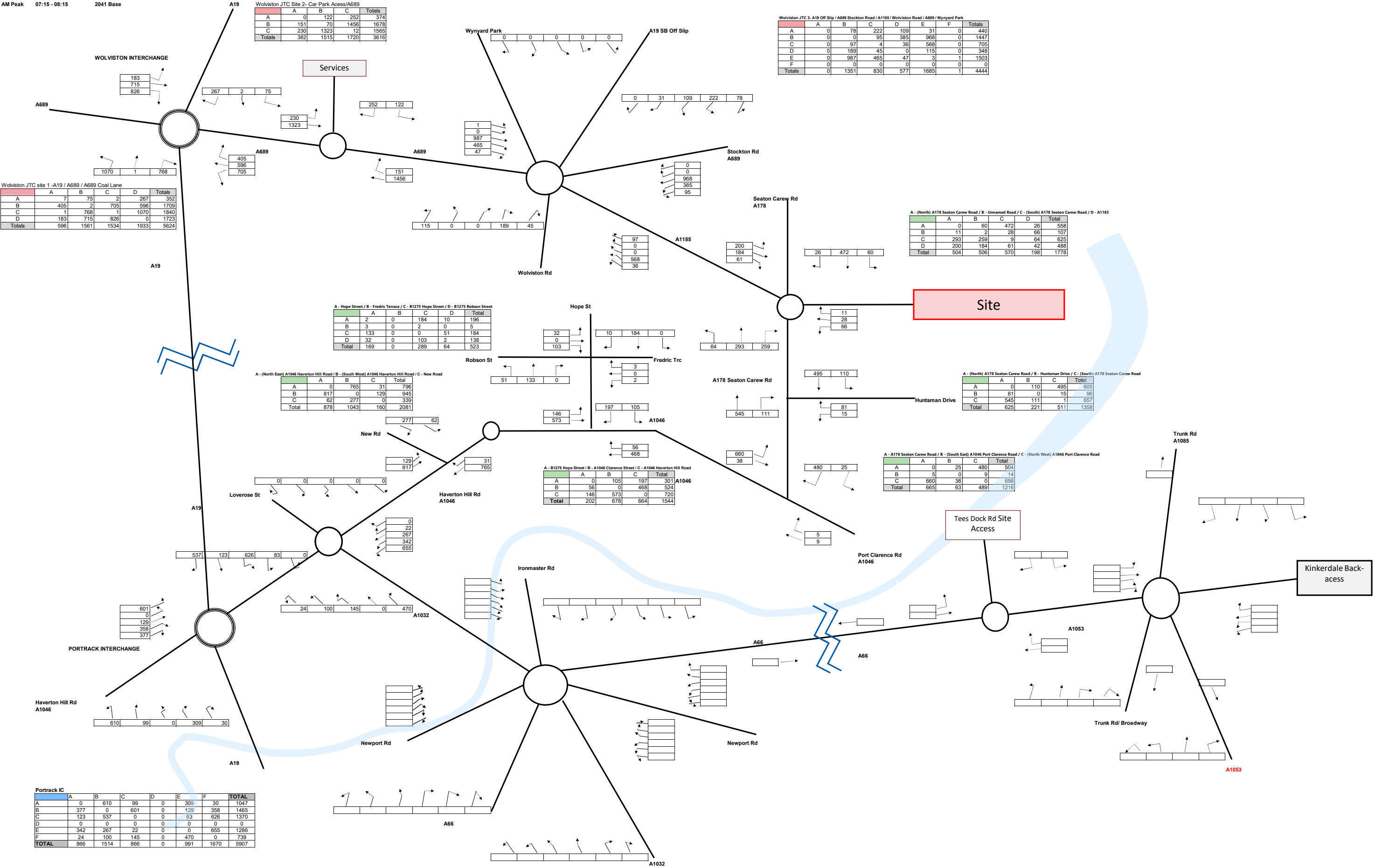
2031 Base+Operational Traffic



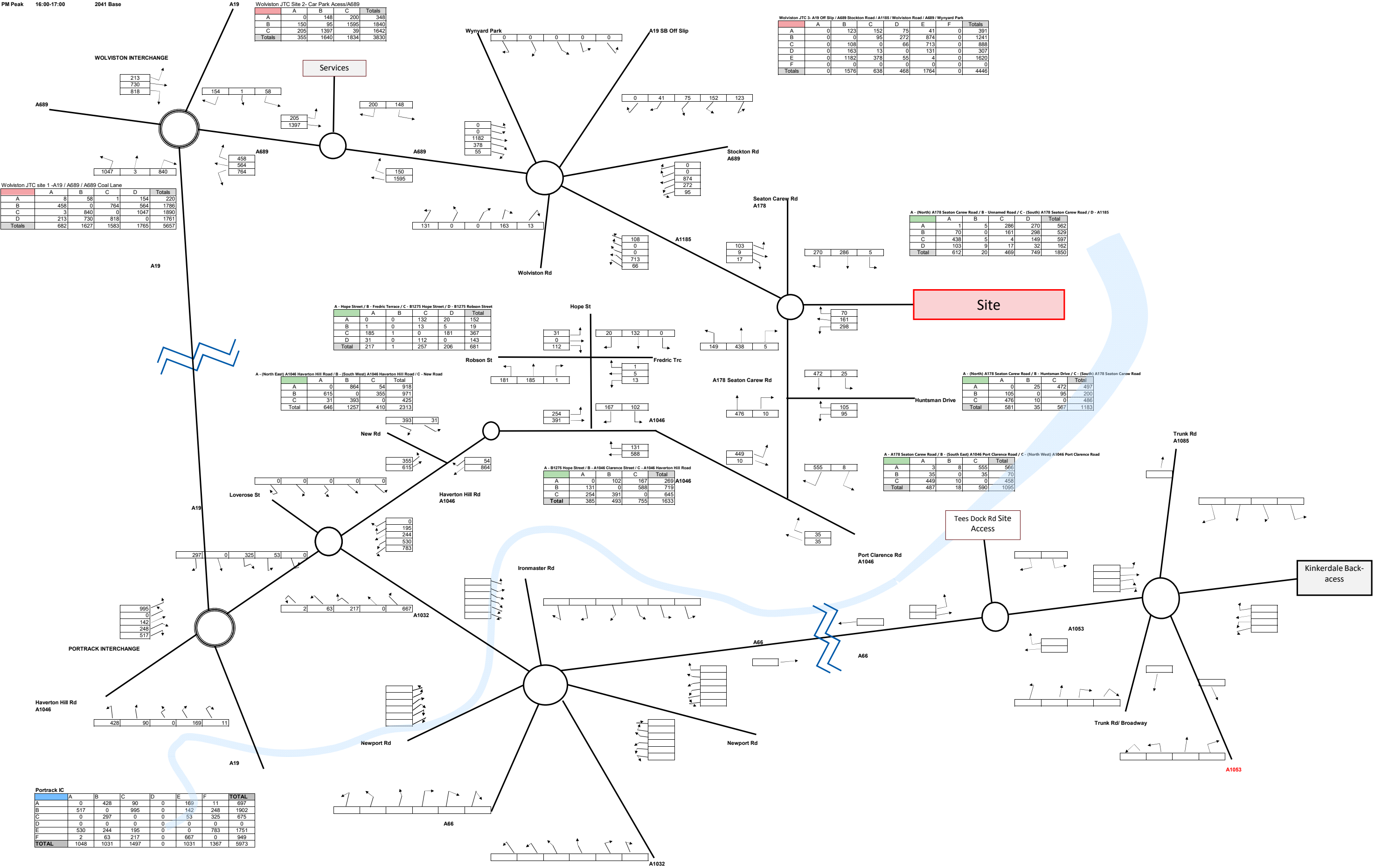
2031 Base+Operational Traffic

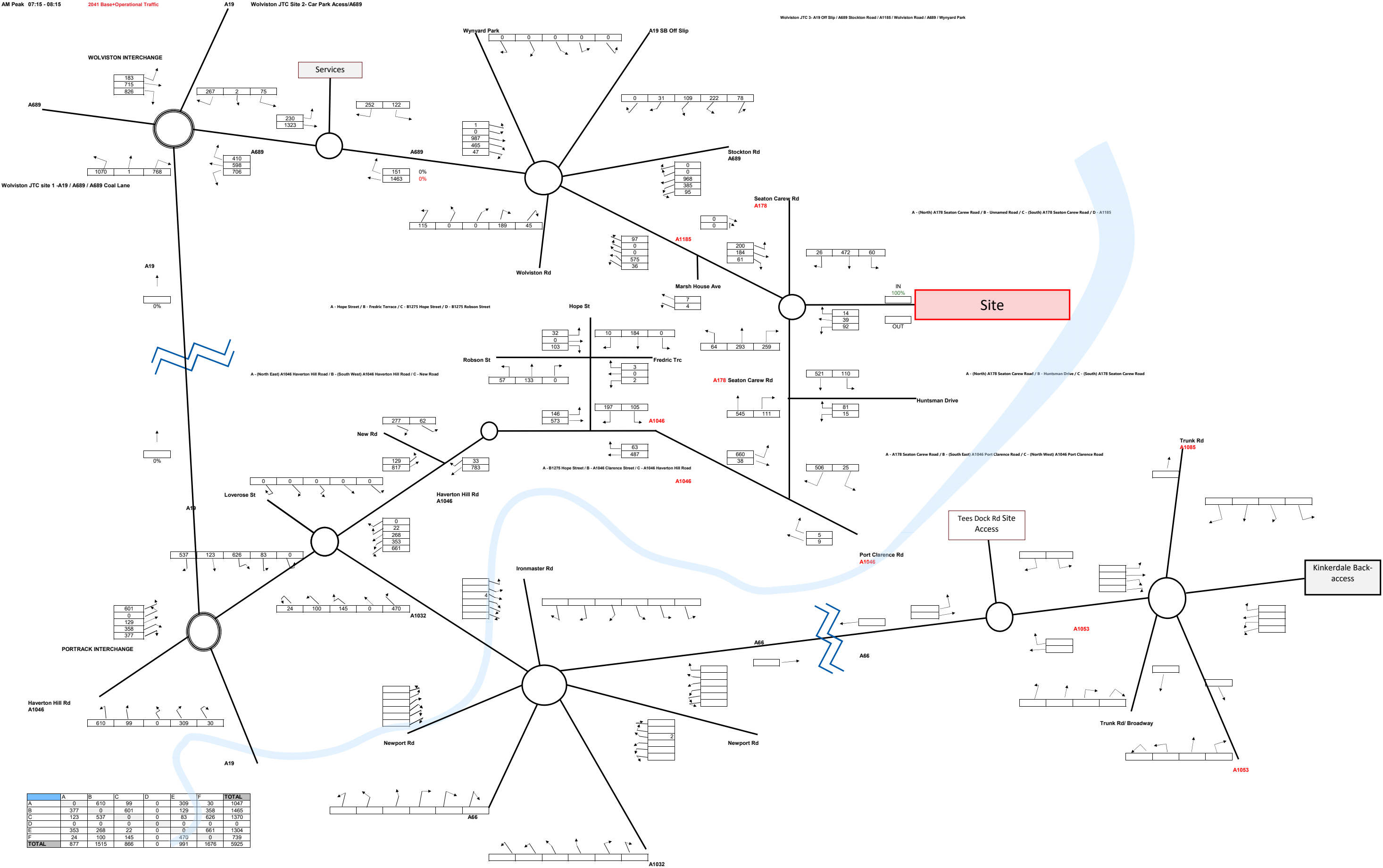


AM Peak 07:15 - 08:15 2041 Base



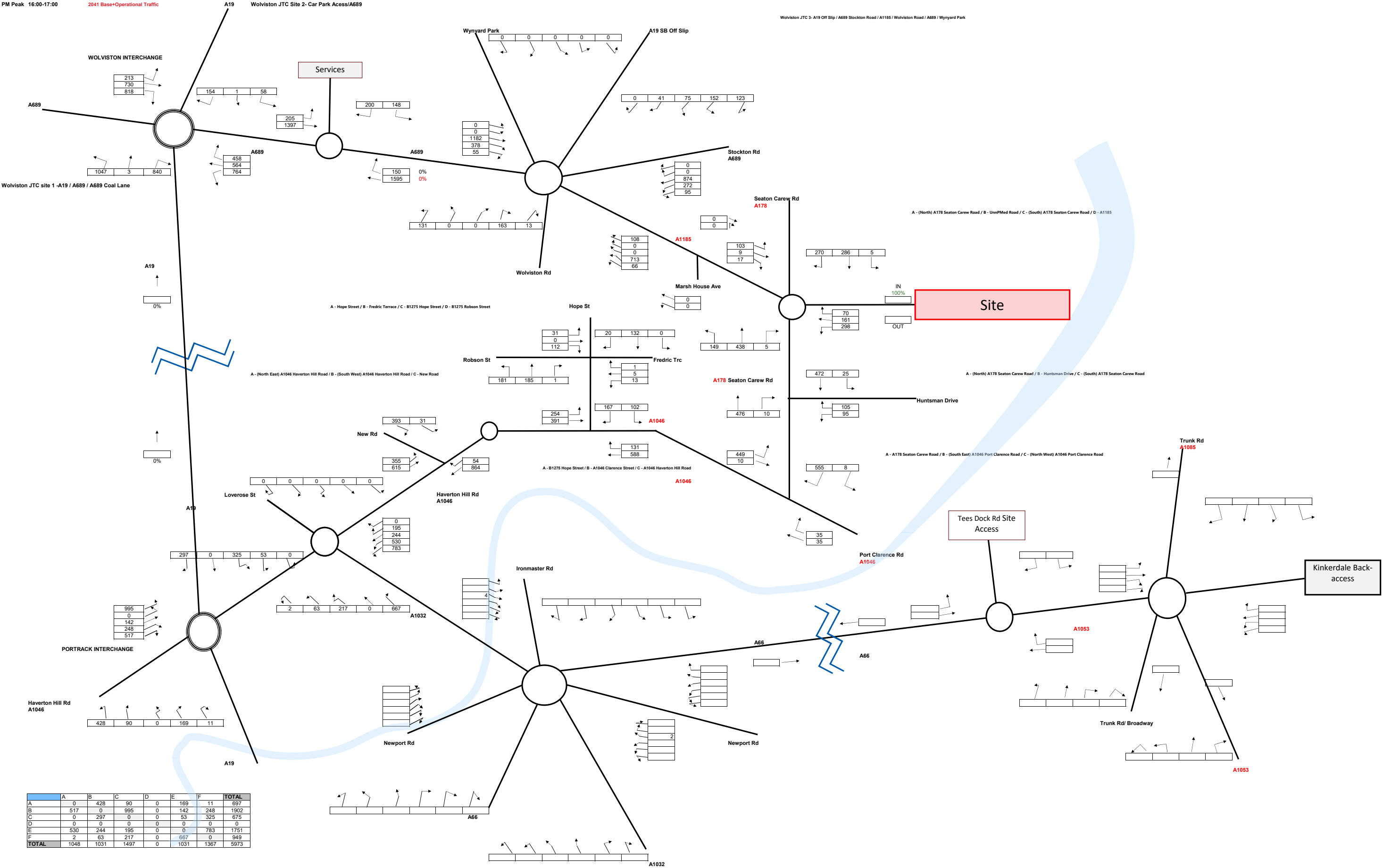
PM Peak 16:00-17:00 2041 Base





PM Peak 16:00-17:00

2041 Base+Operational Traffic



	A	B	C	D	E	F	TOTAL
A	0	428	90	0	169	11	697
B	517	0	995	0	142	248	1902
C	0	297	0	0	53	325	675
D	0	0	0	0	0	0	0
E	530	244	195	0	0	783	1751
F	2	63	217	0	667	0	949
TOTAL	1048	1031	1497	0	1031	1367	5973

Annex B: LinSig modelling results

Lighthouse Green Fuels - LinSig Results

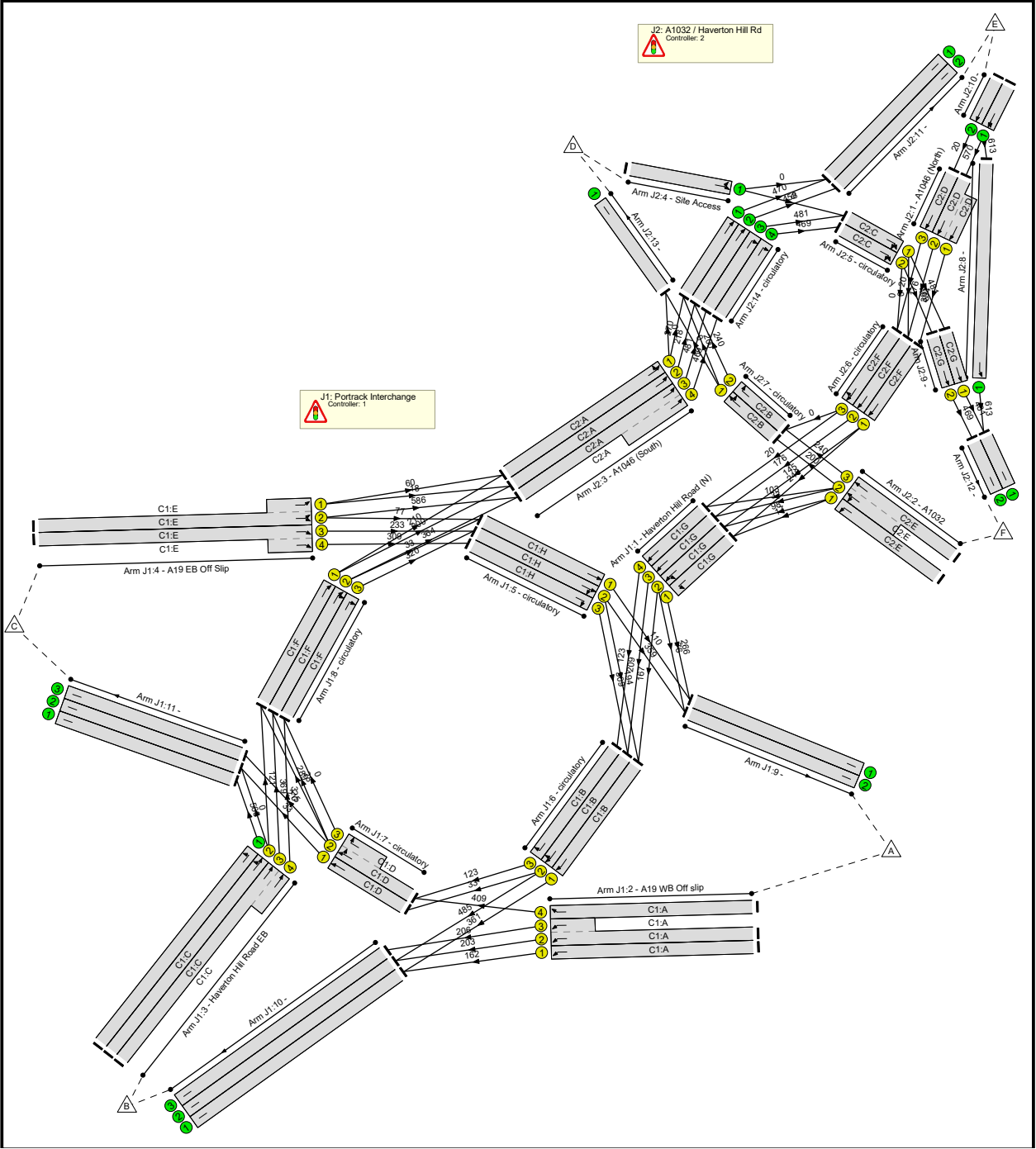
Basic Results Summary

User and Project Details

Project:	Lighthouse Green Fuels
Title:	A19 Portrack Interchange
Location:	Stockton-on-Tees

Scenario 1: '2025 AM base' (FG1: '2025 AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



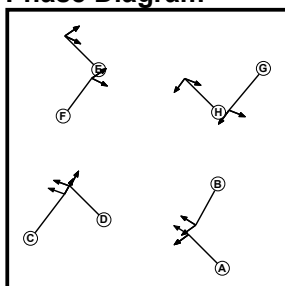
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	571	92	0	289	28	980
	B	353	0	563	0	121	336	1373
	C	116	503	0	0	78	586	1283
	D	0	0	0	0	0	0	0
	E	320	250	20	0	0	613	1203
	F	22	93	136	0	440	0	691
	Tot.	811	1417	811	0	928	1563	5530

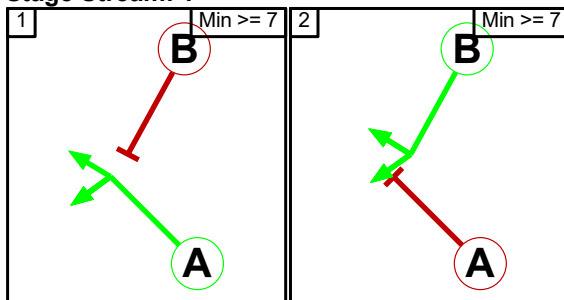
C1

Phase Diagram

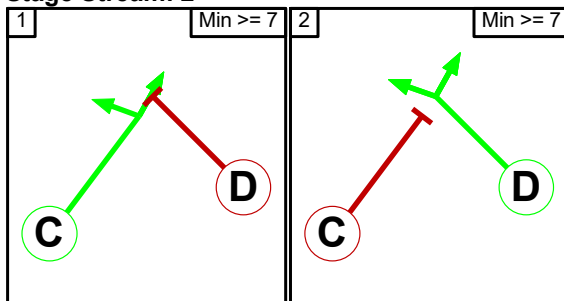


Stage Diagram

Stage Stream: 1

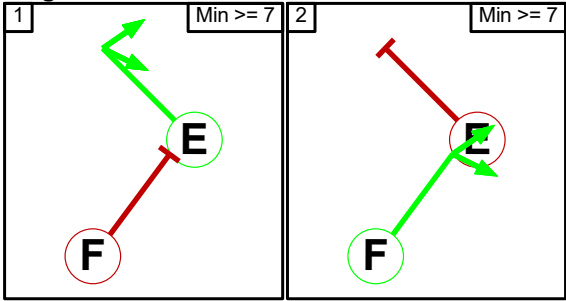


Stage Stream: 2

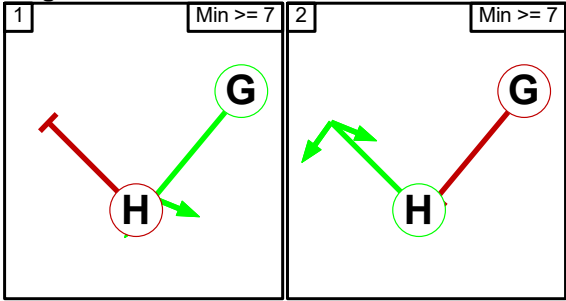


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



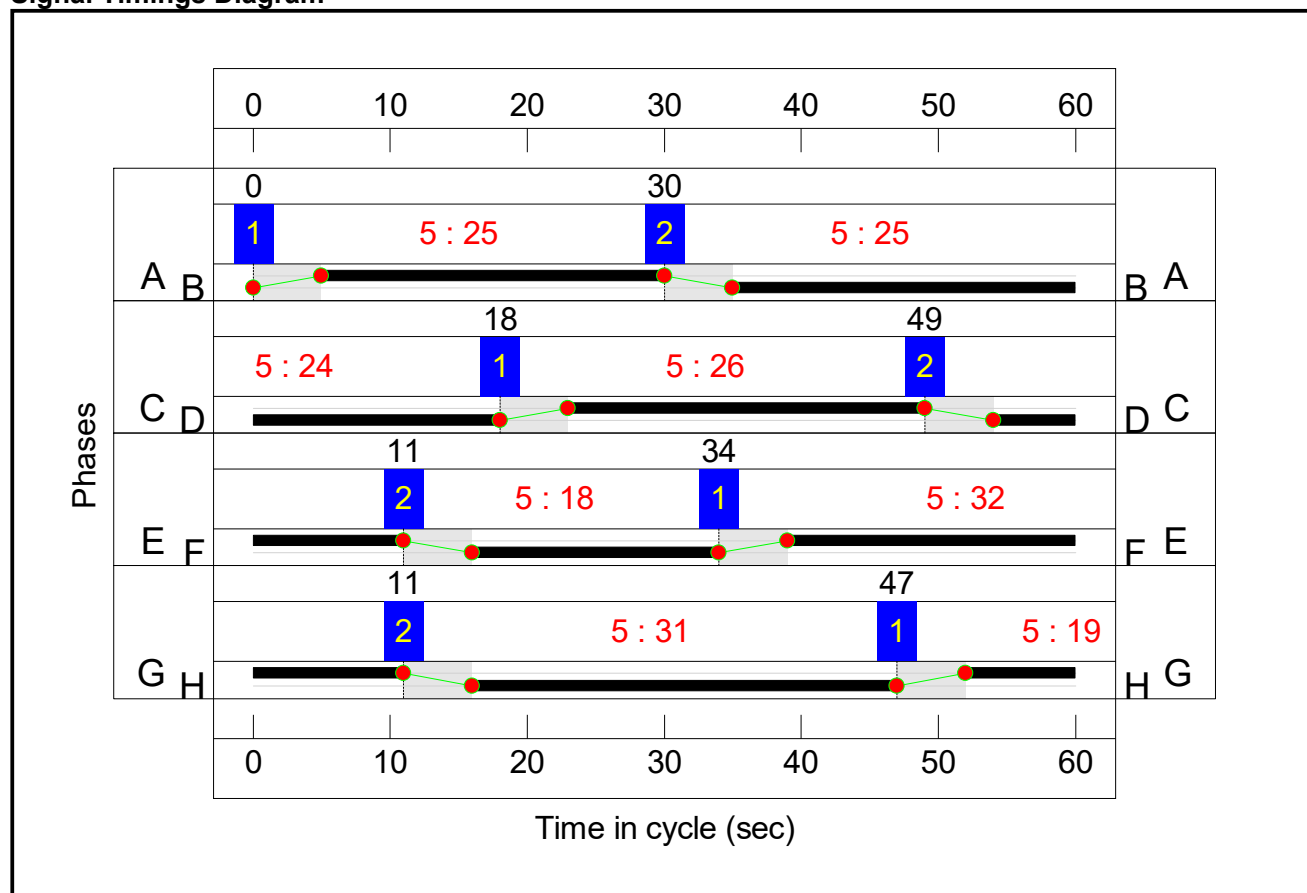
Stage Stream: 4



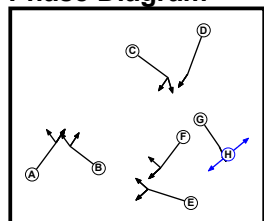
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

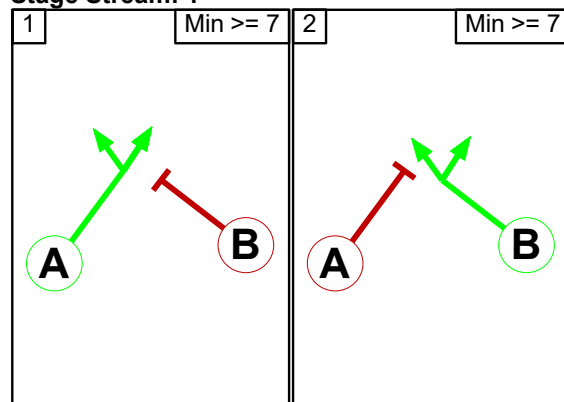
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



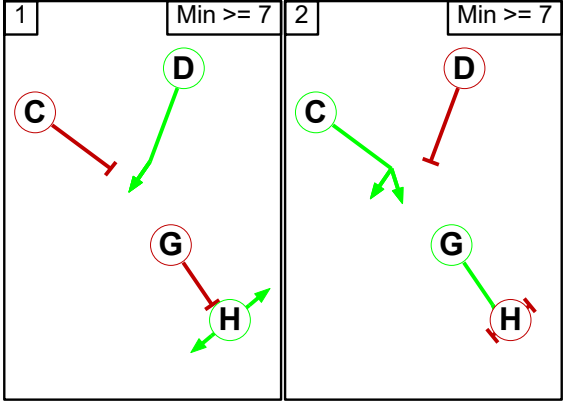
C2
Phase Diagram



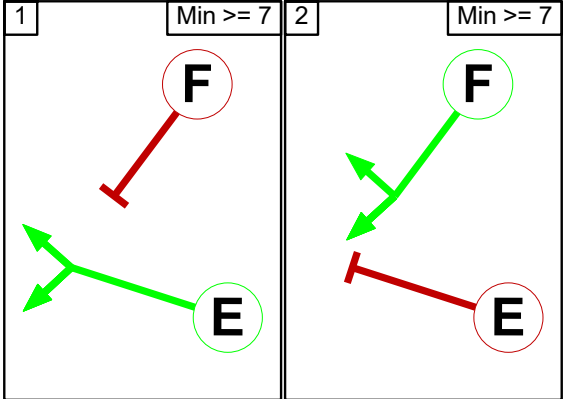
Stage Diagram
Stage Stream: 1



Stage Stream: 2



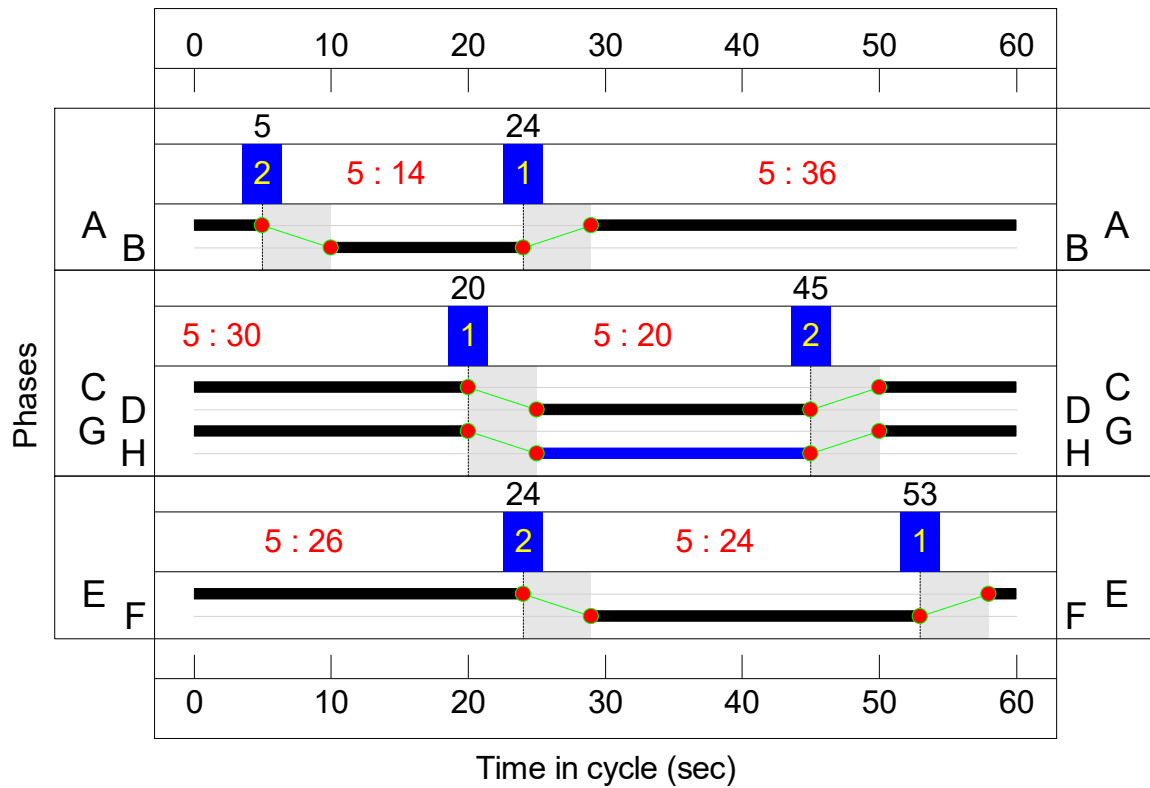
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	65.6%	-	-	0	0	0	45.4	-
J1: Portrack Interchange	-	-	-		-	-	-	-	65.6%	-	-	0	0	0	30.7	-
1/1	Haverton Hill Road (N) Left	U	C1:G		19	-	266	1995	40.0%	4.6	665	-	-	-	1.3	17.6
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		19	-	243	1995	36.5%	3.2	665	-	-	-	1.1	15.7
1/3	Haverton Hill Road (N) Ahead	U	C1:G		19	-	209	1995	31.4%	3.3	665	-	-	-	1.0	17.6
1/4	Haverton Hill Road (N) Ahead	U	C1:G		19	-	123	1995	18.5%	1.0	665	-	-	-	0.5	14.3
2/1	A19 WB Off slip Ahead	U	C1:A		25	-	162	1940	19.3%	1.8	841	-	-	-	0.6	13.2
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		25	-	409	1955:1985	35.4 : 35.4%	2.4	573+581	-	-	-	1.5	13.2
2/4	A19 WB Off slip Ahead	U	C1:A		25	-	409	2065	45.7%	5.2	895	-	-	-	1.8	15.7
3/1	Haverton Hill Road EB Left	U	-		-	-	563	2015	27.9%	0.2	2015	-	-	-	0.2	1.2
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		26	-	121	2065	13.0%	1.3	929	-	-	-	0.4	11.9
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		26	-	689	1995:2015	59.3 : 59.3%	4.8	622+539	-	-	-	2.8	14.8
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		32	-	741	1985:1985	65.6 : 65.6%	8.8	1010+119	-	-	-	2.8	13.6
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		32	-	542	1975:1985	41.1 : 41.1%	3.0	567+752	-	-	-	1.4	9.4

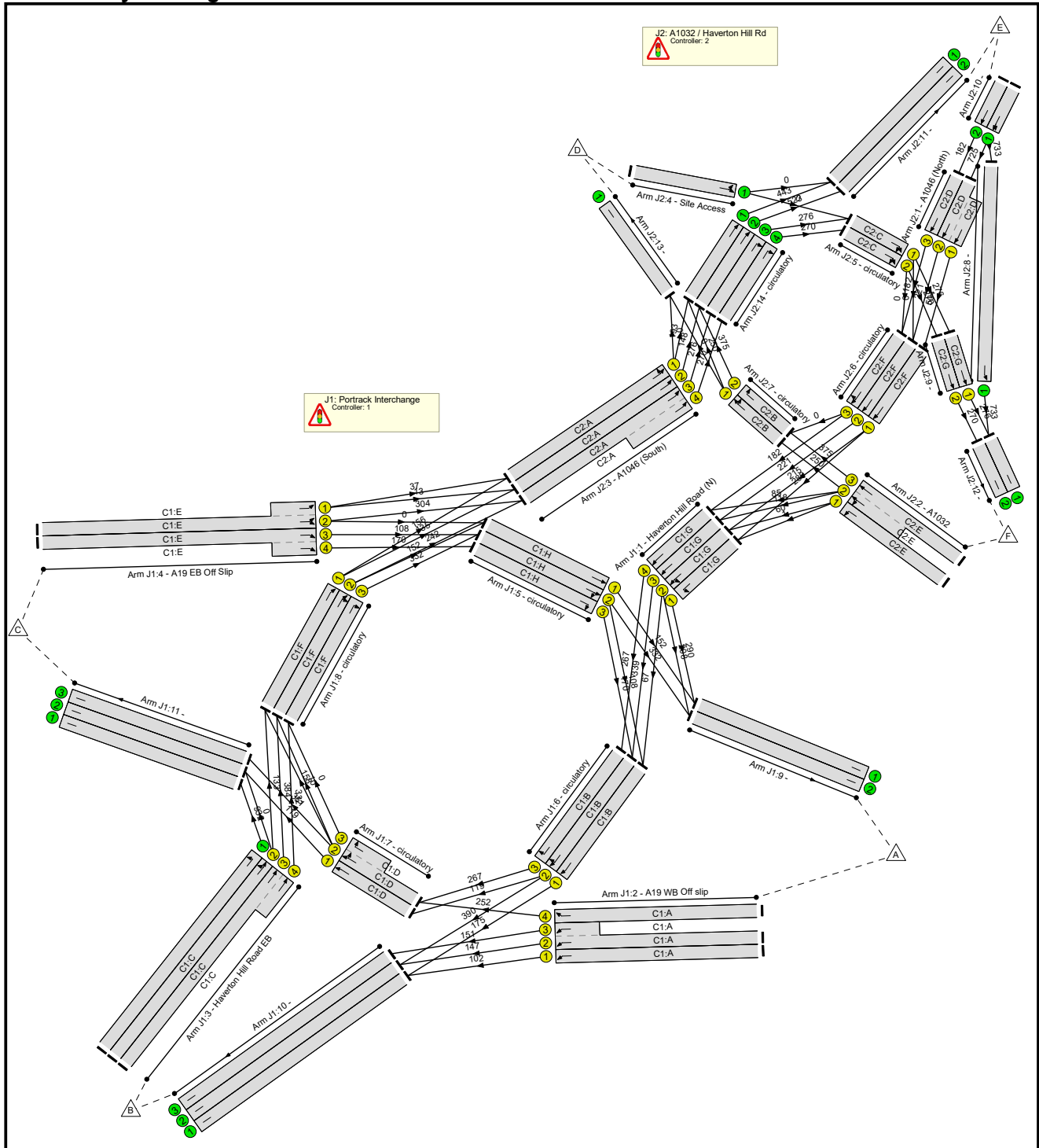
Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		31	-	110	2005	10.3%	1.1	1069	-	-	-	0.4	12.2
5/2	circulatory Right Ahead	U	C1:H		31	-	553	2000	51.8%	2.7	1067	-	-	-	1.2	7.5
5/3	circulatory Right	U	C1:H		31	-	309	2015	28.8%	3.3	1075	-	-	-	1.2	13.5
6/1	circulatory Ahead	U	C1:B		25	-	361	1995	41.8%	3.7	865	-	-	-	1.6	15.6
6/2	circulatory Right Ahead	U	C1:B		25	-	518	1995	59.9%	5.3	865	-	-	-	2.3	16.2
6/3	circulatory Right	U	C1:B		25	-	123	1995	14.2%	1.3	865	-	-	-	0.6	17.3
7/1	circulatory Ahead	U	C1:D		24	-	33	1980	4.0%	0.4	825	-	-	-	0.1	10.5
7/2+7/3	circulatory Right Ahead	U	C1:D		24	-	532	1995:2015	64.0 : 0.0%	9.3	831+0	-	-	-	2.2	15.1
8/1	circulatory Ahead	U	C1:F		18	-	410	1995	64.9%	6.3	632	-	-	-	1.9	16.5
8/2	circulatory Ahead Right	U	C1:F		18	-	397	2015	62.2%	3.7	638	-	-	-	2.4	21.4
8/3	circulatory Right	U	C1:F		18	-	320	2075	48.7%	2.5	657	-	-	-	1.6	18.3
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	65.5%	-	-	0	0	0	14.7	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		20	-	570	1965:1965	65.5 : 65.5%	6.2	269+601	-	-	-	3.4	21.2
1/3	A1046 (North) Ahead	U	C2:D		20	-	20	1965	2.9%	0.2	688	-	-	-	0.1	15.7
2/1	A1032 Left	U	C2:E		26	-	115	1940	13.2%	1.2	873	-	-	-	0.4	12.0
2/3+2/2	A1032 Ahead Left	U	C2:E		26	-	576	1940:1940	49.1 : 49.1%	4.1	489+684	-	-	-	2.2	13.7
3/1	A1046 (South) Left Ahead	U	C2:A		36	-	270	2015	21.7%	3.0	1243	-	-	-	0.4	5.1
3/2	A1046 (South) Ahead	U	C2:A		36	-	218	2015	17.5%	3.2	1243	-	-	-	0.4	6.2
3/3+3/4	A1046 (South) Ahead	U	C2:A		36	-	950	2015:2015	55.2 : 55.2%	3.0	871+849	-	-	-	1.5	5.8

Lighthouse Green Fuels - LinSig Results

4/1	Site Access Ahead Left	U	-	-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C	30	-	481	2015	46.2%	5.0	1041	-	-	-	1.1	7.9
5/2	circulatory Right Ahead	U	C2:C	30	-	469	2015	45.0%	5.1	1041	-	-	-	1.1	8.1
6/1	circulatory Ahead	U	C2:F	24	-	394	2015	46.9%	0.5	840	-	-	-	0.5	4.1
6/2	circulatory Ahead	U	C2:F	24	-	176	2015	21.0%	0.1	840	-	-	-	0.1	2.8
6/3	circulatory Right Ahead	U	C2:F	24	-	20	2015	2.4%	0.0	840	-	-	-	0.0	2.3
7/1	circulatory Ahead Right	U	C2:B	14	-	200	2015	39.7%	3.0	504	-	-	-	0.8	13.7
7/2	circulatory Right	U	C2:B	14	-	240	2015	47.6%	3.8	504	-	-	-	1.0	15.6
8/1	Ahead	U	-	-	-	613	2015	30.4%	0.2	2015	-	-	-	0.2	1.3
9/1	Ahead	U	C2:G	30	-	481	1940	48.0%	1.6	1002	-	-	-	0.5	4.0
9/2	Ahead	U	C2:G	30	-	469	1940	46.8%	1.5	1002	-	-	-	0.5	3.9
14/1	circulatory Ahead	U	-	-	-	470	2015	23.3%	0.2	2015	-	-	-	0.2	1.2
14/2	circulatory Ahead	U	-	-	-	458	2015	22.7%	0.1	2015	-	-	-	0.1	1.2
14/3	circulatory Right	U	-	-	-	481	2015	23.9%	0.2	2015	-	-	-	0.2	1.2
14/4	circulatory Right	U	-	-	-	469	2015	23.3%	0.2	2015	-	-	-	0.2	1.2
		C1	Stream: 1 PRC for Signalled Lanes (%):		50.2		Total Delay for Signalled Lanes (pcuHr):		8.36		Cycle Time (s):		60		
		C1	Stream: 2 PRC for Signalled Lanes (%):		40.6		Total Delay for Signalled Lanes (pcuHr):		5.55		Cycle Time (s):		60		
		C1	Stream: 3 PRC for Signalled Lanes (%):		37.2		Total Delay for Signalled Lanes (pcuHr):		10.08		Cycle Time (s):		60		
		C1	Stream: 4 PRC for Signalled Lanes (%):		73.6		Total Delay for Signalled Lanes (pcuHr):		6.56		Cycle Time (s):		60		
		C2	Stream: 1 PRC for Signalled Lanes (%):		63.0		Total Delay for Signalled Lanes (pcuHr):		4.09		Cycle Time (s):		60		
		C2	Stream: 2 PRC for Signalled Lanes (%):		37.3		Total Delay for Signalled Lanes (pcuHr):		6.60		Cycle Time (s):		60		
		C2	Stream: 3 PRC for Signalled Lanes (%):		83.2		Total Delay for Signalled Lanes (pcuHr):		3.18		Cycle Time (s):		60		
			PRC Over All Lanes (%):		37.2		Total Delay Over All Lanes(pcuHr):		45.44						

Network Layout Diagram



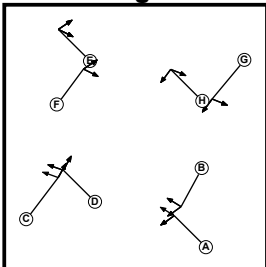
Traffic Flows, Actual

Actual Flow :

Origin	Destination							
		A	B	C	D	E	F	Tot.
A		0	400	84	0	158	10	652
B		484	0	932	0	133	232	1781
C		0	278	0	0	50	304	632
D		0	0	0	0	0	0	0
E		496	228	183	0	0	733	1640
F		2	59	203	0	625	0	889
Tot.		982	965	1402	0	966	1279	5594

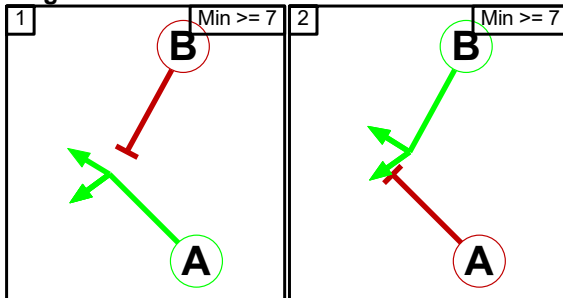
C1

Phase Diagram

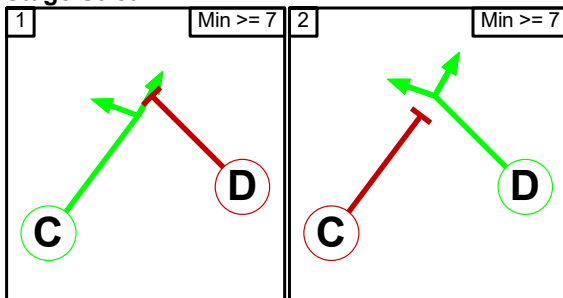


Stage Diagram

Stage Stream: 1

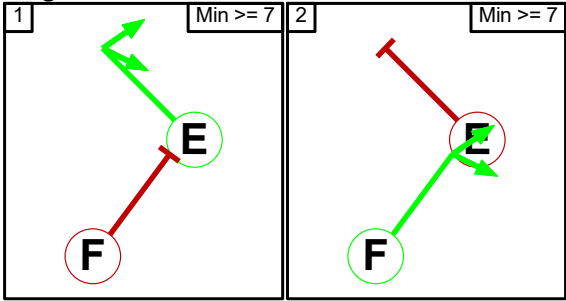


Stage Stream: 2

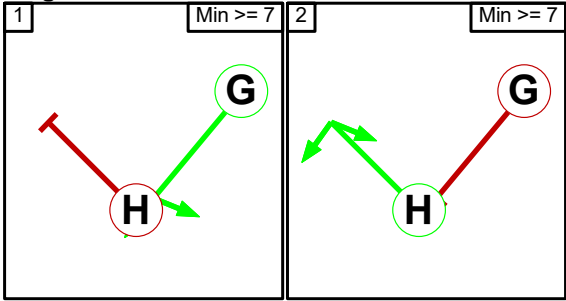


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



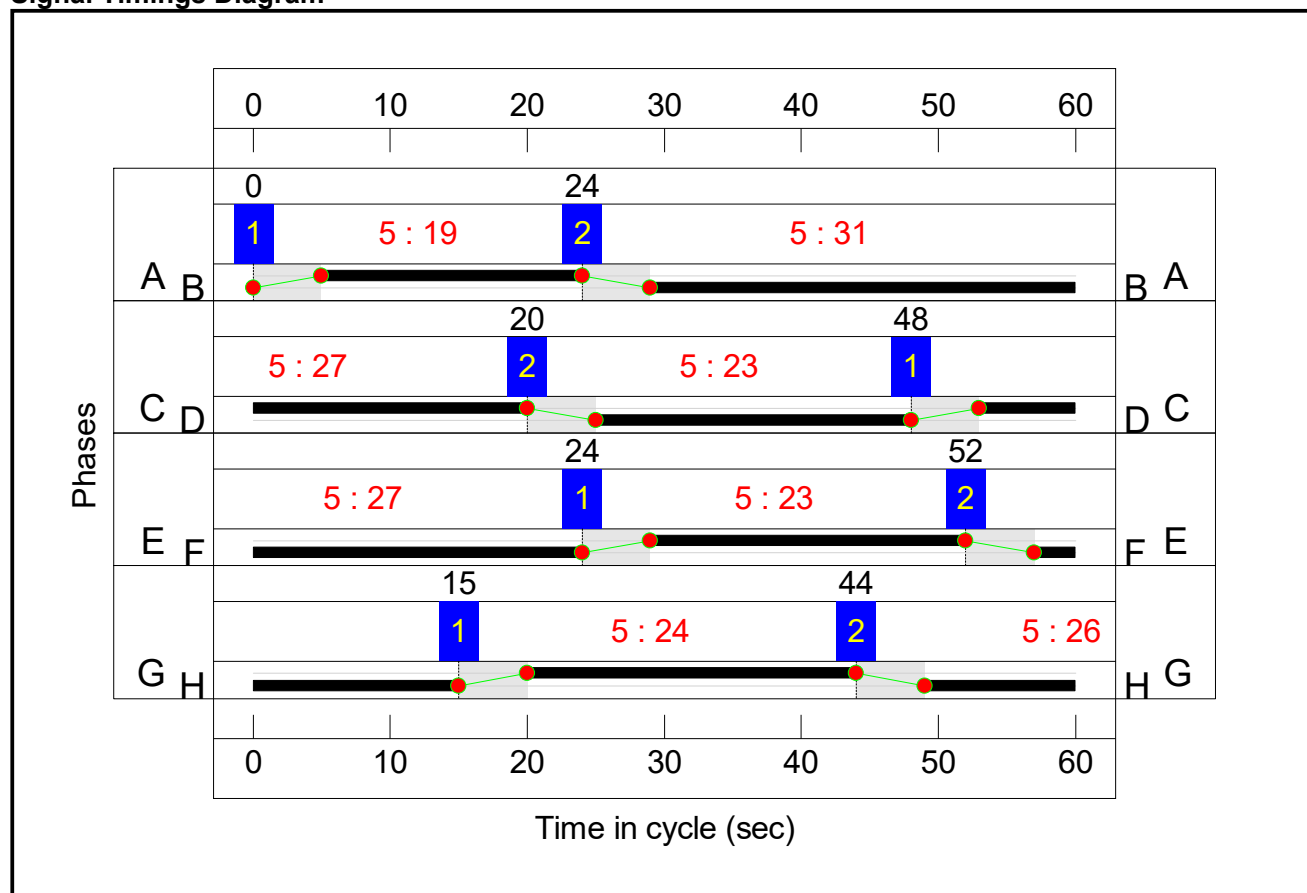
Stage Stream: 4



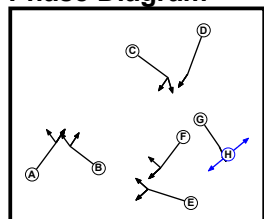
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

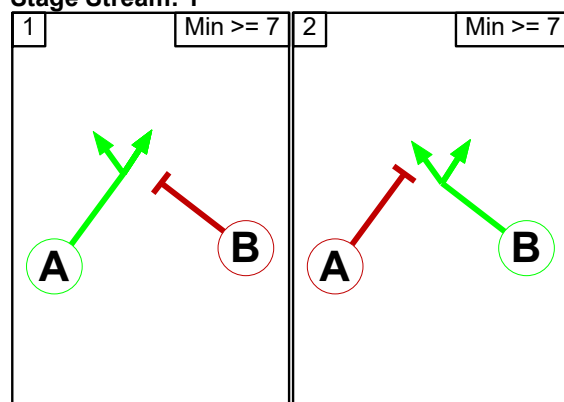
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



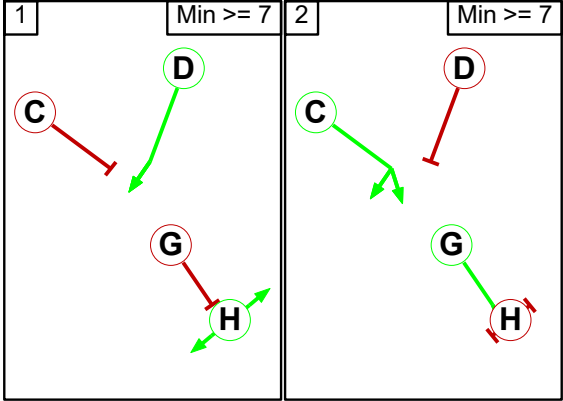
C2
Phase Diagram



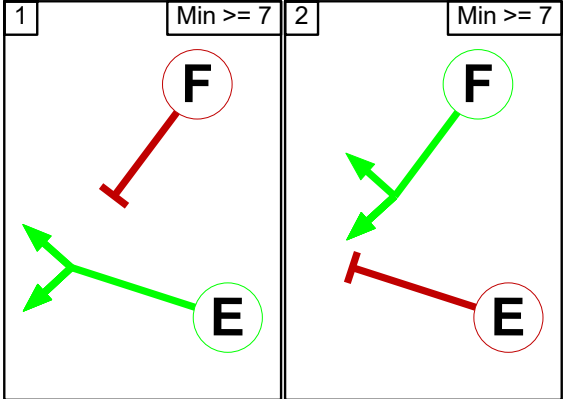
Stage Diagram
Stage Stream: 1



Stage Stream: 2



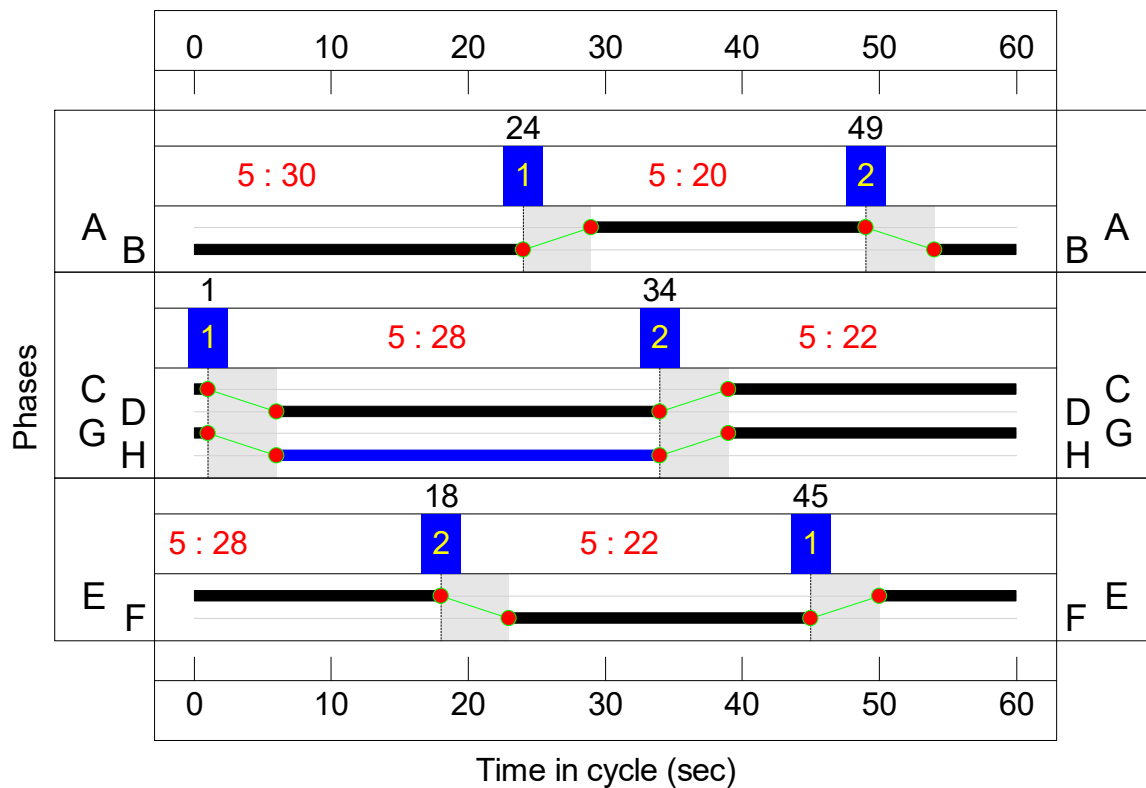
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

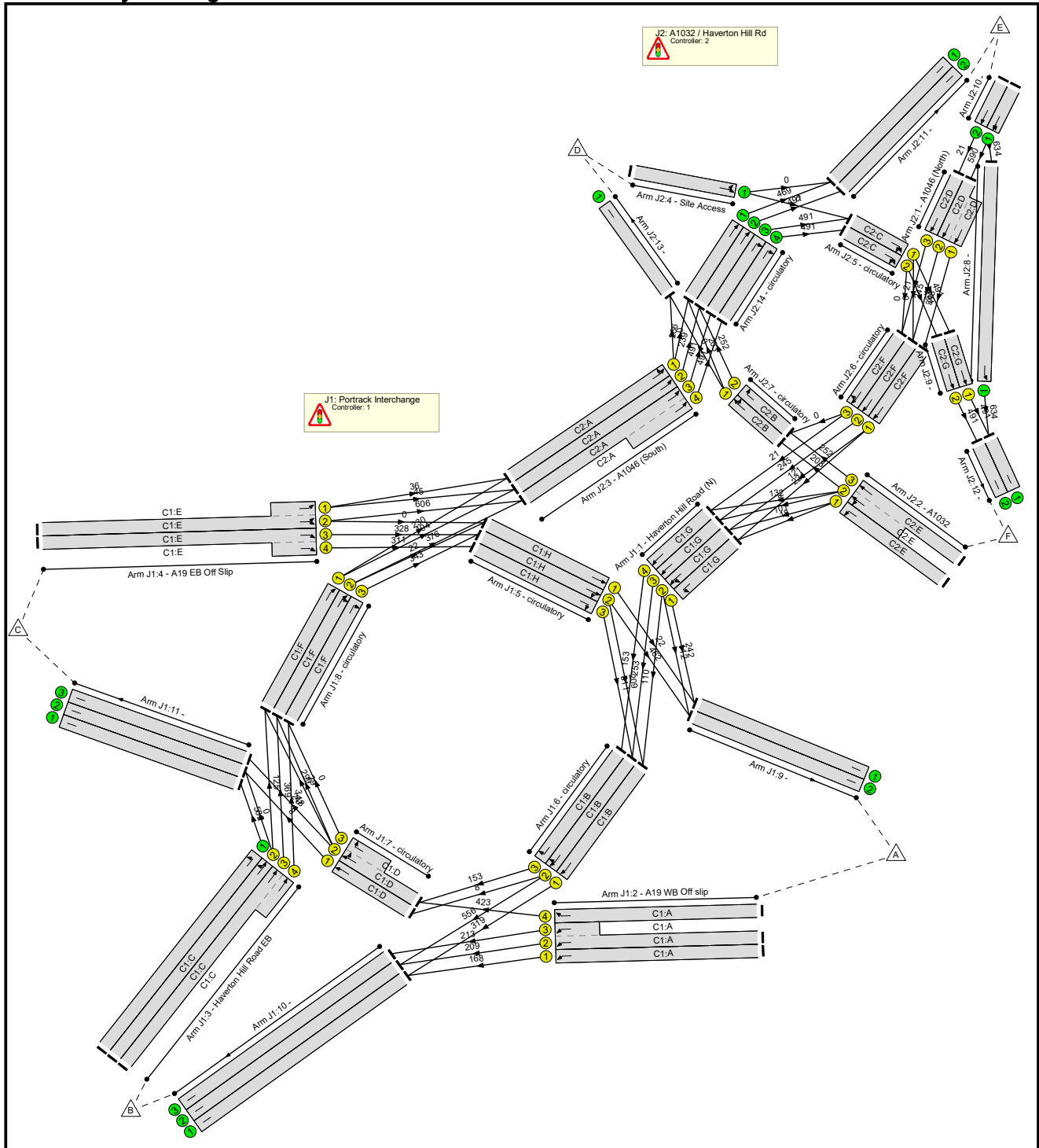
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	65.2%	-	-	0	0	0	37.9	-
J1: Portrack Interchange	-	-	-		-	-	-	-	65.0%	-	-	0	0	0	20.4	-
1/1	Haverton Hill Road (N) Left	U	C1:G		24	-	290	1995	34.9%	0.4	831	-	-	-	0.4	4.4
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		24	-	275	1995	33.1%	1.3	831	-	-	-	0.6	8.1
1/3	Haverton Hill Road (N) Ahead	U	C1:G		24	-	339	1995	40.8%	2.3	831	-	-	-	0.9	10.1
1/4	Haverton Hill Road (N) Ahead	U	C1:G		24	-	267	1995	32.1%	1.7	831	-	-	-	0.7	9.0
2/1	A19 WB Off slip Ahead	U	C1:A		19	-	102	1940	15.8%	1.3	647	-	-	-	0.5	17.4
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		19	-	298	1955:1985	31.3 : 31.3%	2.0	470+483	-	-	-	1.4	17.2
2/4	A19 WB Off slip Ahead	U	C1:A		19	-	252	2065	36.6%	3.4	688	-	-	-	1.4	19.3
3/1	Haverton Hill Road EB Left	U	-		-	-	932	2015	46.3%	0.4	2015	-	-	-	0.4	1.7
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		27	-	133	2065	13.8%	1.3	964	-	-	-	0.4	11.3
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		27	-	716	1995:2015	60.0 : 60.0%	4.9	640+554	-	-	-	2.8	14.2
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		23	-	354	1985:1985	41.9 : 41.9%	3.9	726+119	-	-	-	1.6	16.2
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		23	-	278	1975:1985	28.2 : 28.2%	2.0	383+603	-	-	-	1.1	14.2

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		26	-	152	2005	16.8%	0.7	902	-	-	-	0.4	9.0
5/2	circulatory Right Ahead	U	C1:H		26	-	440	2000	48.9%	3.5	900	-	-	-	1.5	12.2
5/3	circulatory Right	U	C1:H		26	-	170	2015	18.7%	2.7	907	-	-	-	0.7	14.0
6/1	circulatory Ahead	U	C1:B		31	-	175	1995	16.4%	1.3	1064	-	-	-	0.3	5.5
6/2	circulatory Right Ahead	U	C1:B		31	-	509	1995	47.8%	3.3	1064	-	-	-	0.7	5.0
6/3	circulatory Right	U	C1:B		31	-	267	1995	25.1%	1.6	1064	-	-	-	0.3	3.5
7/1	circulatory Ahead	U	C1:D		23	-	119	1980	15.0%	0.1	792	-	-	-	0.1	2.7
7/2+7/3	circulatory Right Ahead	U	C1:D		23	-	519	1995:2015	65.0 : 0.0%	6.0	798+0	-	-	-	2.1	14.5
8/1	circulatory Ahead	U	C1:F		27	-	291	1995	31.3%	4.3	931	-	-	-	1.4	17.5
8/2	circulatory Ahead Right	U	C1:F		27	-	394	2015	41.9%	0.7	940	-	-	-	0.5	4.6
8/3	circulatory Right	U	C1:F		27	-	332	2075	34.3%	0.4	968	-	-	-	0.3	3.5
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	65.2%	-	-	0	0	0	17.5	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		28	-	725	1965:1965	64.3 : 64.3%	6.6	344+784	-	-	-	3.0	14.7
1/3	A1046 (North) Ahead	U	C2:D		28	-	182	1965	19.2%	1.8	950	-	-	-	0.6	11.2
2/1	A1032 Left	U	C2:E		28	-	61	1940	6.5%	0.6	938	-	-	-	0.2	10.3
2/3+2/2	A1032 Ahead Left	U	C2:E		28	-	828	1940:1940	64.4 : 64.4%	5.9	582+703	-	-	-	3.3	14.1
3/1	A1046 (South) Left Ahead	U	C2:A		20	-	193	2015	27.4%	3.0	705	-	-	-	1.1	21.3
3/2	A1046 (South) Ahead	U	C2:A		20	-	148	2015	21.0%	2.4	705	-	-	-	1.0	25.4
3/3+3/4	A1046 (South) Ahead	U	C2:A		20	-	546	2015:2015	46.1 : 46.1%	2.9	599+586	-	-	-	2.2	14.4

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		22	-	276	2015	35.7%	0.9	772	-	-	-	0.3	4.0
5/2	circulatory Right Ahead	U	C2:C		22	-	270	2015	35.0%	0.9	772	-	-	-	0.3	3.9
6/1	circulatory Ahead	U	C2:F		22	-	504	2015	65.2%	8.9	772	-	-	-	2.3	16.1
6/2	circulatory Ahead	U	C2:F		22	-	221	2015	28.6%	3.1	772	-	-	-	0.7	11.3
6/3	circulatory Right Ahead	U	C2:F		22	-	182	2015	23.6%	2.5	772	-	-	-	0.6	10.9
7/1	circulatory Ahead Right	U	C2:B		30	-	250	2015	24.0%	0.2	1041	-	-	-	0.2	2.5
7/2	circulatory Right	U	C2:B		30	-	375	2015	36.0%	0.3	1041	-	-	-	0.3	2.9
8/1	Ahead	U	-		-	-	733	2015	36.4%	0.3	2015	-	-	-	0.3	1.4
9/1	Ahead	U	C2:G		22	-	276	1940	37.1%	0.5	744	-	-	-	0.4	5.5
9/2	Ahead	U	C2:G		22	-	270	1940	36.3%	0.5	744	-	-	-	0.4	5.3
14/1	circulatory Ahead	U	-		-	-	443	2015	22.0%	0.1	2015	-	-	-	0.1	1.1
14/2	circulatory Ahead	U	-		-	-	523	2015	26.0%	0.2	2015	-	-	-	0.2	1.2
14/3	circulatory Right	U	-		-	-	276	2015	13.7%	0.1	2015	-	-	-	0.1	1.0
14/4	circulatory Right	U	-		-	-	270	2015	13.4%	0.1	2015	-	-	-	0.1	1.0
		C1	Stream: 1 PRC for Signalled Lanes (%):				88.1	Total Delay for Signalled Lanes (pcuHr):			4.50	Cycle Time (s):	60			
		C1	Stream: 2 PRC for Signalled Lanes (%):				38.4	Total Delay for Signalled Lanes (pcuHr):			5.42	Cycle Time (s):	60			
		C1	Stream: 3 PRC for Signalled Lanes (%):				114.8	Total Delay for Signalled Lanes (pcuHr):			4.93	Cycle Time (s):	60			
		C1	Stream: 4 PRC for Signalled Lanes (%):				84.1	Total Delay for Signalled Lanes (pcuHr):			5.12	Cycle Time (s):	60			
		C2	Stream: 1 PRC for Signalled Lanes (%):				95.3	Total Delay for Signalled Lanes (pcuHr):			4.85	Cycle Time (s):	60			
		C2	Stream: 2 PRC for Signalled Lanes (%):				40.0	Total Delay for Signalled Lanes (pcuHr):			4.94	Cycle Time (s):	60			
		C2	Stream: 3 PRC for Signalled Lanes (%):				37.9	Total Delay for Signalled Lanes (pcuHr):			6.93	Cycle Time (s):	60			
			PRC Over All Lanes (%):				37.9	Total Delay Over All Lanes(pcuHr):			37.87					

Network Layout Diagram



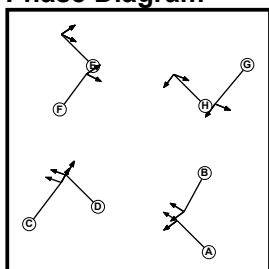
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	590	95	0	299	29	1013
	B	365	0	582	0	125	347	1419
	C	119	520	0	0	81	606	1326
	D	0	0	0	0	0	0	0
	E	331	259	21	0	0	634	1245
	F	23	96	140	0	455	0	714
	Tot.	838	1465	838	0	960	1616	5717

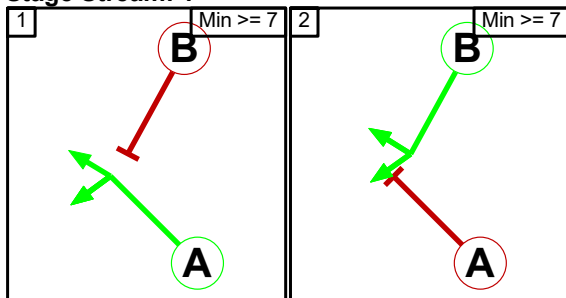
C1

Phase Diagram

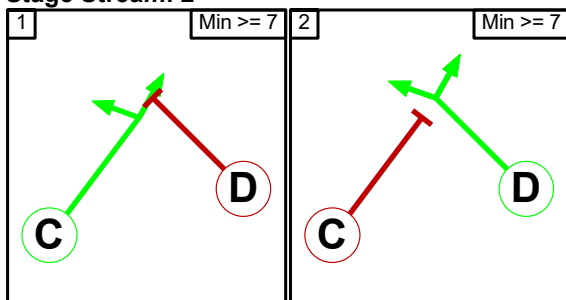


Stage Diagram

Stage Stream: 1

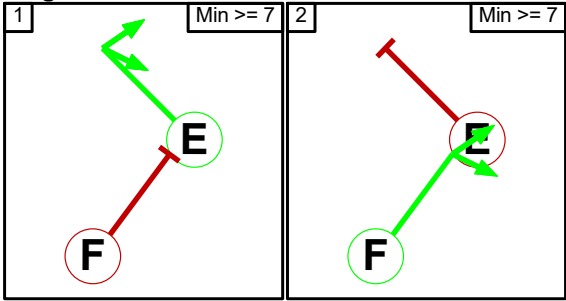


Stage Stream: 2

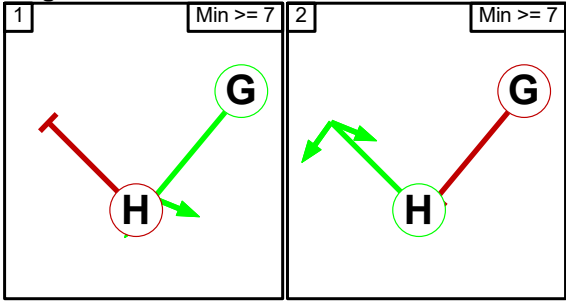


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



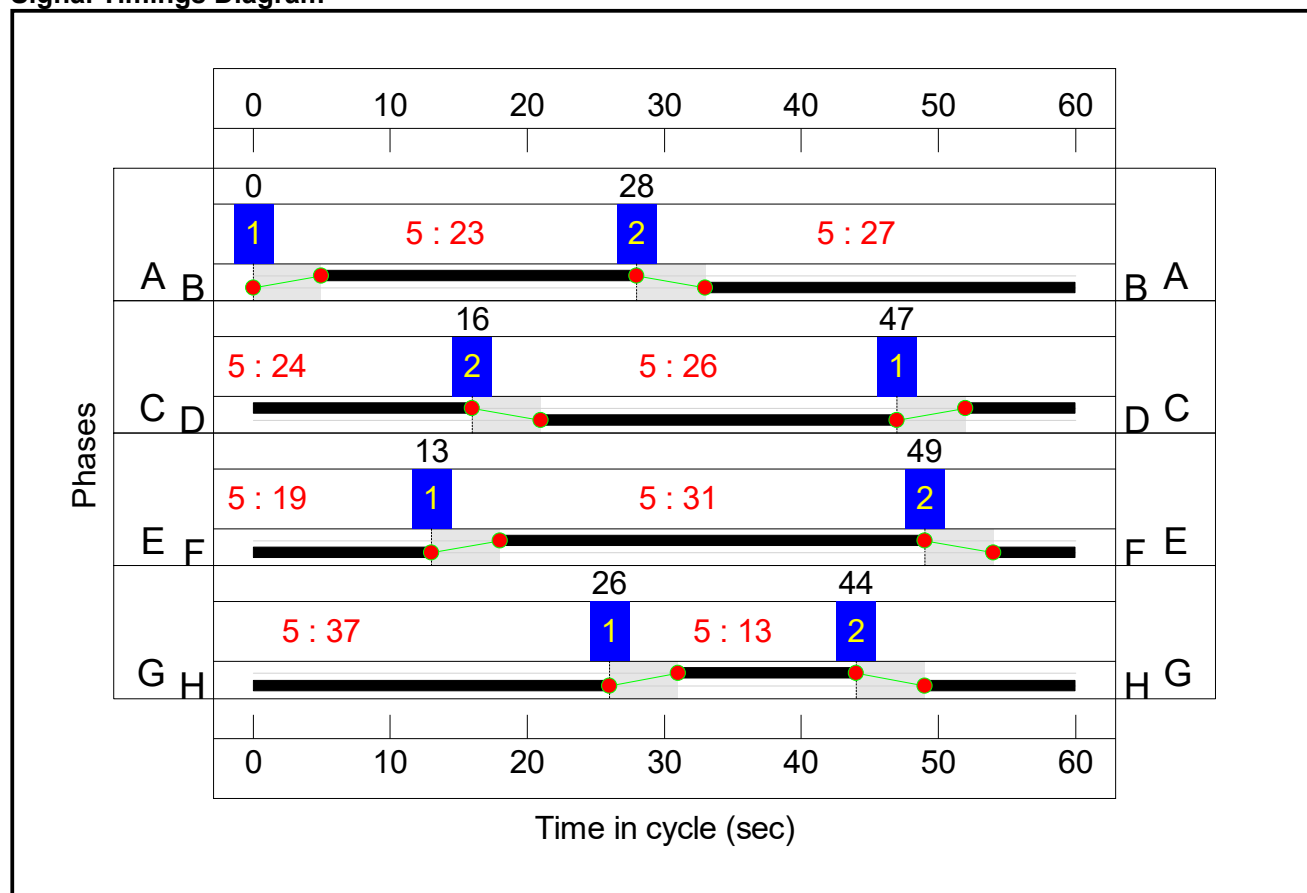
Stage Stream: 4



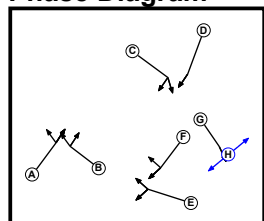
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

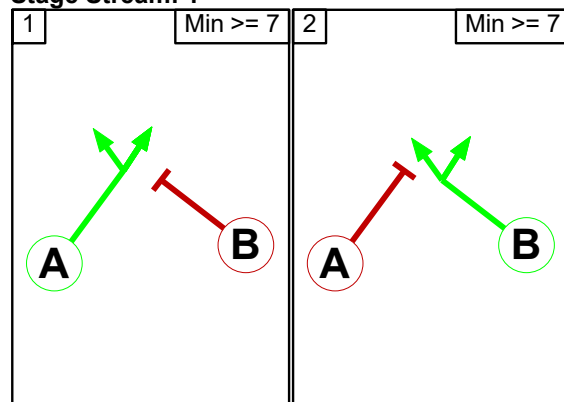
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



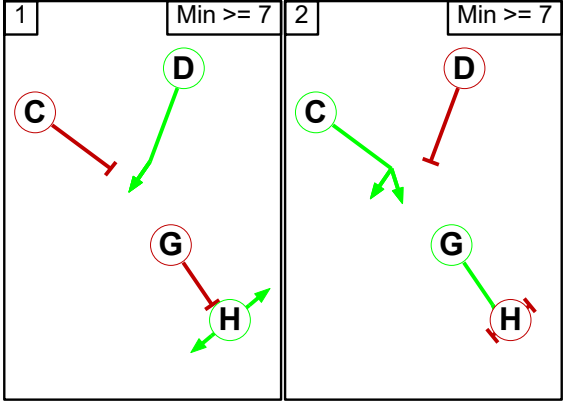
C2
Phase Diagram



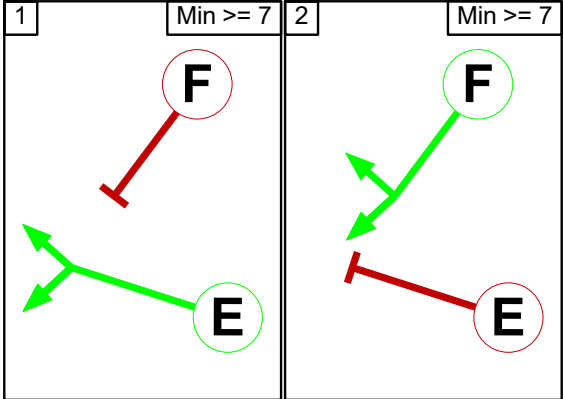
Stage Diagram
Stage Stream: 1



Stage Stream: 2



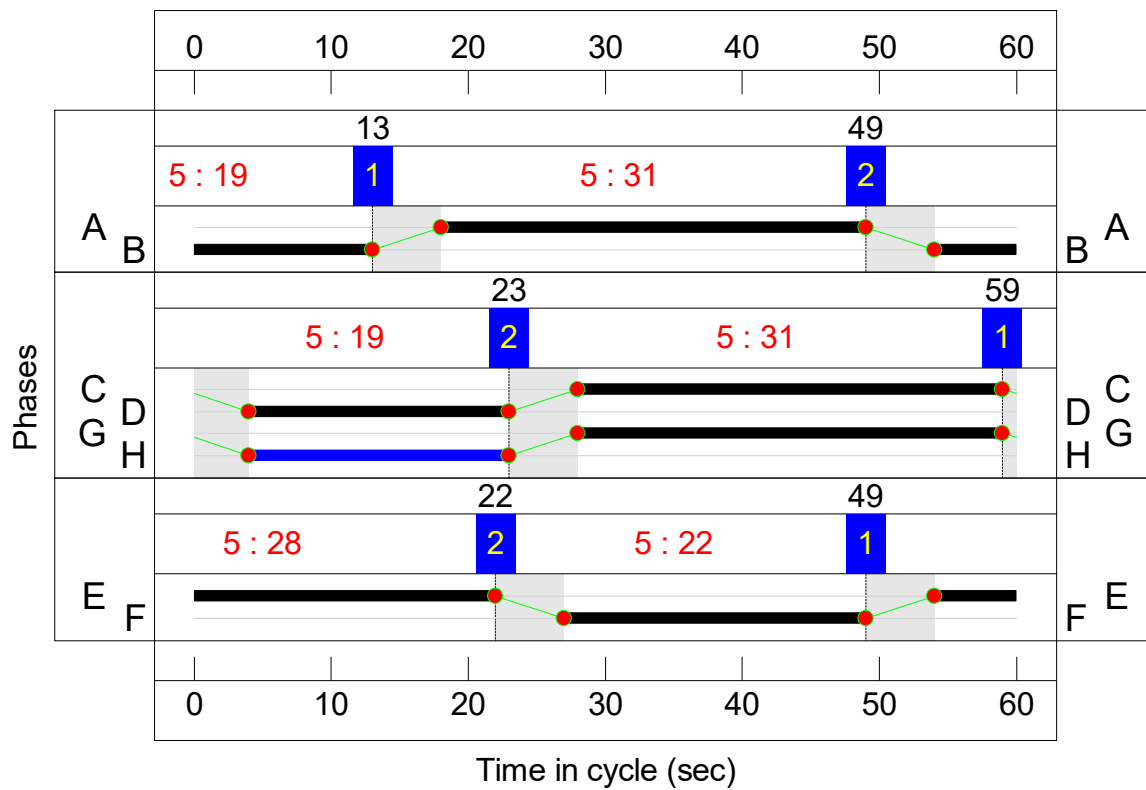
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	64.2%	-	-	0	0	0	47.3	-
J1: Portrack Interchange	-	-	-		-	-	-	-	64.2%	-	-	0	0	0	28.5	-
1/1	Haverton Hill Road (N) Left	U	C1:G		13	-	242	1995	52.0%	0.9	466	-	-	-	0.7	10.6
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		13	-	222	1995	47.7%	2.7	466	-	-	-	1.2	19.7
1/3	Haverton Hill Road (N) Ahead	U	C1:G		13	-	253	1995	54.4%	0.7	466	-	-	-	0.7	9.4
1/4	Haverton Hill Road (N) Ahead	U	C1:G		13	-	153	1995	32.9%	2.8	466	-	-	-	1.2	27.6
2/1	A19 WB Off slip Ahead	U	C1:A		23	-	168	1940	21.6%	2.0	776	-	-	-	0.7	14.8
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		23	-	422	1955:1985	38.8 : 38.8%	2.7	538+549	-	-	-	1.7	14.8
2/4	A19 WB Off slip Ahead	U	C1:A		23	-	423	2065	51.2%	5.8	826	-	-	-	2.1	18.0
3/1	Haverton Hill Road EB Left	U	-		-	-	582	2015	28.9%	0.2	2015	-	-	-	0.2	1.3
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		24	-	125	2065	14.5%	1.4	860	-	-	-	0.5	13.3
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		24	-	712	1995:2015	63.9 : 63.9%	5.2	577+536	-	-	-	3.3	16.9
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		31	-	687	1985:1985	62.4 : 62.4%	7.8	971+130	-	-	-	2.6	13.5
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		31	-	639	1975:1985	47.6 : 47.6%	3.5	690+654	-	-	-	1.8	10.4

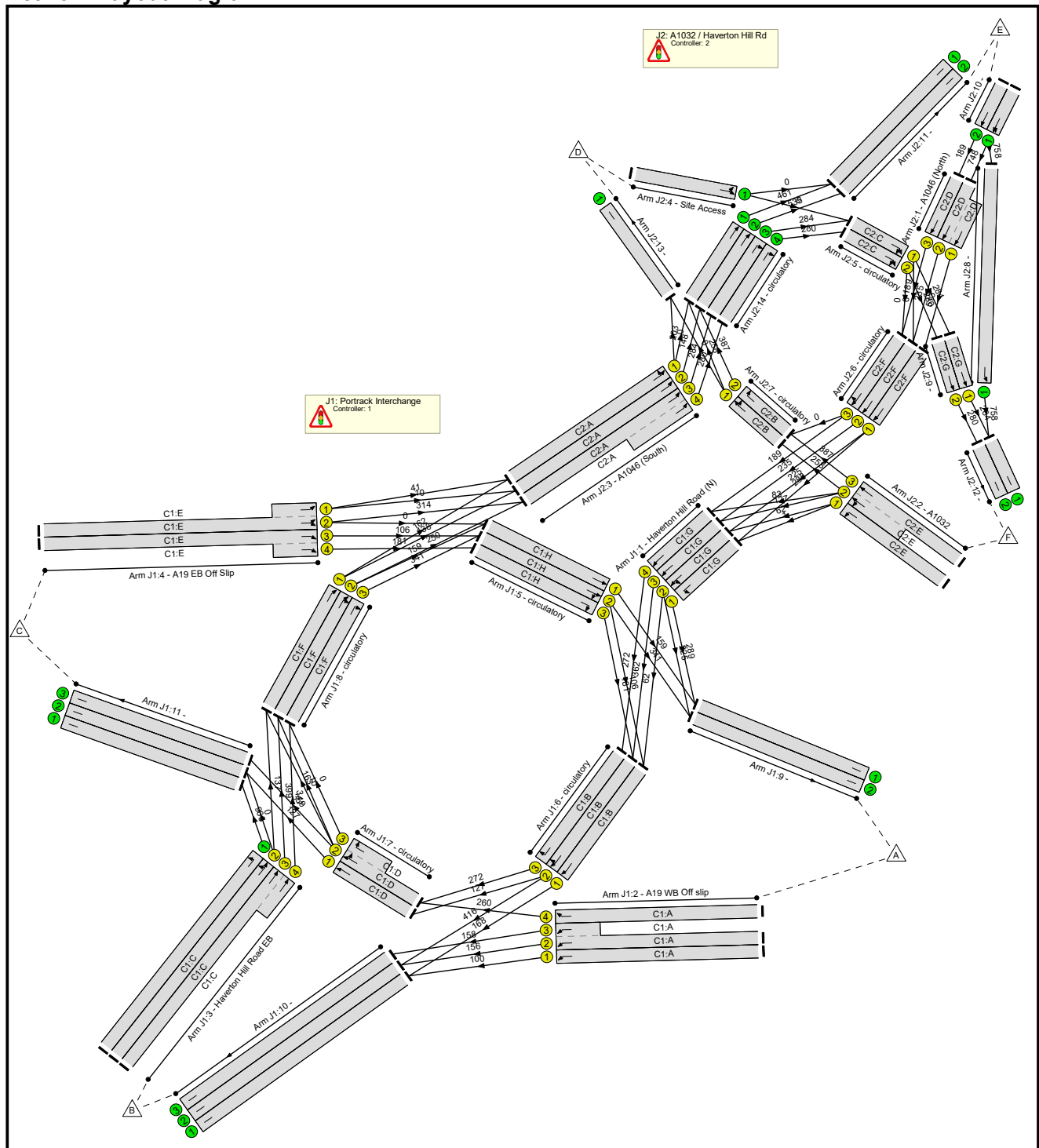
Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		37	-	22	2005	1.7%	0.0	1270	-	-	-	0.0	1.4
5/2	circulatory Right Ahead	U	C1:H		37	-	671	2000	53.0%	3.9	1267	-	-	-	1.4	7.3
5/3	circulatory Right	U	C1:H		37	-	311	2015	24.4%	3.2	1276	-	-	-	0.9	10.0
6/1	circulatory Ahead	U	C1:B		27	-	319	1995	34.3%	1.9	931	-	-	-	0.5	5.1
6/2	circulatory Right Ahead	U	C1:B		27	-	564	1995	60.6%	4.2	931	-	-	-	1.1	6.9
6/3	circulatory Right	U	C1:B		27	-	153	1995	16.4%	0.1	931	-	-	-	0.1	2.3
7/1	circulatory Ahead	U	C1:D		26	-	8	1980	0.9%	0.0	891	-	-	-	0.0	3.5
7/2+7/3	circulatory Right Ahead	U	C1:D		26	-	576	1995:2015	64.2 : 0.0%	7.9	898+0	-	-	-	2.1	13.2
8/1	circulatory Ahead	U	C1:F		19	-	424	1995	63.8%	7.7	665	-	-	-	3.3	28.4
8/2	circulatory Ahead Right	U	C1:F		19	-	398	2015	59.3%	2.1	672	-	-	-	1.4	13.0
8/3	circulatory Right	U	C1:F		19	-	343	2075	49.6%	1.3	692	-	-	-	1.0	10.3
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	62.8%	-	-	0	0	0	18.8	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		19	-	590	1965:1965	62.3 : 62.3%	5.4	393+554	-	-	-	3.4	20.8
1/3	A1046 (North) Ahead	U	C2:D		19	-	21	1965	3.2%	0.2	655	-	-	-	0.1	16.5
2/1	A1032 Left	U	C2:E		28	-	119	1940	12.7%	1.2	938	-	-	-	0.4	10.7
2/3+2/2	A1032 Ahead Left	U	C2:E		28	-	595	1940:1940	47.8 : 47.8%	4.0	528+718	-	-	-	2.0	12.3
3/1	A1046 (South) Left Ahead	U	C2:A		31	-	266	2015	24.8%	4.3	1075	-	-	-	1.1	14.5
3/2	A1046 (South) Ahead	U	C2:A		31	-	239	2015	22.2%	3.7	1075	-	-	-	1.0	15.5
3/3+3/4	A1046 (South) Ahead	U	C2:A		31	-	982	2015:2015	62.8 : 62.8%	4.5	782+782	-	-	-	2.8	10.2

Lighthouse Green Fuels - LinSig Results

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		31	-	491	2015	45.7%	1.2	1075	-	-	-	0.5	3.5
5/2	circulatory Right Ahead	U	C2:C		31	-	491	2015	45.7%	1.2	1075	-	-	-	0.5	3.5
6/1	circulatory Ahead	U	C2:F		22	-	345	2015	44.7%	6.2	772	-	-	-	2.0	20.8
6/2	circulatory Ahead	U	C2:F		22	-	245	2015	31.7%	4.3	772	-	-	-	1.3	19.4
6/3	circulatory Right Ahead	U	C2:F		22	-	21	2015	2.7%	0.3	772	-	-	-	0.1	16.9
7/1	circulatory Ahead Right	U	C2:B		19	-	203	2015	30.2%	1.0	672	-	-	-	0.7	11.9
7/2	circulatory Right	U	C2:B		19	-	252	2015	37.5%	1.3	672	-	-	-	0.9	12.4
8/1	Ahead	U	-		-	-	634	2015	31.5%	0.2	2015	-	-	-	0.2	1.3
9/1	Ahead	U	C2:G		31	-	491	1940	47.5%	0.9	1035	-	-	-	0.6	4.6
9/2	Ahead	U	C2:G		31	-	491	1940	47.5%	0.9	1035	-	-	-	0.6	4.6
14/1	circulatory Ahead	U	-		-	-	469	2015	23.3%	0.2	2015	-	-	-	0.2	1.2
14/2	circulatory Ahead	U	-		-	-	491	2015	24.4%	0.2	2015	-	-	-	0.2	1.2
14/3	circulatory Right	U	-		-	-	491	2015	24.4%	0.2	2015	-	-	-	0.2	1.2
14/4	circulatory Right	U	-		-	-	491	2015	24.4%	0.2	2015	-	-	-	0.2	1.2
		C1	Stream: 1 PRC for Signalled Lanes (%):	48.6				Total Delay for Signalled Lanes (pcuHr):		6.18		Cycle Time (s): 60				
		C1	Stream: 2 PRC for Signalled Lanes (%):	40.3				Total Delay for Signalled Lanes (pcuHr):		5.93		Cycle Time (s): 60				
		C1	Stream: 3 PRC for Signalled Lanes (%):	41.2				Total Delay for Signalled Lanes (pcuHr):		10.18		Cycle Time (s): 60				
		C1	Stream: 4 PRC for Signalled Lanes (%):	65.6				Total Delay for Signalled Lanes (pcuHr):		5.99		Cycle Time (s): 60				
		C2	Stream: 1 PRC for Signalled Lanes (%):	43.4				Total Delay for Signalled Lanes (pcuHr):		6.42		Cycle Time (s): 60				
		C2	Stream: 2 PRC for Signalled Lanes (%):	44.5				Total Delay for Signalled Lanes (pcuHr):		5.73		Cycle Time (s): 60				
		C2	Stream: 3 PRC for Signalled Lanes (%):	88.5				Total Delay for Signalled Lanes (pcuHr):		5.80		Cycle Time (s): 60				
			PRC Over All Lanes (%):	40.3				Total Delay Over All Lanes(pcuHr):		47.29						

Network Layout Diagram



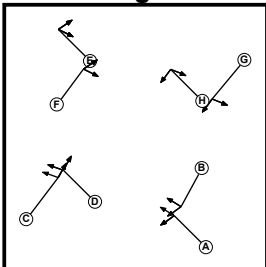
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	414	87	0	163	10	674
	B	500	0	963	0	137	240	1840
	C	0	287	0	0	51	314	652
	D	0	0	0	0	0	0	0
	E	512	236	189	0	0	758	1695
	F	2	61	210	0	645	0	918
	Tot.	1014	998	1449	0	996	1322	5779

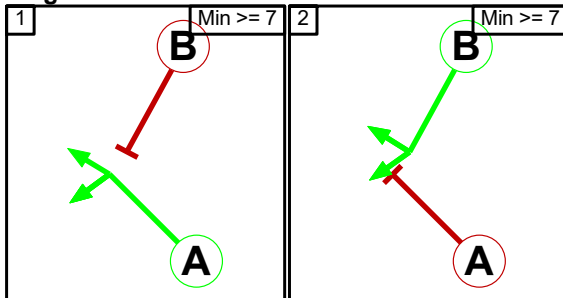
C1

Phase Diagram

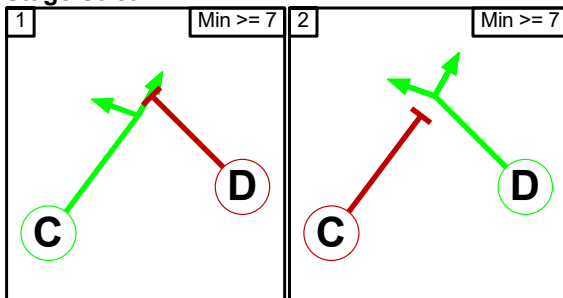


Stage Diagram

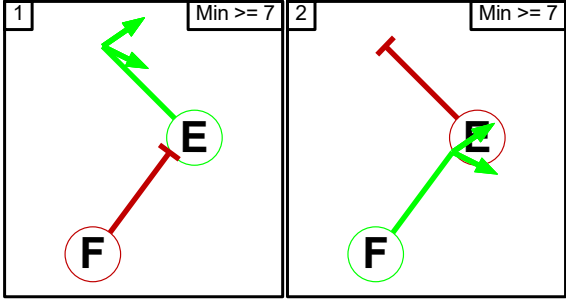
Stage Stream: 1



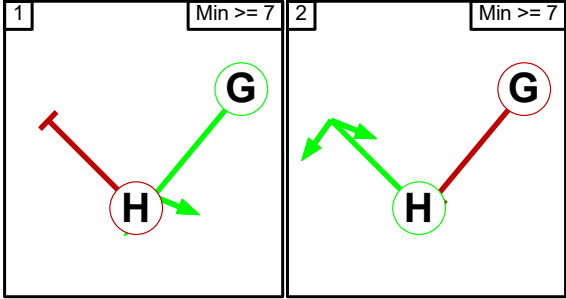
Stage Stream: 2



Stage Stream: 3



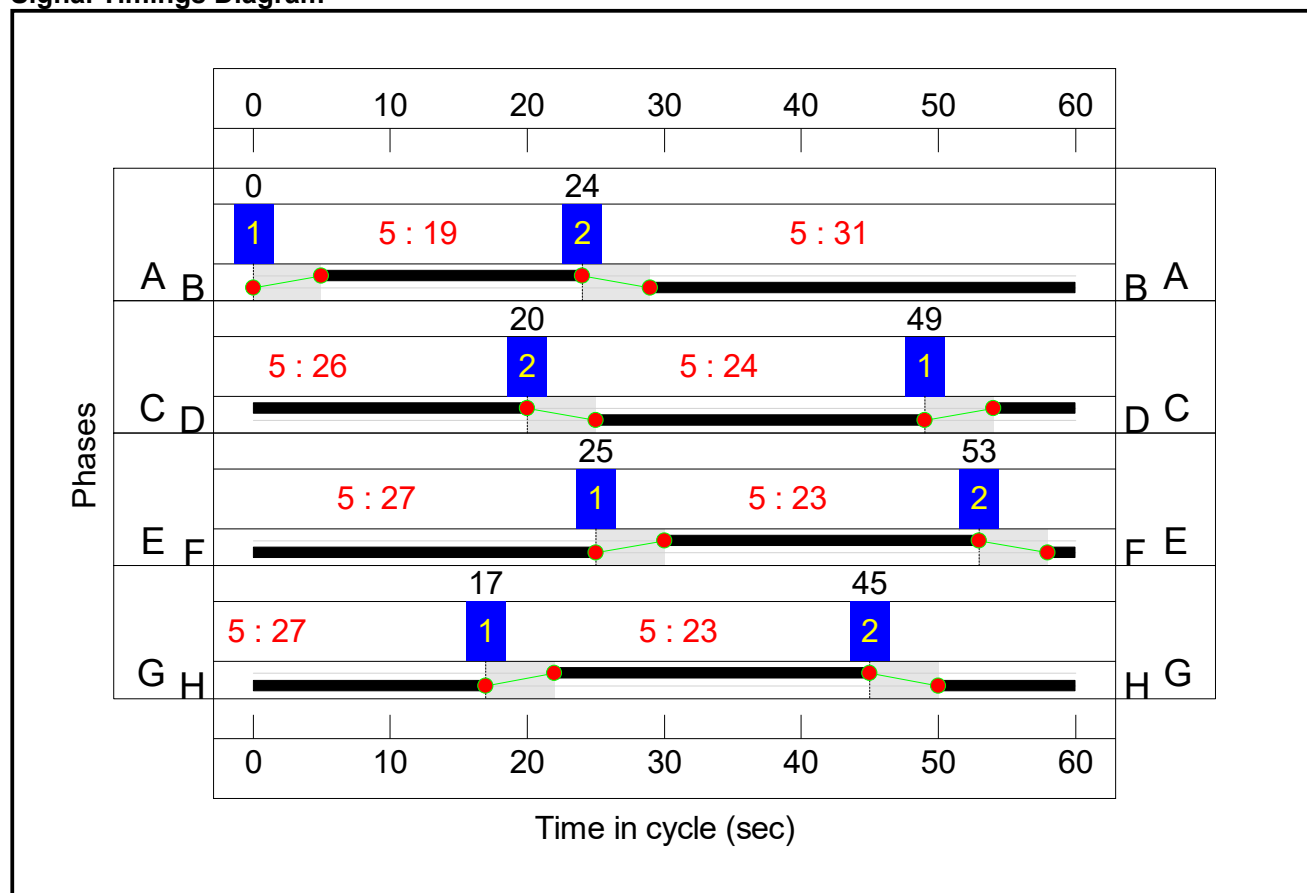
Stage Stream: 4



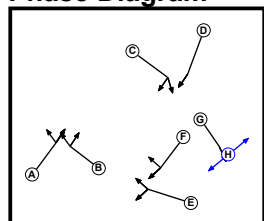
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

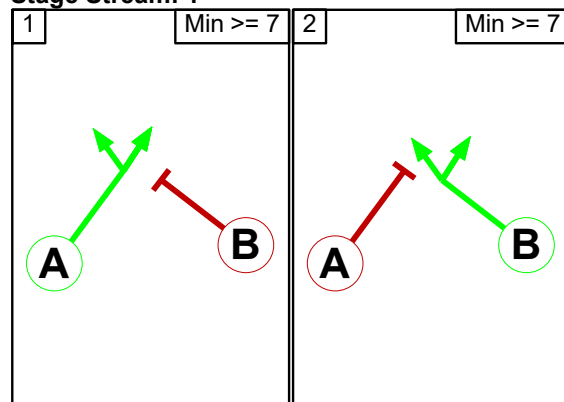
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



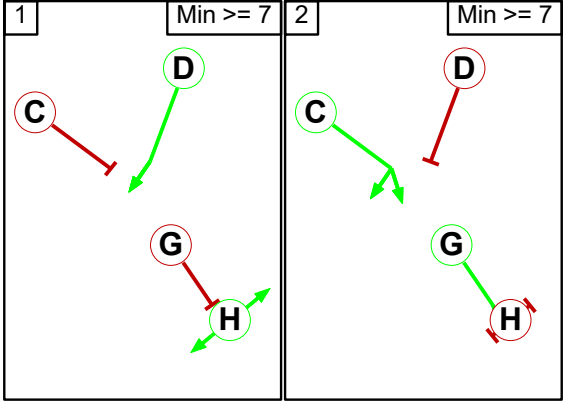
C2
Phase Diagram



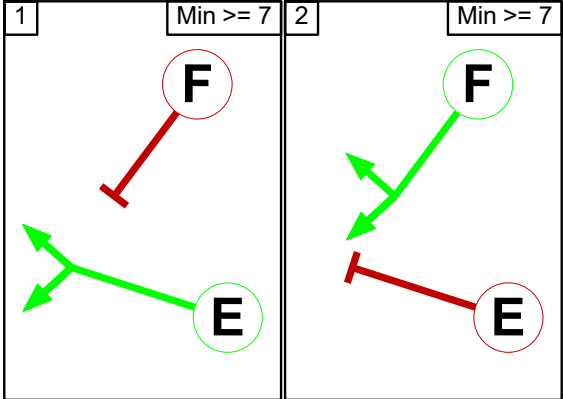
Stage Diagram
Stage Stream: 1



Stage Stream: 2



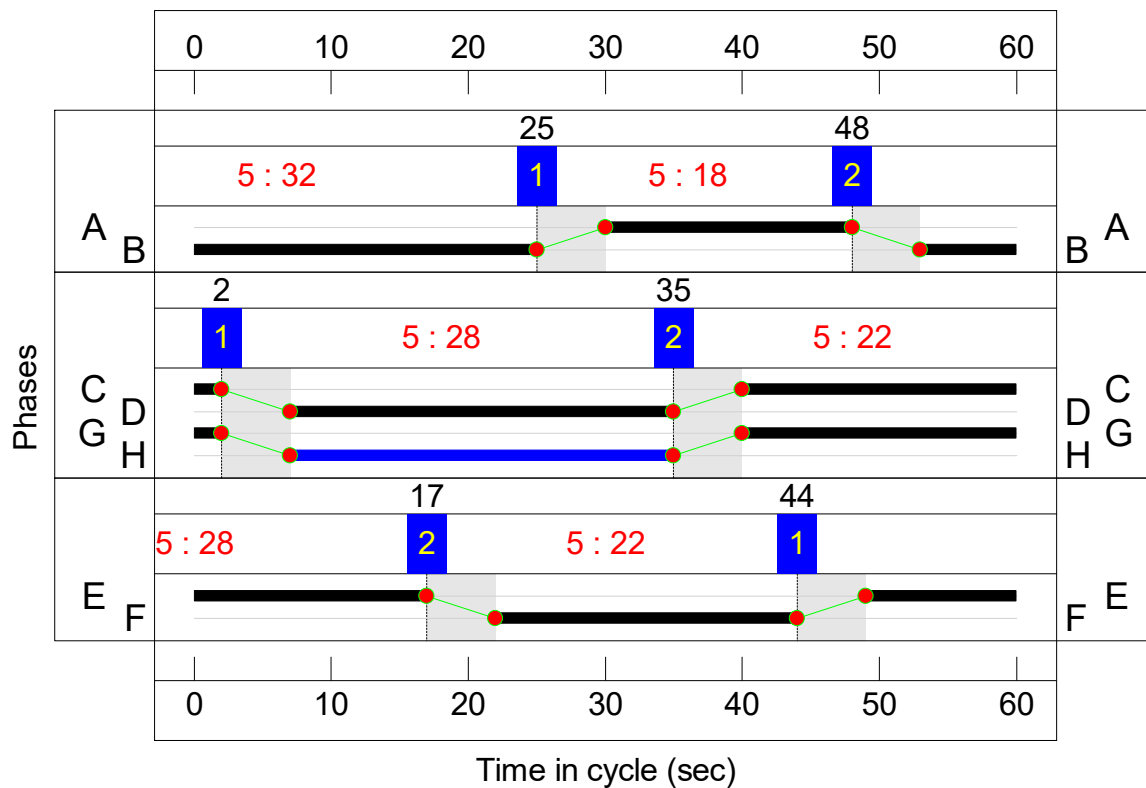
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

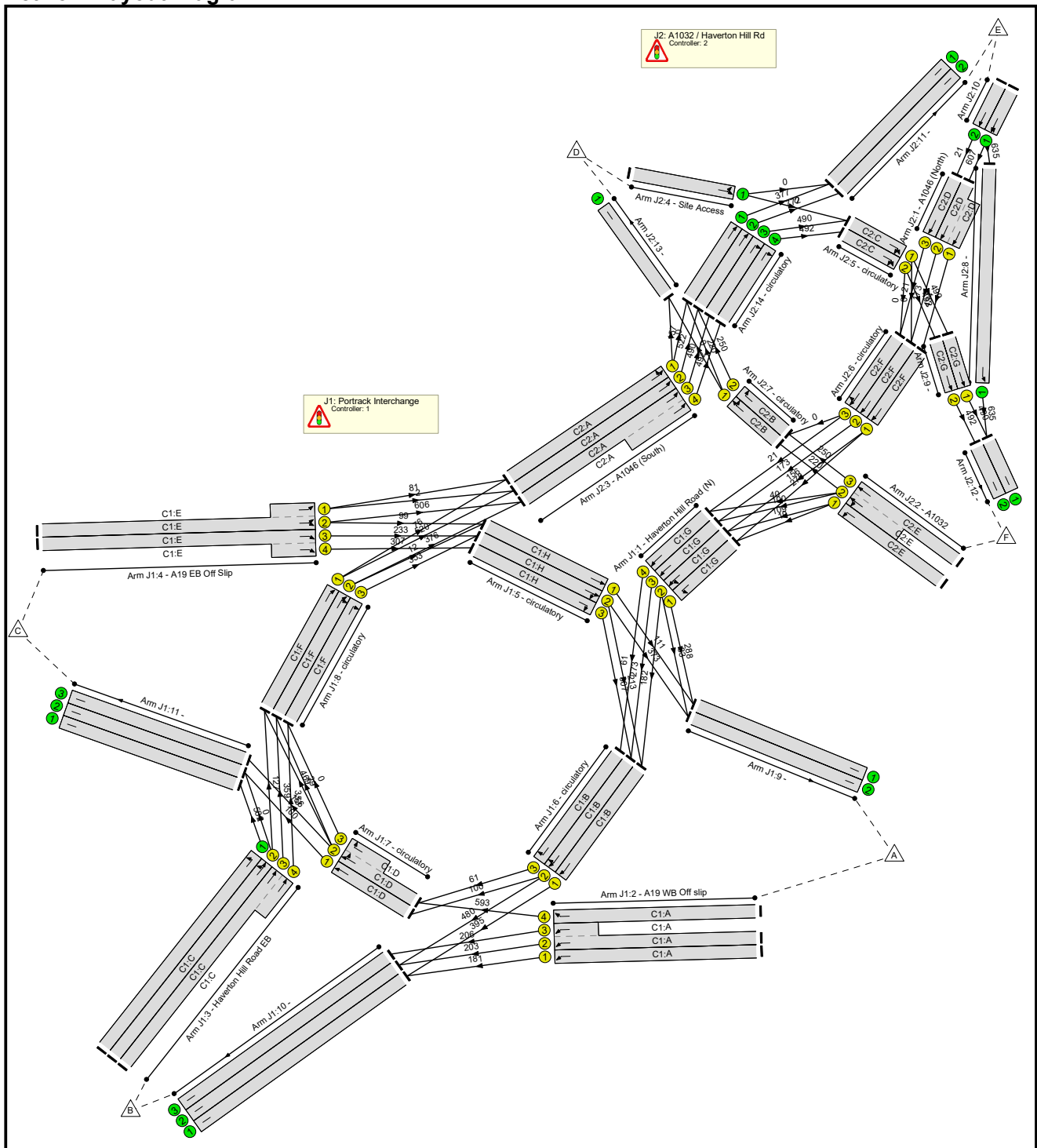
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	66.6%	-	-	0	0	0	39.5	-
J1: Portrack Interchange	-	-	-		-	-	-	-	64.0%	-	-	0	0	0	21.5	-
1/1	Haverton Hill Road (N) Left	U	C1:G		23	-	289	1995	36.2%	0.4	798	-	-	-	0.4	4.4
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		23	-	287	1995	36.0%	1.4	798	-	-	-	0.7	8.8
1/3	Haverton Hill Road (N) Ahead	U	C1:G		23	-	362	1995	45.4%	2.6	798	-	-	-	1.2	11.6
1/4	Haverton Hill Road (N) Ahead	U	C1:G		23	-	272	1995	34.1%	1.7	798	-	-	-	0.7	9.9
2/1	A19 WB Off slip Ahead	U	C1:A		19	-	100	1940	15.5%	1.3	647	-	-	-	0.5	17.4
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		19	-	314	1955:1985	32.8 : 32.8%	2.1	476+482	-	-	-	1.5	17.3
2/4	A19 WB Off slip Ahead	U	C1:A		19	-	260	2065	37.8%	3.6	688	-	-	-	1.4	19.5
3/1	Haverton Hill Road EB Left	U	-		-	-	963	2015	47.8%	0.5	2015	-	-	-	0.5	1.7
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		26	-	137	2065	14.7%	1.4	929	-	-	-	0.5	12.0
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		26	-	740	1995:2015	63.9 : 63.9%	5.4	624+533	-	-	-	3.2	15.4
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		23	-	365	1985:1985	43.2 : 43.2%	4.0	727+118	-	-	-	1.7	16.3
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		23	-	287	1975:1985	29.6 : 29.6%	2.2	359+612	-	-	-	1.1	14.4

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		27	-	159	2005	17.0%	0.7	936	-	-	-	0.4	8.2
5/2	circulatory Right Ahead	U	C1:H		27	-	447	2000	47.9%	3.4	933	-	-	-	1.4	11.3
5/3	circulatory Right	U	C1:H		27	-	181	2015	19.2%	2.9	940	-	-	-	0.7	13.9
6/1	circulatory Ahead	U	C1:B		31	-	168	1995	15.8%	1.4	1064	-	-	-	0.3	6.0
6/2	circulatory Right Ahead	U	C1:B		31	-	543	1995	51.0%	5.6	1064	-	-	-	0.9	5.6
6/3	circulatory Right	U	C1:B		31	-	272	1995	25.6%	1.5	1064	-	-	-	0.2	2.9
7/1	circulatory Ahead	U	C1:D		24	-	127	1980	15.4%	0.1	825	-	-	-	0.1	2.6
7/2+7/3	circulatory Right Ahead	U	C1:D		24	-	532	1995:2015	64.0 : 0.0%	5.9	831+0	-	-	-	2.1	14.0
8/1	circulatory Ahead	U	C1:F		27	-	300	1995	32.2%	4.4	931	-	-	-	1.5	18.0
8/2	circulatory Ahead Right	U	C1:F		27	-	409	2015	43.5%	0.6	940	-	-	-	0.5	4.4
8/3	circulatory Right	U	C1:F		27	-	341	2075	35.2%	0.3	968	-	-	-	0.3	3.3
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	66.6%	-	-	0	0	0	17.9	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		28	-	748	1965:1965	65.8 : 65.8%	6.8	357+779	-	-	-	3.1	14.9
1/3	A1046 (North) Ahead	U	C2:D		28	-	189	1965	19.9%	1.9	950	-	-	-	0.6	11.2
2/1	A1032 Left	U	C2:E		28	-	63	1940	6.7%	0.6	938	-	-	-	0.2	10.3
2/3+2/2	A1032 Ahead Left	U	C2:E		28	-	855	1940:1940	66.6 : 66.6%	6.2	581+703	-	-	-	3.4	14.5
3/1	A1046 (South) Left Ahead	U	C2:A		18	-	203	2015	31.8%	3.2	638	-	-	-	1.3	22.2
3/2	A1046 (South) Ahead	U	C2:A		18	-	148	2015	23.2%	2.5	638	-	-	-	1.1	26.3
3/3+3/4	A1046 (South) Ahead	U	C2:A		18	-	564	2015:2015	50.3 : 50.3%	3.2	565+557	-	-	-	2.5	15.6

4/1	Site Access Ahead Left	U	-	-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C	22	-	284	2015	36.8%	0.9	772	-	-	-	0.3	3.9
5/2	circulatory Right Ahead	U	C2:C	22	-	280	2015	36.2%	0.9	772	-	-	-	0.3	3.9
6/1	circulatory Ahead	U	C2:F	22	-	513	2015	66.4%	8.6	772	-	-	-	2.1	14.6
6/2	circulatory Ahead	U	C2:F	22	-	235	2015	30.4%	3.2	772	-	-	-	0.6	9.9
6/3	circulatory Right Ahead	U	C2:F	22	-	189	2015	24.5%	2.5	772	-	-	-	0.5	9.5
7/1	circulatory Ahead Right	U	C2:B	32	-	258	2015	23.3%	0.2	1108	-	-	-	0.2	2.2
7/2	circulatory Right	U	C2:B	32	-	387	2015	34.9%	0.3	1108	-	-	-	0.3	2.6
8/1	Ahead	U	-	-	-	758	2015	37.6%	0.3	2015	-	-	-	0.3	1.4
9/1	Ahead	U	C2:G	22	-	284	1940	38.2%	0.5	744	-	-	-	0.4	5.1
9/2	Ahead	U	C2:G	22	-	280	1940	37.7%	0.5	744	-	-	-	0.4	5.0
14/1	circulatory Ahead	U	-	-	-	461	2015	22.9%	0.1	2015	-	-	-	0.1	1.2
14/2	circulatory Ahead	U	-	-	-	535	2015	26.6%	0.2	2015	-	-	-	0.2	1.2
14/3	circulatory Right	U	-	-	-	284	2015	14.1%	0.1	2015	-	-	-	0.1	1.0
14/4	circulatory Right	U	-	-	-	280	2015	13.9%	0.1	2015	-	-	-	0.1	1.0
		C1	Stream: 1 PRC for Signalled Lanes (%):			76.4	Total Delay for Signalled Lanes (pcuHr):			4.74	Cycle Time (s):			60	
		C1	Stream: 2 PRC for Signalled Lanes (%):			40.6	Total Delay for Signalled Lanes (pcuHr):			5.80	Cycle Time (s):			60	
		C1	Stream: 3 PRC for Signalled Lanes (%):			106.9	Total Delay for Signalled Lanes (pcuHr):			5.11	Cycle Time (s):			60	
		C1	Stream: 4 PRC for Signalled Lanes (%):			87.9	Total Delay for Signalled Lanes (pcuHr):			5.43	Cycle Time (s):			60	
		C2	Stream: 1 PRC for Signalled Lanes (%):			78.9	Total Delay for Signalled Lanes (pcuHr):			5.22	Cycle Time (s):			60	
		C2	Stream: 2 PRC for Signalled Lanes (%):			36.7	Total Delay for Signalled Lanes (pcuHr):			5.09	Cycle Time (s):			60	
		C2	Stream: 3 PRC for Signalled Lanes (%):			35.2	Total Delay for Signalled Lanes (pcuHr):			6.84	Cycle Time (s):			60	
			PRC Over All Lanes (%):			35.2	Total Delay Over All Lanes(pcuHr):			39.48					

Network Layout Diagram



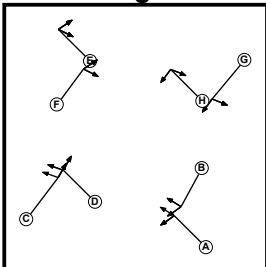
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	590	95	0	469	29	1183
	B	365	0	582	0	127	347	1421
	C	119	520	0	0	83	606	1328
	D	0	0	0	0	0	0	0
	E	348	259	21	0	0	635	1263
	F	23	96	140	0	470	0	729
	Tot.	855	1465	838	0	1149	1617	5924

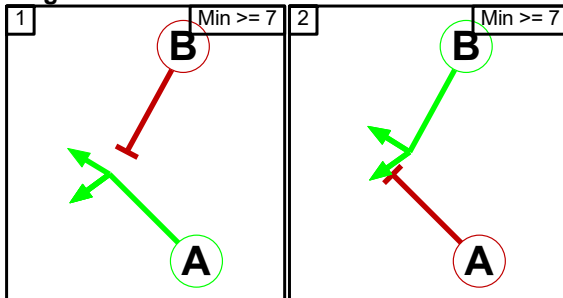
C1

Phase Diagram

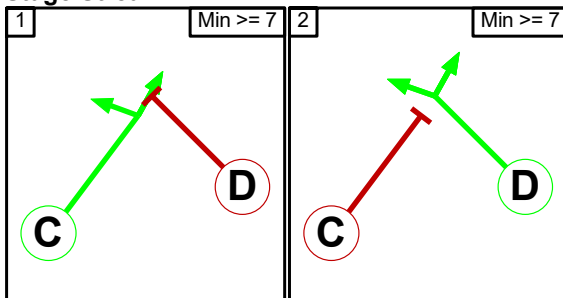


Stage Diagram

Stage Stream: 1

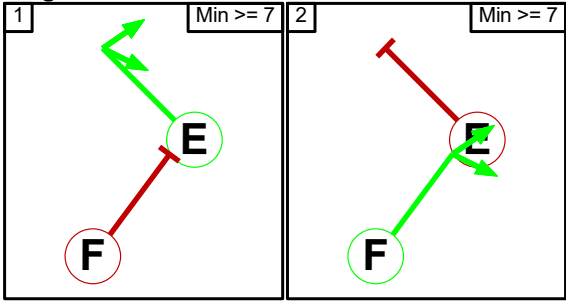


Stage Stream: 2

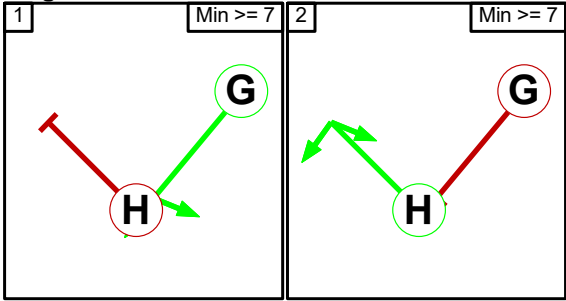


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3

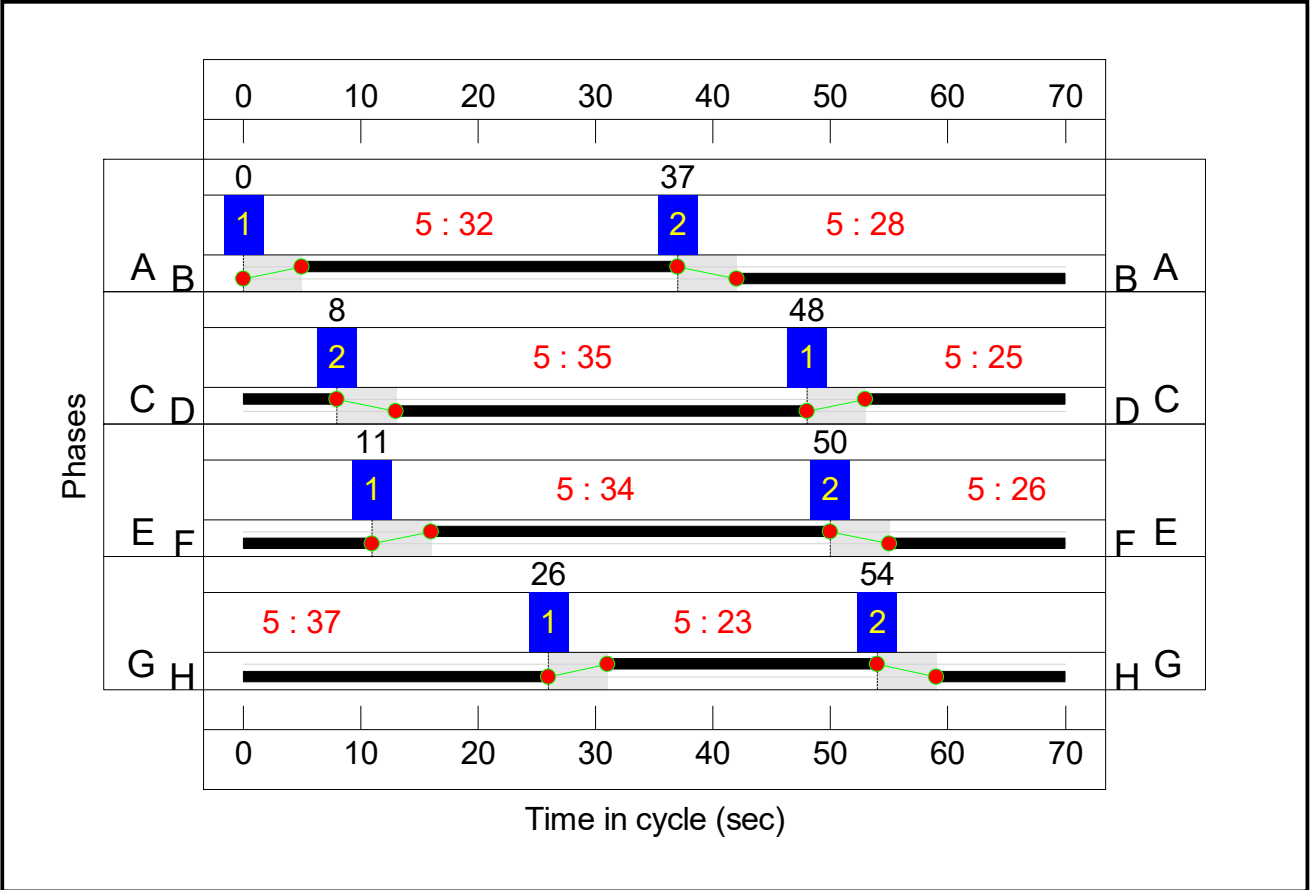


Stage Stream: 4

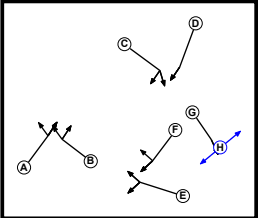


Phase Intergreens Matrix

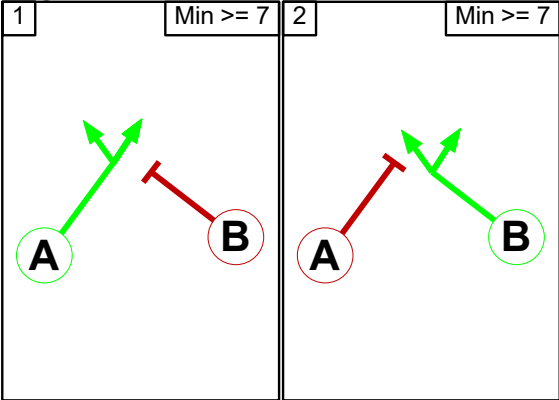
Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-



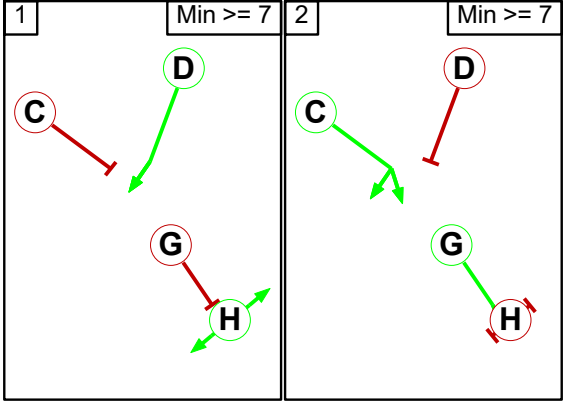
C2
Phase Diagram



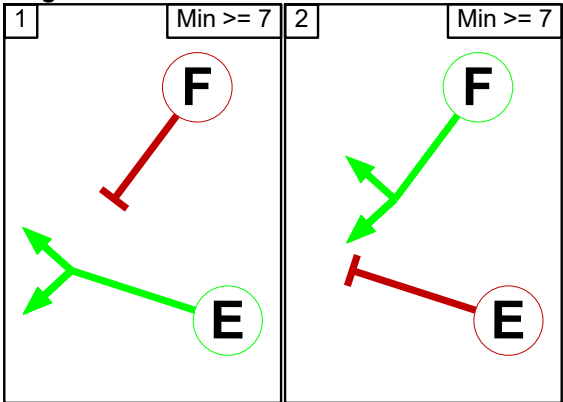
Stage Diagram
Stage Stream: 1



Stage Stream: 2



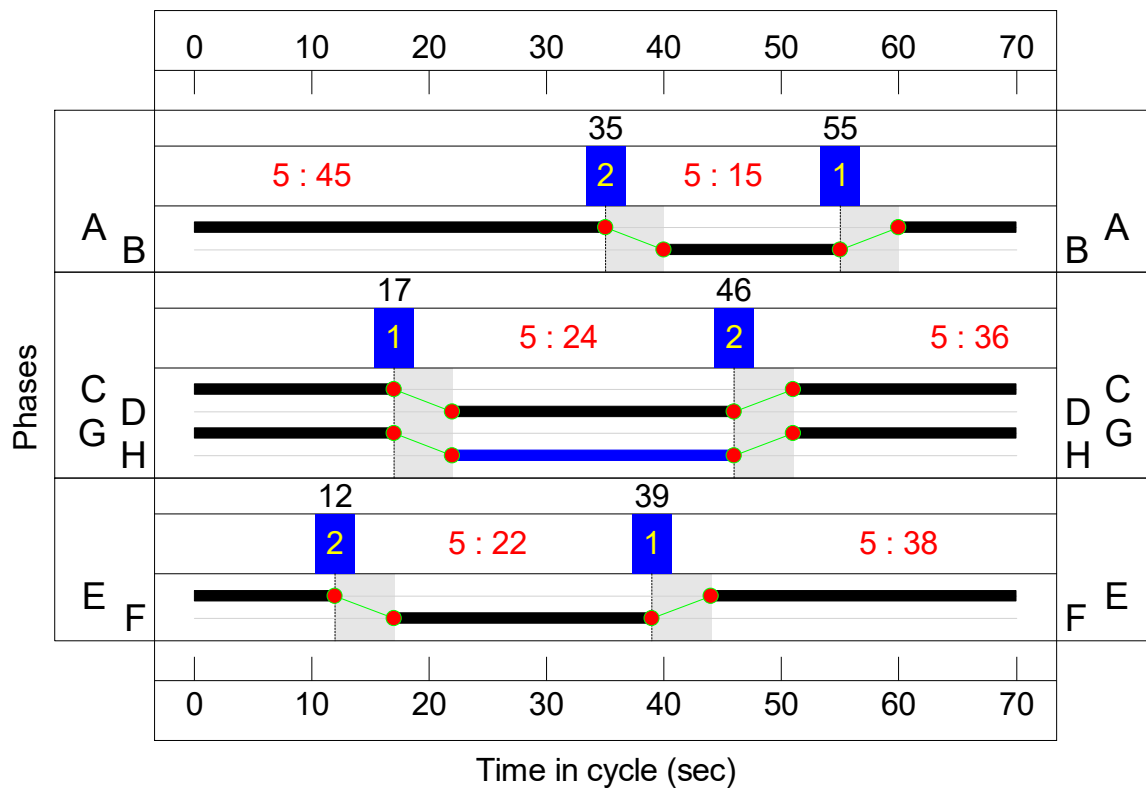
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

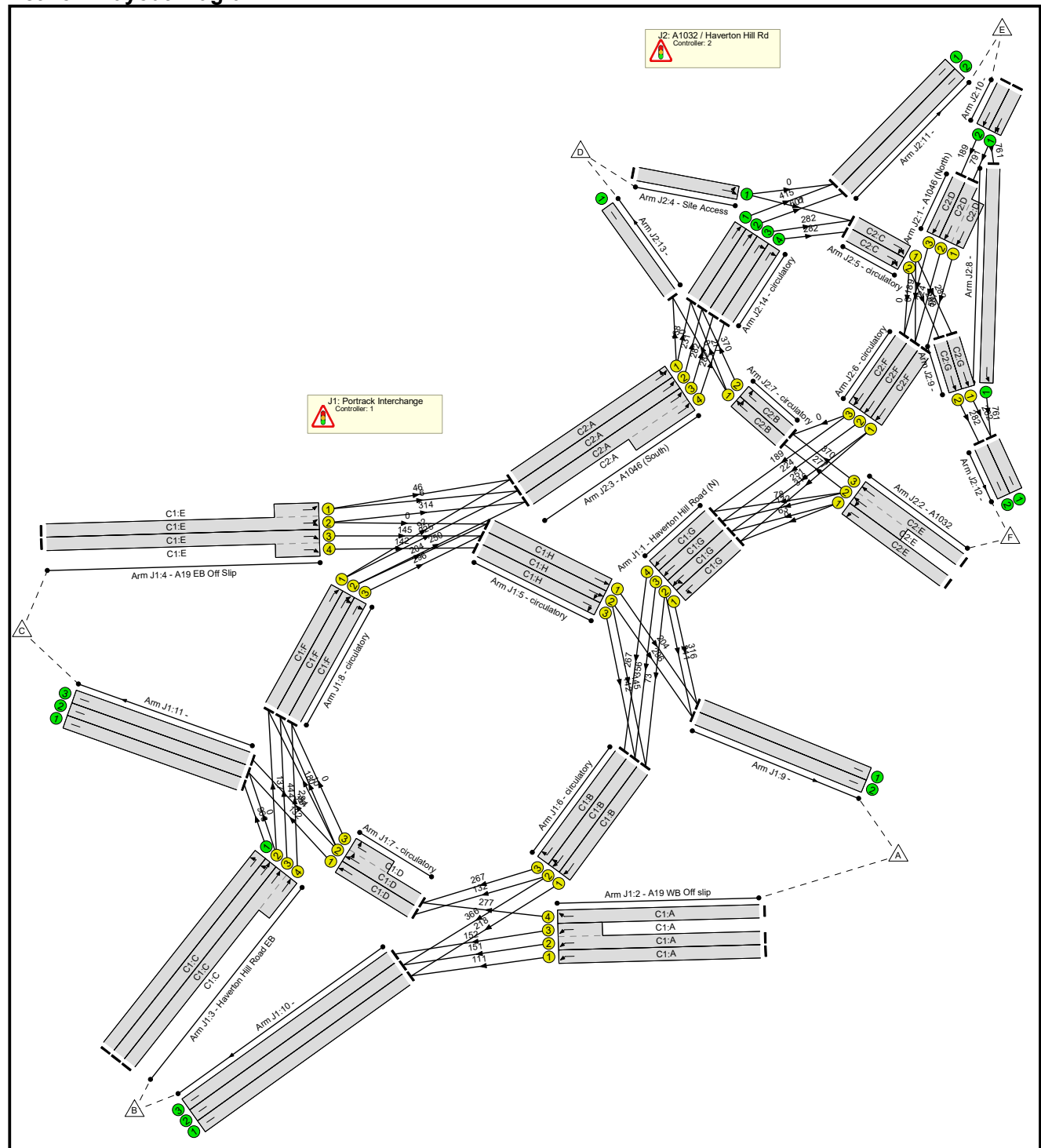
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	77.5%	-	-	0	0	0	57.7	-
J1: Portrack Interchange	-	-	-		-	-	-	-	77.5%	-	-	0	0	0	36.8	-
1/1	Haverton Hill Road (N) Left	U	C1:G		23	-	288	1995	42.1%	2.2	684	-	-	-	0.6	6.9
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		23	-	265	1995	38.7%	2.4	684	-	-	-	0.9	11.8
1/3	Haverton Hill Road (N) Ahead	U	C1:G		23	-	273	1995	39.9%	4.0	684	-	-	-	1.0	13.0
1/4	Haverton Hill Road (N) Ahead	U	C1:G		23	-	61	1995	8.9%	0.7	684	-	-	-	0.3	15.4
2/1	A19 WB Off slip Ahead	U	C1:A		32	-	181	1940	19.8%	2.1	915	-	-	-	0.7	13.2
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		32	-	409	1955:1985	34.5 : 34.5%	2.6	589+597	-	-	-	1.5	13.2
2/4	A19 WB Off slip Ahead	U	C1:A		32	-	593	2065	60.9%	9.2	974	-	-	-	3.0	18.4
3/1	Haverton Hill Road EB Left	U	-		-	-	582	2015	28.9%	0.2	2015	-	-	-	0.2	1.3
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		25	-	127	2065	16.6%	1.7	767	-	-	-	0.6	17.6
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		25	-	712	1995:2015	71.4 : 71.4%	7.2	503+494	-	-	-	4.6	23.1
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		34	-	788	1985:1985	76.9 : 76.9%	13.3	917+108	-	-	-	4.6	21.2
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		34	-	540	1975:1985	45.5 : 45.5%	3.9	513+675	-	-	-	1.9	12.9

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		37	-	111	2005	10.2%	1.5	1088	-	-	-	0.5	16.9
5/2	circulatory Right Ahead	U	C1:H		37	-	586	2000	54.0%	3.5	1086	-	-	-	1.2	7.4
5/3	circulatory Right	U	C1:H		37	-	307	2015	28.1%	3.2	1094	-	-	-	1.1	13.3
6/1	circulatory Ahead	U	C1:B		28	-	395	1995	47.8%	5.2	826	-	-	-	1.3	11.5
6/2	circulatory Right Ahead	U	C1:B		28	-	580	1995	70.2%	9.1	826	-	-	-	2.6	16.4
6/3	circulatory Right	U	C1:B		28	-	61	1995	7.4%	0.8	826	-	-	-	0.1	5.9
7/1	circulatory Ahead	U	C1:D		35	-	100	1980	9.8%	2.0	1018	-	-	-	0.8	28.4
7/2+7/3	circulatory Right Ahead	U	C1:D		35	-	654	1995:2015	63.7 : 0.0%	11.5	1026+0	-	-	-	1.5	8.5
8/1	circulatory Ahead	U	C1:F		26	-	596	1995	77.5%	13.0	770	-	-	-	6.4	38.6
8/2	circulatory Ahead Right	U	C1:F		26	-	388	2015	49.9%	1.3	777	-	-	-	0.8	7.8
8/3	circulatory Right	U	C1:F		26	-	353	2075	44.1%	0.6	800	-	-	-	0.5	5.4
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	72.2%	-	-	0	0	0	20.9	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		24	-	607	1965:1965	72.2 : 72.2%	8.2	240+601	-	-	-	4.3	25.4
1/3	A1046 (North) Ahead	U	C2:D		24	-	21	1965	3.0%	0.3	702	-	-	-	0.1	17.4
2/1	A1032 Left	U	C2:E		38	-	119	1940	11.0%	1.2	1081	-	-	-	0.3	9.2
2/3+2/2	A1032 Ahead Left	U	C2:E		38	-	610	1940:1940	45.8 : 45.8%	4.2	545+785	-	-	-	1.8	10.7
3/1	A1046 (South) Left Ahead	U	C2:A		45	-	157	2015	11.9%	0.8	1324	-	-	-	0.2	5.3
3/2	A1046 (South) Ahead	U	C2:A		45	-	522	2015	39.4%	0.5	1324	-	-	-	0.3	2.3
3/3+3/4	A1046 (South) Ahead	U	C2:A		45	-	982	2015:2015	56.4 : 56.4%	4.3	869+873	-	-	-	2.1	7.7

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		36	-	490	2015	46.0%	4.3	1065	-	-	-	1.4	10.1
5/2	circulatory Right Ahead	U	C2:C		36	-	492	2015	46.2%	4.2	1065	-	-	-	1.4	10.1
6/1	circulatory Ahead	U	C2:F		22	-	434	2015	65.6%	2.8	662	-	-	-	2.1	17.0
6/2	circulatory Ahead	U	C2:F		22	-	173	2015	26.1%	0.8	662	-	-	-	0.5	11.0
6/3	circulatory Right Ahead	U	C2:F		22	-	21	2015	3.2%	0.1	662	-	-	-	0.1	10.1
7/1	circulatory Ahead Right	U	C2:B		15	-	220	2015	47.8%	2.7	461	-	-	-	1.8	28.7
7/2	circulatory Right	U	C2:B		15	-	250	2015	54.3%	2.9	461	-	-	-	1.9	28.0
8/1	Ahead	U	-		-	-	635	2015	31.5%	0.2	2015	-	-	-	0.2	1.3
9/1	Ahead	U	C2:G		36	-	490	1940	47.8%	1.3	1025	-	-	-	0.8	6.0
9/2	Ahead	U	C2:G		36	-	492	1940	48.0%	1.3	1025	-	-	-	0.8	6.0
14/1	circulatory Ahead	U	-		-	-	377	2015	18.7%	0.1	2015	-	-	-	0.1	1.1
14/2	circulatory Ahead	U	-		-	-	772	2015	38.3%	0.3	2015	-	-	-	0.3	1.4
14/3	circulatory Right	U	-		-	-	490	2015	24.3%	0.2	2015	-	-	-	0.2	1.2
14/4	circulatory Right	U	-		-	-	492	2015	24.4%	0.2	2015	-	-	-	0.2	1.2
		C1	Stream: 1 PRC for Signalled Lanes (%):		28.2		Total Delay for Signalled Lanes (pcuHr):		9.21		Cycle Time (s):	70				
		C1	Stream: 2 PRC for Signalled Lanes (%):		26.0		Total Delay for Signalled Lanes (pcuHr):		7.52		Cycle Time (s):	70				
		C1	Stream: 3 PRC for Signalled Lanes (%):		16.2		Total Delay for Signalled Lanes (pcuHr):		14.34		Cycle Time (s):	70				
		C1	Stream: 4 PRC for Signalled Lanes (%):		66.7		Total Delay for Signalled Lanes (pcuHr):		5.53		Cycle Time (s):	70				
		C2	Stream: 1 PRC for Signalled Lanes (%):		59.7		Total Delay for Signalled Lanes (pcuHr):		6.36		Cycle Time (s):	70				
		C2	Stream: 2 PRC for Signalled Lanes (%):		24.6		Total Delay for Signalled Lanes (pcuHr):		8.78		Cycle Time (s):	70				
		C2	Stream: 3 PRC for Signalled Lanes (%):		37.3		Total Delay for Signalled Lanes (pcuHr):		4.76		Cycle Time (s):	70				
			PRC Over All Lanes (%):		16.2		Total Delay Over All Lanes(pcuHr):		57.68							

Network Layout Diagram



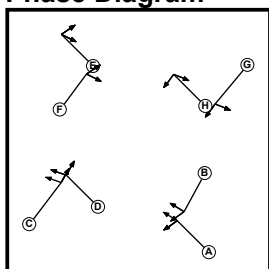
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	414	87	0	180	10	691
	B	500	0	963	0	137	240	1840
	C	0	287	0	0	52	314	653
	D	0	0	0	0	0	0	0
	E	555	236	189	0	0	761	1741
	F	2	61	210	0	647	0	920
	Tot.	1057	998	1449	0	1016	1325	5845

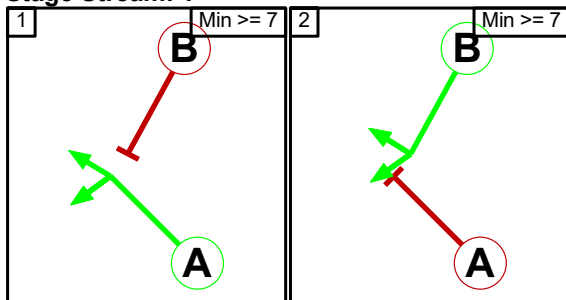
C1

Phase Diagram

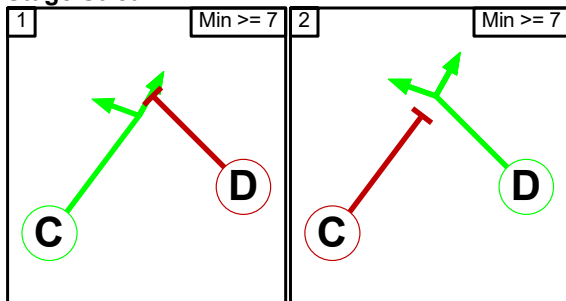


Stage Diagram

Stage Stream: 1

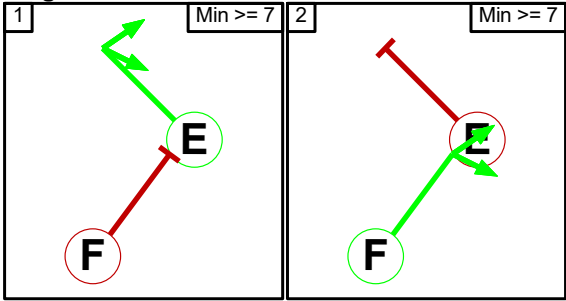


Stage Stream: 2

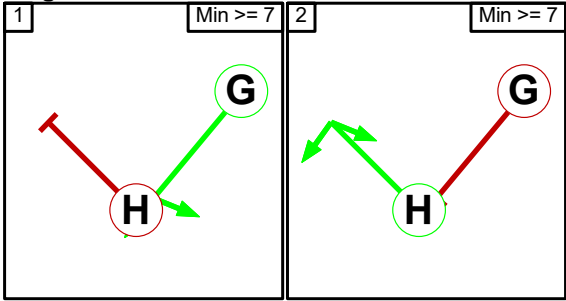


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3

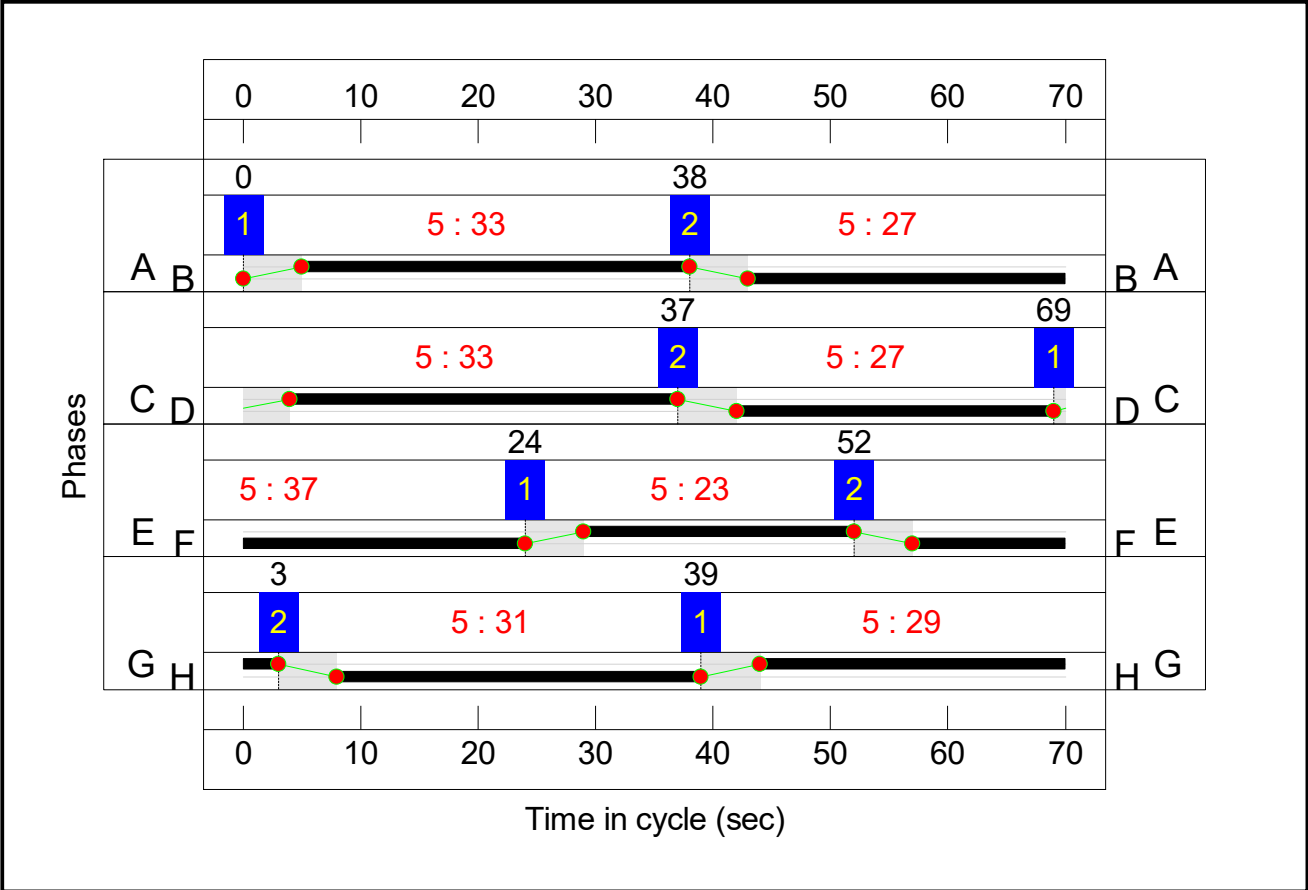


Stage Stream: 4

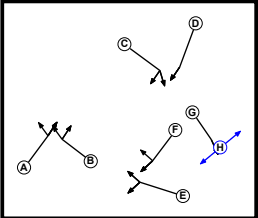


Phase Intergreens Matrix

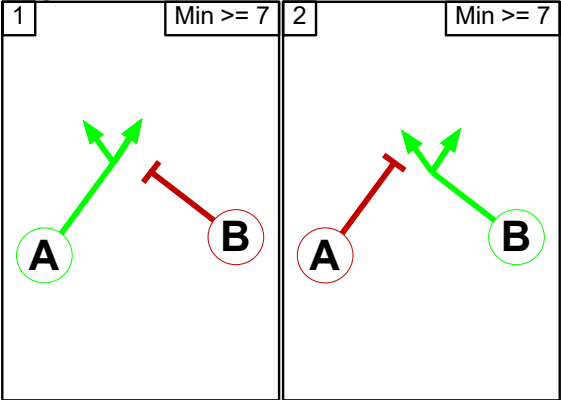
Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-



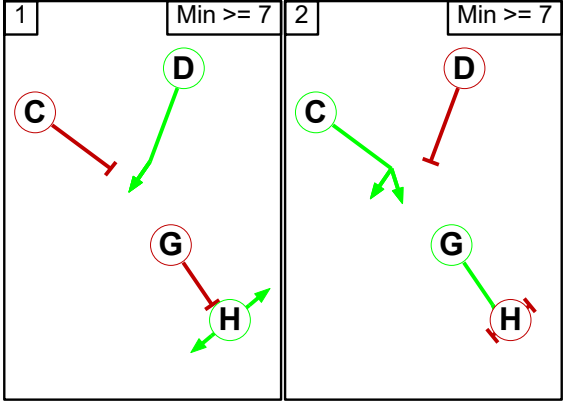
C2
Phase Diagram



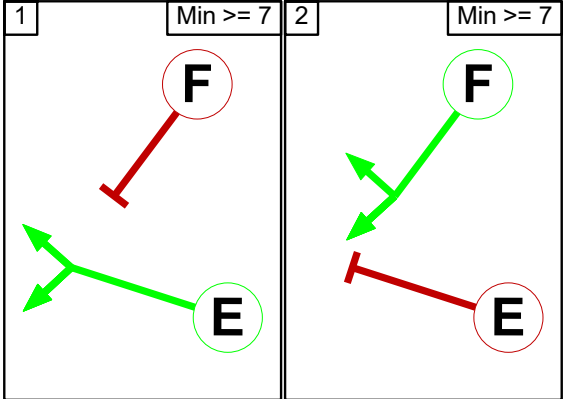
Stage Diagram
Stage Stream: 1



Stage Stream: 2



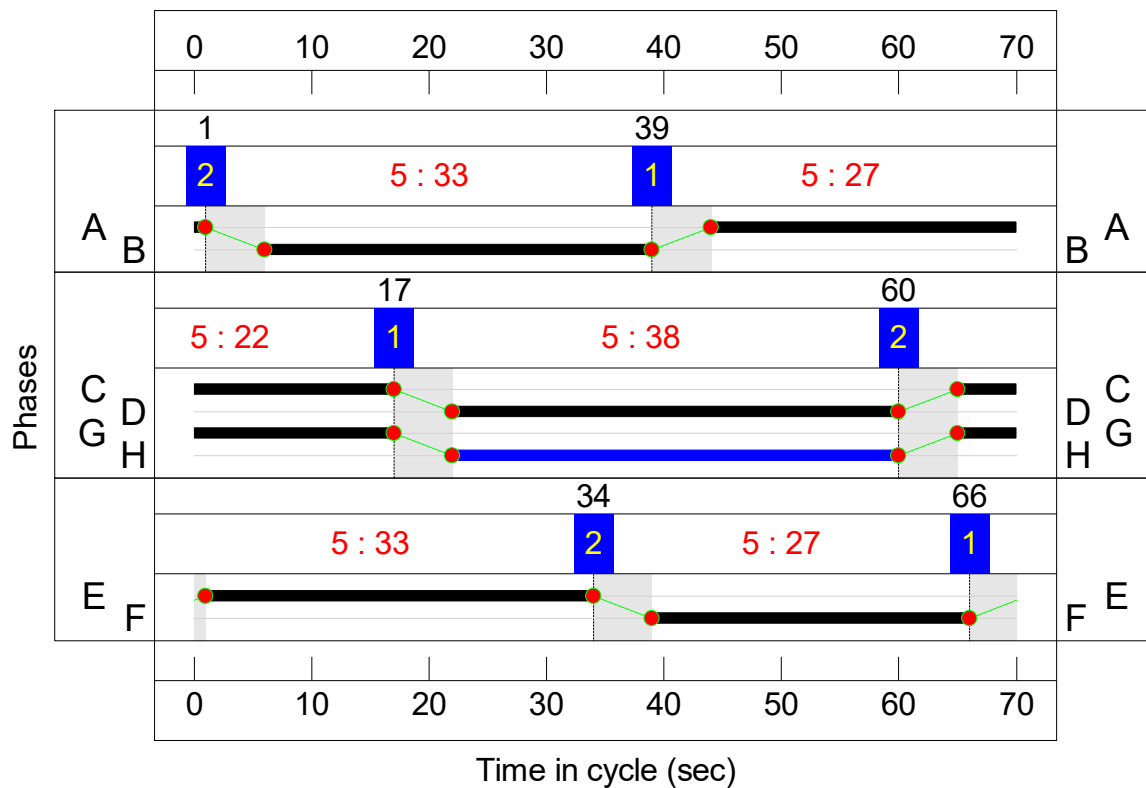
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

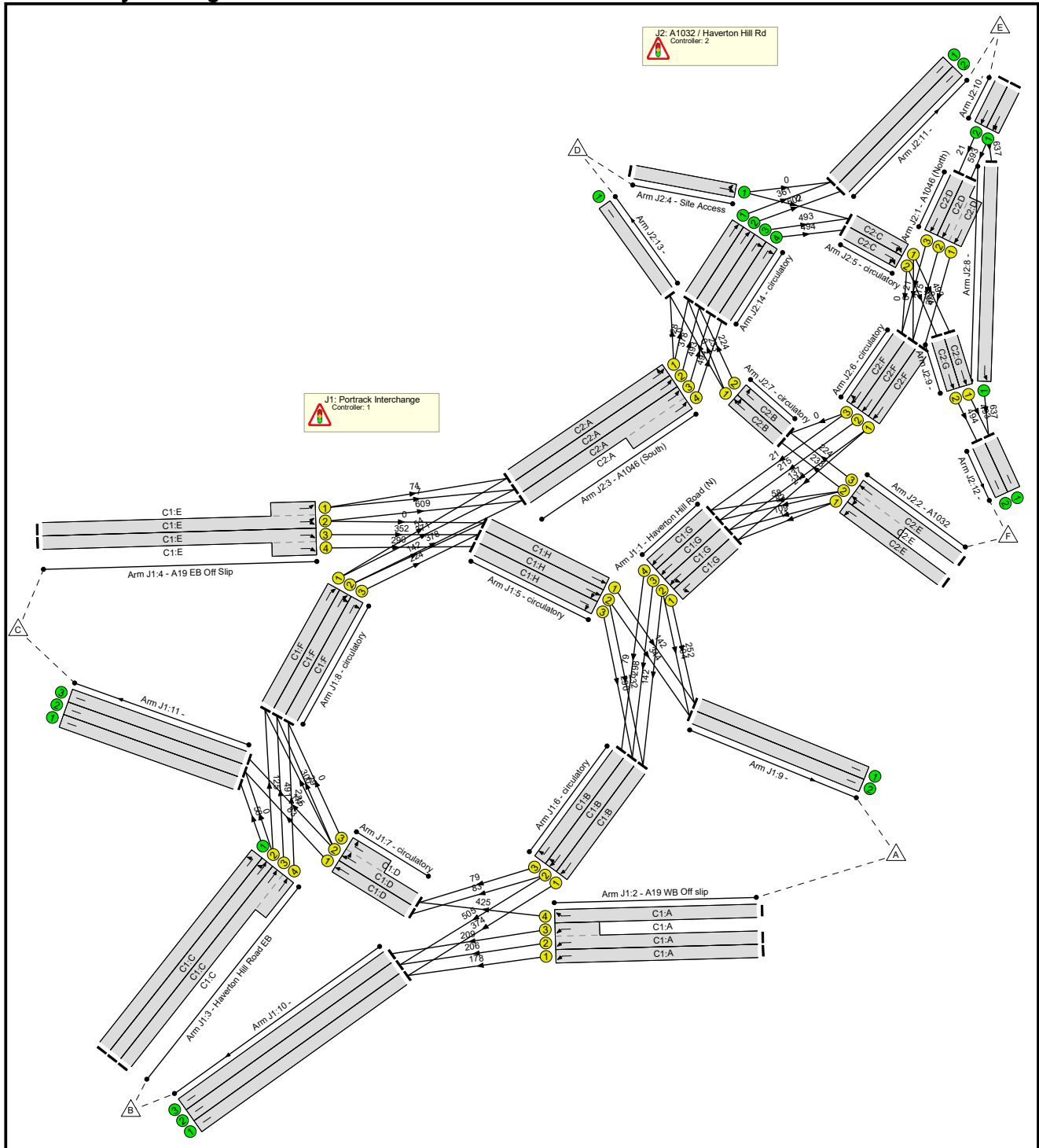
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	70.5%	-	-	0	0	0	44.3	-
J1: Portrack Interchange	-	-	-		-	-	-	-	68.2%	-	-	0	0	0	25.0	-
1/1	Haverton Hill Road (N) Left	U	C1:G		29	-	316	1995	37.0%	0.4	855	-	-	-	0.3	3.5
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		29	-	314	1995	36.7%	2.2	855	-	-	-	0.8	9.6
1/3	Haverton Hill Road (N) Ahead	U	C1:G		29	-	356	1995	41.6%	6.2	855	-	-	-	1.6	16.2
1/4	Haverton Hill Road (N) Ahead	U	C1:G		29	-	267	1995	31.2%	4.3	855	-	-	-	0.9	12.4
2/1	A19 WB Off slip Ahead	U	C1:A		33	-	111	1940	11.8%	1.2	942	-	-	-	0.4	12.0
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		33	-	303	1955:1985	24.9 : 24.9%	1.8	606+610	-	-	-	1.0	12.0
2/4	A19 WB Off slip Ahead	U	C1:A		33	-	277	2065	27.6%	3.3	1003	-	-	-	1.0	13.2
3/1	Haverton Hill Road EB Left	U	-		-	-	963	2015	47.8%	0.5	2015	-	-	-	0.5	1.7
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		33	-	137	2065	13.7%	1.5	1003	-	-	-	0.5	12.0
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		33	-	740	1995:2015	64.7 : 64.7%	7.4	686+458	-	-	-	3.3	16.0
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		23	-	366	1985:1985	50.5 : 50.5%	5.2	622+103	-	-	-	2.3	22.6
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		23	-	287	1975:1985	30.8 : 30.8%	2.2	471+462	-	-	-	1.5	19.1

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		31	-	204	2005	22.3%	1.2	917	-	-	-	0.4	6.4
5/2	circulatory Right Ahead	U	C1:H		31	-	441	2000	48.2%	2.8	914	-	-	-	1.2	9.8
5/3	circulatory Right	U	C1:H		31	-	142	2015	15.4%	0.9	921	-	-	-	0.4	11.4
6/1	circulatory Ahead	U	C1:B		27	-	218	1995	27.3%	3.0	798	-	-	-	0.7	11.5
6/2	circulatory Right Ahead	U	C1:B		27	-	498	1995	62.4%	3.9	798	-	-	-	1.5	11.0
6/3	circulatory Right	U	C1:B		27	-	267	1995	33.5%	0.5	798	-	-	-	0.4	5.6
7/1	circulatory Ahead	U	C1:D		27	-	132	1980	16.7%	0.1	792	-	-	-	0.1	2.8
7/2+7/3	circulatory Right Ahead	U	C1:D		27	-	544	1995:2015	68.2 : 0.0%	7.1	798+0	-	-	-	3.4	22.4
8/1	circulatory Ahead	U	C1:F		37	-	317	1995	29.3%	4.4	1083	-	-	-	0.9	9.9
8/2	circulatory Ahead Right	U	C1:F		37	-	454	2015	41.5%	2.8	1094	-	-	-	1.2	9.4
8/3	circulatory Right	U	C1:F		37	-	296	2075	26.3%	1.7	1126	-	-	-	0.7	8.5
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	70.5%	-	-	0	0	0	19.3	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		38	-	791	1965:1965	64.2 : 64.2%	7.7	349+883	-	-	-	2.9	13.2
1/3	A1046 (North) Ahead	U	C2:D		38	-	189	1965	17.3%	1.9	1095	-	-	-	0.5	9.6
2/1	A1032 Left	U	C2:E		33	-	63	1940	6.7%	0.7	942	-	-	-	0.2	11.6
2/3+2/2	A1032 Ahead Left	U	C2:E		33	-	857	1940:1940	70.5 : 70.5%	7.7	525+691	-	-	-	4.0	17.0
3/1	A1046 (South) Left Ahead	U	C2:A		27	-	138	2015	17.1%	2.2	806	-	-	-	0.7	18.4
3/2	A1046 (South) Ahead	U	C2:A		27	-	231	2015	28.7%	1.1	806	-	-	-	0.5	8.4
3/3+3/4	A1046 (South) Ahead	U	C2:A		27	-	564	2015:2015	46.0 : 46.0%	4.9	613+613	-	-	-	2.3	14.8

4/1	Site Access Ahead Left	U	-	-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C	22	-	282	2015	42.6%	5.2	662	-	-	-	1.1	13.5
5/2	circulatory Right Ahead	U	C2:C	22	-	282	2015	42.6%	5.2	662	-	-	-	1.1	13.4
6/1	circulatory Ahead	U	C2:F	27	-	567	2015	70.3%	10.5	806	-	-	-	2.6	16.3
6/2	circulatory Ahead	U	C2:F	27	-	224	2015	27.8%	3.2	806	-	-	-	0.6	10.3
6/3	circulatory Right Ahead	U	C2:F	27	-	189	2015	23.4%	2.6	806	-	-	-	0.5	10.0
7/1	circulatory Ahead Right	U	C2:B	33	-	277	2015	28.3%	0.4	979	-	-	-	0.2	3.0
7/2	circulatory Right	U	C2:B	33	-	370	2015	37.8%	1.0	979	-	-	-	0.3	3.4
8/1	Ahead	U	-	-	-	761	2015	37.8%	0.3	2015	-	-	-	0.3	1.4
9/1	Ahead	U	C2:G	22	-	282	1940	44.2%	1.5	637	-	-	-	0.4	5.4
9/2	Ahead	U	C2:G	22	-	282	1940	44.2%	1.5	637	-	-	-	0.4	5.4
14/1	circulatory Ahead	U	-	-	-	415	2015	20.6%	0.1	2015	-	-	-	0.1	1.1
14/2	circulatory Ahead	U	-	-	-	601	2015	29.8%	0.2	2015	-	-	-	0.2	1.3
14/3	circulatory Right	U	-	-	-	282	2015	14.0%	0.1	2015	-	-	-	0.1	1.0
14/4	circulatory Right	U	-	-	-	282	2015	14.0%	0.1	2015	-	-	-	0.1	1.0
		C1	Stream: 1 PRC for Signalled Lanes (%):			44.2	Total Delay for Signalled Lanes (pcuHr):			5.03	Cycle Time (s):			70	
		C1	Stream: 2 PRC for Signalled Lanes (%):			32.0	Total Delay for Signalled Lanes (pcuHr):			7.23	Cycle Time (s):			70	
		C1	Stream: 3 PRC for Signalled Lanes (%):			78.3	Total Delay for Signalled Lanes (pcuHr):			6.58	Cycle Time (s):			70	
		C1	Stream: 4 PRC for Signalled Lanes (%):			86.6	Total Delay for Signalled Lanes (pcuHr):			5.68	Cycle Time (s):			70	
		C2	Stream: 1 PRC for Signalled Lanes (%):			95.6	Total Delay for Signalled Lanes (pcuHr):			4.14	Cycle Time (s):			70	
		C2	Stream: 2 PRC for Signalled Lanes (%):			40.2	Total Delay for Signalled Lanes (pcuHr):			6.35	Cycle Time (s):			70	
		C2	Stream: 3 PRC for Signalled Lanes (%):			27.6	Total Delay for Signalled Lanes (pcuHr):			7.96	Cycle Time (s):			70	
			PRC Over All Lanes (%):			27.6	Total Delay Over All Lanes(pcuHr):			44.25					

Network Layout Diagram



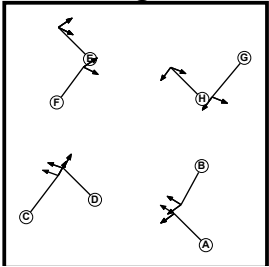
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	593	96	0	300	29	1018
	B	366	0	584	0	125	349	1424
	C	120	522	0	0	81	609	1332
	D	0	0	0	0	0	0	0
	E	333	260	21	0	0	637	1251
	F	23	97	141	0	457	0	718
	Tot.	842	1472	842	0	963	1624	5743

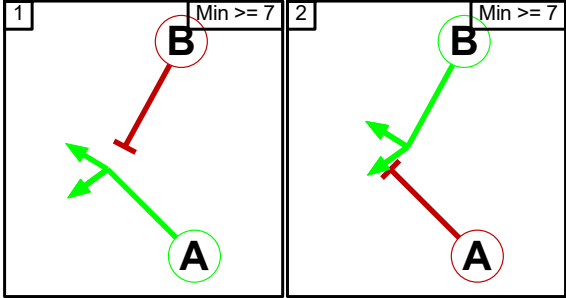
C1

Phase Diagram

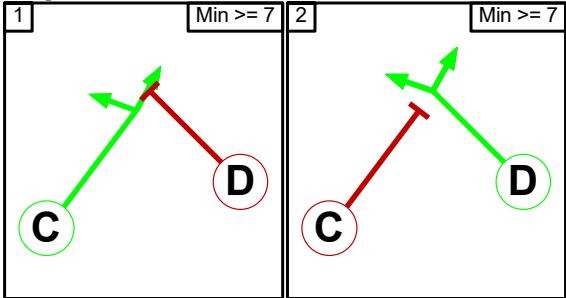


Stage Diagram

Stage Stream: 1

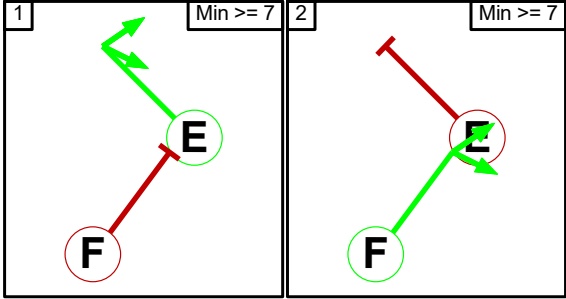


Stage Stream: 2

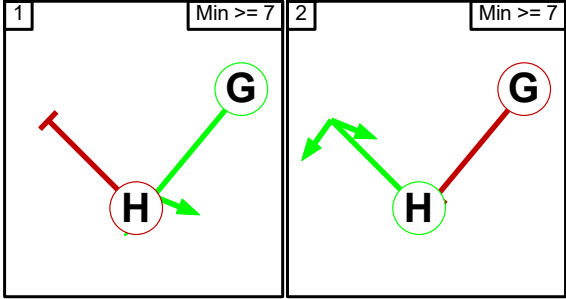


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



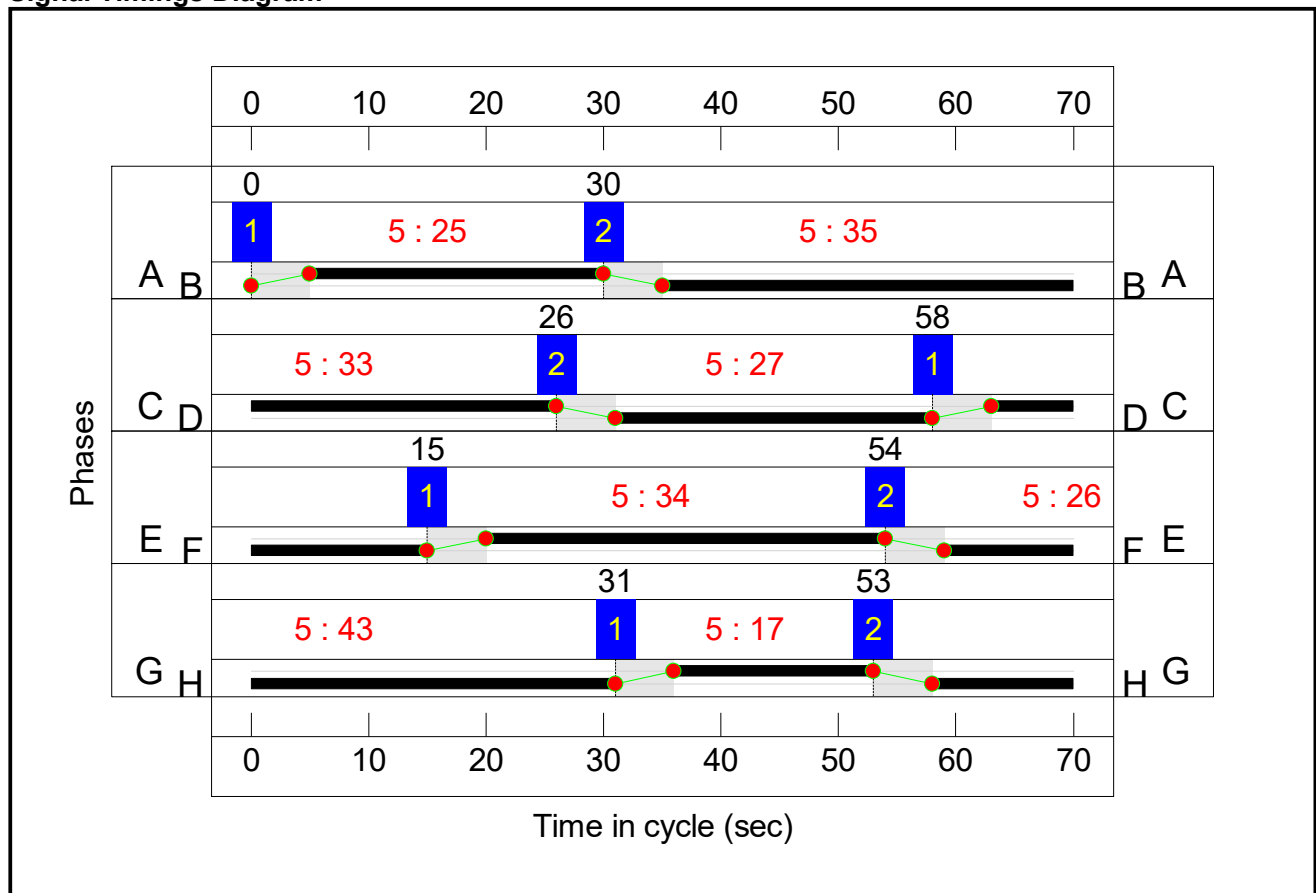
Stage Stream: 4



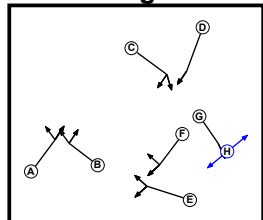
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

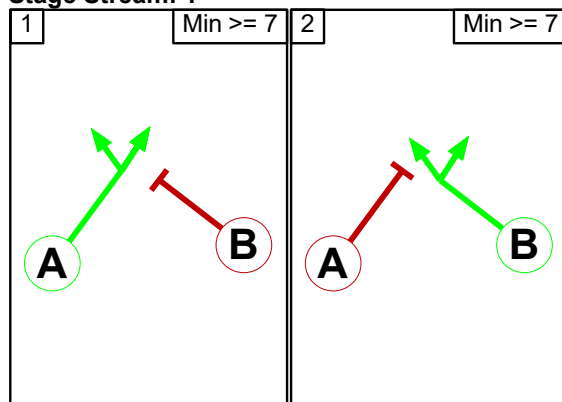
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



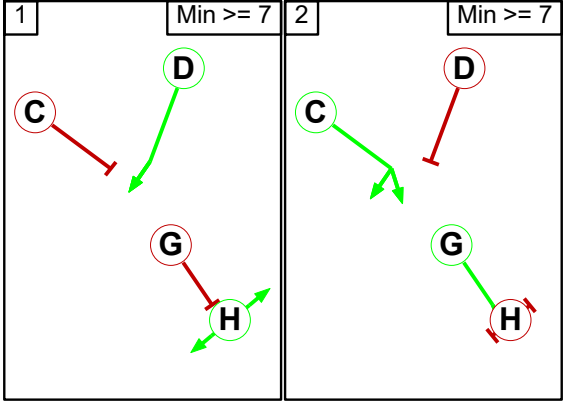
C2
Phase Diagram



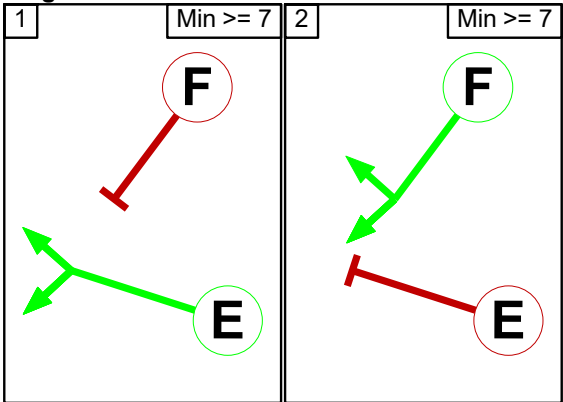
Stage Diagram
Stage Stream: 1



Stage Stream: 2



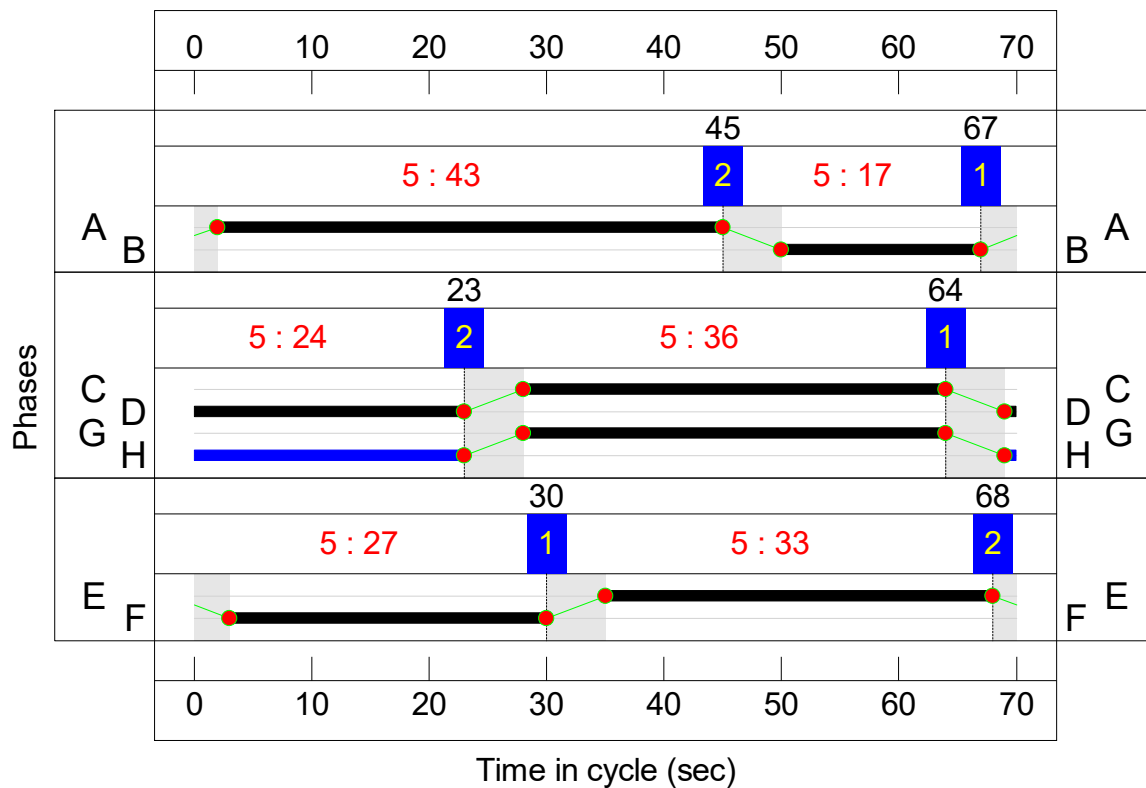
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	67.1%	-	-	0	0	0	51.7	-
J1: Portrack Interchange	-	-	-		-	-	-	-	67.1%	-	-	0	0	0	34.9	-
1/1	Haverton Hill Road (N) Left	U	C1:G		17	-	252	1995	49.1%	5.3	513	-	-	-	2.0	29.2
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		17	-	246	1995	48.0%	4.7	513	-	-	-	1.7	24.8
1/3	Haverton Hill Road (N) Ahead	U	C1:G		17	-	298	1995	58.1%	5.9	513	-	-	-	2.5	29.8
1/4	Haverton Hill Road (N) Ahead	U	C1:G		17	-	79	1995	15.4%	0.8	513	-	-	-	0.4	19.3
2/1	A19 WB Off slip Ahead	U	C1:A		25	-	178	1940	24.7%	2.5	721	-	-	-	0.9	18.6
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		25	-	415	1955:1985	42.0 : 42.0%	3.2	491+498	-	-	-	2.1	18.6
2/4	A19 WB Off slip Ahead	U	C1:A		25	-	425	2065	55.4%	7.1	767	-	-	-	2.7	22.7
3/1	Haverton Hill Road EB Left	U	-		-	-	584	2015	29.0%	0.2	2015	-	-	-	0.2	1.3
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		33	-	125	2065	12.5%	1.4	1003	-	-	-	0.4	11.9
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		33	-	715	1995:2015	65.6 : 65.6%	8.4	748+341	-	-	-	3.3	16.8
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		34	-	690	1985:1985	67.1 : 67.1%	10.1	908+121	-	-	-	3.4	17.8
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		34	-	642	1975:1985	53.3 : 53.3%	4.7	660+544	-	-	-	2.4	13.7

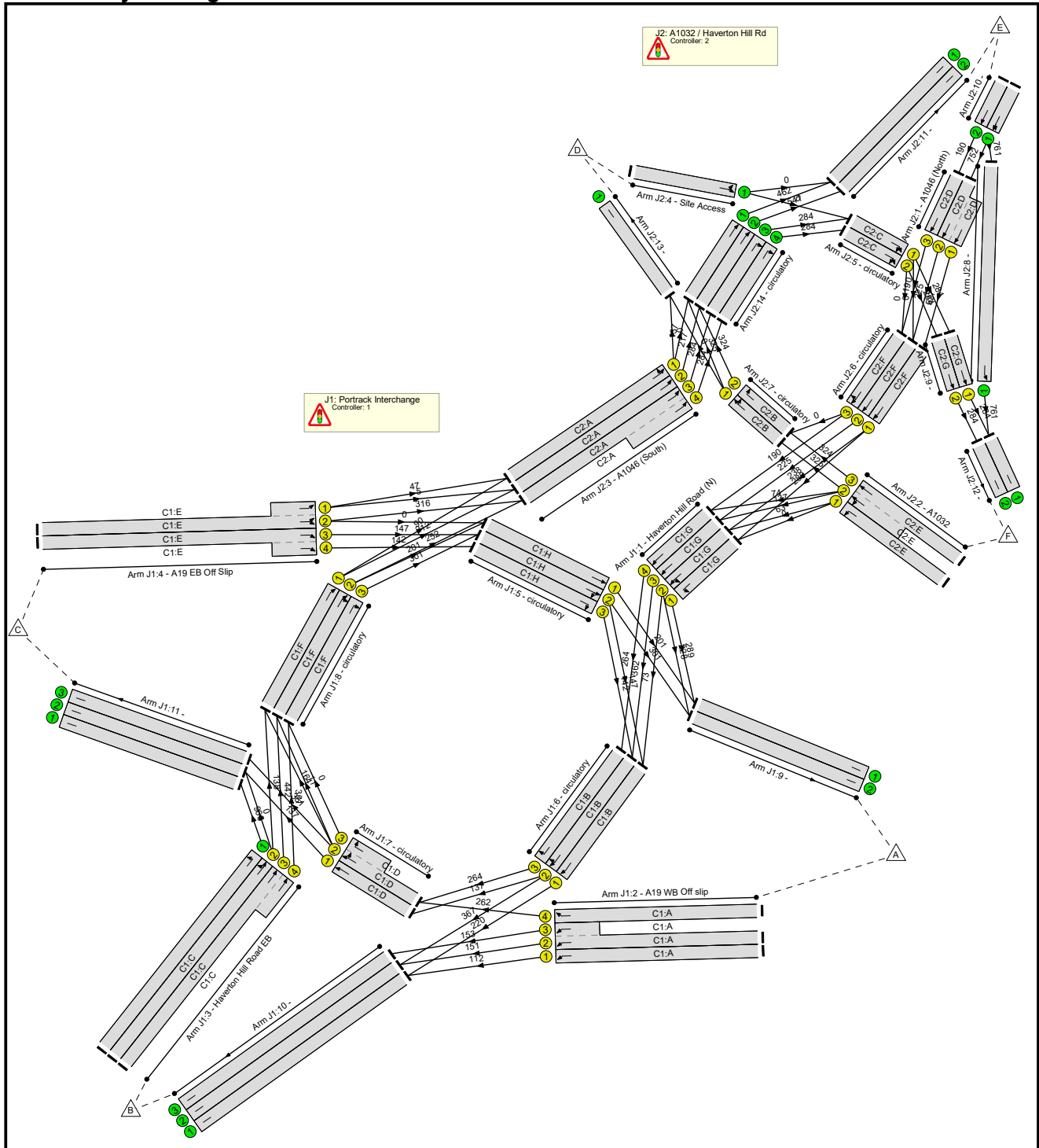
Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		43	-	142	2005	11.3%	0.1	1260	-	-	-	0.1	1.6
5/2	circulatory Right Ahead	U	C1:H		43	-	576	2000	45.8%	3.9	1257	-	-	-	1.2	7.5
5/3	circulatory Right	U	C1:H		43	-	290	2015	22.9%	2.6	1267	-	-	-	0.7	8.5
6/1	circulatory Ahead	U	C1:B		35	-	374	1995	36.5%	2.6	1026	-	-	-	0.5	4.3
6/2	circulatory Right Ahead	U	C1:B		35	-	588	1995	57.3%	4.1	1026	-	-	-	0.9	5.5
6/3	circulatory Right	U	C1:B		35	-	79	1995	7.7%	0.0	1026	-	-	-	0.0	1.9
7/1	circulatory Ahead	U	C1:D		27	-	83	1980	10.5%	0.4	792	-	-	-	0.2	10.3
7/2+7/3	circulatory Right Ahead	U	C1:D		27	-	504	1995:2015	63.2 : 0.0%	9.5	798+0	-	-	-	3.3	23.7
8/1	circulatory Ahead	U	C1:F		26	-	425	1995	55.2%	8.3	770	-	-	-	2.7	22.9
8/2	circulatory Ahead Right	U	C1:F		26	-	520	2015	66.9%	3.8	777	-	-	-	2.3	16.2
8/3	circulatory Right	U	C1:F		26	-	224	2075	28.0%	1.2	800	-	-	-	0.7	11.5
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	65.8%	-	-	0	0	0	16.9	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		24	-	593	1965:1965	65.8 : 65.8%	6.7	327+575	-	-	-	3.8	23.1
1/3	A1046 (North) Ahead	U	C2:D		24	-	21	1965	3.0%	0.3	702	-	-	-	0.1	17.4
2/1	A1032 Left	U	C2:E		33	-	120	1940	12.7%	1.3	942	-	-	-	0.4	12.1
2/3+2/2	A1032 Ahead Left	U	C2:E		33	-	598	1940:1940	51.7 : 51.7%	5.1	434+724	-	-	-	2.4	14.3
3/1	A1046 (South) Left Ahead	U	C2:A		43	-	128	2015	10.1%	1.0	1267	-	-	-	0.2	4.8
3/2	A1046 (South) Ahead	U	C2:A		43	-	378	2015	29.8%	7.2	1267	-	-	-	0.9	8.2
3/3+3/4	A1046 (South) Ahead	U	C2:A		43	-	987	2015:2015	58.6 : 58.6%	3.6	842+844	-	-	-	1.7	6.1

Lighthouse Green Fuels - LinSig Results

[illegible]

Network Layout Diagram



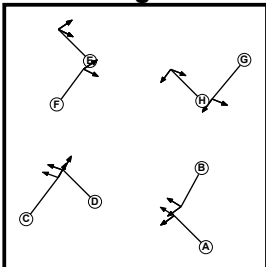
Traffic Flows, Actual

Actual Flow :

Origin	Destination							
		A	B	C	D	E	F	Tot.
A		0	416	87	0	164	11	678
B		502	0	968	0	138	241	1849
C		0	289	0	0	52	316	657
D		0	0	0	0	0	0	0
E		515	237	190	0	0	761	1703
F		2	61	211	0	649	0	923
Tot.		1019	1003	1456	0	1003	1329	5810

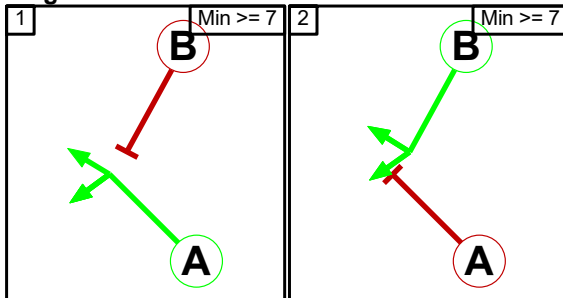
C1

Phase Diagram

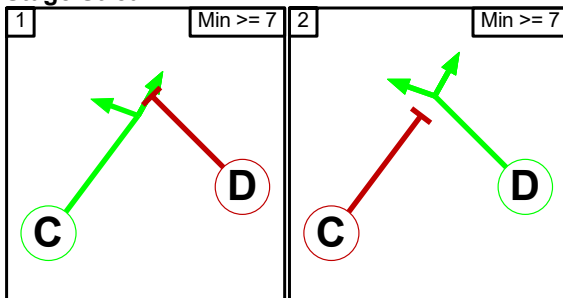


Stage Diagram

Stage Stream: 1

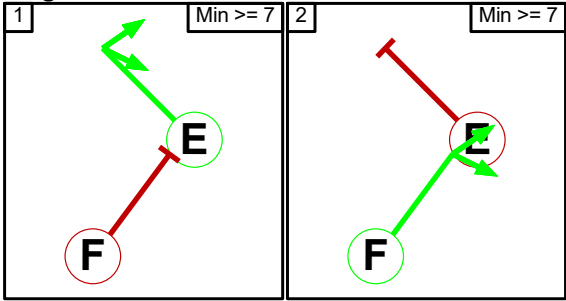


Stage Stream: 2

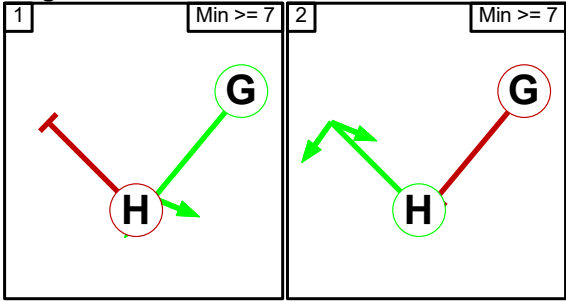


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



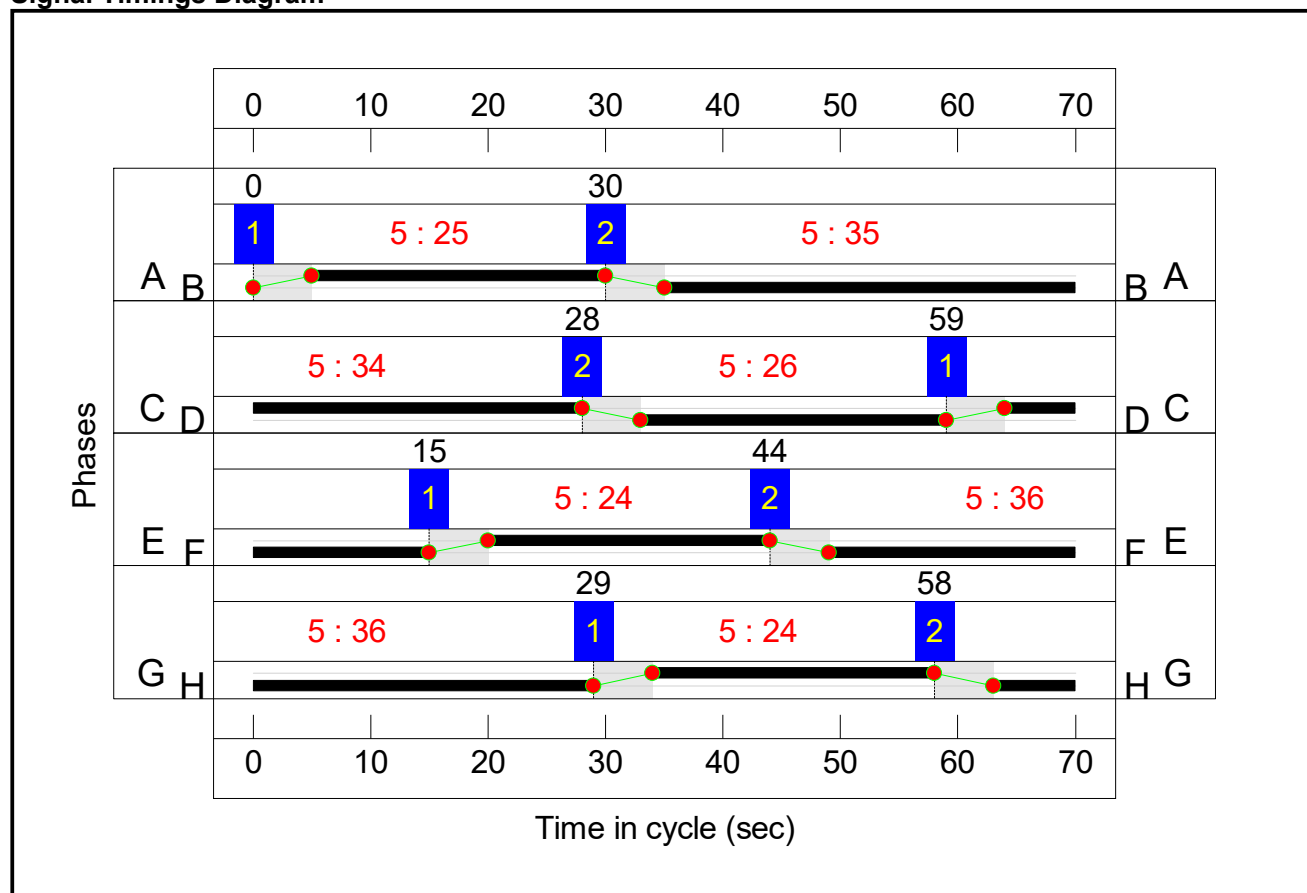
Stage Stream: 4



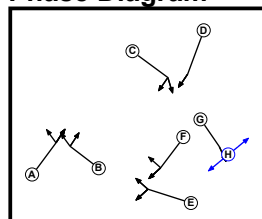
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

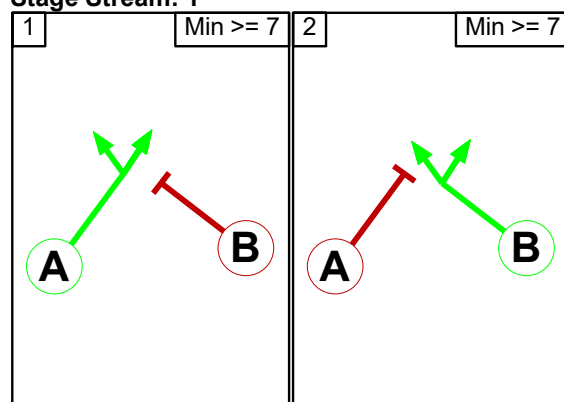
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



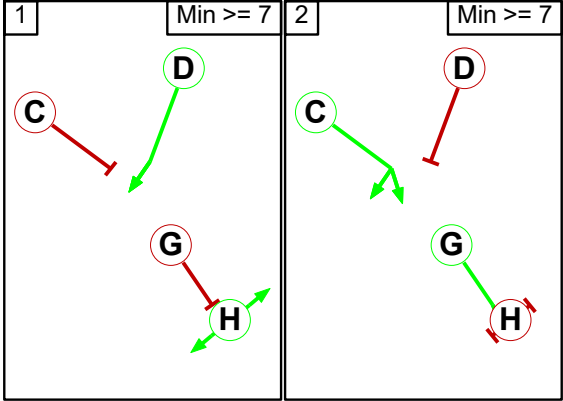
C2
Phase Diagram



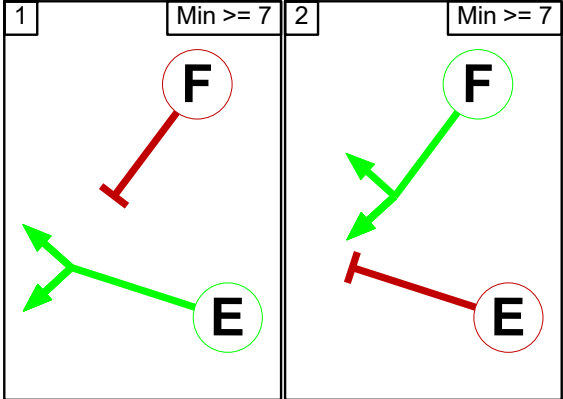
Stage Diagram
Stage Stream: 1



Stage Stream: 2



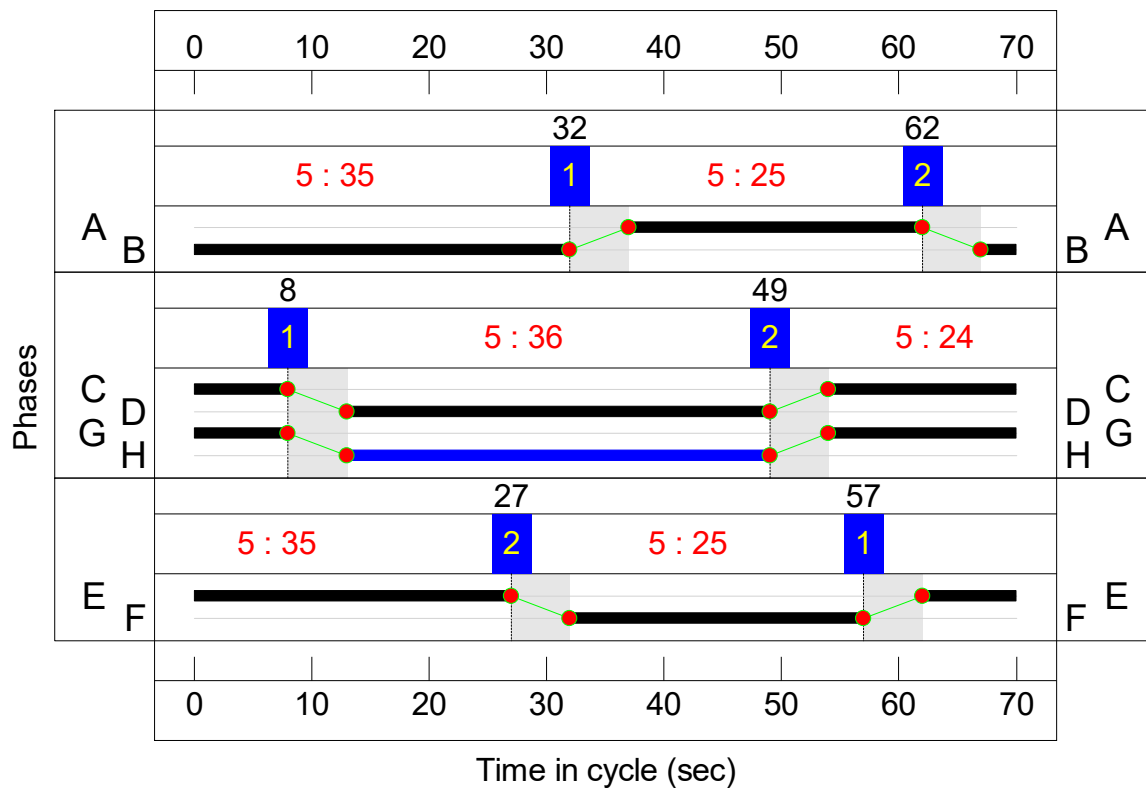
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

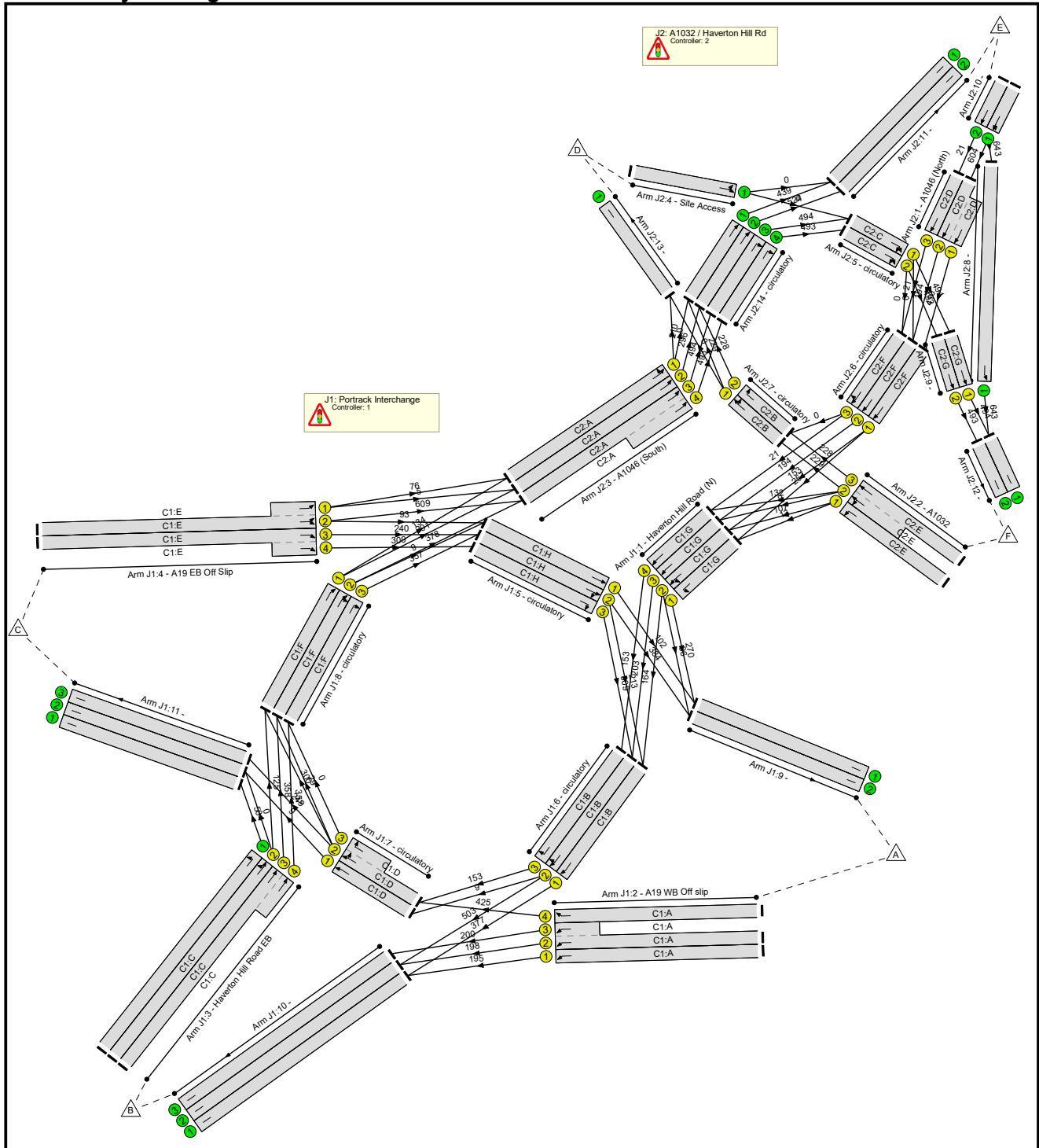
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	70.8%	-	-	0	0	0	43.0	-
J1: Portrack Interchange	-	-	-		-	-	-	-	68.4%	-	-	0	0	0	23.7	-
1/1	Haverton Hill Road (N) Left	U	C1:G		24	-	289	1995	40.6%	0.5	713	-	-	-	0.4	5.4
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		24	-	301	1995	42.2%	1.7	713	-	-	-	0.9	11.3
1/3	Haverton Hill Road (N) Ahead	U	C1:G		24	-	362	1995	50.8%	6.4	713	-	-	-	1.7	16.8
1/4	Haverton Hill Road (N) Ahead	U	C1:G		24	-	264	1995	37.1%	2.1	713	-	-	-	0.9	12.0
2/1	A19 WB Off slip Ahead	U	C1:A		25	-	112	1940	15.5%	1.5	721	-	-	-	0.5	17.7
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		25	-	304	1955:1985	30.7 : 30.7%	2.2	491+498	-	-	-	1.5	17.6
2/4	A19 WB Off slip Ahead	U	C1:A		25	-	262	2065	34.2%	3.9	767	-	-	-	1.4	19.4
3/1	Haverton Hill Road EB Left	U	-		-	-	968	2015	48.0%	0.5	2015	-	-	-	0.5	1.7
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		34	-	138	2065	13.4%	1.5	1032	-	-	-	0.4	11.4
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		34	-	743	1995:2015	63.2 : 63.2%	6.9	700+477	-	-	-	3.1	15.1
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		24	-	368	1985:1985	48.9 : 48.9%	5.1	647+106	-	-	-	2.2	21.5
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		24	-	289	1975:1985	30.2 : 30.2%	2.2	487+471	-	-	-	1.5	18.3

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		36	-	201	2005	19.0%	1.1	1060	-	-	-	0.2	4.1
5/2	circulatory Right Ahead	U	C1:H		36	-	448	2000	42.4%	2.9	1057	-	-	-	1.0	7.7
5/3	circulatory Right	U	C1:H		36	-	142	2015	13.3%	1.0	1065	-	-	-	0.4	10.7
6/1	circulatory Ahead	U	C1:B		35	-	220	1995	21.4%	2.1	1026	-	-	-	0.3	5.5
6/2	circulatory Right Ahead	U	C1:B		35	-	504	1995	49.1%	2.4	1026	-	-	-	0.7	4.8
6/3	circulatory Right	U	C1:B		35	-	264	1995	25.7%	0.2	1026	-	-	-	0.2	2.4
7/1	circulatory Ahead	U	C1:D		26	-	137	1980	17.9%	0.1	764	-	-	-	0.1	2.9
7/2+7/3	circulatory Right Ahead	U	C1:D		26	-	526	1995:2015	68.4 : 0.0%	6.7	770+0	-	-	-	2.9	20.0
8/1	circulatory Ahead	U	C1:F		36	-	302	1995	28.6%	4.1	1055	-	-	-	0.9	10.3
8/2	circulatory Ahead Right	U	C1:F		36	-	453	2015	42.5%	2.9	1065	-	-	-	1.2	9.8
8/3	circulatory Right	U	C1:F		36	-	301	2075	27.4%	1.7	1097	-	-	-	0.7	8.9
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	70.8%	-	-	0	0	0	19.3	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		36	-	752	1965:1965	63.3 : 63.3%	7.4	355+832	-	-	-	3.0	14.2
1/3	A1046 (North) Ahead	U	C2:D		36	-	190	1965	18.3%	2.0	1039	-	-	-	0.6	10.7
2/1	A1032 Left	U	C2:E		35	-	63	1940	6.3%	0.6	998	-	-	-	0.2	10.5
2/3+2/2	A1032 Ahead Left	U	C2:E		35	-	860	1940:1940	70.8 : 70.8%	8.1	458+757	-	-	-	3.8	15.9
3/1	A1046 (South) Left Ahead	U	C2:A		25	-	137	2015	18.3%	2.2	748	-	-	-	0.8	20.4
3/2	A1046 (South) Ahead	U	C2:A		25	-	217	2015	29.0%	1.1	748	-	-	-	0.6	10.0
3/3+3/4	A1046 (South) Ahead	U	C2:A		25	-	568	2015:2015	48.6 : 48.6%	5.0	584+584	-	-	-	2.7	16.9

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		24	-	284	2015	39.5%	5.0	720	-	-	-	0.7	9.4
5/2	circulatory Right Ahead	U	C2:C		24	-	284	2015	39.5%	5.1	720	-	-	-	0.7	9.5
6/1	circulatory Ahead	U	C2:F		25	-	527	2015	70.4%	10.4	748	-	-	-	2.7	18.6
6/2	circulatory Ahead	U	C2:F		25	-	225	2015	30.1%	3.4	748	-	-	-	0.8	12.2
6/3	circulatory Right Ahead	U	C2:F		25	-	190	2015	25.4%	2.8	748	-	-	-	0.6	11.9
7/1	circulatory Ahead Right	U	C2:B		35	-	325	2015	31.4%	0.4	1036	-	-	-	0.3	2.9
7/2	circulatory Right	U	C2:B		35	-	324	2015	31.3%	0.9	1036	-	-	-	0.3	3.0
8/1	Ahead	U	-		-	-	761	2015	37.8%	0.3	2015	-	-	-	0.3	1.4
9/1	Ahead	U	C2:G		24	-	284	1940	41.0%	1.4	693	-	-	-	0.4	4.8
9/2	Ahead	U	C2:G		24	-	284	1940	41.0%	1.4	693	-	-	-	0.4	4.8
14/1	circulatory Ahead	U	-		-	-	462	2015	22.9%	0.1	2015	-	-	-	0.1	1.2
14/2	circulatory Ahead	U	-		-	-	541	2015	26.8%	0.2	2015	-	-	-	0.2	1.2
14/3	circulatory Right	U	-		-	-	284	2015	14.1%	0.1	2015	-	-	-	0.1	1.0
14/4	circulatory Right	U	-		-	-	284	2015	14.1%	0.1	2015	-	-	-	0.1	1.0
		C1	Stream: 1 PRC for Signalled Lanes (%):				83.2	Total Delay for Signalled Lanes (pcuHr):				4.63	Cycle Time (s): 70			
		C1	Stream: 2 PRC for Signalled Lanes (%):				31.7	Total Delay for Signalled Lanes (pcuHr):				6.57	Cycle Time (s): 70			
		C1	Stream: 3 PRC for Signalled Lanes (%):				84.2	Total Delay for Signalled Lanes (pcuHr):				6.51	Cycle Time (s): 70			
		C1	Stream: 4 PRC for Signalled Lanes (%):				77.1	Total Delay for Signalled Lanes (pcuHr):				5.56	Cycle Time (s): 70			
		C2	Stream: 1 PRC for Signalled Lanes (%):				85.1	Total Delay for Signalled Lanes (pcuHr):				4.59	Cycle Time (s): 70			
		C2	Stream: 2 PRC for Signalled Lanes (%):				42.1	Total Delay for Signalled Lanes (pcuHr):				5.78	Cycle Time (s): 70			
		C2	Stream: 3 PRC for Signalled Lanes (%):				27.2	Total Delay for Signalled Lanes (pcuHr):				8.09	Cycle Time (s): 70			
			PRC Over All Lanes (%):				27.2	Total Delay Over All Lanes(pcuHr):				42.99				

Network Layout Diagram



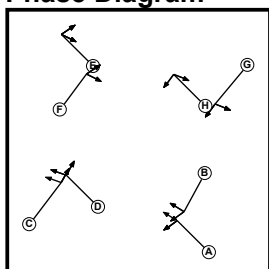
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	593	96	0	300	29	1018
	B	366	0	584	0	125	349	1424
	C	120	522	0	0	81	609	1332
	D	0	0	0	0	0	0	0
	E	343	261	21	0	0	643	1268
	F	23	97	141	0	457	0	718
	Tot.	852	1473	842	0	963	1630	5760

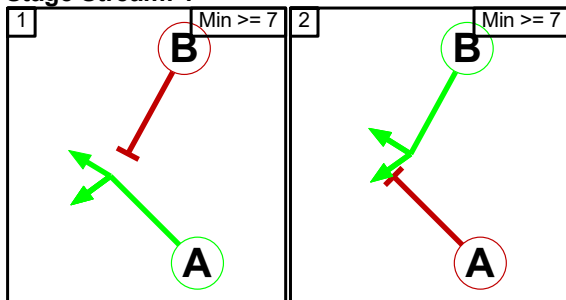
C1

Phase Diagram

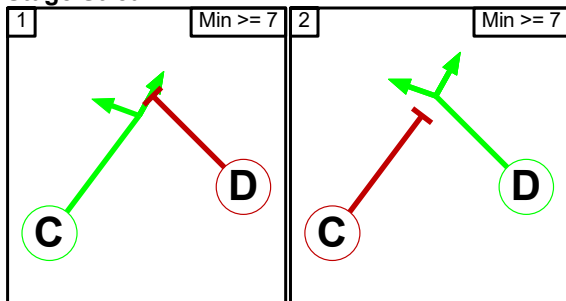


Stage Diagram

Stage Stream: 1

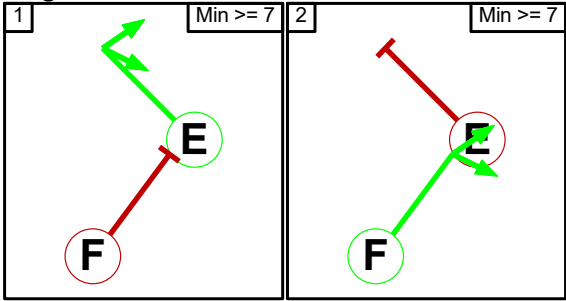


Stage Stream: 2

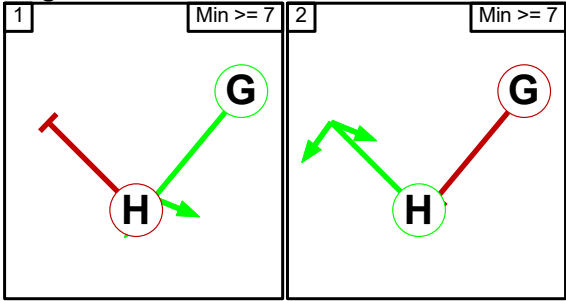


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



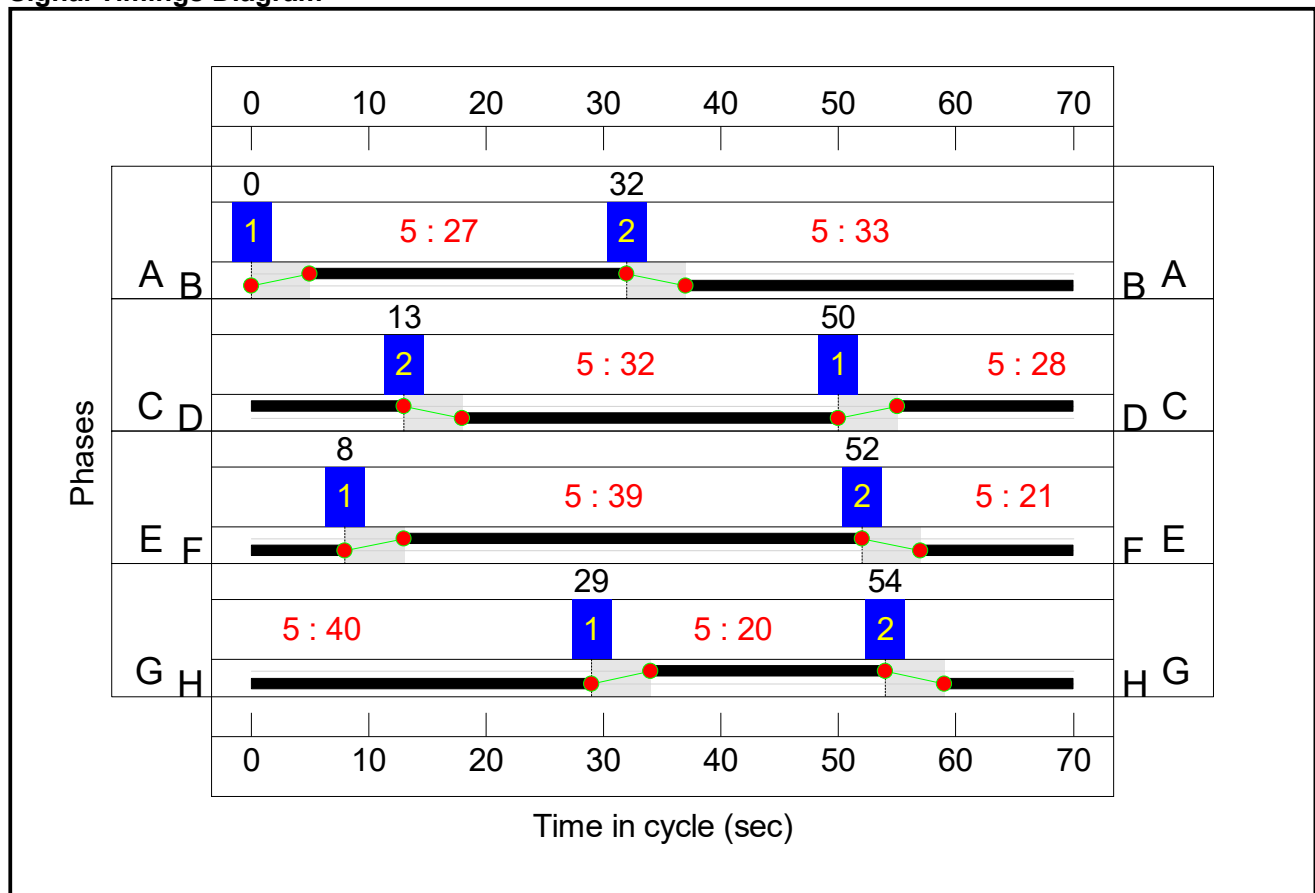
Stage Stream: 4



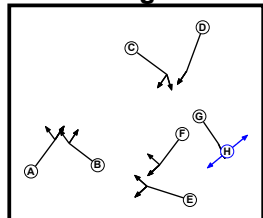
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

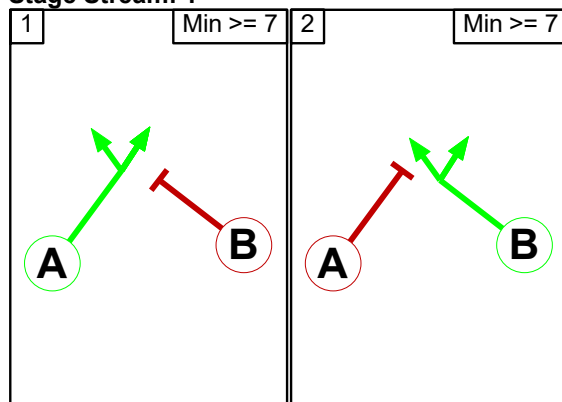
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



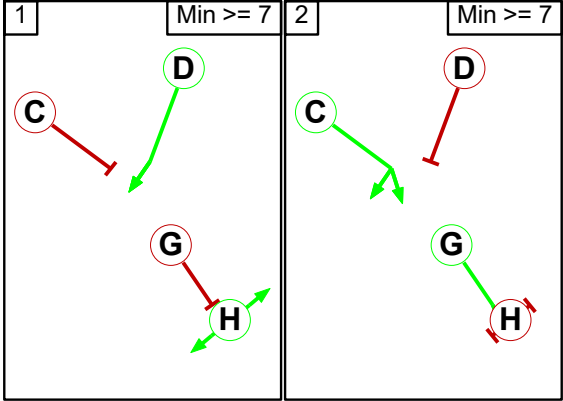
C2
Phase Diagram



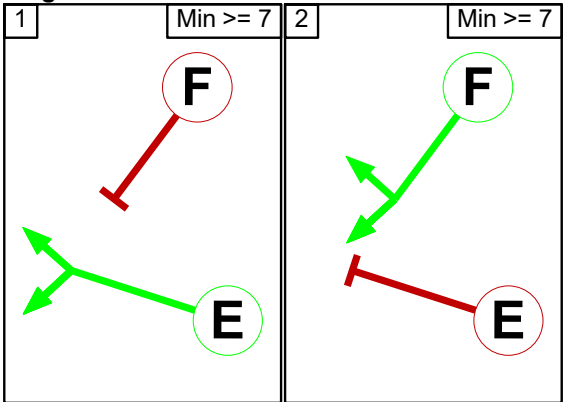
Stage Diagram
Stage Stream: 1



Stage Stream: 2



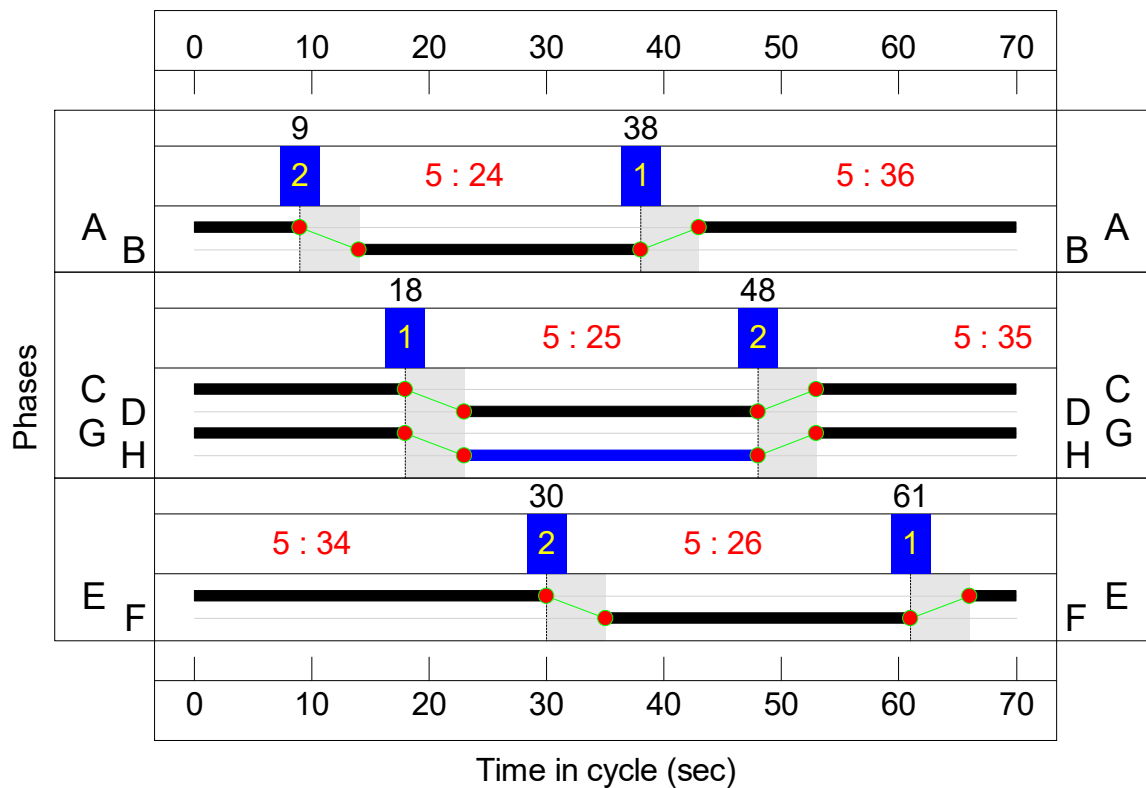
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	5	-
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	67.8%	-	-	0	0	0	49.0	-
J1: Portrack Interchange	-	-	-		-	-	-	-	67.8%	-	-	0	0	0	31.2	-
1/1	Haverton Hill Road (N) Left	U	C1:G		20	-	270	1995	45.1%	1.1	599	-	-	-	0.8	10.3
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		20	-	260	1995	43.4%	2.7	599	-	-	-	1.3	18.1
1/3	Haverton Hill Road (N) Ahead	U	C1:G		20	-	203	1995	33.9%	0.7	599	-	-	-	0.5	8.6
1/4	Haverton Hill Road (N) Ahead	U	C1:G		20	-	153	1995	25.6%	2.8	599	-	-	-	1.1	25.3
2/1	A19 WB Off slip Ahead	U	C1:A		27	-	195	1940	25.1%	2.7	776	-	-	-	0.9	17.1
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		27	-	398	1955:1985	38.0 : 38.0%	2.9	521+526	-	-	-	1.9	16.8
2/4	A19 WB Off slip Ahead	U	C1:A		27	-	425	2065	51.5%	6.7	826	-	-	-	2.4	20.3
3/1	Haverton Hill Road EB Left	U	-		-	-	584	2015	29.0%	0.2	2015	-	-	-	0.2	1.3
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		28	-	125	2065	14.6%	1.6	856	-	-	-	0.5	15.3
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		28	-	715	1995:2015	65.8 : 65.8%	5.8	544+542	-	-	-	3.9	19.4
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		39	-	783	1985:1985	67.2 : 67.2%	10.7	1045+121	-	-	-	3.2	14.6
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		39	-	549	1975:1985	41.2 : 41.2%	3.4	583+751	-	-	-	1.5	9.8

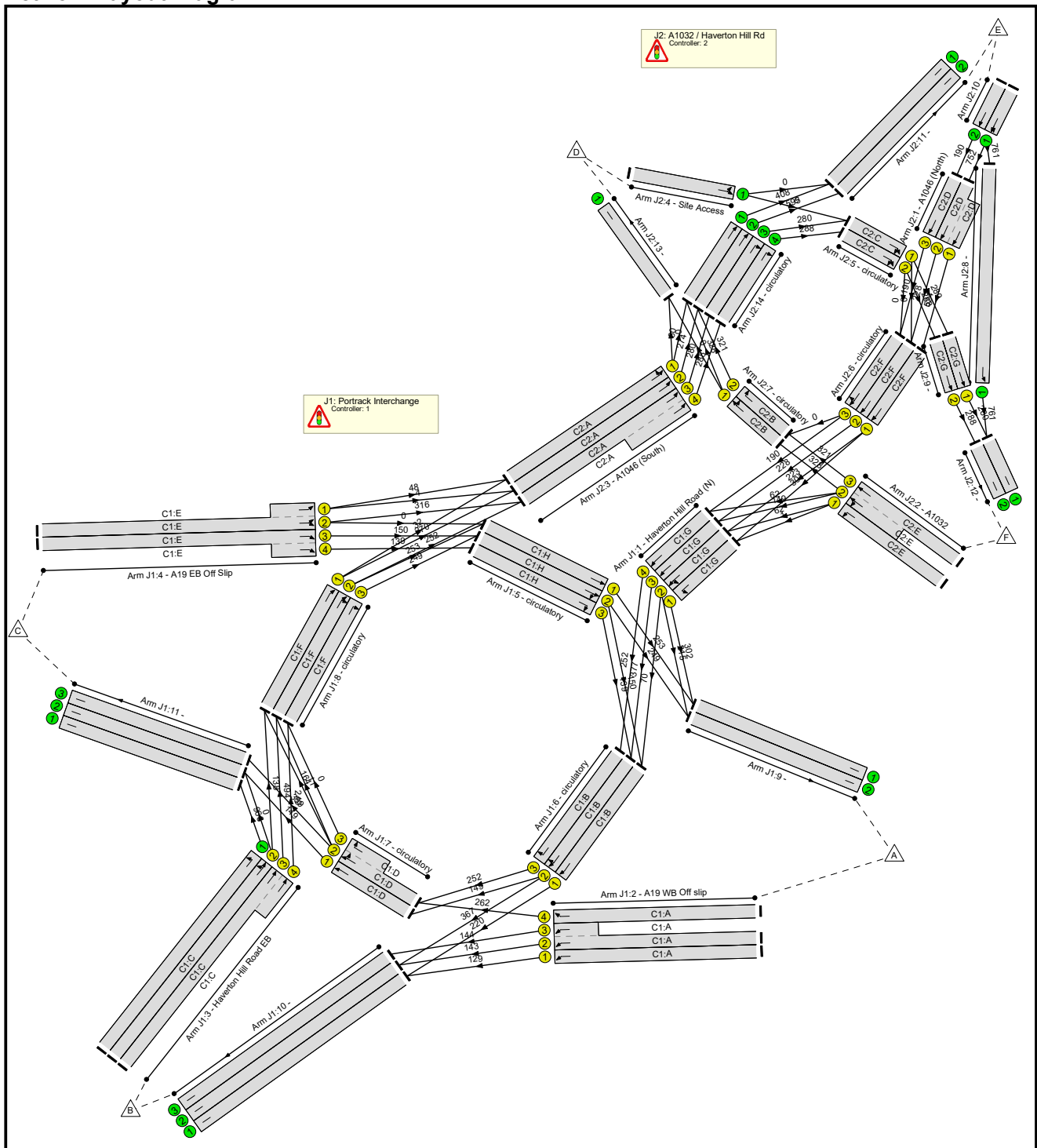
Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		40	-	102	2005	8.7%	1.0	1174	-	-	-	0.3	10.7
5/2	circulatory Right Ahead	U	C1:H		40	-	597	2000	51.0%	3.0	1171	-	-	-	1.0	5.9
5/3	circulatory Right	U	C1:H		40	-	309	2015	26.2%	2.6	1180	-	-	-	0.8	9.0
6/1	circulatory Ahead	U	C1:B		33	-	377	1995	38.9%	4.6	969	-	-	-	0.8	8.0
6/2	circulatory Right Ahead	U	C1:B		33	-	512	1995	52.8%	4.7	969	-	-	-	1.3	9.2
6/3	circulatory Right	U	C1:B		33	-	153	1995	15.8%	0.1	969	-	-	-	0.1	2.2
7/1	circulatory Ahead	U	C1:D		32	-	9	1980	1.0%	0.0	933	-	-	-	0.0	7.9
7/2+7/3	circulatory Right Ahead	U	C1:D		32	-	578	1995:2015	61.5 : 0.0%	8.7	941+0	-	-	-	1.8	11.4
8/1	circulatory Ahead	U	C1:F		21	-	425	1995	67.8%	9.0	627	-	-	-	4.0	34.3
8/2	circulatory Ahead Right	U	C1:F		21	-	387	2015	61.1%	2.6	633	-	-	-	1.7	15.4
8/3	circulatory Right	U	C1:F		21	-	357	2075	54.7%	1.6	652	-	-	-	1.2	12.6
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	67.5%	-	-	0	0	0	17.9	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		25	-	604	1965:1965	67.5 : 67.5%	7.3	288+608	-	-	-	3.8	22.9
1/3	A1046 (North) Ahead	U	C2:D		25	-	21	1965	2.9%	0.3	730	-	-	-	0.1	16.7
2/1	A1032 Left	U	C2:E		34	-	120	1940	12.4%	1.3	970	-	-	-	0.4	11.5
2/3+2/2	A1032 Ahead Left	U	C2:E		34	-	598	1940:1940	50.2 : 50.2%	4.9	454+737	-	-	-	2.2	13.5
3/1	A1046 (South) Left Ahead	U	C2:A		36	-	210	2015	19.7%	1.5	1065	-	-	-	0.5	8.8
3/2	A1046 (South) Ahead	U	C2:A		36	-	296	2015	27.8%	0.4	1065	-	-	-	0.2	3.0
3/3+3/4	A1046 (South) Ahead	U	C2:A		36	-	987	2015:2015	66.5 : 66.5%	6.9	743+741	-	-	-	3.7	13.6

Lighthouse Green Fuels - LinSig Results

4/1	Site Access Ahead Left	U	-	-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0	
5/1	circulatory Right Ahead	U	C2:C	35	-	494	2015	47.7%	1.6	1036	-	-	-	0.5	3.9	
5/2	circulatory Right Ahead	U	C2:C	35	-	493	2015	47.6%	1.7	1036	-	-	-	0.6	4.0	
6/1	circulatory Ahead	U	C2:F	26	-	410	2015	52.8%	7.7	777	-	-	-	1.2	10.4	
6/2	circulatory Ahead	U	C2:F	26	-	194	2015	25.0%	3.2	777	-	-	-	0.4	8.0	
6/3	circulatory Right Ahead	U	C2:F	26	-	21	2015	2.7%	0.3	777	-	-	-	0.0	6.9	
7/1	circulatory Ahead Right	U	C2:B	24	-	229	2015	31.8%	3.7	720	-	-	-	0.7	11.3	
7/2	circulatory Right	U	C2:B	24	-	228	2015	31.7%	3.6	720	-	-	-	0.8	12.1	
8/1	Ahead	U	-	-	-	643	2015	31.9%	0.2	2015	-	-	-	0.2	1.3	
9/1	Ahead	U	C2:G	35	-	494	1940	49.5%	1.2	998	-	-	-	0.8	5.9	
9/2	Ahead	U	C2:G	35	-	493	1940	49.4%	1.3	998	-	-	-	0.9	6.4	
14/1	circulatory Ahead	U	-	-	-	439	2015	21.8%	0.1	2015	-	-	-	0.1	1.1	
14/2	circulatory Ahead	U	-	-	-	524	2015	26.0%	0.2	2015	-	-	-	0.2	1.2	
14/3	circulatory Right	U	-	-	-	494	2015	24.5%	0.2	2015	-	-	-	0.2	1.2	
14/4	circulatory Right	U	-	-	-	493	2015	24.5%	0.2	2015	-	-	-	0.2	1.2	
		C1	Stream: 1 PRC for Signalled Lanes (%):				70.3	Total Delay for Signalled Lanes (pcuHr):				7.42	Cycle Time (s): 70			
		C1	Stream: 2 PRC for Signalled Lanes (%):				36.8	Total Delay for Signalled Lanes (pcuHr):				6.24	Cycle Time (s): 70			
		C1	Stream: 3 PRC for Signalled Lanes (%):				32.8	Total Delay for Signalled Lanes (pcuHr):				11.61	Cycle Time (s): 70			
		C1	Stream: 4 PRC for Signalled Lanes (%):				76.6	Total Delay for Signalled Lanes (pcuHr):				5.70	Cycle Time (s): 70			
		C2	Stream: 1 PRC for Signalled Lanes (%):				35.3	Total Delay for Signalled Lanes (pcuHr):				5.98	Cycle Time (s): 70			
		C2	Stream: 2 PRC for Signalled Lanes (%):				33.4	Total Delay for Signalled Lanes (pcuHr):				6.73	Cycle Time (s): 70			
		C2	Stream: 3 PRC for Signalled Lanes (%):				70.6	Total Delay for Signalled Lanes (pcuHr):				4.28	Cycle Time (s): 70			
			PRC Over All Lanes (%):				32.8	Total Delay Over All Lanes(pcuHr):				49.03				

Network Layout Diagram



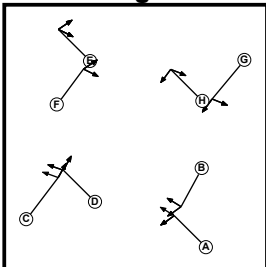
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	416	87	0	164	11	678
	B	502	0	968	0	138	241	1849
	C	0	289	0	0	52	316	657
	D	0	0	0	0	0	0	0
	E	515	237	190	0	0	761	1703
	F	2	61	211	0	649	0	923
	Tot.	1019	1003	1456	0	1003	1329	5810

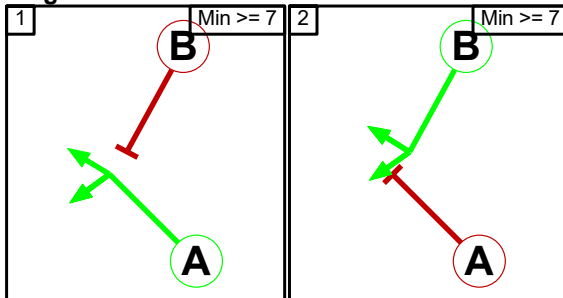
C1

Phase Diagram

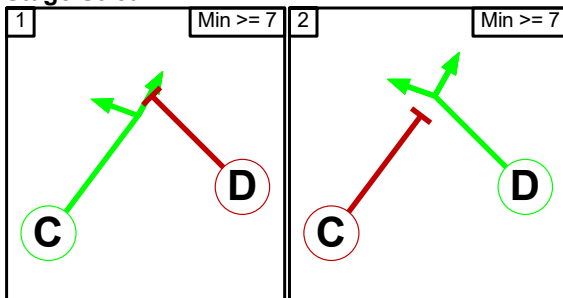


Stage Diagram

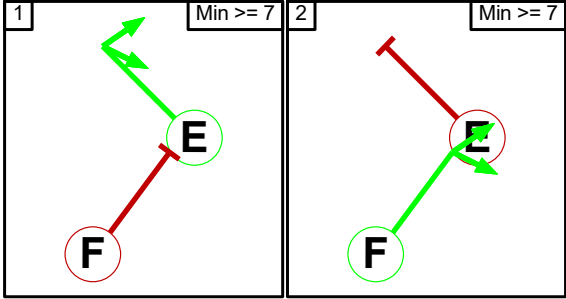
Stage Stream: 1



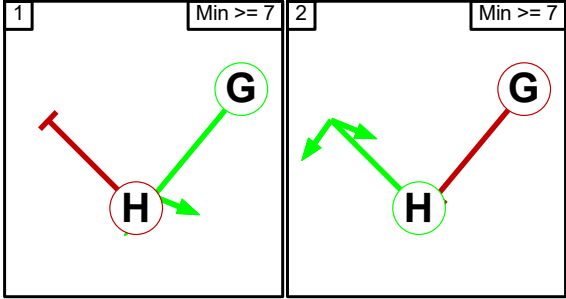
Stage Stream: 2



Stage Stream: 3



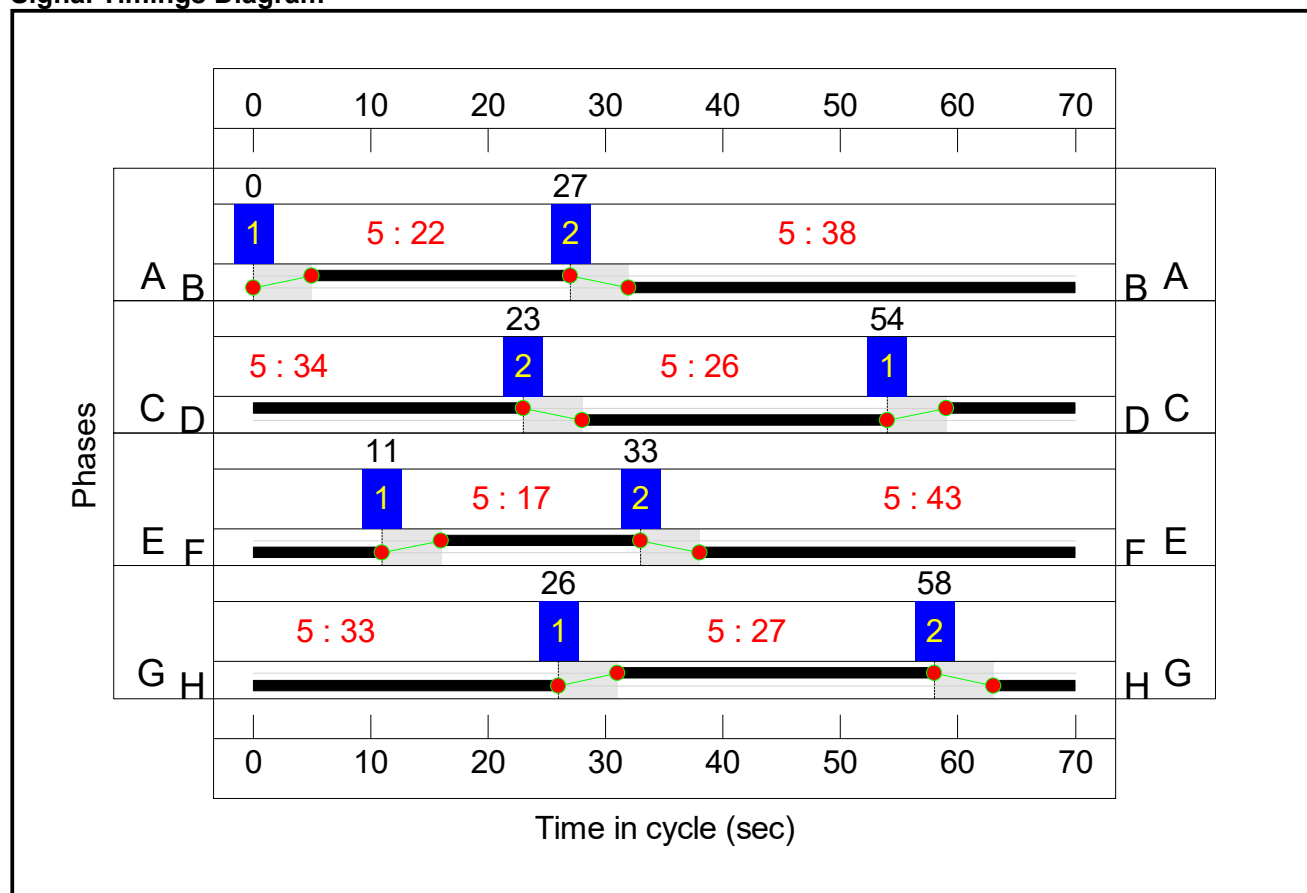
Stage Stream: 4



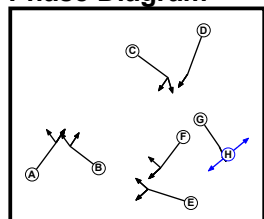
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

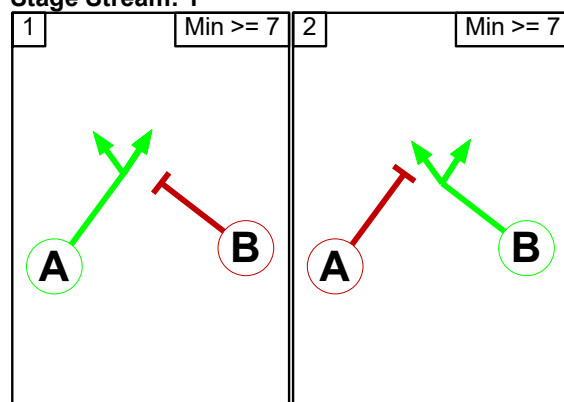
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



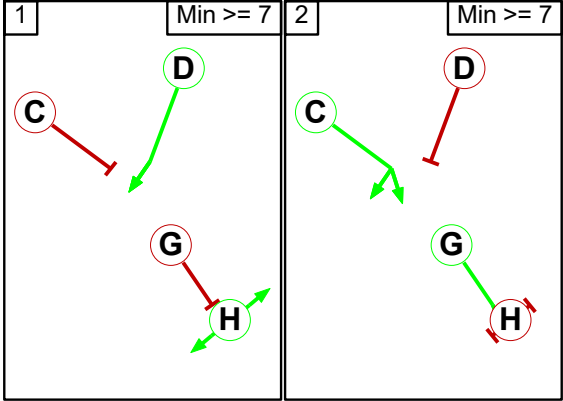
C2
Phase Diagram



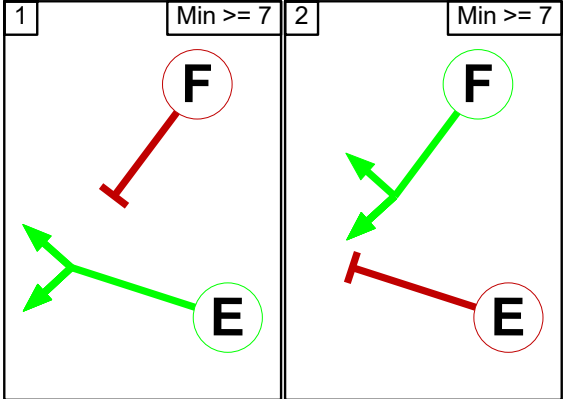
Stage Diagram
Stage Stream: 1



Stage Stream: 2



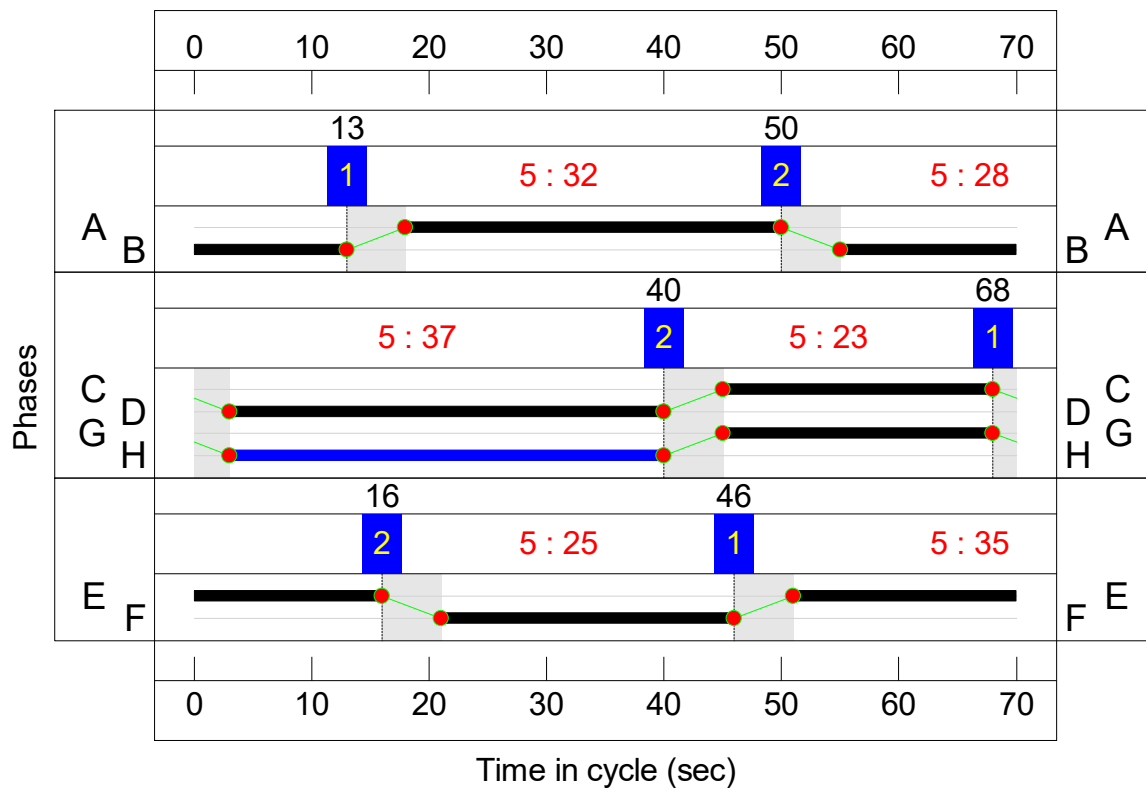
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	5	-
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

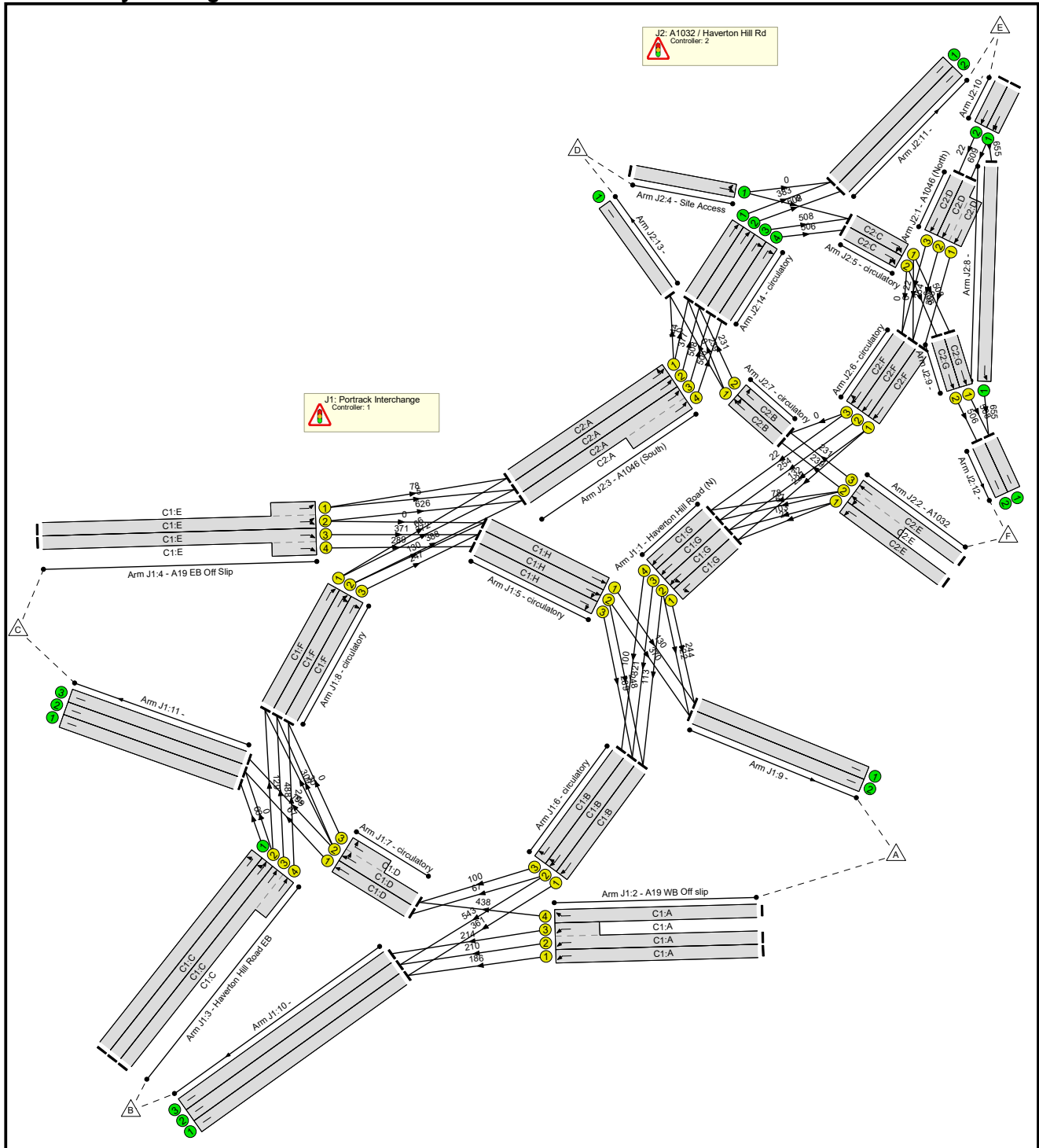
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	71.0%	-	-	0	0	0	43.9	-
J1: Portrack Interchange	-	-	-		-	-	-	-	66.8%	-	-	0	0	0	25.3	-
1/1	Haverton Hill Road (N) Left	U	C1:G		27	-	302	1995	37.8%	3.7	798	-	-	-	0.4	5.2
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		27	-	285	1995	35.7%	3.2	798	-	-	-	0.6	8.0
1/3	Haverton Hill Road (N) Ahead	U	C1:G		27	-	377	1995	47.2%	6.8	798	-	-	-	2.1	19.7
1/4	Haverton Hill Road (N) Ahead	U	C1:G		27	-	252	1995	31.6%	4.2	798	-	-	-	1.0	13.6
2/1	A19 WB Off slip Ahead	U	C1:A		22	-	129	1940	20.2%	1.9	637	-	-	-	0.7	20.5
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		22	-	287	1955:1985	31.7 : 31.7%	2.2	452+455	-	-	-	1.6	19.9
2/4	A19 WB Off slip Ahead	U	C1:A		22	-	262	2065	38.6%	4.2	678	-	-	-	1.6	22.4
3/1	Haverton Hill Road EB Left	U	-		-	-	968	2015	48.0%	0.5	2015	-	-	-	0.5	1.7
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		34	-	138	2065	13.4%	1.5	1032	-	-	-	0.4	11.4
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		34	-	743	1995:2015	65.7 : 65.7%	8.3	751+379	-	-	-	3.3	16.0
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		17	-	368	1985:1985	66.3 : 66.3%	6.5	476+78	-	-	-	3.3	32.1
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		17	-	289	1975:1985	38.5 : 38.5%	2.6	389+361	-	-	-	2.0	24.7

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		33	-	253	2005	26.0%	1.4	974	-	-	-	0.5	7.1
5/2	circulatory Right Ahead	U	C1:H		33	-	399	2000	41.1%	2.2	971	-	-	-	1.0	9.1
5/3	circulatory Right	U	C1:H		33	-	139	2015	14.2%	0.7	979	-	-	-	0.3	9.0
6/1	circulatory Ahead	U	C1:B		38	-	220	1995	19.8%	2.7	1112	-	-	-	0.3	5.6
6/2	circulatory Right Ahead	U	C1:B		38	-	516	1995	46.4%	2.8	1112	-	-	-	0.6	4.4
6/3	circulatory Right	U	C1:B		38	-	252	1995	22.7%	0.1	1112	-	-	-	0.1	2.1
7/1	circulatory Ahead	U	C1:D		26	-	149	1980	19.5%	0.5	764	-	-	-	0.3	7.4
7/2+7/3	circulatory Right Ahead	U	C1:D		26	-	514	1995:2015	66.8 : 0.0%	6.7	770+0	-	-	-	2.5	17.8
8/1	circulatory Ahead	U	C1:F		43	-	302	1995	24.1%	3.8	1254	-	-	-	0.5	5.6
8/2	circulatory Ahead Right	U	C1:F		43	-	505	2015	39.9%	2.9	1267	-	-	-	1.0	7.2
8/3	circulatory Right	U	C1:F		43	-	249	2075	19.1%	1.3	1304	-	-	-	0.4	6.3
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	71.0%	-	-	0	0	0	18.7	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		37	-	752	1965:1965	61.7 : 61.7%	7.1	369+849	-	-	-	2.8	13.3
1/3	A1046 (North) Ahead	U	C2:D		37	-	190	1965	17.8%	2.0	1067	-	-	-	0.5	10.2
2/1	A1032 Left	U	C2:E		35	-	63	1940	6.3%	0.6	998	-	-	-	0.2	10.5
2/3+2/2	A1032 Ahead Left	U	C2:E		35	-	860	1940:1940	71.0 : 71.0%	8.5	452+760	-	-	-	3.8	15.9
3/1	A1046 (South) Left Ahead	U	C2:A		32	-	80	2015	8.4%	0.3	950	-	-	-	0.1	5.4
3/2	A1046 (South) Ahead	U	C2:A		32	-	274	2015	28.8%	2.3	950	-	-	-	0.8	10.1
3/3+3/4	A1046 (South) Ahead	U	C2:A		32	-	568	2015:2015	41.8 : 41.8%	2.3	670+689	-	-	-	1.0	6.2

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		23	-	280	2015	40.5%	5.2	691	-	-	-	1.3	16.3
5/2	circulatory Right Ahead	U	C2:C		23	-	288	2015	41.7%	5.2	691	-	-	-	1.3	16.4
6/1	circulatory Ahead	U	C2:F		25	-	524	2015	70.0%	9.9	748	-	-	-	2.6	17.6
6/2	circulatory Ahead	U	C2:F		25	-	228	2015	30.5%	3.4	748	-	-	-	0.7	11.6
6/3	circulatory Right Ahead	U	C2:F		25	-	190	2015	25.4%	2.8	748	-	-	-	0.6	11.2
7/1	circulatory Ahead Right	U	C2:B		28	-	328	2015	39.3%	1.2	835	-	-	-	0.7	8.1
7/2	circulatory Right	U	C2:B		28	-	321	2015	38.5%	2.1	835	-	-	-	0.7	8.1
8/1	Ahead	U	-		-	-	761	2015	37.8%	0.3	2015	-	-	-	0.3	1.4
9/1	Ahead	U	C2:G		23	-	280	1940	42.1%	1.5	665	-	-	-	0.4	4.9
9/2	Ahead	U	C2:G		23	-	288	1940	43.3%	1.5	665	-	-	-	0.4	5.1
14/1	circulatory Ahead	U	-		-	-	408	2015	20.2%	0.1	2015	-	-	-	0.1	1.1
14/2	circulatory Ahead	U	-		-	-	595	2015	29.5%	0.2	2015	-	-	-	0.2	1.3
14/3	circulatory Right	U	-		-	-	280	2015	13.9%	0.1	2015	-	-	-	0.1	1.0
14/4	circulatory Right	U	-		-	-	288	2015	14.3%	0.1	2015	-	-	-	0.1	1.0
		C1	Stream: 1 PRC for Signalled Lanes (%):				93.9	Total Delay for Signalled Lanes (pcuHr):				5.08	Cycle Time (s): 70			
		C1	Stream: 2 PRC for Signalled Lanes (%):				34.7	Total Delay for Signalled Lanes (pcuHr):				6.58	Cycle Time (s): 70			
		C1	Stream: 3 PRC for Signalled Lanes (%):				35.7	Total Delay for Signalled Lanes (pcuHr):				7.19	Cycle Time (s): 70			
		C1	Stream: 4 PRC for Signalled Lanes (%):				90.5	Total Delay for Signalled Lanes (pcuHr):				5.95	Cycle Time (s): 70			
		C2	Stream: 1 PRC for Signalled Lanes (%):				115.2	Total Delay for Signalled Lanes (pcuHr):				3.32	Cycle Time (s): 70			
		C2	Stream: 2 PRC for Signalled Lanes (%):				45.8	Total Delay for Signalled Lanes (pcuHr):				6.69	Cycle Time (s): 70			
		C2	Stream: 3 PRC for Signalled Lanes (%):				26.8	Total Delay for Signalled Lanes (pcuHr):				7.87	Cycle Time (s): 70			
			PRC Over All Lanes (%):				26.8	Total Delay Over All Lanes(pcuHr):				43.94				

Network Layout Diagram



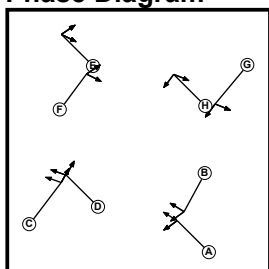
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	610	99	0	309	30	1048
	B	377	0	601	0	129	358	1465
	C	123	537	0	0	83	626	1369
	D	0	0	0	0	0	0	0
	E	342	267	22	0	0	655	1286
	F	24	100	145	0	470	0	739
	Tot.	866	1514	867	0	991	1669	5907

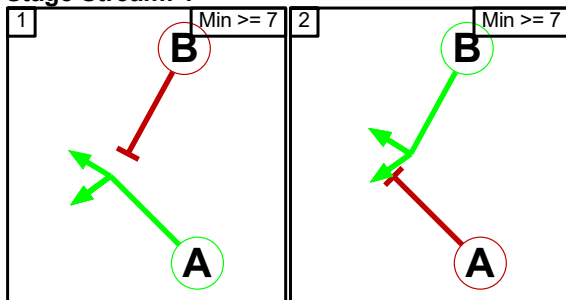
C1

Phase Diagram

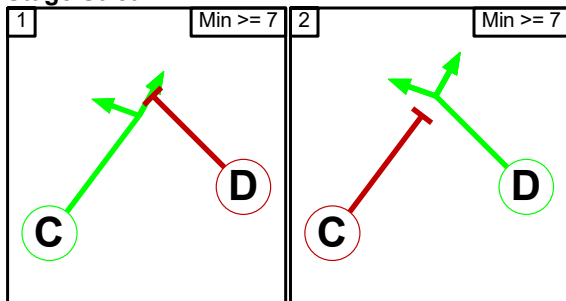


Stage Diagram

Stage Stream: 1

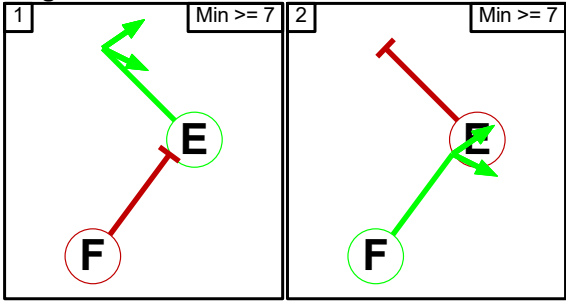


Stage Stream: 2

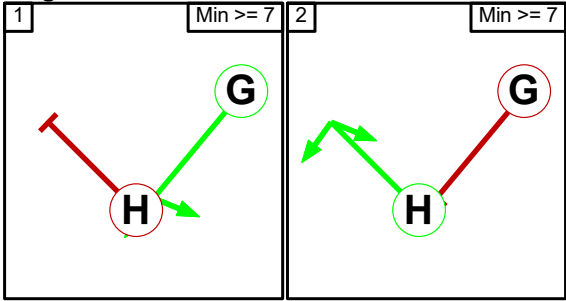


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



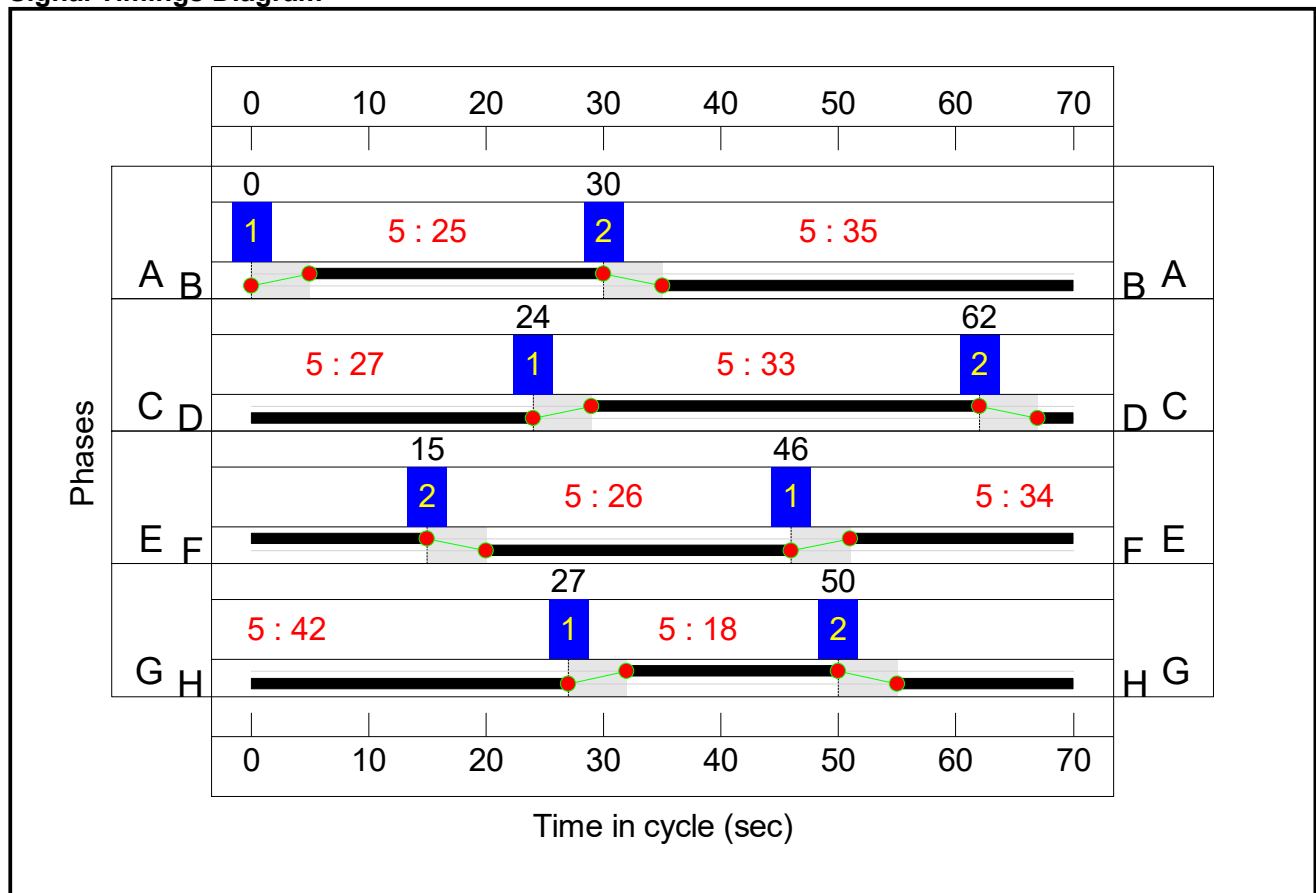
Stage Stream: 4



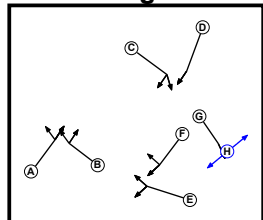
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

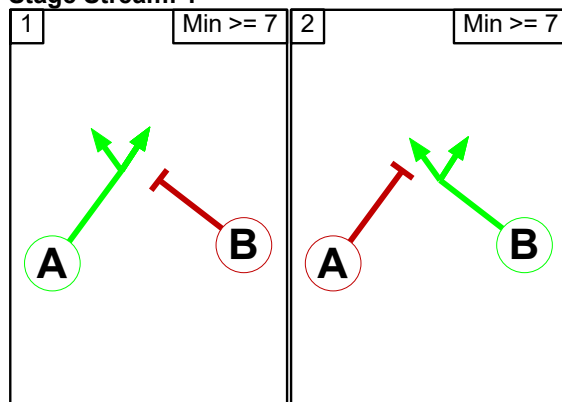
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



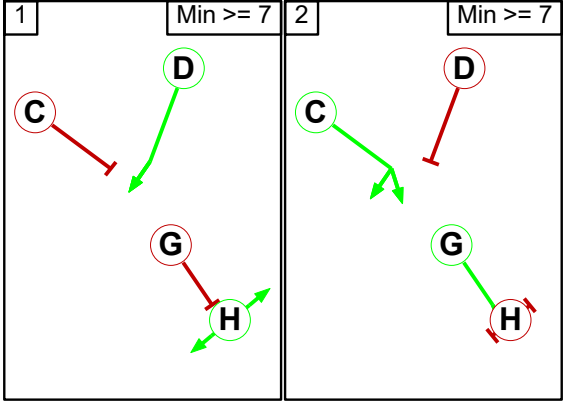
C2
Phase Diagram



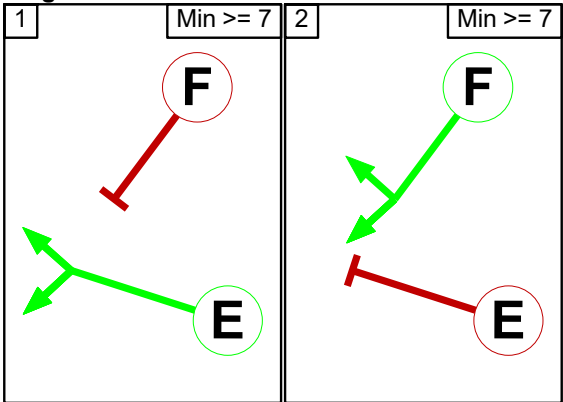
Stage Diagram
Stage Stream: 1



Stage Stream: 2



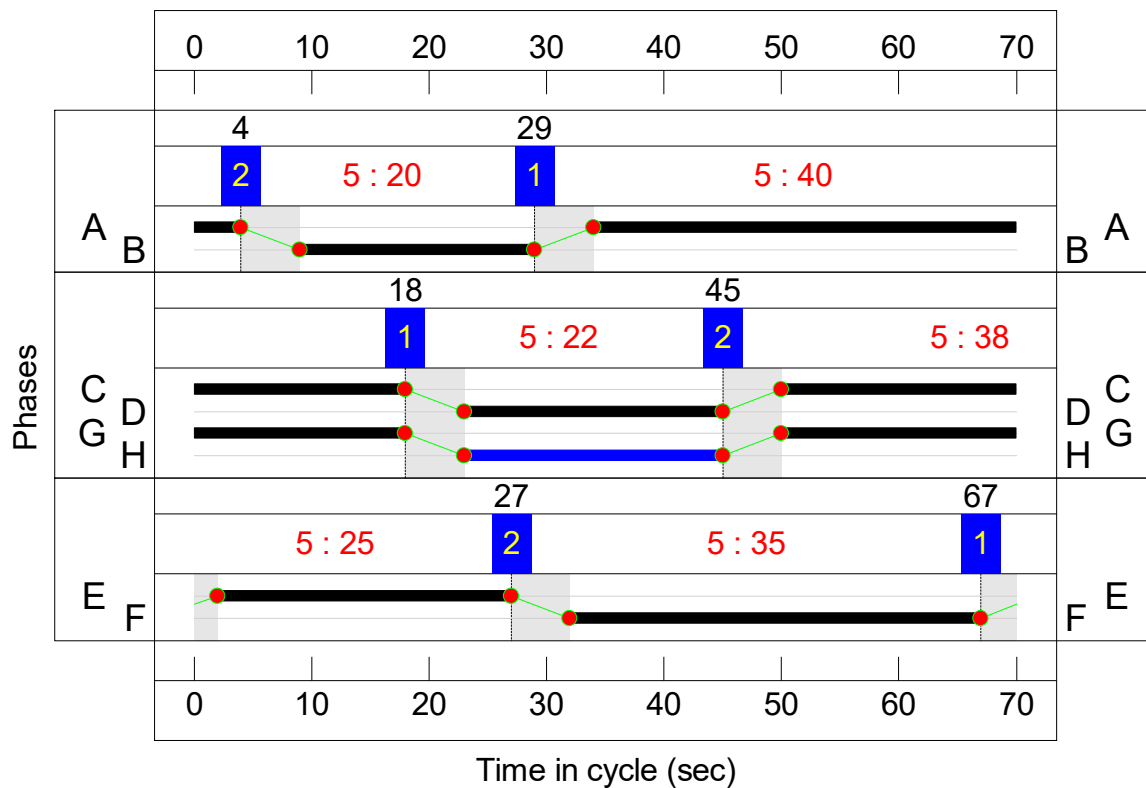
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

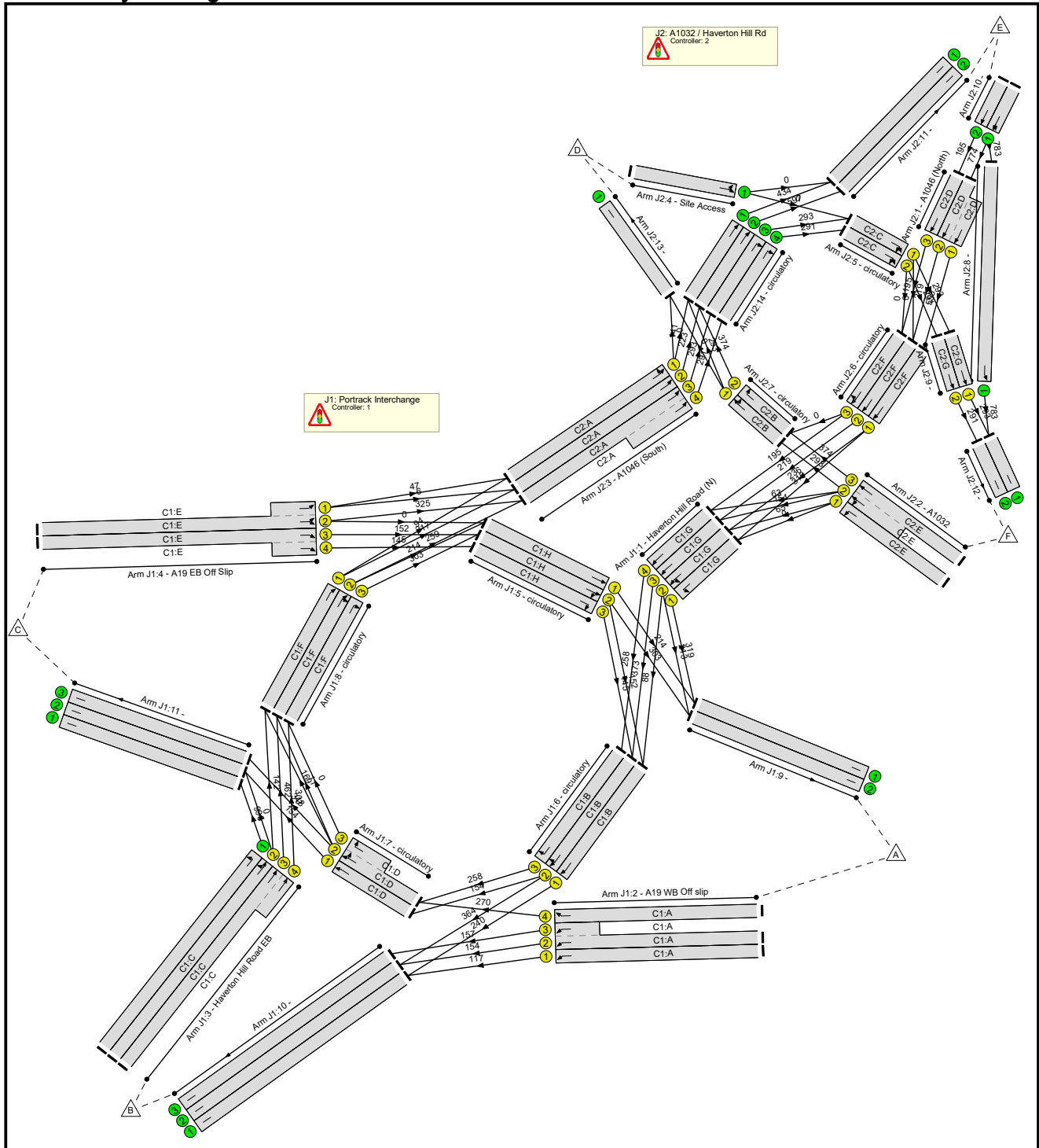
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	68.9%	-	-	0	0	0	51.6	-
J1: Portrack Interchange	-	-	-		-	-	-	-	68.9%	-	-	0	0	0	33.9	-
1/1	Haverton Hill Road (N) Left	U	C1:G		18	-	244	1995	45.1%	1.2	542	-	-	-	0.8	11.9
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		18	-	235	1995	43.4%	2.6	542	-	-	-	1.2	17.6
1/3	Haverton Hill Road (N) Ahead	U	C1:G		18	-	321	1995	59.3%	2.4	542	-	-	-	1.4	15.2
1/4	Haverton Hill Road (N) Ahead	U	C1:G		18	-	100	1995	18.5%	1.7	542	-	-	-	0.5	18.8
2/1	A19 WB Off slip Ahead	U	C1:A		25	-	186	1940	25.8%	2.7	721	-	-	-	1.0	18.7
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		25	-	424	1955:1985	42.9 : 42.9%	3.3	489+499	-	-	-	2.2	18.7
2/4	A19 WB Off slip Ahead	U	C1:A		25	-	438	2065	57.1%	7.4	767	-	-	-	2.8	23.0
3/1	Haverton Hill Road EB Left	U	-		-	-	601	2015	29.8%	0.2	2015	-	-	-	0.2	1.3
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		33	-	129	2065	12.9%	1.4	1003	-	-	-	0.4	12.0
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		33	-	735	1995:2015	66.7 : 66.7%	8.5	732+370	-	-	-	3.4	16.9
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		34	-	709	1985:1985	68.9 : 68.9%	10.7	908+120	-	-	-	3.6	18.3
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		34	-	660	1975:1985	55.3 : 55.3%	5.0	670+522	-	-	-	2.6	13.9

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		42	-	130	2005	10.6%	2.2	1232	-	-	-	0.5	13.9
5/2	circulatory Right Ahead	U	C1:H		42	-	618	2000	50.3%	9.0	1229	-	-	-	1.6	9.5
5/3	circulatory Right	U	C1:H		42	-	289	2015	23.3%	0.2	1238	-	-	-	0.2	1.9
6/1	circulatory Ahead	U	C1:B		35	-	361	1995	35.2%	5.4	1026	-	-	-	1.7	16.6
6/2	circulatory Right Ahead	U	C1:B		35	-	610	1995	59.5%	5.2	1026	-	-	-	1.5	8.9
6/3	circulatory Right	U	C1:B		35	-	100	1995	9.7%	0.1	1026	-	-	-	0.1	1.9
7/1	circulatory Ahead	U	C1:D		27	-	67	1980	8.5%	1.3	792	-	-	-	0.5	24.4
7/2+7/3	circulatory Right Ahead	U	C1:D		27	-	538	1995:2015	67.4 : 0.0%	11.7	798+0	-	-	-	2.5	16.7
8/1	circulatory Ahead	U	C1:F		26	-	438	1995	56.9%	7.4	770	-	-	-	1.7	13.8
8/2	circulatory Ahead Right	U	C1:F		26	-	518	2015	66.6%	4.7	777	-	-	-	2.7	18.8
8/3	circulatory Right	U	C1:F		26	-	247	2075	30.9%	1.8	800	-	-	-	1.0	14.7
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	67.8%	-	-	0	0	0	17.7	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		22	-	609	1965:1965	67.8 : 67.8%	6.7	375+524	-	-	-	4.2	25.0
1/3	A1046 (North) Ahead	U	C2:D		22	-	22	1965	3.4%	0.3	646	-	-	-	0.1	19.0
2/1	A1032 Left	U	C2:E		25	-	124	1940	17.2%	1.7	721	-	-	-	0.6	17.8
2/3+2/2	A1032 Ahead Left	U	C2:E		25	-	615	1940:1940	65.6 : 65.6%	6.7	352+585	-	-	-	3.8	22.2
3/1	A1046 (South) Left Ahead	U	C2:A		40	-	144	2015	12.2%	1.2	1180	-	-	-	0.2	5.7
3/2	A1046 (South) Ahead	U	C2:A		40	-	377	2015	31.9%	7.2	1180	-	-	-	1.0	9.1
3/3+3/4	A1046 (South) Ahead	U	C2:A		40	-	1014	2015:2015	63.4 : 63.4%	3.8	801+798	-	-	-	2.1	7.6

Lighthouse Green Fuels - LinSig Results

[illegible]



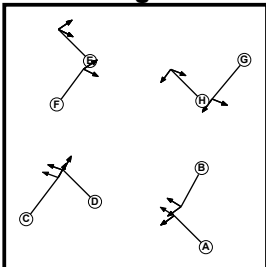
Traffic Flows, Actual

Actual Flow :

Origin	Destination							
		A	B	C	D	E	F	Tot.
A		0	428	90	0	169	11	698
B		517	0	995	0	142	248	1902
C		0	297	0	0	53	325	675
D		0	0	0	0	0	0	0
E		530	244	195	0	0	783	1752
F		2	63	217	0	667	0	949
Tot.		1049	1032	1497	0	1031	1367	5976

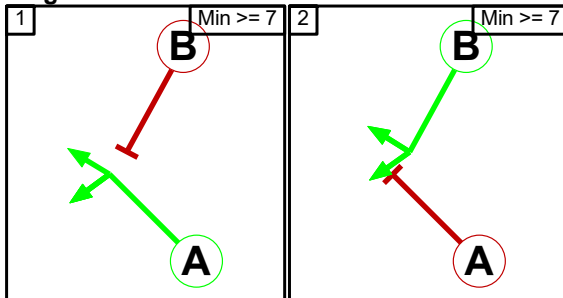
C1

Phase Diagram

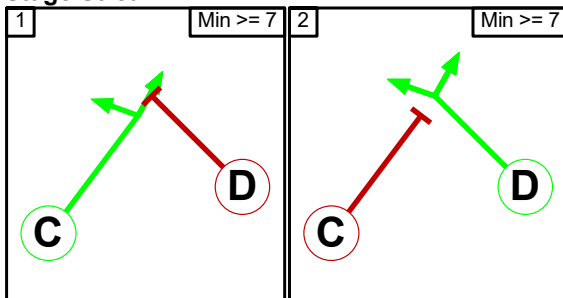


Stage Diagram

Stage Stream: 1

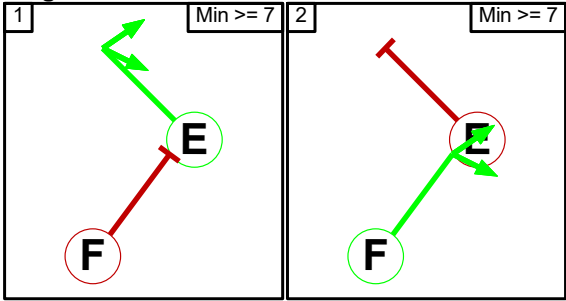


Stage Stream: 2

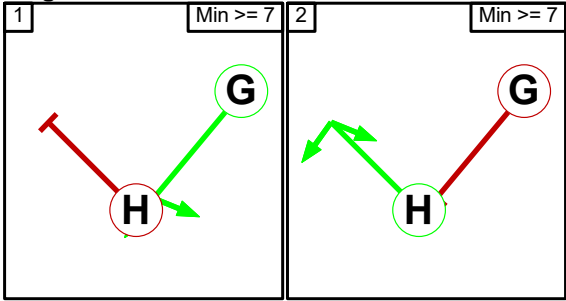


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



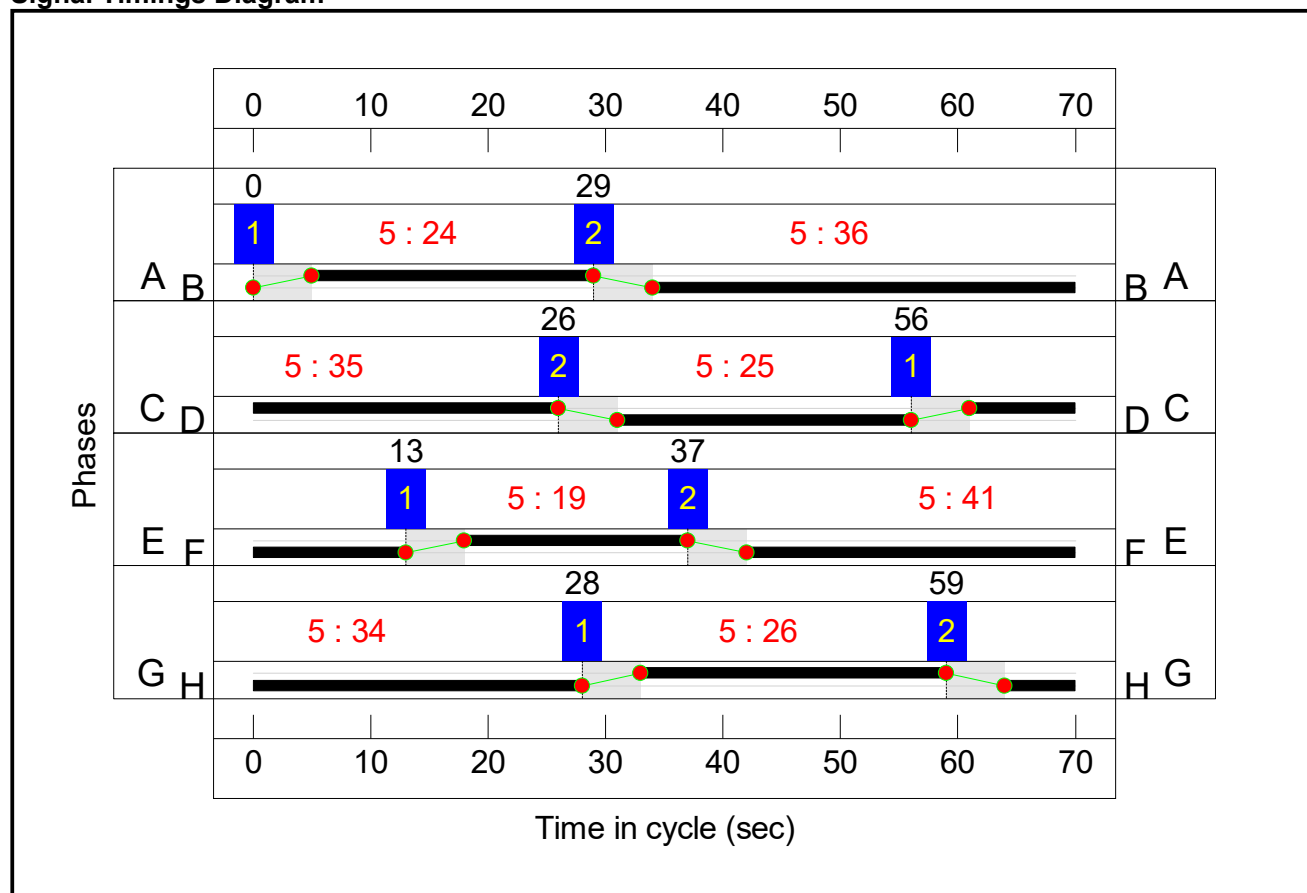
Stage Stream: 4



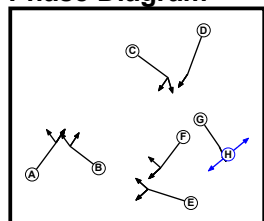
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

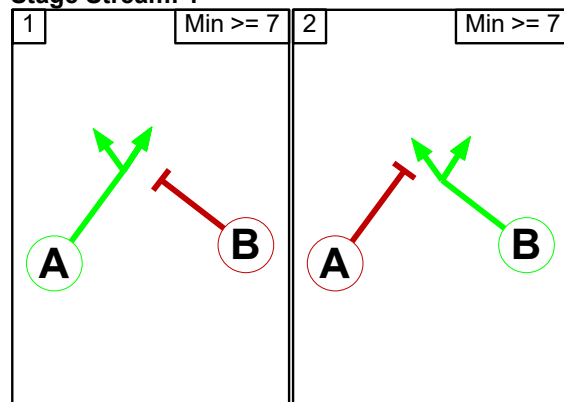
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



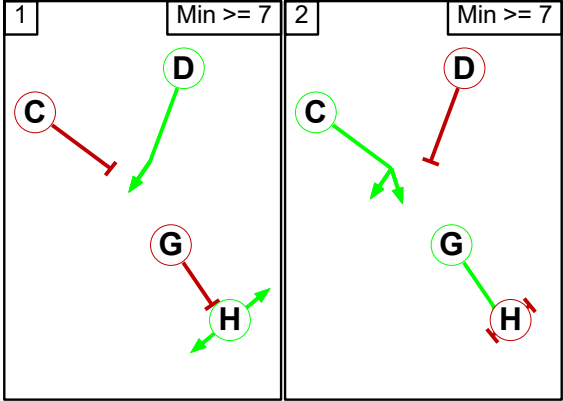
C2
Phase Diagram



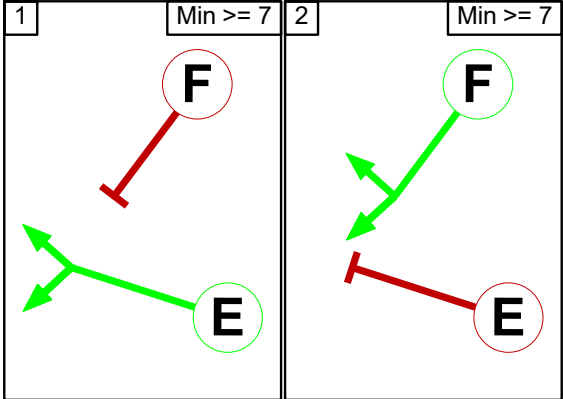
Stage Diagram
Stage Stream: 1



Stage Stream: 2



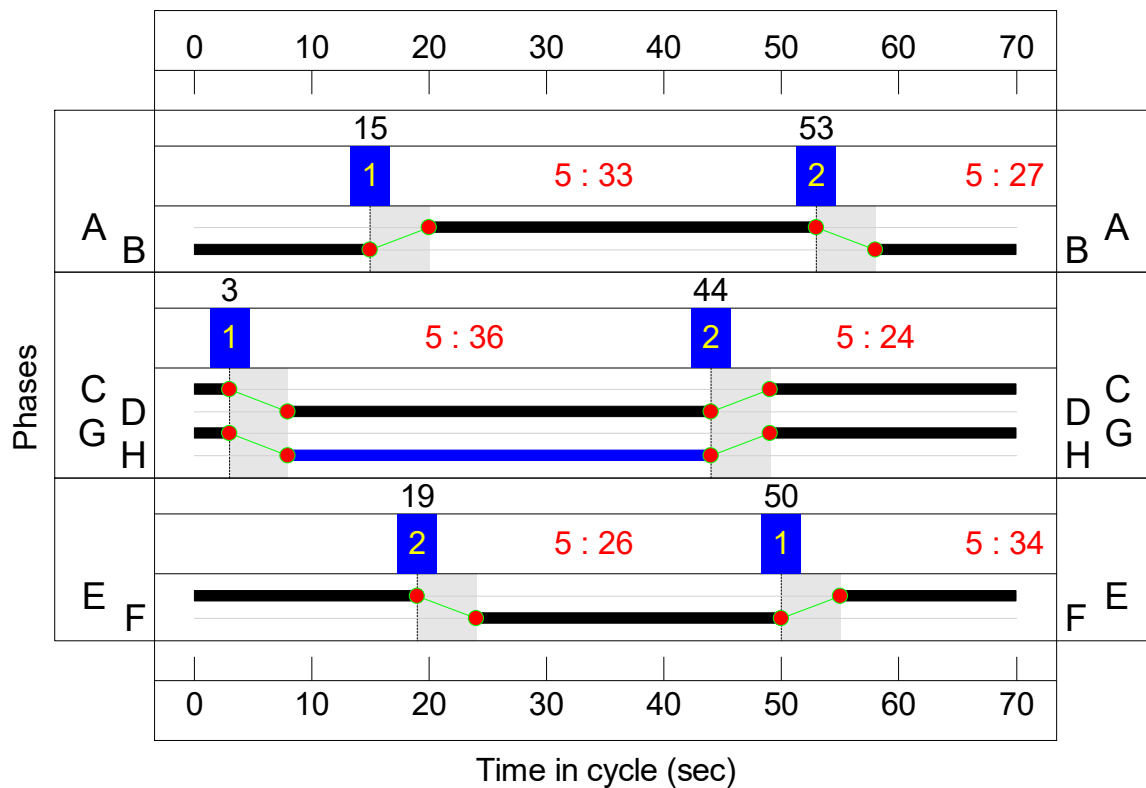
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

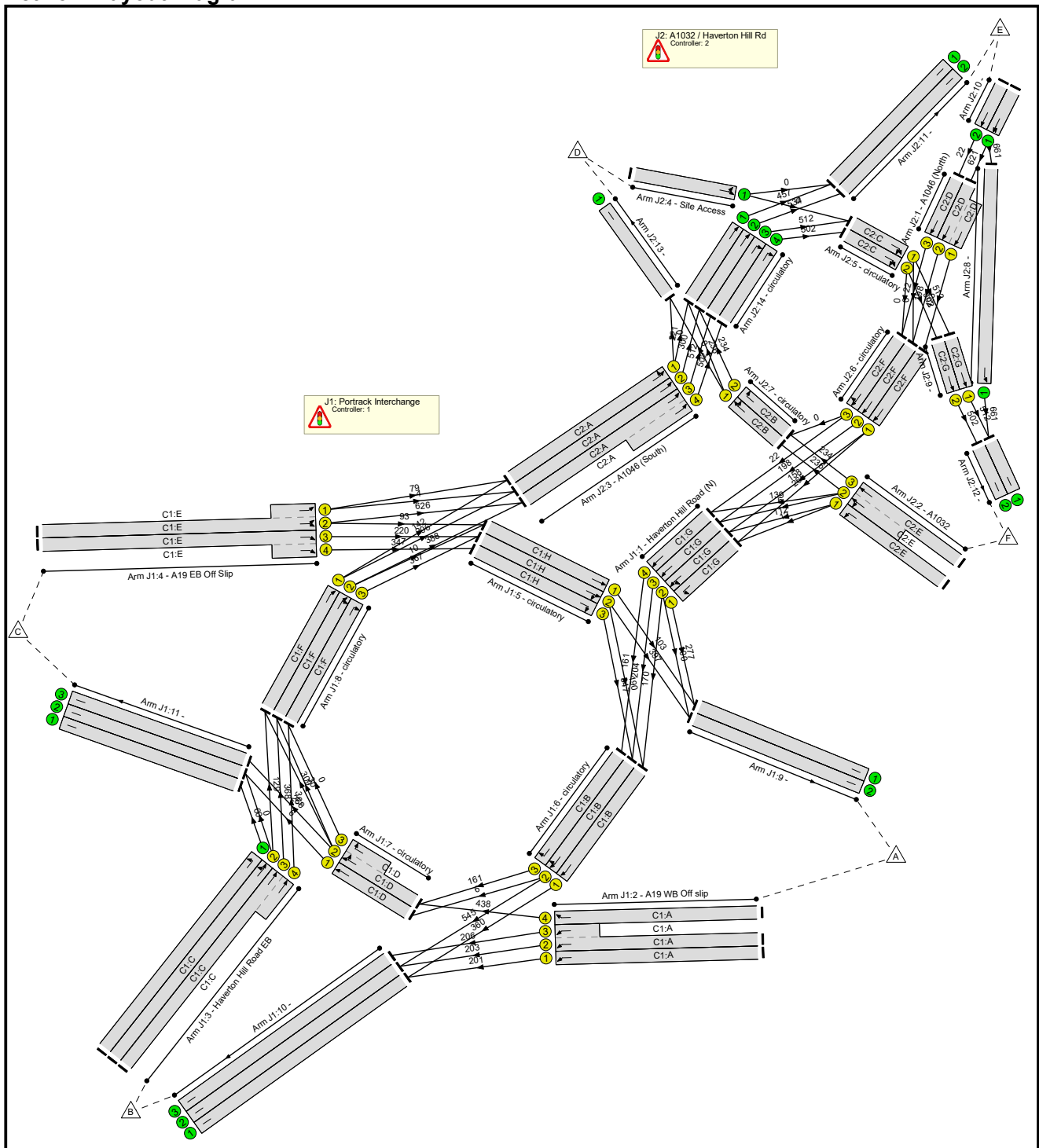
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	71.7%	-	-	0	0	0	45.6	-
J1: Portrack Interchange	-	-	-		-	-	-	-	71.3%	-	-	0	0	0	25.9	-
1/1	Haverton Hill Road (N) Left	U	C1:G		26	-	319	1995	41.5%	3.1	770	-	-	-	0.4	4.9
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		26	-	301	1995	39.1%	3.6	770	-	-	-	0.9	10.7
1/3	Haverton Hill Road (N) Ahead	U	C1:G		26	-	373	1995	48.5%	7.0	770	-	-	-	2.3	22.0
1/4	Haverton Hill Road (N) Ahead	U	C1:G		26	-	258	1995	33.5%	4.4	770	-	-	-	1.0	14.3
2/1	A19 WB Off slip Ahead	U	C1:A		24	-	117	1940	16.9%	1.6	693	-	-	-	0.6	18.5
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		24	-	311	1955:1985	32.4 : 32.4%	2.3	475+484	-	-	-	1.6	18.5
2/4	A19 WB Off slip Ahead	U	C1:A		24	-	270	2065	36.6%	4.1	737	-	-	-	1.5	20.5
3/1	Haverton Hill Road EB Left	U	-		-	-	995	2015	49.4%	0.5	2015	-	-	-	0.5	1.8
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		35	-	142	2065	13.4%	1.5	1062	-	-	-	0.4	10.8
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		35	-	765	1995:2015	63.8 : 63.8%	7.4	724+475	-	-	-	3.1	14.6
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		19	-	378	1985:1985	61.9 : 61.9%	6.2	525+86	-	-	-	3.0	28.6
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		19	-	297	1975:1985	36.5 : 36.5%	2.6	416+397	-	-	-	1.9	22.8

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		34	-	214	2005	21.3%	1.2	1002	-	-	-	0.4	6.4
5/2	circulatory Right Ahead	U	C1:H		34	-	455	2000	45.5%	2.7	1000	-	-	-	1.1	8.9
5/3	circulatory Right	U	C1:H		34	-	145	2015	14.4%	0.8	1007	-	-	-	0.4	9.4
6/1	circulatory Ahead	U	C1:B		36	-	240	1995	22.8%	3.1	1055	-	-	-	0.4	6.2
6/2	circulatory Right Ahead	U	C1:B		36	-	518	1995	49.1%	3.3	1055	-	-	-	0.7	5.1
6/3	circulatory Right	U	C1:B		36	-	258	1995	24.5%	0.2	1055	-	-	-	0.2	2.3
7/1	circulatory Ahead	U	C1:D		25	-	154	1980	20.9%	0.2	735	-	-	-	0.2	4.0
7/2+7/3	circulatory Right Ahead	U	C1:D		25	-	528	1995:2015	71.3 : 0.0%	7.0	741+0	-	-	-	3.0	20.5
8/1	circulatory Ahead	U	C1:F		41	-	311	1995	26.0%	4.1	1197	-	-	-	0.6	6.6
8/2	circulatory Ahead Right	U	C1:F		41	-	473	2015	39.1%	2.9	1209	-	-	-	1.0	7.9
8/3	circulatory Right	U	C1:F		41	-	303	2075	24.3%	1.7	1245	-	-	-	0.6	7.2
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	71.7%	-	-	0	0	0	19.7	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		36	-	774	1965:1965	65.8 : 65.8%	8.2	333+843	-	-	-	3.2	14.7
1/3	A1046 (North) Ahead	U	C2:D		36	-	195	1965	18.8%	2.1	1039	-	-	-	0.6	10.8
2/1	A1032 Left	U	C2:E		34	-	65	1940	6.7%	0.7	970	-	-	-	0.2	11.1
2/3+2/2	A1032 Ahead Left	U	C2:E		34	-	884	1940:1940	71.7 : 71.7%	7.9	522+712	-	-	-	4.1	16.6
3/1	A1046 (South) Left Ahead	U	C2:A		33	-	141	2015	14.4%	1.4	979	-	-	-	0.4	9.5
3/2	A1046 (South) Ahead	U	C2:A		33	-	223	2015	22.8%	1.4	979	-	-	-	0.6	9.2
3/3+3/4	A1046 (South) Ahead	U	C2:A		33	-	584	2015:2015	41.8 : 41.8%	2.1	700+695	-	-	-	1.0	6.3

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		24	-	293	2015	40.7%	5.3	720	-	-	-	1.4	17.6
5/2	circulatory Right Ahead	U	C2:C		24	-	291	2015	40.4%	5.3	720	-	-	-	1.4	17.6
6/1	circulatory Ahead	U	C2:F		26	-	555	2015	71.4%	10.5	777	-	-	-	2.5	16.3
6/2	circulatory Ahead	U	C2:F		26	-	219	2015	28.2%	3.2	777	-	-	-	0.6	10.0
6/3	circulatory Right Ahead	U	C2:F		26	-	195	2015	25.1%	2.8	777	-	-	-	0.5	9.8
7/1	circulatory Ahead Right	U	C2:B		27	-	293	2015	36.4%	1.1	806	-	-	-	0.7	8.6
7/2	circulatory Right	U	C2:B		27	-	374	2015	46.4%	1.6	806	-	-	-	1.0	9.3
8/1	Ahead	U	-		-	-	783	2015	38.9%	0.3	2015	-	-	-	0.3	1.5
9/1	Ahead	U	C2:G		24	-	293	1940	42.3%	2.0	693	-	-	-	0.4	4.7
9/2	Ahead	U	C2:G		24	-	291	1940	42.0%	2.0	693	-	-	-	0.4	4.7
14/1	circulatory Ahead	U	-		-	-	434	2015	21.5%	0.1	2015	-	-	-	0.1	1.1
14/2	circulatory Ahead	U	-		-	-	597	2015	29.6%	0.2	2015	-	-	-	0.2	1.3
14/3	circulatory Right	U	-		-	-	293	2015	14.5%	0.1	2015	-	-	-	0.1	1.0
14/4	circulatory Right	U	-		-	-	291	2015	14.4%	0.1	2015	-	-	-	0.1	1.0
		C1	Stream: 1 PRC for Signalled Lanes (%):				83.2	Total Delay for Signalled Lanes (pcuHr):				5.04	Cycle Time (s): 70			
		C1	Stream: 2 PRC for Signalled Lanes (%):				26.3	Total Delay for Signalled Lanes (pcuHr):				6.70	Cycle Time (s): 70			
		C1	Stream: 3 PRC for Signalled Lanes (%):				45.5	Total Delay for Signalled Lanes (pcuHr):				7.11	Cycle Time (s): 70			
		C1	Stream: 4 PRC for Signalled Lanes (%):				85.7	Total Delay for Signalled Lanes (pcuHr):				6.52	Cycle Time (s): 70			
		C2	Stream: 1 PRC for Signalled Lanes (%):				94.0	Total Delay for Signalled Lanes (pcuHr):				3.62	Cycle Time (s): 70			
		C2	Stream: 2 PRC for Signalled Lanes (%):				36.7	Total Delay for Signalled Lanes (pcuHr):				7.37	Cycle Time (s): 70			
		C2	Stream: 3 PRC for Signalled Lanes (%):				25.6	Total Delay for Signalled Lanes (pcuHr):				7.92	Cycle Time (s): 70			
			PRC Over All Lanes (%):				25.6	Total Delay Over All Lanes(pcuHr):				45.61				

Network Layout Diagram



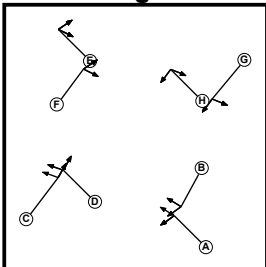
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	610	99	0	309	30	1048
	B	377	0	601	0	129	358	1465
	C	123	537	0	0	83	626	1369
	D	0	0	0	0	0	0	0
	E	353	268	22	0	0	661	1304
	F	24	100	145	0	470	0	739
	Tot.	877	1515	867	0	991	1675	5925

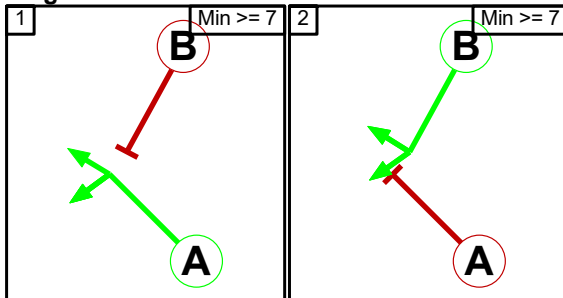
C1

Phase Diagram

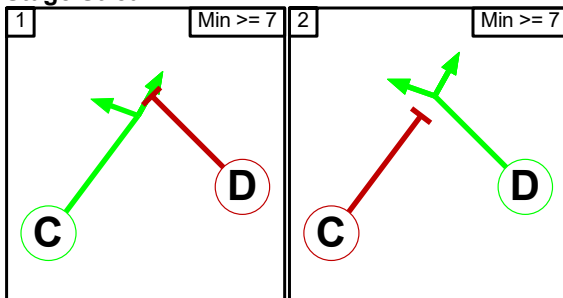


Stage Diagram

Stage Stream: 1

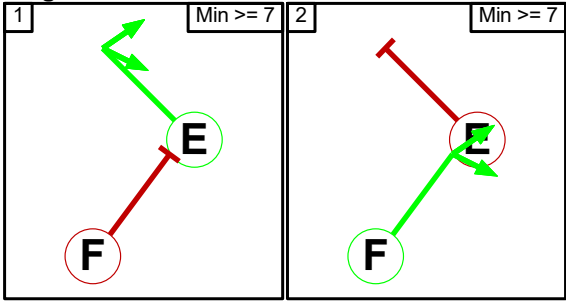


Stage Stream: 2

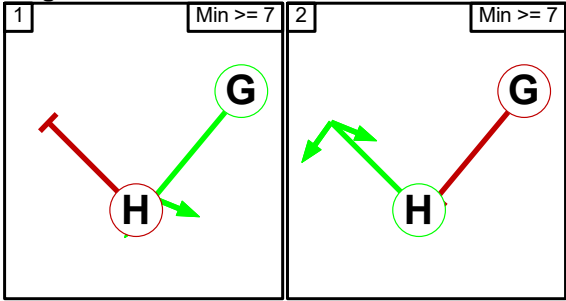


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



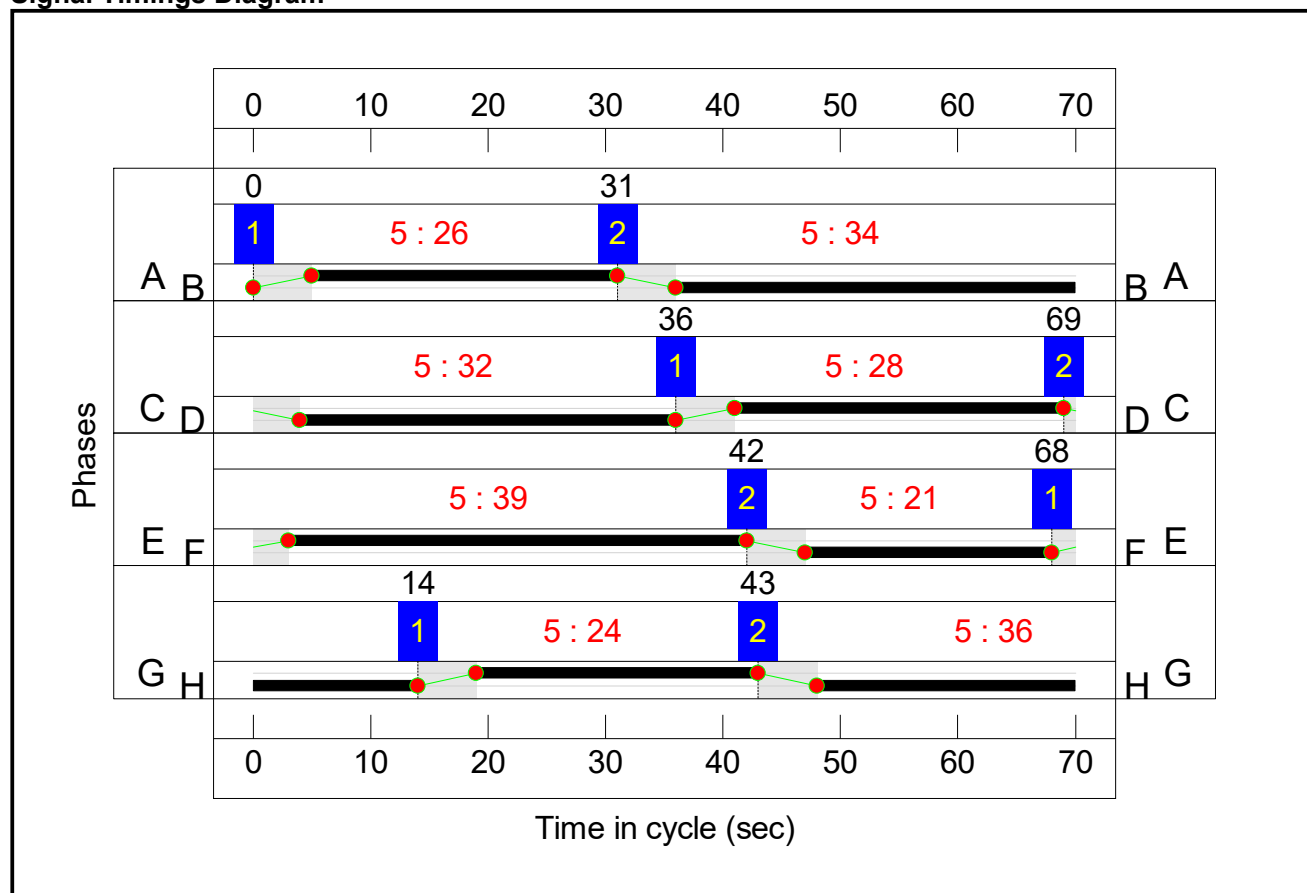
Stage Stream: 4



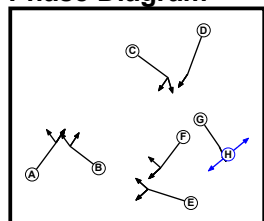
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

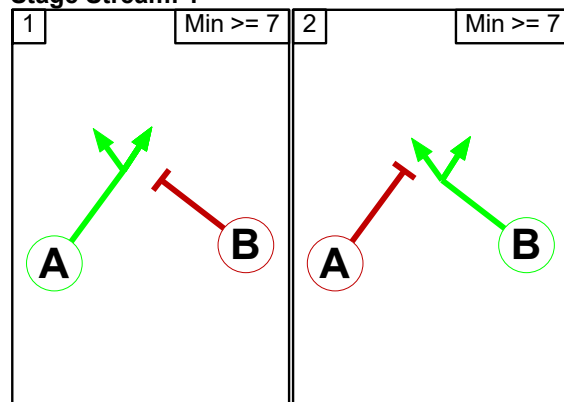
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



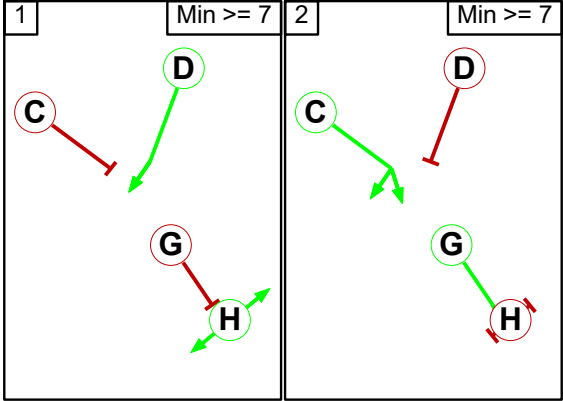
C2
Phase Diagram



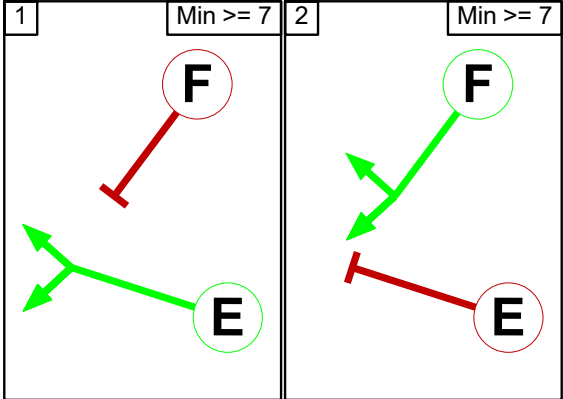
Stage Diagram
Stage Stream: 1



Stage Stream: 2



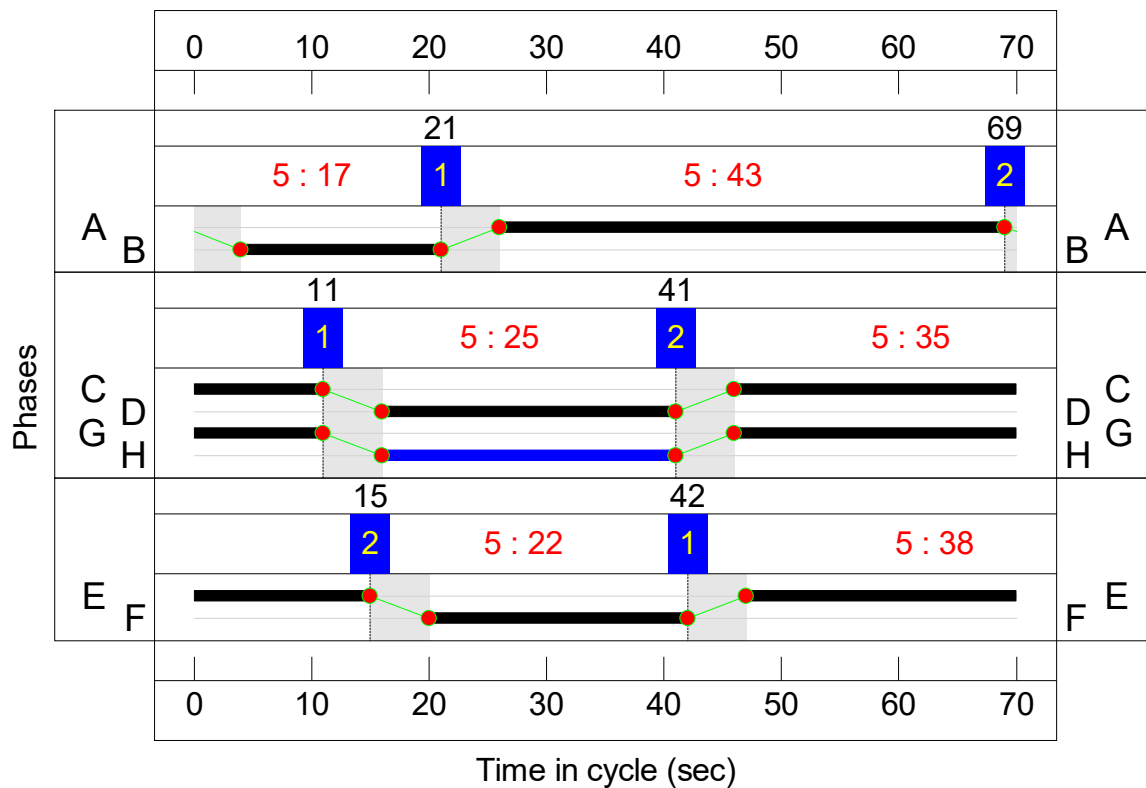
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

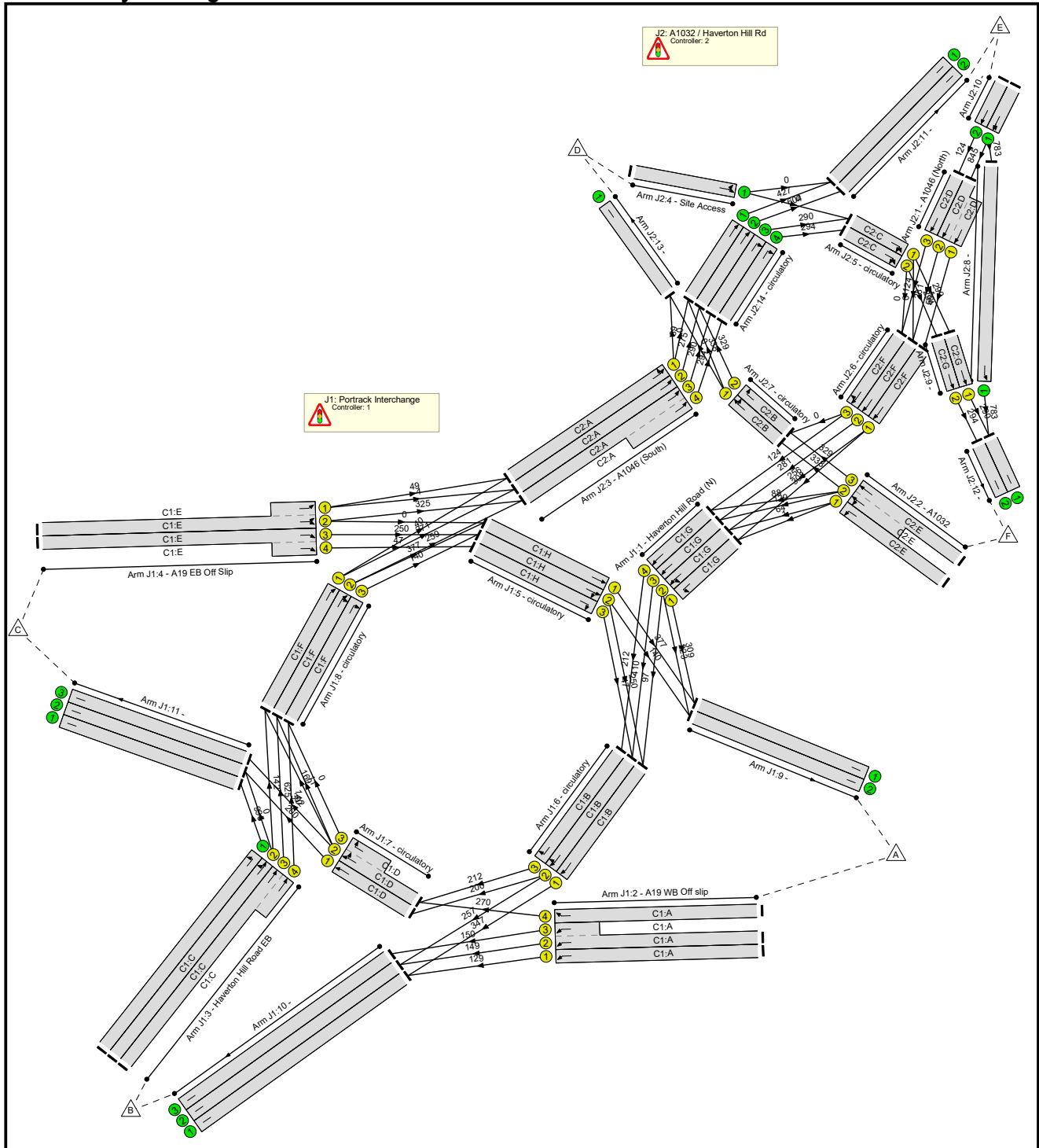
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	69.9%	-	-	0	0	0	53.8	-
J1: Portrack Interchange	-	-	-		-	-	-	-	69.9%	-	-	0	0	0	35.3	-
1/1	Haverton Hill Road (N) Left	U	C1:G		24	-	277	1995	38.9%	0.9	713	-	-	-	0.6	8.0
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		24	-	270	1995	37.9%	2.7	713	-	-	-	1.3	17.2
1/3	Haverton Hill Road (N) Ahead	U	C1:G		24	-	204	1995	28.6%	0.6	713	-	-	-	0.4	6.9
1/4	Haverton Hill Road (N) Ahead	U	C1:G		24	-	161	1995	22.6%	2.9	713	-	-	-	1.2	26.6
2/1	A19 WB Off slip Ahead	U	C1:A		26	-	201	1940	26.9%	2.8	748	-	-	-	1.0	18.0
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		26	-	409	1955:1985	40.2 : 40.2%	3.0	505+512	-	-	-	2.0	17.7
2/4	A19 WB Off slip Ahead	U	C1:A		26	-	438	2065	55.0%	7.2	797	-	-	-	2.6	21.8
3/1	Haverton Hill Road EB Left	U	-		-	-	601	2015	29.8%	0.2	2015	-	-	-	0.2	1.3
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		28	-	129	2065	15.1%	1.6	856	-	-	-	0.5	15.3
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		28	-	735	1995:2015	67.7 : 67.7%	6.7	544+542	-	-	-	4.0	19.8
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		39	-	802	1985:1985	68.8 : 68.8%	11.2	1045+121	-	-	-	3.3	15.0
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		39	-	567	1975:1985	43.7 : 43.7%	3.9	503+794	-	-	-	1.6	10.0

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		36	-	103	2005	9.7%	1.4	1060	-	-	-	0.5	16.1
5/2	circulatory Right Ahead	U	C1:H		36	-	587	2000	55.5%	3.0	1057	-	-	-	1.2	7.3
5/3	circulatory Right	U	C1:H		36	-	347	2015	32.6%	3.7	1065	-	-	-	1.3	13.1
6/1	circulatory Ahead	U	C1:B		34	-	360	1995	36.1%	5.3	998	-	-	-	1.4	14.1
6/2	circulatory Right Ahead	U	C1:B		34	-	551	1995	55.2%	7.8	998	-	-	-	2.3	14.7
6/3	circulatory Right	U	C1:B		34	-	161	1995	16.1%	3.2	998	-	-	-	0.6	13.2
7/1	circulatory Ahead	U	C1:D		32	-	6	1980	0.6%	0.1	933	-	-	-	0.0	28.8
7/2+7/3	circulatory Right Ahead	U	C1:D		32	-	599	1995:2015	63.7 : 0.0%	11.5	941+0	-	-	-	2.4	14.2
8/1	circulatory Ahead	U	C1:F		21	-	438	1995	69.9%	9.4	627	-	-	-	4.0	33.2
8/2	circulatory Ahead Right	U	C1:F		21	-	398	2015	62.8%	7.4	633	-	-	-	1.7	15.2
8/3	circulatory Right	U	C1:F		21	-	367	2075	56.3%	6.4	652	-	-	-	1.2	11.6
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	69.5%	-	-	0	0	0	18.5	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		25	-	621	1965:1965	69.5 : 69.5%	7.7	285+609	-	-	-	4.0	23.5
1/3	A1046 (North) Ahead	U	C2:D		25	-	22	1965	3.0%	0.3	730	-	-	-	0.1	16.7
2/1	A1032 Left	U	C2:E		38	-	124	1940	11.5%	1.2	1081	-	-	-	0.3	9.2
2/3+2/2	A1032 Ahead Left	U	C2:E		38	-	615	1940:1940	47.2 : 47.2%	4.5	495+806	-	-	-	1.9	10.9
3/1	A1046 (South) Left Ahead	U	C2:A		43	-	221	2015	17.4%	1.4	1267	-	-	-	0.4	6.1
3/2	A1046 (South) Ahead	U	C2:A		43	-	300	2015	23.7%	0.3	1267	-	-	-	0.2	2.4
3/3+3/4	A1046 (South) Ahead	U	C2:A		43	-	1014	2015:2015	60.4 : 60.4%	6.0	847+831	-	-	-	2.5	8.8

4/1	Site Access Ahead Left	U	-		-	-	0	2015	0.0%	0.0	2015	-	-	-	0.0	0.0
5/1	circulatory Right Ahead	U	C2:C		35	-	512	2015	49.4%	6.8	1036	-	-	-	1.3	9.0
5/2	circulatory Right Ahead	U	C2:C		35	-	502	2015	48.4%	6.3	1036	-	-	-	1.2	8.7
6/1	circulatory Ahead	U	C2:F		22	-	423	2015	63.9%	1.6	662	-	-	-	1.2	10.3
6/2	circulatory Ahead	U	C2:F		22	-	198	2015	29.9%	0.5	662	-	-	-	0.4	6.7
6/3	circulatory Right Ahead	U	C2:F		22	-	22	2015	3.3%	0.0	662	-	-	-	0.0	5.6
7/1	circulatory Ahead Right	U	C2:B		17	-	236	2015	45.5%	4.4	518	-	-	-	1.4	20.6
7/2	circulatory Right	U	C2:B		17	-	234	2015	45.2%	4.3	518	-	-	-	1.4	21.3
8/1	Ahead	U	-		-	-	661	2015	32.8%	0.2	2015	-	-	-	0.2	1.3
9/1	Ahead	U	C2:G		35	-	512	1940	51.3%	3.3	998	-	-	-	0.7	4.9
9/2	Ahead	U	C2:G		35	-	502	1940	50.3%	2.7	998	-	-	-	0.7	4.9
14/1	circulatory Ahead	U	-		-	-	457	2015	22.7%	0.1	2015	-	-	-	0.1	1.2
14/2	circulatory Ahead	U	-		-	-	534	2015	26.5%	0.2	2015	-	-	-	0.2	1.2
14/3	circulatory Right	U	-		-	-	512	2015	25.4%	0.2	2015	-	-	-	0.2	1.2
14/4	circulatory Right	U	-		-	-	502	2015	24.9%	0.2	2015	-	-	-	0.2	1.2
		C1	Stream: 1 PRC for Signalled Lanes (%):		62.9		Total Delay for Signalled Lanes (pcuHr):		9.92		Cycle Time (s):	70				
		C1	Stream: 2 PRC for Signalled Lanes (%):		33.0		Total Delay for Signalled Lanes (pcuHr):		7.01		Cycle Time (s):	70				
		C1	Stream: 3 PRC for Signalled Lanes (%):		28.8		Total Delay for Signalled Lanes (pcuHr):		11.82		Cycle Time (s):	70				
		C1	Stream: 4 PRC for Signalled Lanes (%):		62.1		Total Delay for Signalled Lanes (pcuHr):		6.40		Cycle Time (s):	70				
		C2	Stream: 1 PRC for Signalled Lanes (%):		49.0		Total Delay for Signalled Lanes (pcuHr):		5.77		Cycle Time (s):	70				
		C2	Stream: 2 PRC for Signalled Lanes (%):		29.5		Total Delay for Signalled Lanes (pcuHr):		8.02		Cycle Time (s):	70				
		C2	Stream: 3 PRC for Signalled Lanes (%):		40.9		Total Delay for Signalled Lanes (pcuHr):		3.79		Cycle Time (s):	70				
			PRC Over All Lanes (%):		28.8		Total Delay Over All Lanes(pcuHr):		53.84							

Network Layout Diagram



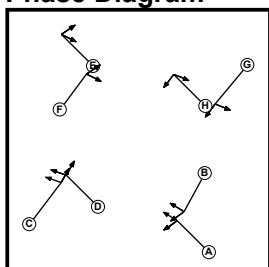
Traffic Flows, Actual

Actual Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	428	90	0	169	11	698
	B	517	0	995	0	142	248	1902
	C	0	297	0	0	53	325	675
	D	0	0	0	0	0	0	0
	E	530	244	195	0	0	783	1752
	F	2	63	217	0	667	0	949
	Tot.	1049	1032	1497	0	1031	1367	5976

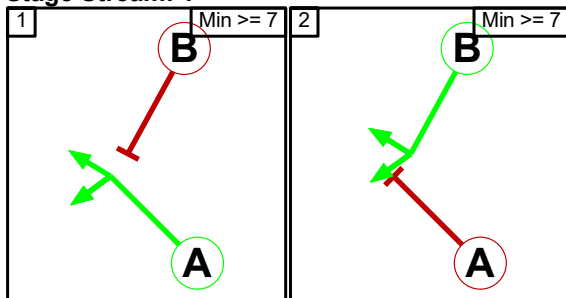
C1

Phase Diagram

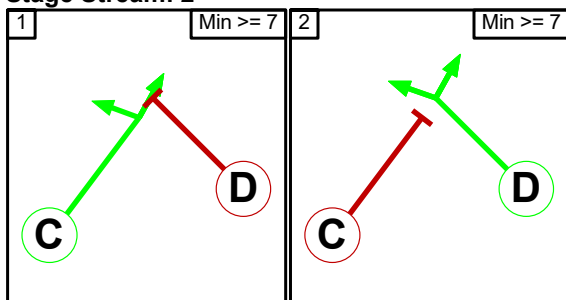


Stage Diagram

Stage Stream: 1

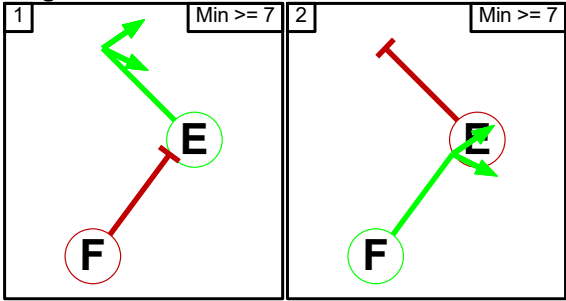


Stage Stream: 2

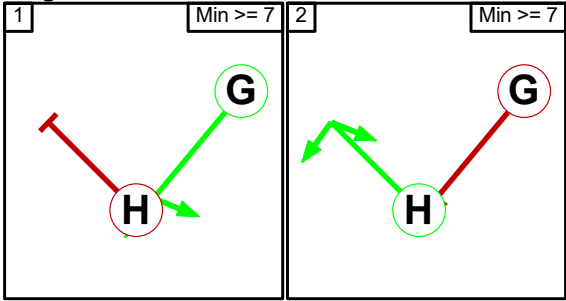


Lighthouse Green Fuels - LinSig Results

Stage Stream: 3



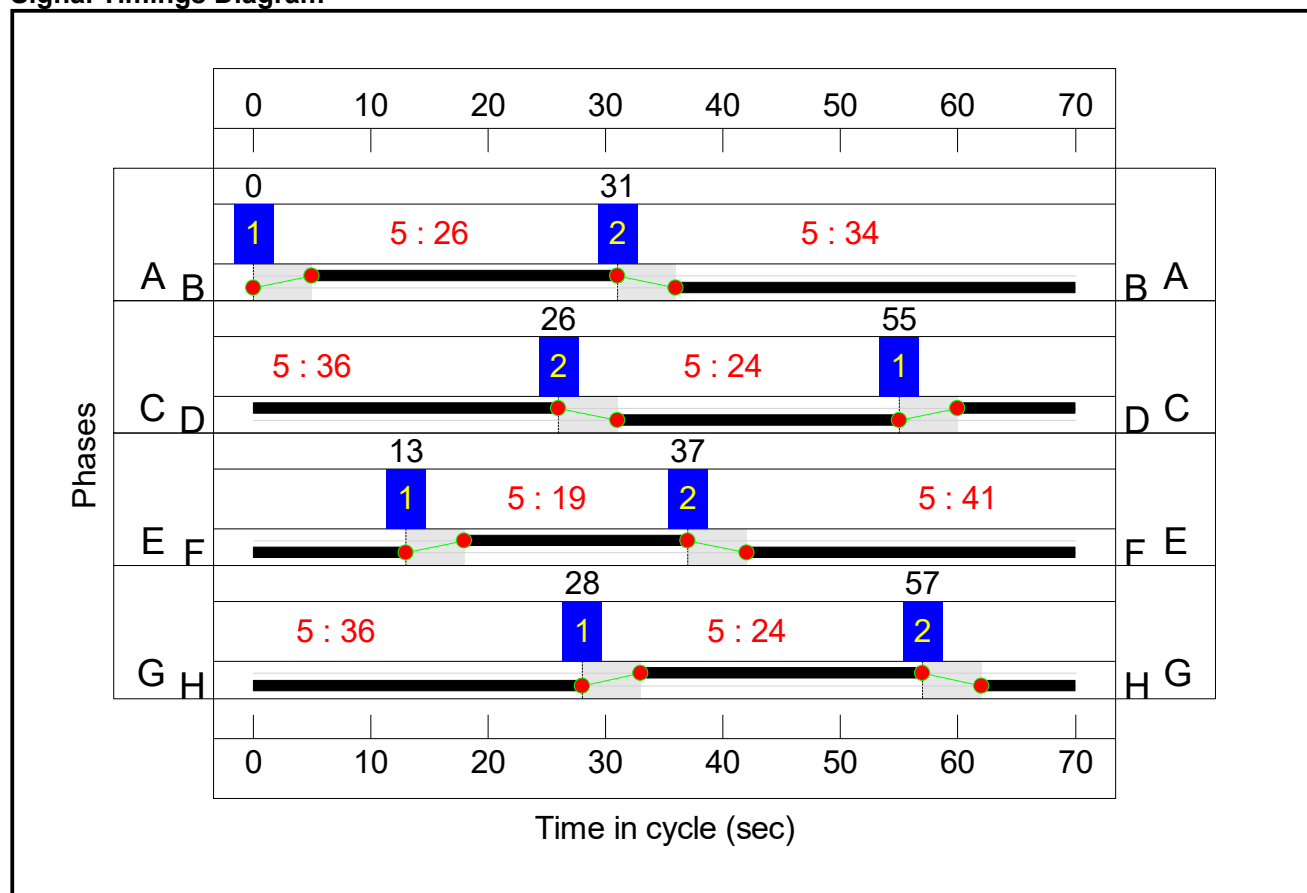
Stage Stream: 4



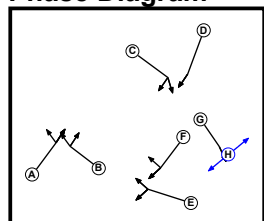
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A	-	5	-	-	-	-	-	-
	B	5	-	-	-	-	-	-	-
	C	-	-	-	5	-	-	-	-
	D	-	-	5	-	-	-	-	-
	E	-	-	-	-	-	5	-	-
	F	-	-	-	-	5	-	-	-
	G	-	-	-	-	-	-	-	5
	H	-	-	-	-	-	-	5	-

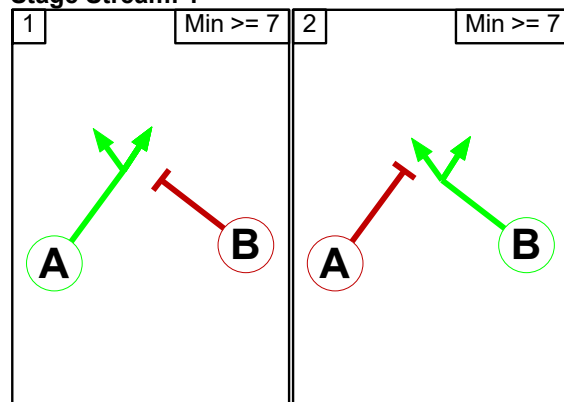
Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



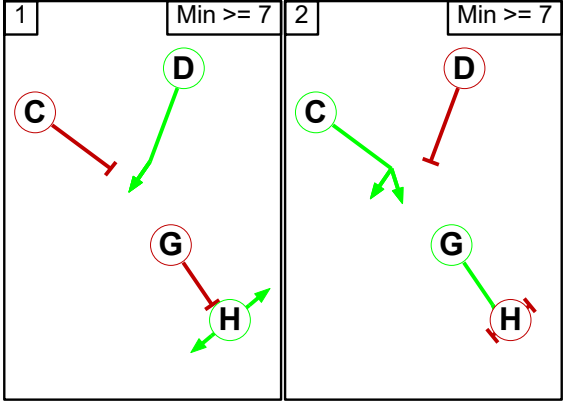
C2
Phase Diagram



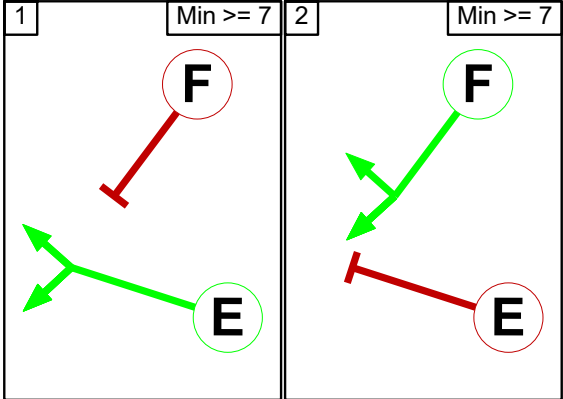
Stage Diagram
Stage Stream: 1



Stage Stream: 2



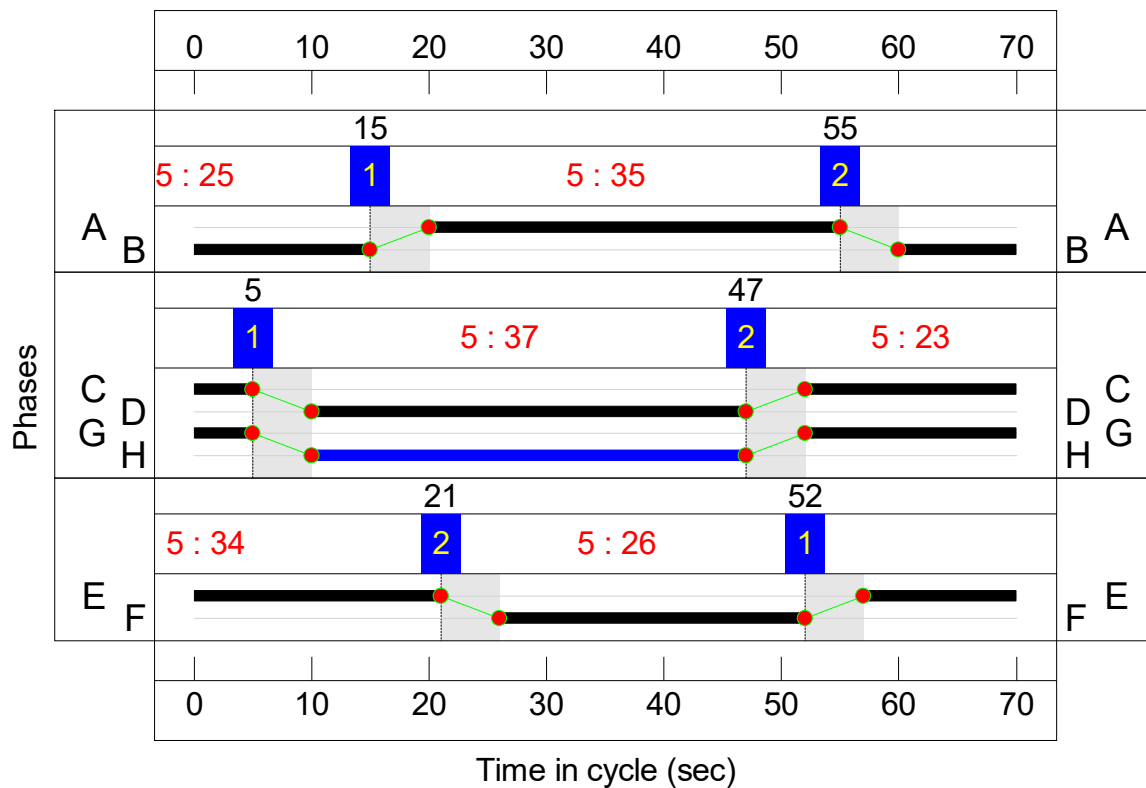
Stage Stream: 3



Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	-	5	-	-	-	-	-	-
	5	-	-	-	-	-	-	-
	-	-	-	5	-	-	-	-
	-	-	5	-	-	-	-	-
	-	-	-	-	-	5	-	-
	-	-	-	-	5	-	-	-
	-	-	-	-	-	-	-	5
	-	-	-	-	-	5	-	-

Lighthouse Green Fuels - LinSig Results
Signal Timings Diagram



Lighthouse Green Fuels - LinSig Results

Network Results

Lighthouse Green Fuels - LinSig Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Deg Sat (%)	Mean Max Queue (pcu)	Capacity (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
Network: Portrack Interchange Double Roundabout	-	-	-		-	-	-	-	74.7%	-	-	0	0	0	47.4	-
J1: Portrack Interchange	-	-	-		-	-	-	-	68.7%	-	-	0	0	0	26.7	-
1/1	Haverton Hill Road (N) Left	U	C1:G		24	-	309	1995	43.4%	1.6	713	-	-	-	0.4	5.2
1/2	Haverton Hill Road (N) Ahead Left	U	C1:G		24	-	320	1995	44.9%	3.4	713	-	-	-	1.1	12.1
1/3	Haverton Hill Road (N) Ahead	U	C1:G		24	-	410	1995	57.5%	7.7	713	-	-	-	2.2	19.2
1/4	Haverton Hill Road (N) Ahead	U	C1:G		24	-	212	1995	29.8%	3.7	713	-	-	-	1.1	18.2
2/1	A19 WB Off slip Ahead	U	C1:A		26	-	129	1940	17.2%	1.8	748	-	-	-	0.6	17.1
2/2+2/3	A19 WB Off slip Ahead	U	C1:A		26	-	299	1955:1985	29.3 : 29.3%	2.1	508+511	-	-	-	1.4	16.8
2/4	A19 WB Off slip Ahead	U	C1:A		26	-	270	2065	33.9%	3.9	797	-	-	-	1.4	18.6
3/1	Haverton Hill Road EB Left	U	-		-	-	995	2015	49.4%	0.5	2015	-	-	-	0.5	1.8
3/2	Haverton Hill Road EB Ahead Left	U	C1:C		36	-	142	2065	13.0%	1.5	1091	-	-	-	0.4	10.3
3/3+3/4	Haverton Hill Road EB Ahead	U	C1:C		36	-	765	1995:2015	68.7 : 68.7%	10.6	910+204	-	-	-	3.5	16.4
4/2+4/1	A19 EB Off Slip Ahead Ahead2	U	C1:E		19	-	378	1985:1985	61.9 : 61.9%	6.2	525+86	-	-	-	3.0	28.6
4/3+4/4	A19 EB Off Slip Ahead	U	C1:E		19	-	297	1975:1985	48.2 : 48.2%	4.4	519+97	-	-	-	2.1	25.7

Lighthouse Green Fuels - LinSig Results

5/1	circulatory Ahead	U	C1:H		36	-	377	2005	35.6%	2.3	1060	-	-	-	0.7	6.3
5/2	circulatory Right Ahead	U	C1:H		36	-	390	2000	36.9%	2.8	1057	-	-	-	1.2	11.3
5/3	circulatory Right	U	C1:H		36	-	47	2015	4.4%	0.2	1065	-	-	-	0.1	7.7
6/1	circulatory Ahead	U	C1:B		34	-	347	1995	34.8%	5.0	998	-	-	-	0.8	8.4
6/2	circulatory Right Ahead	U	C1:B		34	-	457	1995	45.8%	1.1	998	-	-	-	0.5	4.0
6/3	circulatory Right	U	C1:B		34	-	212	1995	21.3%	0.1	998	-	-	-	0.1	2.3
7/1	circulatory Ahead	U	C1:D		24	-	200	1980	28.3%	0.6	707	-	-	-	0.4	7.7
7/2+7/3	circulatory Right Ahead	U	C1:D		24	-	482	1995:2015	67.6 : 0.0%	6.7	713+0	-	-	-	2.7	20.2
8/1	circulatory Ahead	U	C1:F		41	-	311	1995	26.0%	4.1	1197	-	-	-	0.6	6.7
8/2	circulatory Ahead Right	U	C1:F		41	-	636	2015	52.6%	4.0	1209	-	-	-	1.6	9.0
8/3	circulatory Right	U	C1:F		41	-	140	2075	11.2%	0.8	1245	-	-	-	0.3	6.9
J2: A1032 / Haverton Hill Rd	-	-	-		-	-	-	-	74.7%	-	-	0	0	0	20.7	-
1/2+1/1	A1046 (North) Ahead	U	C2:D		37	-	845	1965:1965	68.1 : 68.1%	8.3	413+828	-	-	-	3.3	14.2
1/3	A1046 (North) Ahead	U	C2:D		37	-	124	1965	11.6%	1.2	1067	-	-	-	0.3	9.7
2/1	A1032 Left	U	C2:E		34	-	65	1940	6.7%	0.7	970	-	-	-	0.2	11.1
2/3+2/2	A1032 Ahead Left	U	C2:E		34	-	884	1940:1940	74.7 : 74.7%	9.7	440+743	-	-	-	4.3	17.6
3/1	A1046 (South) Left Ahead	U	C2:A		35	-	89	2015	8.6%	0.3	1036	-	-	-	0.1	5.0
3/2	A1046 (South) Ahead	U	C2:A		35	-	275	2015	26.5%	2.2	1036	-	-	-	0.7	9.1
3/3+3/4	A1046 (South) Ahead	U	C2:A		35	-	584	2015:2015	40.3 : 40.3%	2.2	720+730	-	-	-	0.9	5.8

[illegible]

Annex C: Framework Construction Worker Travel Plan

The Lighthouse Green Fuels Order

Application Reference: EN0110025

Applicant: LGF Projects Limited

Environmental Statement Volume III Annex 18C: Framework Construction Worker Travel Plan

Document Reference: 6.3.24

Revision: 00

APFP Reg. 5(2)(a), 5(2)(l) and EIA Reg. 14

Document information

Document Title	ES Appendix 18A: Transport Assessment Annex 18C: Construction Worker Travel Plan
Document Ref	6.3.24
Author	Arup

Revision record

00	Purpose	DCO Application Submission
	Date	September 2026

Information classification

Information Classification	Date	Reason
Public	September 2026	Proprietary information which will have no impact on the company if disclosed publicly

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Abbreviations

Abbreviation	In full
CHP	Combined Heat and Power
CIHT	Chartered Institution of Highways and Transportation
fCTMP	Framework Construction Traffic Management Plan
fCWTP	Framework Construction Worker Travel Pan
ES	Environmental Statement
HGV	Heavy Goods Vehicle
RCBC	Redcar and Cleveland Borough Council
RSPB	Royal Society for the Protection of Birds
SAF	Sustainable Aviation Fuel
STBC	Stockton-on-Tees Borough Council

1 Introduction

1.1 Document purpose

- 1.1.1 This Framework Construction Worker Travel Plan (fCWTP) has been prepared in support of the traffic and transport assessment of the Proposed Development. It identifies the framework to promote and encourage the use of sustainable transport modes and reduce reliance on private vehicles during the construction of the Proposed Development.
- 1.1.2 The fCWTP sets out the aims, objectives and measures to promote sustainable travel to the Site. In this fCWTP 'Site' refers to the respective construction compound and associated construction site.
- 1.1.3 This document should be read in conjunction with the traffic and transport assessment within **Chapter 18: Traffic and Transport (ES Volume I, Application Document Ref. 6.1)**.

1.2 Report structure

- 1.2.1 This report contains the following:
- Section 2: Background;
 - Section 3: Proposed Development Trip Generation;
 - Section 4: Objectives;
 - Section 5: Roles and Responsibilities;
 - Section 6: Travel Plan Measures;
 - Section 7: Targets; and
 - Section 8: Monitoring and Review.

2 Background

2.1 Site context

- 2.1.1 The Site covers a wide area located within the administrative boundaries of Stockton-on-Tees Borough Council (STBC) Billingham South Ward to the north and Redcar and Cleveland Borough Council (RCBC) South Bank Ward to the south of the River Tees.
- 2.1.2 The Main Site is located in the industrial area of Seal Sands, approximately 5km east of Billingham town centre and 4km north east of Middlesbrough town centre in Teesside. It is on the north bank of the River Tees and roughly 3km south west of Teesmouth. The Site is immediately bounded by the River Tees to the east and is surrounded by the Seal Sands industrial area.
- 2.1.3 The Main Site lies:
- To the north and south of Seal Sands Road;
 - To the north of the operational Navigator Terminals North Tees rail terminal and the disused Tees Valley 1 and 2 waste to energy plants;
 - To the east of the Tees Gas Processing Plant;
 - directly adjacent to the south west of Navigator Terminals Seal Sands bulk storage terminal;
 - To the south of KD Pharma UK Ltd. and the Lianhetech chemical plant; and
 - close to the consented Northern Endurance Partnership carbon dioxide (CO₂) Gathering Network corridor which will run north-south through the eastern side of the Main Site and then westward along its southern boundary.
- 2.1.4 The Main Site is connected to the public highway network via Seal Sands Road which joins Seaton Carew Road (A178) at Seal Sands Roundabout. From this roundabout, Seaton Carew Road provides connections north towards Hartlepool and south towards Port Clarence, with onward links to the A1185 and the strategic road network via the A689 and A19.
- 2.1.5 In addition, the Main Site can also be accessed via Huntsman Drive, which connects to the A178 in close proximity to the Seal Sands Roundabout and provides an alternative local access route within the industrial area.

2.1.6 The Wider Site includes several access corridors running to Grangetown to the south, to Wilton and Dabholm Gut to the east, and to Lackenby to the south east. These are:

- Construction vehicular access corridor from Wilton International North Gate off Steelhouse Gate Roundabout to the Dabholm Gut using the Sembcorp internal road network on the south bank of the Tees; and
- Construction vehicular access corridor from Tees Dock Road to Dabholm Gut on the South Bank of the Tees.

2.1.7 The location and extent of the Proposed Development is provided in **Figures 1.1: Site Location** and **1.2: Proposed Development Boundary (ES Volume II, Application Document Ref. 6.2)**

2.2 Accessibility

2.2.1 The accessibility of the Proposed Development has been reviewed with respect to opportunities for walking, cycling and the availability of public transport within the public highway network. This assessment therefore is taken from Seal Sands Road adjacent to its roundabout with Seaton Carew Road. **Figure 18.3: Walking and Cycling Network (ES Volume II, Application Document Ref. 6.2)** shows the existing walking and cycling network in the local area.

Walking

- 2.2.2 The document 'Providing for Journeys on Foot' from the Chartered Institution of Highways and Transportation (CIHT) [Ref 1] recommends a maximum walking distance of 2km for commuting to work.
- 2.2.3 The potential for walking to and from the Main Site is limited, as it is located in a heavy industrial area, and available walking routes do not readily connect to residential areas, which are more than 2km away. These routes within the 2km catchment extend partially north and south along Seaton Carew Road and northwest along the A1185.
- 2.2.4 The remaining 'A' roads to/from the Site (i.e. the A1185 and Seaton Carew Road links) do not currently feature any dedicated pedestrian or cycle infrastructure, which may impact accessibility of the site by foot and bicycle.

Cycling

- 2.2.5 In respect of acceptable cycle distances, the Department for Transport (DfT) Cycle Infrastructure Design Local Transport Note 1/20 [Ref 2] states that the majority of cycling trips are less than 5 miles (approximately 8km) in length.

- 2.2.6 In addition, the DfT Cycle Infrastructure Design Local Transport Note 1/20 [Ref 2] also states that:
- “Recent growth of cycling recorded in central London and other towns and cities following programmes of investment have illustrated that there is significant potential for change in travel behaviour and that more people cycle for everyday journeys where acceptable conditions are provided. Two out of every three personal trips are less than five miles in length an achievable distance to cycle for most people, with many shorter journeys also suitable for walking. For schoolchildren the opportunities are even greater”
- 2.2.7 The residential areas in the 8km catchment area include Billingham, the outskirts of Stockton-on-Tees, Greatham, Seaton Carew and the suburbs of Middlesbrough including Ayresome.
- 2.2.8 Within the vicinity of the Proposed Development there is limited cycling infrastructure. The Saltholme Cycle Path, accessible during RSPB (Royal Society for the Protection of Birds) Saltholme reserve opening hours, is located off Seaton Carew Road approximately 500m from the Main Site access, providing a link to Port Clarence Road and the wider local cycle network in Middlesbrough and Stockton-on-Tees. Outside reserve opening hours, the nearest available cycle path is along Port Clarence Road, with direct access to the Site via the highway.
- 2.2.9 Given the industrial nature of the area, the potential for cycling may be reduced by the lack of dedicated cycleways. In addition, the surrounding highway network is characterised by a high proportion of HGV movements associated with adjacent industrial uses, which may further reduce the attractiveness of cycling as a mode choice. The nature of construction activity may also limit the suitability of cycling for some workers, particularly where journeys involve the transport of tools or equipment.
- 2.2.10 Connectivity to the Site is also influenced by the River Tees, which acts as a physical barrier between residential areas and the Site. With the Tees Transporter Bridge currently unavailable, crossing opportunities are more limited and can result in longer journey distances, which may further constrain the potential for cycling.
- Public transport**
- 2.2.11 The CIHT document, ‘Buses in Urban Developments’ [Ref 3] recommends a maximum walking distance of 400m to bus stops on single high-frequency routes (every 12 minutes or better).
- 2.2.12 The nearest bus stops to the Main Site are situated on the A178, Seaton Carew Road, to the north of the A178, Seaton Carew Road/Huntsman Drive

junction. Both the northbound and southbound bus stops are flagged by signage with the bus stop information displayed. Alternatively, the Community Fire Station stops are located approximately 250m south of the junction, also marked by signage.

- 2.2.13 In total there are four stops within the 400m walking catchment for a bus stop on Seaton Carew Road, serviced by the bus route 1 and operated by Stagecoach.
- 2.2.14 Bus service 1 runs between The Clarences, University Hospital of Hartlepool and Throston Grange, providing regular access to residential, industrial, and natural areas, including the RSPB Saltholme Reserve. This service operates seven days a week providing a half an hour service Monday to Saturday and an hourly service on Sunday. The first bus departs Middlesbrough and High Tunstall at 07:15. The last bus departs Middlesbrough at 18:52 and High Tunstall at 22:49.
- 2.2.15 The nearest bus stops to the Wider Site south of the River Tees are the International East Gate stops on Wilton Common Lane, just off the A1085 Steelhouse Gate Roundabout. Alternatively, the International West Gate stops are available for access from the A1053 Tees Dock Road.
- 2.2.16 The stops are serviced by bus routes 62 and 64, which operate between Middlesbrough and Redcar, managed by Arriva North East. Routes 62 and 64 offer a half-hourly service from Monday to Friday. The first service departs from Middlesbrough at 06:38 for route 62 and at 06:50 for route 64, with the last buses leaving at 18:25 for route 62 and at 18:10 for route 64, respectively.
- 2.2.17 The bus services and service frequencies are summarised in [Table 2.1](#) and demonstrate that there is a reasonable frequency of services running through the working week which would be suitable for use by construction workers.

Table 2.1 Bus Service Frequency

Service	Route	Daytime Frequency	
		Monday-Saturday	Sunday
1	Middlesbrough – Haverton Hill- Port Clarence – Hartlepool	2 buses per hour	1 bus per hour
62	Middlesbrough Bus Station, Stand 11 – Redcar Town Clock	2 buses per hour	No Sunday services
64	Middlesbrough – Grangetown	2 buses per hour	No Sunday services

Rail

- 2.2.18 The closest train stations to the Site are Middlesbrough Train Station, located south of the River Tees, and Billingham Train Station, located west of the Main Site. The closest river crossing between the Main Site and Middlesbrough Train Station is via the Tees Newport Bridge, making the walking route over 10km. In addition, Billingham Train Station is located over 5km from the Proposed Development via Cowpen Bewley Woodland. Therefore, the Main Site is not directly accessible by walking from the nearest stations with access likely to be reliant on car, bus or cycle.

Accessibility summary

- 2.2.19 From the above, it is considered that, although the area is reasonably well connected by alternative modes to private car travel, given the working patterns and type of work, it is accepted that sustainable travel modes are unlikely to represent a significant proportion of worker trips to site.

3 Proposed Development trip generation

3.1 Indicative construction programme

- 3.1.1 The duration of construction is anticipated to last three to four years.
- 3.1.2 The key stages of the construction programme are currently expected to be:
- 2028 – Preliminary Works, site establishment, site preparation, commencement of quay construction, commencement of civils works;
 - 2029-30 – site preparation, civils works, construction of the Sustainable Aviation Fuel (SAF) production facility, Combined Heat and Power (CHP) plant and infrastructure including utilities; and
 - 2030-2031 – mechanical installation and commissioning.
- 3.1.3 A more detailed construction programme is shown in **Chapter 5: Construction Programme and Management (ES Volume I, Application Document Ref. 6.1)**.

3.2 Construction phase site worker traffic generation

- 3.2.1 This section summarises the construction worker trip generation. The assumed worst case is that the construction workforce will peak with a total of around 2,200 workers on site per day.
- 3.2.2 For the purposes of this assessment, construction worker traffic associated with the Main Site is assumed to utilise the principal access via Seal Sands Road. This reflects the primary point of access for the Main Site during the peak construction period.
- 3.2.3 It is recognised that construction activity will also take place across elements of the Wider Site, including areas to the south of the River Tees and along utility and link corridors. These works may utilise alternative access routes, as described in Section 3.4 and the Framework Construction Traffic Management Plan (fCTMP). However, the assessment presented within this section relates to the Main Site only and therefore represents a reasonable worst-case for worker trip generation..
- 3.2.4 Census data (2021) and data from the Office of National Statistics (2023) shows that 23% of the workforce in the North East works in the construction industry. This portion of the construction staff will be based within the region and travel from home, with the remaining 77% of the workforce likely to be filled by transient workers who will travel from local accommodation within the region.
- 3.2.5 There will therefore be around 506 local workers travelling to Site. An average vehicle occupancy of 1 worker per vehicle has been assumed as a

worst case, equating to 1,012 two-way vehicle trips per day across all activities.

- 3.2.6 From the remaining workforce 1,694 transient workers will travel to Site by private vehicle with an average vehicle occupancy of 2 workers per vehicle; in line with the Net Zero Teesside Power TA (PINS ref: EN010103). This equates to 847 vehicles making 1,694 two-way vehicle trips per day.
- 3.2.7 In total, the construction phase is expected to generate around 2,706 two-way worker trips on the local highway network at the peak of construction (excluding Heavy Goods Vehicles (HGVs)). The stated vehicle occupancy of workers per car will be controlled through the CWTP. The Proposed Development will provide on-site parking space to accommodate construction traffic at the Main Site.

3.3 Construction phase HGV traffic generation

- 3.3.1 **Appendix 18D: Framework Construction Traffic Management Plan (fCTMP) (ES Volume III, Application Document Ref. 6.3)**, provides details on how the HGV traffic generated by the construction phase will be managed.

3.4 Access proposals

- 3.4.1 Construction and operational access to the Main Site and associated utility connections in North Tees will primarily be via Seal Sands Road, which connects to the trunk road network via the A1185 and the A689/A19. This is expected to account for the majority of vehicular trips to the Main Site.
- 3.4.2 In addition, the Main Site can also be accessed via Huntsman Drive, which connects to the A178 in close proximity to the Seal Sands Roundabout.
- 3.4.3 Access to elements of the Wider Site, including linkline corridors and utility connections, may also be achieved via the A1185. The specific routing of construction traffic will be managed through the fCTMP.
- 3.4.4 In South Tees, construction access for utility connections only will be from the Wilton International North Gate located off the A1085 Steelhouse Gate Roundabout and then via the internal Sembcorp Road network to Dabholm Gut, or alternatively, via the A1053, Tees Dock Road.

4 Objectives

4.1 Overview

- 4.1.1 The aim of a fCWTP is to reduce the number of trips made to and from the Site by private car during the construction phase, which in turn reduces congestion, and improves air quality. All workers during construction will be made aware of the measures included in the fCWTP so that benefits can be delivered and the number of individual vehicle trips reduced by promoting car sharing, minibus use and public transport.
- 4.1.2 The fCWTP aims to ensure all construction staff are aware of the advantages and potential for travel by more sustainable and environmentally friendly modes of transport, through the provision of information identifying travel options and the necessary contact information.
- 4.1.3 The primary objectives which are of most relevance during the construction phase of the Proposed Development are to:
- ensure that an appropriate package of measures is employed to encourage sustainable travel behaviour;
 - reduce car usage (particularly single occupancy car journeys);
 - raise awareness of the sustainable transport measures serving the Proposed Development Site; and
 - minimise the impact of traffic on sensitive locations.

5 Roles and responsibilities

5.1 The Applicants

5.1.1 The Applicant's responsibilities will be as follows:

- Ensuring that contracts entered into with all Contractors working on the Site contain a requirement to develop and comply with the CWTP; and
- Appointing a CWTP Co-ordinator to deliver the Travel Plan.

5.2 The CWTP Co-ordinator

5.2.1 The CWTP Co-ordinator has a key role to play in managing, monitoring and implementing the individual measures within the CWTP. The CWTP Co-ordinator will be appointed by the Contractor(s) to manage and deliver the CWTP.

5.2.2 The CWTP Co-ordinator's details will be supplied to STBC, Middlesbrough Council, RCBC and, where necessary National Highways. Engagement with National Highways is anticipated to be proportionate and focused on any potential interactions with the strategic road network.

5.2.3 The responsibilities of the CWTP Co-ordinator may include:

- liaising with the overall Site Manager to ensure that all workers are aware of the CWTP;
- encouraging the contractual obligations of Contractors/sub-contractors related to the CWTP to be adhered to;
- ensuring the CWTP notice board is located in a prominent position and that the information is kept up to date;
- being based on Site during construction;
- acting as the key point of contact for issues related to construction traffic;
- undertaking a snap-shot parking survey on a monthly basis to ensure car park occupancy targets are being met;
- reviewing cycle parking provision on a regular basis;
- engaging with local stakeholders;
- monitoring performance against the targets of the CWTP; and
- implementing additional measures if not delivering on targets set.

- 5.2.4 The CWTP Co-ordinator will work closely with the Site Manager, who has overall responsibility for the Site, and thus has the authority to introduce measures for those workers who do not follow the guidelines.

5.3 Community Liaison Manager

- 5.3.1 A Community Liaison Manager will be appointed by the Contractor(s) to act as the primary point of contact for local communities and stakeholders throughout the construction phase.
- 5.3.2 The Community Liaison Manager will be responsible for managing communications relating to construction activities, including construction traffic, and for responding to any concerns or complaints raised by local residents, businesses or other stakeholders.
- 5.3.3 The Community Liaison Manager will work closely with the CWTP Co-ordinator to ensure that any issues relating to construction worker travel and traffic are appropriately managed and, where necessary, that measures within the CWTP are reviewed or refined in response to stakeholder feedback.

5.4 Contractor(s)

- 5.4.1 The Contractor(s) will be responsible for managing how its workers travel to and from the Site and encouraging compliance to the CWTP. The main responsibilities of the Contractor(s) will include:
- encouraging and promoting the use of sustainable transport measures included within the CWTP; and
 - organising crew coaches or minibuses to transport workers to and from the Main Site, where appropriate, including pick up of workers from key locations within the local area.

6 Travel plan measures

6.1 General

- 6.1.1 To promote sustainable travel habits among construction personnel during the construction phase, it is essential to implement a suitable set of measures. This set of measures should primarily focus on reducing the amount of construction worker traffic and, where feasible, reducing the impact and disruption caused by the remaining traffic on the local road network.

6.2 Proposed measures to reduce the level of traffic

Working hours

- 6.2.1 To minimise the impact of construction worker traffic on the road network (during the weekday AM and PM peak periods, 07:15-08:15 and 16:00-17:00 respectively), construction shift start and end times will, where reasonably practicable, be scheduled to avoid coinciding with these peak periods. This will be achieved through appropriate staggering of shift patterns and arrival/departure times, to reduce the number of vehicles arriving at and leaving the Site during network peak periods. Core construction working hours will be between 07:00 and 19:00 Monday to Friday (except bank holidays), Saturday 07:00 to 16:00 and Sunday 08:00 to 17:00. However, it is likely that some construction activities may need to be undertaken outside of these core working hours. This is principally because certain construction activities cannot be stopped, such as concrete pouring, but also potentially to manage the construction programme and ensure the completion of the works in line with the agreed timescales for commissioning.

Car parking

- 6.2.2 The availability of car parking significantly influences the transportation choices individuals make for their journeys.
- 6.2.3 Effectively managing the number of parking spaces on Site will help control the volume of vehicles arriving to Site and along with other measures in this fCWTP will help to promote sustainable transport options. The CWTP Co-ordinator, in collaboration with the Site Manager, will be responsible for determining the appropriate number of spaces to be allocated, thereby encouraging the use of sustainable modes (including private vehicle sharing) over single occupancy personal vehicles for workers travelling to Site.

Minibuses and coaches

- 6.2.4 The Contractor(s) will be encouraged to provide minibus/coach services for transporting transient workers from key points near accommodations to the Main Site. This will have the benefit of reducing the number of vehicular trips on the local road network. It is anticipated that construction workers may be accommodated across a range of locations within the wider area, depending on availability of housing and labour sourcing. As such, shared transport services may be provided from key accommodation hubs or agreed pick-up points where appropriate.

Car sharing

- 6.2.5 The CWTP Co-ordinator will be encouraged set up and manage a car share scheme for their workers, with a target to ensure an average occupancy of 2 workers per vehicle.
- 6.2.6 In emergencies, the CWTP Co-ordinator will provide a lift home for car sharers, e.g. by use of taxi, and generally act as a point of contact for all workers as needed. The provision could be extended for emergency situations for staff that cycle to the Site.

Public transport information

- 6.2.7 Information about all available forms of public passenger transport including routes and destinations, service frequencies and locations of nearest bus stops will be provided in an information pack (either a physical copy or electronically) and sent to construction workers prior to them starting work at the Site. Public transport information will also be displayed on the travel information boards. It will be the responsibility of the CWTP Co-ordinator to ensure that this information is kept up to date.

6.3 Minimising the impact on the local road network

CWTP communication

- 6.3.1 Details of the sustainable transport options available for accessing the Site will be provided in an information pack (either a physical copy or electronically) and sent to construction workers, prior to them starting work at the Site. This will raise awareness of the measures being implemented, as detailed above, and allow staff to register an interest in the schemes. The Contractors will be responsible for ensuring all construction workers receive the information pack (either a physical copy or electronically) prior to starting work on Site.
- 6.3.2 All construction workers will receive an introductory briefing on the CWTP when they commence work, incorporated into the Site safety briefing. It will include the provision of the following information:

- Details of sustainable transport measures available for accessing the Site; and
- Parking arrangements across the Site.

6.3.3 This will ensure that each construction worker is fully aware of the CWTP and measures contained within it.

7 Targets

7.1 Parking

7.1.1 One of the prime objectives of an active CWTP is to set clear and realistic targets. The main targets to be achieved during the construction phase of the Proposed Development are as follows:

- To minimise single occupancy car use among workers over the duration of the construction phase, both local and transient workers will be encouraged to car share where possible to reduce the number of vehicles parking on Site; and
- To ensure the number of vehicles on the local highway network does not exceed the worst-case traffic generation, the minimum number of parking spaces should be provided for both cars and minibuses, with priority given to car sharers.

7.1.2 The CWTP Co-ordinator will oversee parking utilisation at the compounds, analysing the distribution of vehicles among cars, vans, and minibuses. This role includes ensuring that the Contractor(s) promotes sustainable travel options for its workers commuting to and from the Site. Should the monitoring process (refer to Section 8) indicate that the targets are not being achieved, additional measures will be implemented to realign the CWTP with its overall target objectives.

8 Monitoring and review

8.1 General Measures

- 8.1.1 Monitoring the CWTP will be central to ensuring its aims are delivered in practice. Monitoring guarantees that failures or changing conditions are identified at the earliest point and that remedial action (such as identifying additional measures, providing incentives, or undertaking a marketing campaign to promote the CWTP) can be taken, to ensure that it stays on course to meet its overall objectives.
- 8.1.2 The CWTP Co-ordinator will be responsible for monitoring the final CWTP(s), to ensure an efficient and effective execution of the measures, and to refine the measures, where necessary, to cope with the changes in demand over the construction phase.
- 8.1.3 An important part of the monitoring strategy will be obtaining feedback from construction workers, and local stakeholders regarding any issues with construction worker traffic. The appointment of a CWTP Co-ordinator will ensure that an appropriate point of contact is available and can react to such feedback.
- 8.1.4 Furthermore, construction workers will be given the opportunity to offer their suggestions and ideas via a suggestion box or via an informal discussion with the CWTP Co-ordinator.

8.2 Remedial measures

- 8.2.1 As part of the regular monitoring of car parking, should the target to achieve a car occupancy of two workers per vehicle over the duration of the construction project not be met, then further remedial action may be required. Further action could include:
- Focused campaigns to focus on changing behaviours and competitions to promote sustainable travel;
 - Promotion of the car sharing scheme;
 - Incentivised car sharing;
 - Promotion of sustainable travel modes ; and
 - A review of any minibus service being provided to ensure that the routes used are the most efficient and to improve take-up.
- 8.2.2 The above measures will be kept under review by the CWTP Co-ordinator.

References

- Ref 1 Chartered Institution of Highways and Transportation . (2000). Guidelines for Providing for Journeys on Foot. Available online:
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- Ref 2 Department for Transport. (2020). Cycle infrastructure design (LTN 1/20). Available online:
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- Ref 3 Chartered Institution of Highways and Transportation. (2018). Buses in Urban Developments. Available online:
https://www.ciht.org.uk/media/4459/buses_ua_tp_full_version_v5.pdf [Accessed May 2026].

Annex D: Traffic tables and supporting data

Construction Traffic Flow Screening and Link Selection

Link Number	Link Name	Speed Limit	Sensitivity	Two-way Daily Construction Traffic				2024 Do Minimum			2030 Do Minimum			2030 Do Something			Percentage Change	
				Car/LGV	HGV	HGV%	Total	HGV	HGV%	Total	HGV	HGV%	Total	HGV	HGV%	Total	HGV %	Total Vehicles
1	Site access road (East of Seal Sands Roundabout	30	Low	2706	360	12%	3066	629	14%	4490	653	14%	4662	1013	13%	7728	55%	66%
2	A178 Seaton Carew Road (Between Huntsman Drive and A1185 / A178, Seaton Carew Road)	60	Low	2089	0	0%	2089	362	4%	8146	376	4%	8459	376	4%	10547	0%	25%
3	A178 Seaton Carew Road (North of Seal Sands Roundabout	60	Low	335	0	0%	335	475	7%	6911	493	7%	7176	493	7%	7511	0%	5%
4	A1185 (Between A1185 / A178, Seaton Carew Road (Seal Sands Roundabout and Saltholme North Power Station)	60	Low	282	360	56%	642	986	20%	4950	1024	20%	5140	1384	24%	5782	35%	12%
5	A1185 (Between Saltholme North Power Station and Cowpen Woodland	60	Medium	282	360	56%	642	986	20%	4950	1024	20%	5140	1384	24%	5782	35%	12%
6	A1185 (Between Cowpen Woodland and Marsh House Avenue	60/50	Medium	282	360	56%	642	986	20%	4950	1024	20%	5140	1384	24%	5782	35%	12%
7	Marsh House Avenue	40	Medium	106	0	0%	106	228	2%	9170	236	2%	9522	236	2%	9629	0%	1%
8	A1185 (Between Marsh House Avenue and A689, Stockton Road / A1185 Roundabout	50/40	Low	176	360	67%	536	1612	12%	13290	1674	12%	13800	2034	14%	14336	22%	4%
9	Wolviston Road (south of the A689 rbt)	50/40	Low	2	0	0%	2	84	1%	8211	87	1%	8526	87	1%	8528	0%	0%
10	A689 Stockton Road	70/40	Low	7	0	0%	7	1248	4%	30520	1296	4%	31692	1296	4%	31699	0%	0%
11	A19 / Wynyard Park Southbound Off-Slip	70	Medium	0	0	0%	0	294	7%	3946	305	7%	4098	305	7%	4098	0%	0%
12	A19 Wolviston Interchange Northbound On-Slip	70	Medium	47	22	31%	69	-	-	-	-	-	-	-	-	-	-	-
13	A689 (Between A689, Stockton Road / A1185 Roundabout and A689 / Wolviston Services Roundabout	40	Low	120	335	74%	455	2694	8%	33563	2797	8%	34852	3132	9%	35307	12%	1%
14	A689 (West of A689 / Wolviston Services Roundabout	40	Low	115	335	74%	450	2694	8%	33563	2797	8%	34852	3132	9%	35301	12%	1%
15	A19 Mainline (North of A19 Wolviston Interchange	70	Medium	52	22	29%	74	3965	7%	54716	4117	7%	56817	4139	7%	56891	1%	0%
16	A689 Coal Lane (West of A19 Wolviston Interchange	50	Medium	50	137	73%	186	1688	9%	19692	1753	9%	20448	1890	9%	20635	8%	1%
17	A178 Seaton Carew Road (Between Huntsman Drive and A1046 Port Clarence Road)	60	Low	2089	0	0%	2089	362	4%	8146	376	4%	8459	376	4%	10547	0%	25%
18	A1046 Port Clarence Road (Adjacent to High Clarence Primary School	30	High	2085	0	0%	2085	362	4%	8146	376	4%	8459	376	4%	10543	0%	25%
19	A1046 Clarence Street (East of A1046, Haverton Hill Road / B1275, Hope Street Junction)	40	Medium	2085	0	0%	2085	362	4%	8146	376	4%	8459	376	4%	10543	0%	25%
20	B1275 Hope Street (Between Haverton Hill Road / Clarence Street Junction and B1275 Robson Street)	40	Medium	483	0	0%	483	362	4%	8146	376	4%	8459	376	4%	8942	0%	6%
21	Hope Street (North of B1275, Robson Street (Belasis Avenue	40/60	Low	13	0	0%	13	196	6%	3274	203	6%	3400	203	6%	3413	0%	0%
22	B1275 Belasis Avenue	40	Low	149	0	0%	149	167	2%	7343	174	2%	7625	174	2%	7774	0%	2%
23	Greenwood Road (North of B1275, Belasis Avenue / Greenwood Road / Coxwold Way Roundabout	40	High	35	0	0%	35	-	-	-	-	-	-	-	-	-	-	-
24	B1275 Belasis Avenue (Between Greenwood Road and Cowpen Lane	30/40	Low	113	0	0%	113	167	2%	7343	174	2%	7625	174	2%	7739	0%	1%
25	Central Avenue (Between Cowpen Lane and A1027 / Wolviston Road / Central Avenue Double Roundabout	30	High	16	0	0%	16	167	2%	7343	174	2%	7625	174	2%	7642	0%	0%
26	A1027 (Between A1027 / Wolviston Road / Central Avenue Double Roundabout and A19 Norton Interchange	40	Medium	97	0	0%	97	167	2%	7343	174	2%	7625	174	2%	7723	0%	1%
27	A1027 (West of A19 Norton Interchange	40	Low	75	0	0%	75	211	1%	31970	219	1%	33198	219	1%	33273	0%	0%
28	Cowpen Lane	30	High	16	0	0%	16	407	4%	10407	423	4%	10807	423	4%	10823	0%	0%
29	B1275 (Between Cowpen Lane and A139 / A19 Southbound On-slip	30	High	16	0	0%	16	407	4%	10407	423	4%	10807	423	4%	10823	0%	0%
30	A139	40	Low	58	0	0%	58	235	1%	16539	244	1%	17174	244	1%	17232	0%	0%
31	A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange	70	Medium	16	180	92%	196	5991	8%	77571	6221	8%	80550	6401	8%	80746	3%	0%
32	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road / Hope Street Junction and A1046 / SUEZ EfW Roundabout	40	Medium	1923	0	0%	1923	1081	7%	14445	1123	7%	15000	1123	7%	16922	0%	13%
33	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road / SUEZ EfW Roundabout and New Road	40	Medium	1923	0	0%	1923	1081	7%	14445	1123	7%	15000	1123	7%	16922	0%	13%
34	New Road	40	Medium	52	0	0%	52	251	5%	4664	261	5%	4843	261	5%	4894	0%	1%
35	A1046, Haverton Hill Road (Between New Road and Able UK Head Office Access	40	Medium	1871	0	0%	1871	1081	7%	14445	1123	7%	15000	1123	7%	16871	0%	12%
36	A1046, Haverton Hill Road (East of A19 Portrack Interchange	40	Medium	1871	0	0%	1871	1081	7%	14445	1123	7%	15000	1123	7%	16871	0%	12%
37	A1032, Newport Bridge Approach Road	30/40	Medium	152	0	0%	152	634	4%	18042	658	4%	18735	658	3%	18887	0%	1%
38	A19 Mainline (South of A19 Portrack Interchange	70	Medium	1699	0	0%	1699	6999	6%	110155	7268	6%	114385	7268	6%	116084	0%	1%
39	A1046, Haverton Hill Road (West of A19 Portrack Interchange	40	Medium	23	0	0%	23	958	4%	27236	995	4%	28282	995	4%	28305	0%	0%
40	A19 Mainline (North of A19 Portrack Interchange	70	Medium	15	0	0%	15	5794	6%	98111	6016	6%	101878	6016	6%	101894	0%	0%

Operation Traffic Flow Screening and Link Selection

Link Number	Link Name	Speed Limit	Two-way Daily Operation Traffic				2024 Do Minimum			2031 Do Minimum			2031 Do Something			2041 Do Minimum			2041 Do Something			Percentage Change	
			Car/LGV	HGV	HGV%	Total	HGV	HGV%	Total	HGV	HGV%	Total	HGV	HGV%	Total	HGV	HGV%	Total	HGV	HGV%	Total	HGV %	Total Vehicles
1	Site access road (East of Seal Sands Roundabout	30	320	282	47%	602	629	14%	4490	656	14%	4686	938	18%	5288	684	14%	4879	966	18%	5481	43%	13%
2	A178 Seaton Carew Road (Between Huntsman Drive and A1185 / A178, Seaton Carew Road)	60	205	0	0%	205	362	4%	8146	378	4%	8501	378	4%	8706	393	4%	8852	393	4%	9057	0%	2%
3	A178 Seaton Carew Road (North of Seal Sands Roundabout	60	26	0	0%	26	475	7%	6911	496	7%	7212	496	7%	7238	516	7%	7510	516	7%	7536	0%	0%
4	A1185 (Between A1185 / A178, Seaton Carew Road (Seal Sands Roundabout and Saltholme North Power Station)	60	89	282	76%	371	986	20%	4950	1029	20%	5166	1311	24%	5537	1071	20%	5379	1353	24%	5750	27%	7%
5	A1185 (Between Saltholme North Power Station and Cowpen Woodland	60	89	282	76%	371	986	20%	4950	1029	20%	5166	1311	24%	5537	1071	20%	5379	1353	24%	5750	27%	7%
6	A1185 (Between Cowpen Woodland and Marsh House Avenue	60/50	89	282	76%	371	986	20%	4950	1029	20%	5166	1311	24%	5537	1071	20%	5379	1353	24%	5750	27%	7%
7	Marsh House Avenue	40	34	0	0%	34	228	2%	9170	238	2%	9570	238	2%	9604	247	2%	9965	247	2%	9999	0%	0%
8	A1185 (Between Marsh House Avenue and A689, Stockton Road / A1185 Roundabout	50/40	56	282	84%	338	1612	12%	13290	1682	12%	13869	1964	14%	14207	1752	12%	14442	2034	14%	14780	17%	2%
9	Wolviston Road (south of the A689 rbt)	50/40	1	0	0%	1	84	1%	8211	88	1%	8569	88	1%	8570	91	1%	8923	91	1%	8924	0%	0%
10	A689 Stockton Road	70/40	2	0	0%	2	1248	4%	30520	1302	4%	31851	1302	4%	31853	1356	4%	33166	1356	4%	33168	0%	0%
11	A19 / Wynyard Park Southbound Off-Slip	70	-	0	0%	0	294	7%	3946	307	7%	4118	307	7%	4118	319	7%	4288	319	7%	4288	0%	0%
12	A19 Wolviston Interchange Northbound On-Slip	70	15	17	53%	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	A689 (Between A689, Stockton Road / A1185 Roundabout and A689 / Wolviston Services Roundabout	40	38	262	87%	300	2694	8%	33563	2811	8%	35026	3074	9%	35327	2928	8%	36473	3190	9%	36773	9%	1%
14	A689 (West of A689 / Wolviston Services Roundabout	40	36	262	88%	299	2694	8%	33563	2811	8%	35026	3074	9%	35325	2928	8%	36473	3190	9%	36771	9%	1%
15	A19 Mainline (North of A19 Wolviston Interchange	70	16	17	51%	33	3965	7%	54716	4138	7%	57102	4155	7%	57135	4309	7%	59460	4326	7%	59493	0%	0%
16	A689 Coal Lane (West of A19 Wolviston Interchange	50	16	107	87%	123	1688	9%	19692	1762	9%	20551	1869	9%	20673	1834	9%	21399	1942	9%	21522	6%	1%
17	A178 Seaton Carew Road (Between Huntsman Drive and A1046 Port Clarence Road)	60	205	0	0%	205	362	4%	8146	378	4%	8501	378	4%	8706	393	4%	8852	393	4%	9057	0%	2%
18	A1046 Port Clarence Road (Adjacent to High Clarence Primary School	30	204	0	0%	204	362	4%	8146	378	4%	8501	378	4%	8705	393	4%	8852	393	4%	9056	0%	2%
19	A1046 Clarence Street (East of A1046, Haverton Hill Road / B1275, Hope Street Junction)	40	204	0	0%	204	362	4%	8146	378	4%	8501	378	4%	8705	393	4%	8852	393	4%	9056	0%	2%
20	B1275 Hope Street (Between Haverton Hill Road / Clarence Street Junction and B1275 Robson Street)	40	153	0	0%	153	362	4%	8146	378	4%	8501	378	4%	8654	393	4%	8852	393	4%	9005	0%	2%
21	Hope Street (North of B1275, Robson Street (Belasis Avenue	40/60	4	0	0%	4	196	6%	3274	204	6%	3417	204	6%	3421	212	6%	3558	212	6%	3562	0%	0%
22	B1275 Belasis Avenue	40	47	0	0%	47	167	2%	7343	175	2%	7664	175	2%	7711	182	2%	7980	182	2%	8027	0%	1%
23	Greenwood Road (North of B1275, Belasis Avenue / Greenwood Road / Coxwold Way Roundabout	40	11	0	0%	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	B1275 Belasis Avenue (Between Greenwood Road and Cowpen Lane	30/40	36	0	0%	36	167	2%	7343	175	2%	7664	175	2%	7699	182	2%	7980	182	2%	8016	0%	0%
25	Central Avenue (Between Cowpen Lane and A1027 / Wolviston Road / Central Avenue Double Roundabout	30	5	0	0%	5	167	2%	7343	175	2%	7664	175	2%	7669	182	2%	7980	182	2%	7985	0%	0%
26	A1027 (Between A1027 / Wolviston Road / Central Avenue Double Roundabout and A19 Norton Interchange	40	31	0	0%	31	167	2%	7343	175	2%	7664	175	2%	7694	182	2%	7980	182	2%	8011	0%	0%
27	A1027 (West of A19 Norton Interchange	40	24	0	0%	24	211	1%	31970	220	1%	33364	220	1%	33388	229	1%	34742	229	1%	34765	0%	0%
28	Cowpen Lane	30	5	0	0%	5	407	4%	10407	425	4%	10861	425	4%	10866	442	4%	11309	442	4%	11314	0%	0%
29	B1275 (Between Cowpen Lane and A139 / A19 Southbound On-slip	30	5	0	0%	5	407	4%	10407	425	4%	10861	425	4%	10866	442	4%	11309	442	4%	11314	0%	0%
30	A139	40	18	0	0%	18	235	1%	16539	245	1%	17260	245	1%	17278	255	1%	17973	255	1%	17991	0%	0%
31	A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange	70	5	141	96%	146	5991	8%	77571	6252	8%	80953	6393	8%	81099	6510	8%	84296	6651	8%	84443	2%	0%
32	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road / Hope Street Junction and A1046 / SUEZ EFW Roundabout	40	153	0	0%	153	1081	7%	14445	1128	7%	15075	1128	7%	15227	1175	7%	15697	1175	7%	15850	0%	1%
33	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road / SUEZ EFW Roundabout and New Road	40	153	0	0%	153	1081	7%	14445	1128	7%	15075	1128	7%	15227	1175	7%	15697	1175	7%	15850	0%	1%
34	New Road	40	16	0	0%	16	251	5%	4664	262	5%	4867	262	5%	4883	273	5%	5068	273	5%	5084	0%	0%
35	A1046, Haverton Hill Road (Between New Road and Able UK Head Office Access	40	136	0	0%	136	1081	7%	14445	1128	7%	15075	1128	7%	15211	1175	7%	15697	1175	7%	15834	0%	1%
36	A1046, Haverton Hill Road (East of A19 Portrack Interchange	40	136	0	0%	136	1081	7%	14445	1128	7%	15075	1128	7%	15211	1175	7%	15697	1175	7%	15834	0%	1%
37	A1032, Newport Bridge Approach Road	30/40	48	0	0%	48	634	4%	18042	662	4%	18829	662	4%	18877	689	4%	19606	689	4%	19654	0%	0%
38	A19 Mainline (South of A19 Portrack Interchange	70	82	0	0%	82	6999	6%	110155	7304	6%	114958	7304	6%	115040	7606	6%	119705	7606	6%	119787	0%	0%
39	A1046, Haverton Hill Road (West of A19 Portrack Interchange	40	7	0	0%	7	958	4%	27236	1000	4%	28423	1000	4%	28431	1041	4%	29597	1041	4%	29605	0%	0%
40	A19 Mainline (North of A19 Portrack Interchange	70	5	0	0%	5	5794	6%	98111	6047	6%	102389	6047	6%	102393	6296	6%	106617	6296	6%	106622	0%	0%



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