Representations to Lancaster Local Plan:

Response to MIQs – April 2019

On behalf of TNPG Sandeman Trust and M Capital Developments Ltd

The following represents the formal responses to the Inspectors' Matters, Issues and Questions to the Council regarding the Examination of the Lancaster District Local Plan Strategy Policies and Land Allocations Development Plan Document.

Matter 1: Legal Compliance, Procedural and General

Question 1B: The Council refers in the Duty to Co-operate Statement to how co-operation with South Lakeland District Council informed the need to review the Green Belt in relation to OAN methodology and calculation. Could the Council be more specific on this matter? How did the Council co-operate with adjoining authorities in respect of any unmet housing need?

In our submissions to the Local Plan relating to the site at Home Farm, Ellel, and through the pre-application process for this site, we have made reference to the location of our site potentially helping to address unmet housing need across both Lancaster and Wyre district, due to the location of the site close to the boundary of the two districts. The extent to which the Councils have discussed the site in this context is unclear, but notably the site is not referenced as an issue discussed in Appendix B of the Duty to Co-Operate Statement of Compliance in relation to conversations with Wyre. Given the Council's position to the examination that it has considered reasonable alternatives, it must surely have discussed this large-scale potential development site that is capable of going someway to meet the housing shortfall, with Wyre during the course of Local Plan preparations. We have included copies of our separate letters to each authority setting out our positon with this statement, and have previously submitted details of the Pre-Application work with Lancaster to date, which recommended that the site be pursued through the Local Plan.

We note also that the letters from Wyre Borough Council in the Duty to Co-operate Statement includes several offers to agree a Statement of Common Ground, but see no such document has been submitted.

We therefore seek further clarification of the discussions between the authorities in relation to this specific potential strategic allocation site.

Question 1D: Are the DPDs in general conformity with the National Planning Policy Framework (NPPF)?

The submitted Local Plan does not propose to meet the objectively assessed need for housing and has not provided sufficient evidence that this cannot be achieved. We understand the outcome of this question depends on the outcome of discussions relating to other Matters, specifically with reference to the consideration of other alternative options for housing, but it is clear in the NPPF that failing to meet the OAN requires sufficient justification beyond that already submitted, and certainly requires a specific discussion regarding this potential development site and the opportunities it presents to contribute to the OAN in the district.

Question 1G: Are appropriate arrangements in place to ensure proper monitoring of the DPDs?

This question is particularly pertinent to the issue of meeting housing need, as the Council is not seeking to meet the OAN, so failure to deliver even the reduced housing figure would be even more harmful to the plan strategy. Indeed, there are several questions regarding delivery of the housing numbers raised by the Council post submission and certainly the speed of the delivery of proposed strategic housing sites is a concern. It would appear that there are no contingency measures within the Local Plan to address any potential further shortfalls, let alone the planned shortfall of housing, nor is there a review of the implications of not meeting the objectively assessed need to the vision and strategic objectives of the plan originally set out when the Council initially intended to meet the OAN.

Whilst the recently published Housing Delivery Test shows Lancaster to have 167% measurement against the past three years, this is predicated on much lower figures than proposed in the Local Plan. The number of completions over the past three year period, at 1,666, does not meet the OAN and only just meets the figure set out in the Submission Local Plan. In terms of future housing delivery, as set out in our previous submissions, many of the sites with extant consent in the district will not be developed in the short-term and insufficient sites are coming forward to fill the gap. When the plan should be seeking to significantly increase supply in line with national policy and to support economic growth, it appears to be doing little in the short term to address this.

Given that the Council published new information as proposed modifications in October 2018, after submission of the Plan, that directly addressed the fact that housing would not be coming forward at the initially conceived rates, it is of paramount importance that this plan, at the very least, contains mitigation measures to address a severe housing shortfall. Failure to do this will result in the strategic objectives of the plan and its vision being unfulfilled and requiring early review of the plan. We would propose that should the Inspector identify and agree that there is a significant lack of housing against even the submission figure and the OAN, that the plan includes potential contingencies to meet any shortfall prior

to adoption and that a much shorter period is proposed for partial review of this element of the plan if certain monitoring targets are not met in due course.

Question 1I: Does the SA adequately consider reasonable alternatives where these exist, including in respect of the scale of housing and employment provision and the balance between them?

Land at Home Farm, Ellel was submitted to the Council as an alternative site in early 2017.

The additional site consultation published by the Council in August 2017 does refer to the potential site submission at Home Farm, Ellel, but incorrectly drew the site boundary in a way that dramatically altered the likelihood of the site being considered acceptable, by effectively removing a large part of the site from consideration, including the main access to the site, disconnecting it with the proposed allocation immediately adjacent to it and its direct access onto the A6. The part of the submitted site that was excluded is proposed for commercial uses in association with the residential development, providing a sustainable form of development.

We wrote to the Council on the 15th September 2017 to highlight this error, seeking further engagement, but nothing appears to have been done to correct this error or reassess the site, taking this information into account.

The SA of the site did not correctly assess the site and also did not include any of the details we had submitted through Local Plan consultation and Pre-App relating to the intended development, which was more than a simple housing allocation. The scheme proposes a new village referred to as Ellel Gardens http://www.ellelgardens.co.uk/ which proposes numerous employment opportunities, a marketplace, hotel and primary school to create a sustainable new village environment. The scheme proposes approximately 2,400 sqm marketplace, a 3,700 sqm hotel, and a 1,800 sqm school along with circa 750 residential properties and retirement homes.

We submitted details of our own sustainability appraisal of the site for comparison with the Council's, demonstrating that the scheme can provide a reasonable alternative site in the district to meet housing need and be consistent with the strategic objectives of the plan. Our submissions to the Council through pre-application have also included screening and scoping for an EIA. The Council's screening and scoping opinion has been sent to the Inspector.

Each submission made to the Local Plan included a draft Masterplan and vision of the proposed development. The site has also been through each stage of the Council's pre-application process. Despite

the level of information submitted, which in some cases provides more detail than the Council have considered for the draft strategic sites, the Council's assessments of the Home Farm site in the plan itself and the SA have not taken account of the proposed village development approach sought here, or entered into discussions with us regarding how the site may meet the housing need, measure the balance of economic growth or potential improvements to the local environment in line with the Plan. An indicative layout taken from the pre-app submissions is shown below.

Since submission, the Council produced further evidence regarding highway and landscape, to which we provided a response in relation to the assessment of the site at Home Farm. We have since produced an updated Transport Assessment of the proposal based on the worst case methodology adopted by WYG in the Council's response. This details that the proposals for the site have been developed in detail for a residential-led mixed use sustainable new community on land at Ellel on the western side of the A6, south of Lancaster. The proposals include a range of commercial and leisure uses to be brought forward in the early phases of development, helping to ensure the benefits of these are locked-in in relation to sustainable movement patterns.

The proposed development aligns with the strategy outlined in the emerging Local Plan to focus development within the A6 corridor south of Lancaster. Strategic highway improvement proposals and sustainable transport measures are identified within the highway authority's transport masterplan for the area that are consistent with this development strategy. Irrespective of the strategic highway and

sustainable transport proposals, the impact of developing the site has been tested using the worst-case assessment methodology adopted in the Transport Assessment work undertaken for Lancaster City Council by WYG to test the preferred allocations in the emerging Local Plan and one omission site. This demonstrates that the proposed development at Ellel can come forward in the early part of the Plan period without having an undue negative effect on local highway conditions and is not reliant on strategic improvements over which there is greater uncertainty regarding timescales for delivery.

We believe that sufficient information has been submitted to the Council during the Local Plan preparations and through pre-application for the Council to have adequately considered it as a reasonable alternative for development to meet the housing shortfall, but it has not sought to undertake the relevant assessments to do this. The site has been demonstrated and tested by our client to a higher degree in some instances than those sites sought to be allocated in the Local Plan.

We have included this Transport Statement alongside the Phase 3 Pre-Application response and copies of other documents already submitted relating to the proposals for the land at Home Farm, Ellel.

Matter 2: Housing

Main issue: whether the Council's strategy for meeting its housing requirement is sound.

Question 2A: The OAN for housing for the area is 14,000 new dwellings (an average of 700 per year). The Council, as set out in Policy SP6, identifies a requirement of 12,000 new dwellings at a rate of 522 per year. Is the Council's housing requirement soundly based and supported by robust and credible evidence? Does it take appropriate account of the 2012-based DCLG Household Projections, the likelihood of past trends in migration and household formation continuing in the future, and 'market signals'? Is the housing requirement appropriately aligned with forecasts for jobs growth? What implication should be drawn from paragraphs 7.9-7.13 of the updated Council statement of February 2019, on the OAN figure?

Our objections to the Local Plan relate to the Council's failure to meet the OAN and the robustness of their assessment of potential housing sites, including our proposed strategic village development at Home Farm, Ellel. We consider the OAN to be soundly based and supported by robust and credible evidence. However, the final sentence of the above question relates to an updated position provided by the Council in February 2019, well beyond the submission of the Local Plan. This relates to the recommissioning of Turleys to seek clarification of the OAN from the October 2015 study; this would appear to have been done solely on a perceived lack of confidence from the wider public regarding the validity and robustness of the objectively assessed housing need. This approach seems to be similar to each update of the objectively assessed need for housing that has been undertaken by the Council since the Local Plan began preparations in 2011, which has seen the OAN increasing due, in part, to the lack of action locally to address the issue of undersupply of housing. There is somewhat of a disconnect between perception and reality as to the extent of the housing problems in the district.

This approach is reflected also in the Council's apparent lack of interest in considering the land at Home Farm for allocation in the Local Plan, which despite submissions since January 2017 and continued pre-application discussions has not been adequately assessed as a potential allocation. The Council's approach to the Local Plan, when met with concerns regarding housing delivery or meeting the OAN has been to accept things as they are in the short term, rather than reassessing a strategy that is not working. Whilst the Plan will likely increase housebuilding at the strategic sites in the long term, it does little in the short term and does not overall seek to meet the OAN. The proposals in the draft modifications simply reduce housing numbers due to there being a greater shortfall than anticipated in recent completions and future projections of completions, rather than seeking to address the shortfall in any way through revisions to the Local Plan approach or indeed the Council's approach to planning applications.

National guidance on significantly boosting housing supply set out in the NPPF and guidance on strategic housing land availability assessments in the National Planning Policy Guidance suggest that where housing numbers cannot be delivered, potential sites should be reappraised. It is not clear that any attempt has

been made by the Council to address the newly identified post submission lack of housing delivery, with the draft amendments to the plan simply suggesting an overall reduction in the numbers that are already well below the OAN.

Our site at Home Farm was submitted as a potential allocation in early 2017. The updated consultation statement at paragraph 7.14 onwards, deals with the consideration of reasonable alternatives. Paragraph 7.23 refers to a number of additional sites that have also been suggested through consultation. It states that the largest submission made to the Council was for land to the west of Junction 33 (adjacent to the proposed agri-business centre, which could generate up to 1,000 new homes). It says that sites have been submitted for their suitability for development through the Strategic Housing and Employment Plan availability assessment processes and the outcomes reflected in the publication version of the Local Plan. There is no further discussion on the site and whether it could be suitable to make up the existing shortfall in the plan, or the new shortfall identified in the updated consultation statement and additional evidence. Further discussion of this site is required during the Local Plan before a determination can be made as to whether the Council has done all it can to meet the OAN.

b) Are the constraints identified by the Council sufficient justification for not meeting the full OAN for housing in the District?

We have previously made submissions that the Council should seek to allocate all potential sites that are considered to be available and suitable for residential development to seek as best they can to meet the OAN, with the implications being that failing to do this means the plan would not be positively prepared and would be unlikely to meet the vision and strategic objectives, particularly in relation to jobs growth, strengthening the economy and changing demographics. We maintain our objection that the Council has not sought to do this, and that an alternative strategic site at Home Farm, Ellel has not be considered for allocation despite evidence of its potential being submitted to the Council since early 2017.

The site has been subject to pre-application discussions with the Council, with the ultimate recommendation being that it should be considered through the Local Plan process. Despite this, the submission of the site has been misrepresented and then largely ignored by the Council in its consideration of alternative sites. We submitted a detailed response to the latest consultation in February 2019 as to why we consider the updated 2018 assessment of the site in the SHELAA is inadequate, and why we would consider it appropriate that the Inspector reviews omission sites as part of the hearings to understand why sites have been excluded that could readily help in delivering the much needed increase in housing, particularly in the short term period when it's clear the plan presented does not intend to deliver new housing on new allocated sites in the next five years. Further delays to the examination process, and thus the delivery of housing, could be avoided by considering all potential housing sites during the examination hearing process so the Inspector understands the level of housing that could be achieved if all potential sites are included. We consider that the process followed by the Council in selecting the allocations is unsound and not based on sufficient evidence, nor will those allocations

actually meet the development requirements of the district, which is a commitment in the spatial vision of the plan.

National guidance relating to SHELAAs requires a reassessment of all potential sites and how constraints can be overcome when the housing numbers in the OAN cannot be met. As the Council has now produced new evidence/information and published a new SHELAA that affirms it cannot meet the OAN, the Council should have reassessed all potential sites for housing and reasonable alternatives to meet housing numbers. This has not been undertaken, but it is right that this process is now undertaken as part of the examination to ensure the plan is justified and does not fail the test of soundness.

This site at Home Farm is not hindered by any of the constraints the Council has identified in seeking to justify not meeting the OAN. As such, we do not agree that the current proposed housing target in the Plan is an acceptable reduction, being well below the OAN, until all options have been considered.

The Council's Stage 3 Pre-Application response for our proposal states in the Conclusion (page 7) that the information submitted in support of the scheme does take a positive step forward in illustrating a sustainable new settlement. It also states that the site needs to be considered in relation to alternatives, a role that would be played out by the Local Plan process.

c) What provision has the Council made for any unmet housing need and does the housing requirement take appropriate account of the need to ensure that the identified requirement for affordable housing is delivered?

A shortfall of unmet housing need has been a consistent situation in the district for many years. The Local Plan presents an opportunity to correct this, but the restrictive strategy of the Plan does not seek to meet the OAN or address the shortfall from previous years. There has not been any serious attempt to increase housebuilding in the district in the short term through the Local Plan, with the Plan preferring longer term strategic allocations and neighbourhood plan allocations rather than direct allocation of more smaller sites. As above, we consider a reassessment of all sites should be undertaken to address the significant problem in the short-term, which is likely to continue post adoption unless the Plan is altered.

f) Is the amount of land allocated for housing sufficient to meet the requirement and how will it ensure delivery of the appropriate type of housing where it is required within the District.

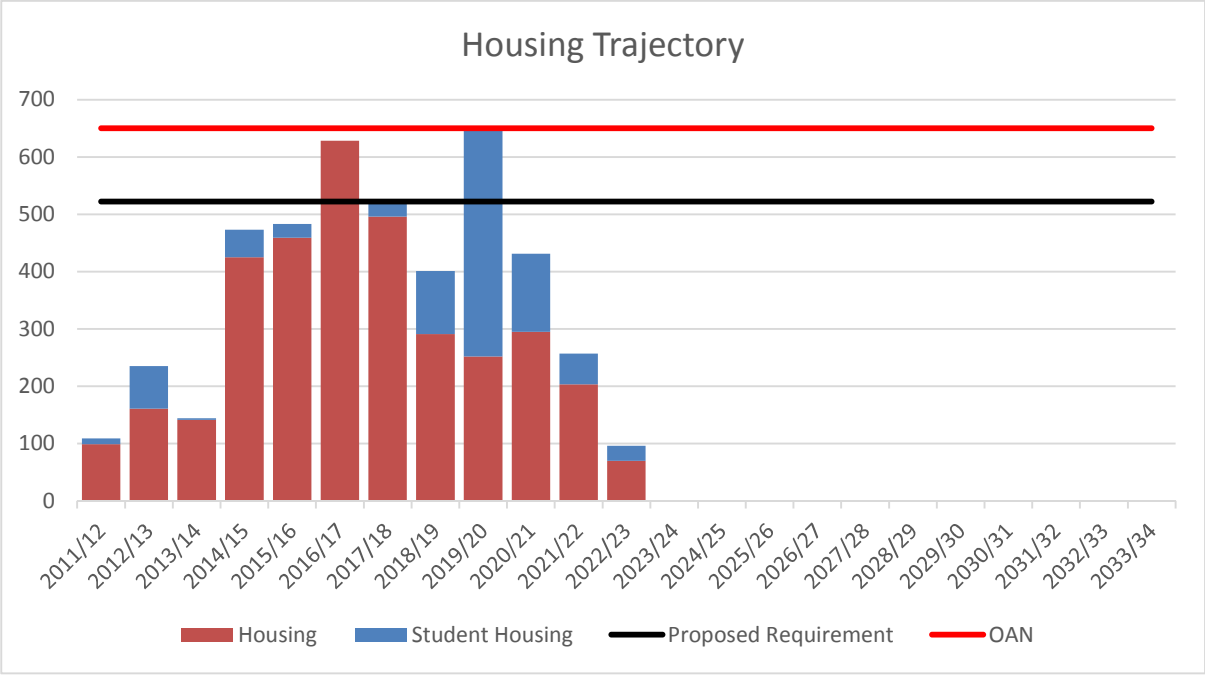
We have already made submission that we do not consider that sufficient land is allocated for residential development. With regard to whether this provides for the appropriate type of housing required within

the district, there are also concerns regarding the overall number of student accommodation being considered within the housing figures. Whilst the increase in student bedrooms does provide equivalent accommodation leading to the release of existing property used by students back into the housing market, the situation in Lancaster is that the current stock of homes for student accommodation is largely made up of terraced properties in or close to the city centre. There are questions to be raised as to the extent to which the release of these properties back into the market goes towards helping to alter the housing market or meet the growth strategy in line with the strategic objectives, particularly given the overall number of student equivalent houses going to meet the OAN.

The bar chart below shows the extent to which student accommodation is included in the housing already delivered and proposed in the trajectory. It highlights that even the lower housing supply figures in the plan, well below the OAN are reliant on student accommodation, particularly in the first five years until the strategic sites are developed. It demonstrates that the shortfall in housing delivery is more exacerbated in terms of the potential housing being made available, as student accommodation does not mean new houses on the open market. The inclusion of student accommodation into the OAN also does nothing to address the need for affordable housing.

The chart also demonstrates how far the projected numbers have fallen since the initial preferred option was set, and how far below the OAN this has fallen. Despite this, the plan strategy has not been amended to reflect the changing situation.

The bar chart also shows how far below the OAN of 650 and the Local Plan proposal of 522 dwellings per annum the housing numbers fall, with the gap effectively showing a shortfall in each year.



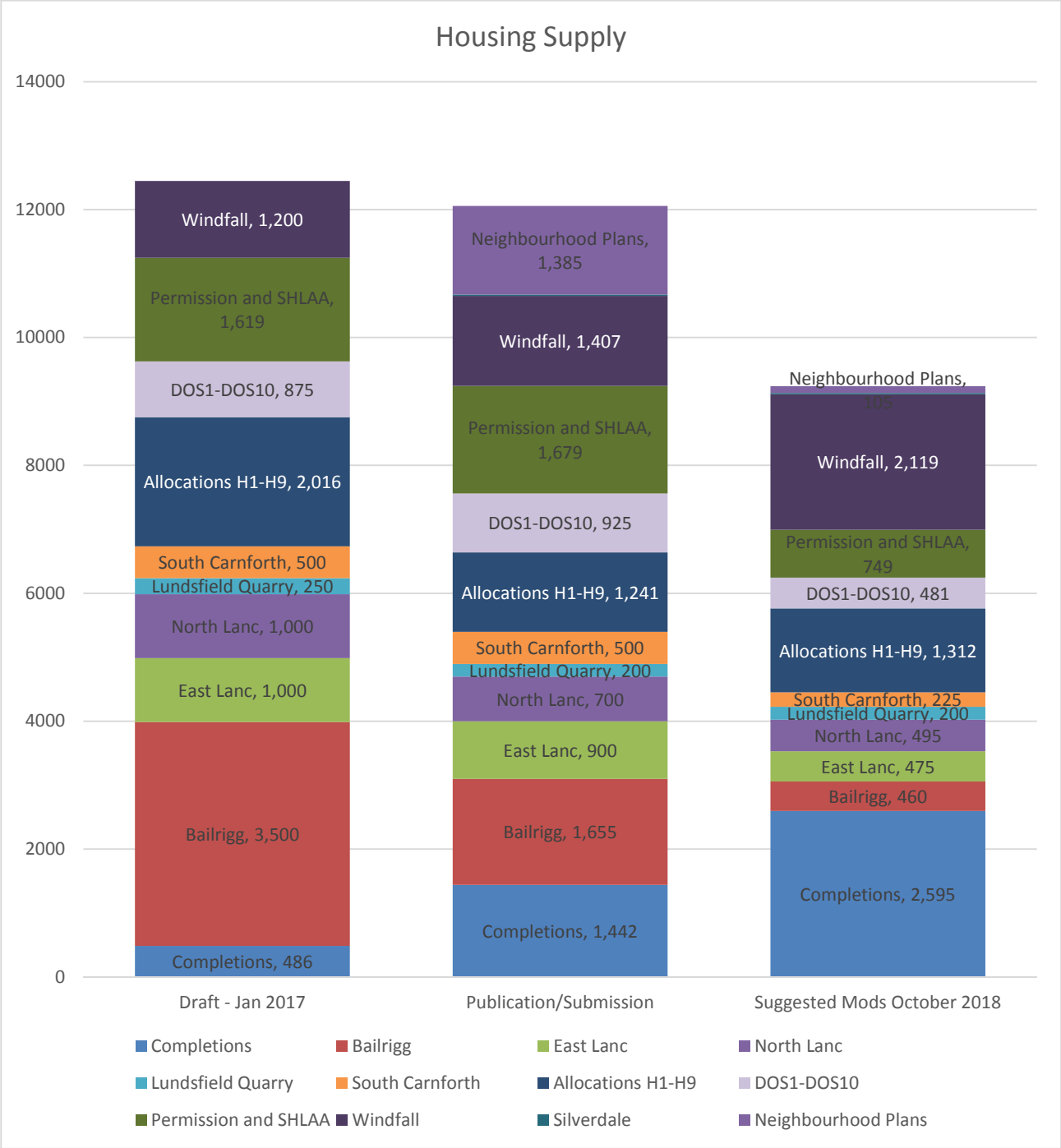
Trajectory based on updated Housing Land Statement

In addition to concerns regarding student housing, a potential issue has also been raised recently regarding those sites allocated as mixed use Development Opportunity Sites in the Plan. A recent planning application for residential development on site DOS4 was refused, largely due to the proposed density of development. This raises a question regarding the number of dwellings proposed for these mixed use sites and what contingencies exist where the numbers fall below those proposed in the Plan.

g) Will the distribution, capacity and speed of deliverability (with regard to viability and infrastructure) of the sites, satisfy the provision of a 5 year housing land supply?

We have serious concerns that without the introduction of the new strategic site at Home Farm, Ellel into the Plan and the allocation of other potential smaller scale sites, the delivery of housing will be significantly delayed and a 5 year housing land supply will not be achievable. Delays in provision will also result in their being a more significant shortfall in the first years of the Plan, requiring an uplift in the later years that cannot physically be delivered in the district. Work on the masterplanning of the site at Home Farm Ellel is well underway, with details having been submitted at each stage, and as the site is in a single ownership, initial housing delivery is possible in 2020/21 if the site is allocated, providing a steady stream of new housing throughout the plan period.

The level of housing proposed in the Local Plan at Policy SP6 has changed significantly since the initial draft of the Plan. We have provided a bar chart below showing the extent to which the mix of site allocations and proposed delivery in the housing supply has changed since the initial preferred option of the plan, and what is clearly evident is that there has been dramatic changes in several areas, notably significant reductions at Bailrigg, reductions to the strategic allocations and the neighbourhood plan areas and increases in windfall sites. Despite these changes, and reduction in the overall number proposed, the Plan strategy remains the same.



i) Is the proposed monitoring likely to be adequate and what steps will be taken if sites do not come forward?

Some of the likely steps to increase delivery could be taken now by considering the site at Home Farm, Ellel as a potential allocation. Our comments in relation to Matter Question 1G apply equally here.

Matter 3: Spatial Strategy

Main Issue: Whether the Council's spatial strategy for development within the district is sound?

3A) Is the spatial strategy as set out in policies SP1-SP6 and their supporting text soundly based? Is the settlement hierarchy sound based? Would the spatial strategy be sound if no provision was made for any unmet housing need for Lancaster District either within the District or within the wider Strategic Housing Market Area?

A spatial strategy that does not meet the OAN is unsound, so this question largely relies on the outcome of Matters 1 and 2. In specific terms however, the Local Plan initially set out its Spatial Strategy at draft stage to meet the OAN, but at each further stage of production the number of houses proposed has been reduced, resulting in a Local Plan that now falls well short of meeting the OAN. Despite this, the spatial strategy has not changed. Where opportunities exist for meeting unmet need caused by the spatial strategy, these should be fully investigated before the plan can be made sound. Our previous submissions regarding the site at Home Farm demonstrate a suitable site that is within the district, but it also close to the adjacent district of Wyre, which also has a shortfall of housing. The opportunity this site presents should be considered in detail through the Local Plan process, an approach advocated by the Council in response to our pre-application advice requests. Despite our submissions we believe that this site has not been considered adequately, as detailed in our response to Matters 1 and 2. We believe the site could be considered alongside those strategic allocations as a plug-in proposal to the spatial strategy to meet the shortfall on the basis that it presents as a sustainable village proposal rather than a simple housing allocation, which appears to have been the Council's initial consideration of the site.

The Council claims that the Local Plan has considered the potential for new settlements as part of the Local Plan consultation, which have been rejected. However, these proposals sought opinion on a specific new settlement site early in the Local Plan process at Cowan Bridge, in an area not suitable in terms of access, landscape or location, being largely isolated from the rest of the district. The site at Home Farm, Ellel, is located close to junction 33 of the M6, adjacent to a

site the council considers suitable as an employment allocation for the agri-business park, in an area not encumbered by specific land or policy designations that could exclude development. It is not within the green belt or the AONB, and lies almost exclusively within flood zone 1 and has excellent access to the road network. It deserves to be considered alongside other potential allocations, to meet shortfall within the district.

Matter 4: Economic Development

Main Issue: Whether the Council's strategy for accommodating economic development is sound?

4a) Would the approach of Policies SP4, EC1, EC2, EC3, EC5, DOS4, DOS5, DOS9, and DM14 provide flexibility and choice for employment land within the District in line with the Employment Land Review?

With regard to the draft site allocation at Policy EC3, we have previously submitted that the proposed site submission at Home Farm, Ellel, which lies adjacent to this site, could provide a better form of access into this site taken from the A6 roundabout. This would of course be associated with the allocation of this site, which seek discussion under Matters 1, 2 and 3 of the Examination Hearings.

Appendices

Transport Statement – SK Transport Planning

Level 3 Pre-Application Presentation to Members

Level 3 Pre-Application Advice Response - Lancaster City Council

Representations to Wyre Local Plan – April 2018

Ellel Gardens, Lancaster

Transport Assessment

190402/SK2156/TA01(-01)

April 2019

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Contents

Appendices

Project	Document	Rev	Description	Authorised by	Signed	Date
SK21756	TA01	00	-	L Speers	LGS	01/04/19
SK21756	TA01	01	Submission	L Speers	LGS	02/04/19

1 Introduction

Background

1.1 SK has been instructed to prepare a Transport Assessment (TA) that examines the transport impact and accordance with emerging Local Plan policy of developing an area of land to the south of Lancaster, in the vicinity of Ellel, to provide a new residential-led mixed-use sustainable community. This TA is intended to inform the consideration of the site for allocation in the emerging Local Plan for Lancaster.

1.2 An indicative site layout is attached as Appendix A and full details of the proposal can be found on the following website: www.ellelgardens.co.uk.

1.3 The site has the potential to deliver a significant amount of residential and commercial development that promotes sustainable living practices and fits with the ethos of the emerging Local Plan. The site can accommodate around 750 dwellings over the plan period, with 250 dwellings that can come forward by 2023. A key objective for the development is to co-locate a mixture of uses in order to create a sustainable community and promote further containment in the Lancaster area. The current proposal includes a mix of commercial uses (8,500sqm), including local centre, primary education, destination retail/food/drink, hotel, and small scale visitor attraction facilities. To embed sustainable living practices from day one of the development, it is the intention to also build most of the commercial uses by 2023 and deliver the transport strategy measures at an early stage.

1.4 For consistency, the traffic impact assessment presented in the TA has been prepared entirely in line with the method set out in WYG's recent 'Local Plan Transport Assessment'. WYG was commissioned in early 2018 to prepare a study of the impact of the Local Plan on the highway network by Lancaster City Council, the planning authority. The method adopted by WYG was developed in conjunction with Lancashire County Council, the highway authority, and Highways England, the trunk road/strategic network authority. As set out in WYG's report, this method has led to a 'worst-case traffic scenario' being assessed and as such it forms a robust basis for this assessment. Further details of WYG's assessment is set out in Section 3 of this TA.

1.5 Unlike the WYG study, this TA also includes details of the proposed sustainable transport strategy that will underpin the site's development. This assessment includes 'SA Accessibility Assessment' undertaken in line with Lancaster City Council's method as presented in the Local Plan. Consideration is also given to how the sustainable transport strategy fits with the emerging transport strategy for the Local Plan.

2 Existing Situation

Site Location

2.1 Figure 2.1 shows the location of the Site.

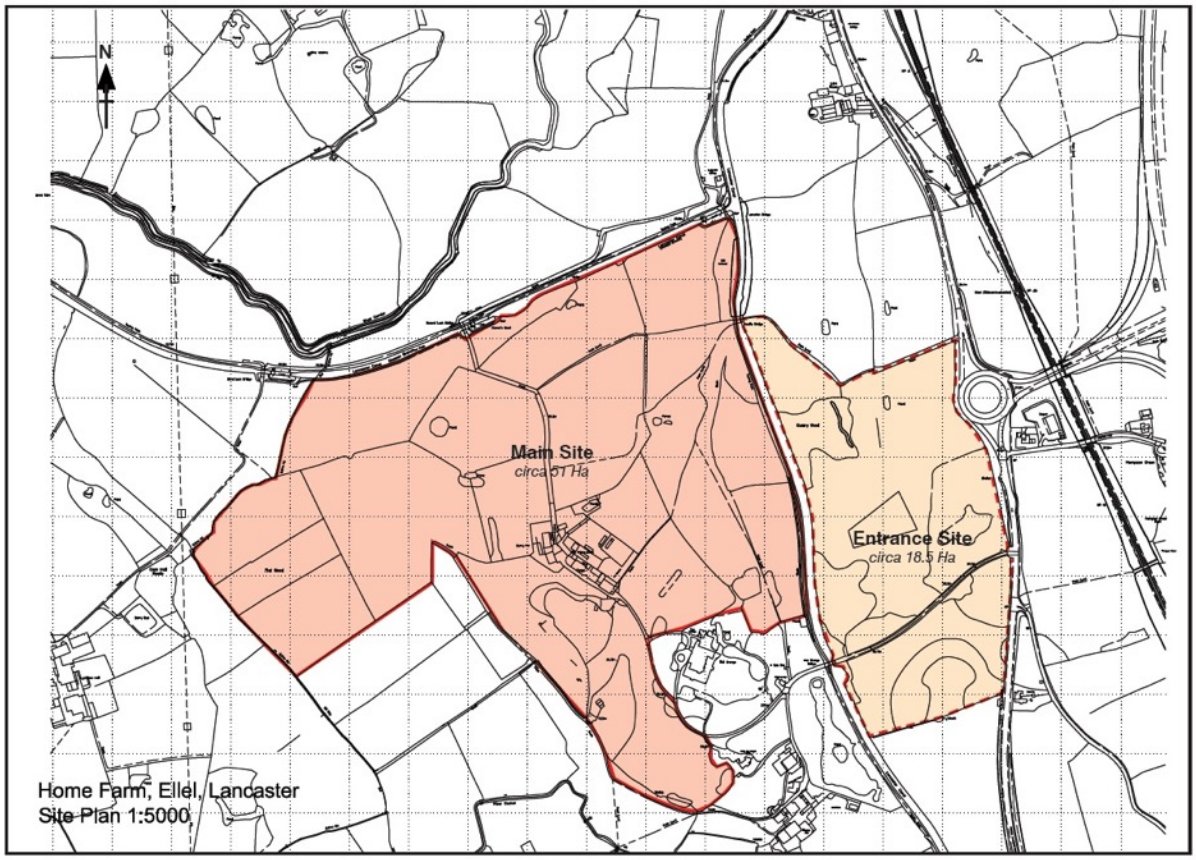

Figure 2.1: Site Location

Highway Characteristics

2.2 The site is located on the western side of the A6 Preston Lancaster Road adjacent to Junction 33 of the M6, a little under five miles south of the centre of Lancaster. The site is largely undeveloped at present, though there are a number of properties present in the area around Ellel Grange, and a church, accessed from the A6 via existing minor roads.

2.3 The A6 Preston Lancaster Road is a principal, high standard road running north-south broadly parallel to the M6 and connecting the major settlements of Lancaster and Preston with numerous smaller towns and villages. This road provides the main north-south route for local trips, with the M6 accommodating longer distance strategic movements. The A6 is also the principal corridor for existing public transport services connecting the established settlement areas.

2.4 The Lancaster Canal also runs north-south on the western side of the A6 and divides the site into two distinct areas. Two existing bridges link the eastern area of the site with the west.

2.5 A mile north of the site on the A6 is the established settlement of Galgate. Continuing north the Lancaster University main campus is located 2 miles north of the site and the Scotforth area of south Lancaster a mile further on. Continuing towards the city centre the University of Cumbria in Lancaster campus and Lancaster Hospital are on the southern side of the city centre, around four miles north of the site, with the city centre itself approximately five miles in total.

Non-Car Access

Public Transport

2.6 As already noted, the A6 is principal public transport corridor with numerous existing scheduled bus services. Stops are currently present on the A6 for services in both directions on the site frontage.

2.7 Existing bus services passing the site are summarised in Table 4.1. The existing bus services provide regular scheduled services linking Lancaster with Preston, in addition to numerous dedicated school and college services.

No.	Route	Typical Frequency
40	Morecambe - Preston via Galgate, Cabus, Bilsborrow, Broughton	Hourly (Sunday service)
40A	Lancaster - Garstang - Preston College	College Service
41	Lancaster - Preston via Galgate, Cabus, Bilsborrow, Broughton	30 min (peak), hourly (off peak)
42	Lancaster - Blackpool via Galgate, Great Eccleston	Hourly
529	Galgate - Garstang - Pilling - Preesall St Aidans	School Service
940	Lancaster Royal Grammar School - Preston	School Service
941	Lancaster Girls Grammar School - Preston	School Service
942	Catterall - Lancaster Grammar Schools	School Service

Table 2.1: Existing Bus Routes

Pedestrians & Cyclists

2.8 Figure 2.2 shows that pedestrian connections across the site are provided from the extensive PROW network. These connect across the Lancaster Canal to routes towards Ellel and Galgate local centre, and the A6. A comprehensive and sympathetic pedestrian route network will be developed that enables people to comfortably and safely move around the site. These routes will provide connections to both utility and leisure routes on the wider network.

2.9 There are currently no cycle routes directly serving the site, but Routes 6 and 90 of the National Cycle Network are present nearby. The proposal will include measures to allow residents and the wider community to cycle around the site and provide appropriate facilities to connect to the wider network.

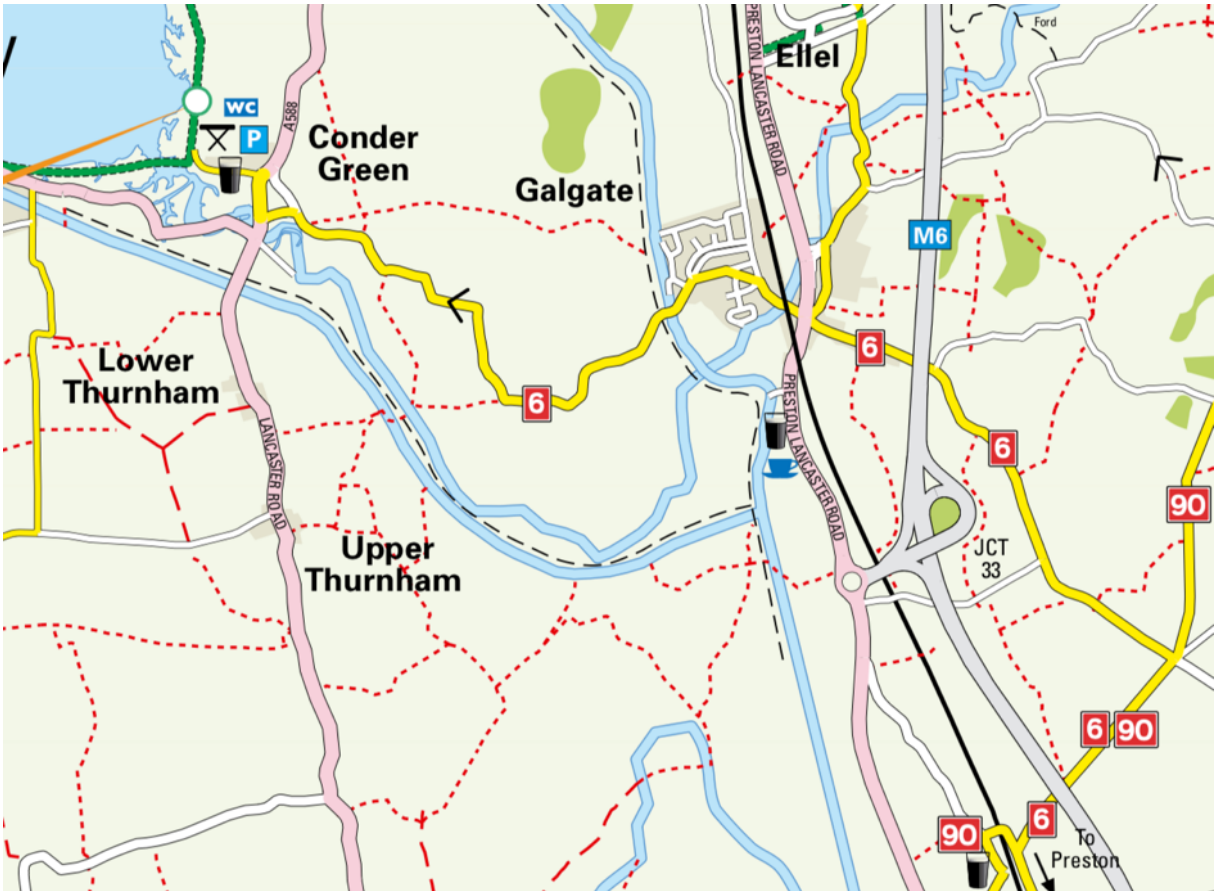

Figure 4.1: Walking & Cycling Routes

Access to Amenities

2.10 The site is located to the south of the existing settlements at Ellel and Galgate. These areas provide existing local facilities including, a primary school, health centre, village hall, day nursery, café, public houses/restaurants, and local shops.

2.11 The SA Site Appraisal (attached as Appendix B) shows that the site scores at a medium level for all the criteria as access can generally be gained to the required facilities within 1km of the site. The SA Site Appraisal score will be substantially improved by the measures included in the development, this is set out at Section 5 of this TA.

3 Local Plan Evidence Base: WYG Study

Background

3.1 In December 2018 WYG was commissioned by Lancaster City Council to prepare a Transport Assessment of the Local Plan proposals. The study was prepared in co-ordination with Lancaster City Council and also through consultation with Lancashire County Council and Highways England.

3.2 The County and Strategic Highway Authorities have subsequently confirmed that the method used in the study is acceptable to them and all have concluded (including WYG) that it provides a worst-case assessment of future highway conditions in Lancaster.

Modelling Method

3.3 The WYG study report acknowledges and explains the key limitations of the study within the introductory sections. Principal amongst these is the absence of a Strategic Transport Model (STM). As described in the study, this fundamentally limits the degree to which future changes in vehicle movements can be evaluated in response to development generated traffic demand and

infrastructure improvements. The limitations of the study are set out in Section 1.3 of the WYG report.

3.4 The study considers the impact of development identified in the Lancaster City Council preferred Local Plan allocation sites on the existing highway network for future years of 2023 and 2033.

3.5 Notably within the Local Plan sites used in the study only one 'omission site' has been included (Land adjacent to Scotland Road). It is unclear why only one omission site has been included, rather than considering all of the omission sites or none. In doing so the assessment somewhat muddies the value of the results as it not possible to establish the impact of delivering any shortfall in housing supply across the study area. This TA report seeks to redress the balance by building on the work presented in the WYG report to incorporate the significant development potential that allocation of the land at Ellel would deliver.

3.6 The report advises that the assessment approach is adequate to determine the impact of the preferred Local Plan development strategy in the 2023 assessment year, and that the method provides a high-level indication of impact in 2033. Although the assessment advises caution when reviewing the results, particularly for the 15 years hence assessment horizon. The report advises that further assessment using a STM will be required to support this.

3.7 The principal difference between the method set out in the WYG assessment and a STM, is the use of a flat traffic growth horizon that makes no allowance for inevitable re-assignment effects, as traffic chooses to use different routes across the highway as a result of changes in traffic flows. The use of a flat horizon of growth has the fundamental effect of overestimating the use of highway routes in some locations, an inevitably underestimating the use of other routes.

Future Infrastructure

3.8 The WYG method also fails to acknowledge the effects of future infrastructure proposals on traffic routing, traffic volumes, journey times, available capacity and highway operation. Again, this has the effect of overestimating the impact of future background traffic growth and traffic generated by the Local Plan sites. No account has been made within the assessment of the potential for sustainable transport improvements (such as the Bus Rapid Transit proposal and other proposals outlined in local policy) to reduce car trips and improve the operation of the highway network. All of this is noted within the WYG assessment report.

3.9 With reference to the Lancashire County Council Highways and Transport Masterplan for Lancaster, there are a number of significant infrastructure measures being pursued within this time frame. Measures programmed for completion within this period include, inter alia:

- Reconfiguration of M6 Junction 33 (programmed completion 2020/2025)
- Highways Improvements into South Lancaster (programmed completion 2020/2025)
- Lancaster South A6 Corridor Improvements (programmed completion 2020/2035)
- Junction Improvements at A6 Main Road (programmed completion 2020/2023)
- Junction Improvements at A6 Lancaster Road (programmed completion 2020/2023)
- Creation of new Cycle/Walking Superhighway (programmed completion 2020/2035)
- Bus Rapid Transit Phase 1 South Lancaster (programmed completion 2020/2035)

3.10 Policy T1 of the Local Plan safeguards land at Junction 33 of the M6 for a Bus Rapid Transit Park & Ride facility. In Appendix J of WYG's response to comments on the Study it states that '…there is potential to develop a BRT network capable of being operated on a commercial basis and attracting mode shift from the car.' As with the other infrastructure proposals set out in adopted and emerging local policy (including the updated Infrastructure Delivery Plan), the impact of this intervention in alleviating traffic demand levels along the A6 corridor south of Lancaster has not been assessed in the WYG study.

3.11 The WYG study also excludes committed infrastructure schemes that will have positive effects on the network, such as the improvement schemes at the Galgate and Hala junction, though some limited mitigation has been considered at each of these locations.

3.12 Whilst it is acknowledged that programmed completion dates are subject to uncertainty, the intentions for major infrastructure improvements within the early phases of the Local Plan period align with the preferred development strategy and in particular, the focus of development and

associated infrastructure improvement measures on the A6 corridor to the south of Lancaster. The failure to acknowledge the positive effects that these interventions could have on network operation leads to a situation whereby the WYG study artificially constrains the potential level of development that could be brought forward in both periods assessed.

Study Limitations

3.13 The assessments presented in the report therefore represent a position in 2023 wherein no changes have taken place on the highway network, in terms of traffic reassignment effects, strategic highway improvements (local mitigation schemes are represented as in the WYG study) and mode share choice, in the district. Whilst this will provide an indication of the impacts of development, the approach inherently lacks any recognition of major infrastructure improvements scheduled to occur in the intervening period and can therefore be expected to lead to an overestimation of network stress.

3.14 While the WYG exercise is a useful assessment in terms broadly setting out highway conditions, it provides a very much worst-case and simplistic assessment of the impact of the Local Plan that unrealistically inflates future network operation. Thus, it cannot be wholly relied on to set the future infrastructure required at a detailed level for delivery the Local Plan nor as a basis for restraining future housing supply.

3.15 The limitations of the study and the impact of this on its usefulness are acknowledged by WYG at the outset of the report. HE and Lancashire County Council also agree that the method used leads to a 'worst-case assessment'.

4 Highway Access & Traffic Impact

Access Strategy

4.1 Full details of the proposal are provided on the following website: www.ellelgardens.co.uk.

4.2 The scale of the site is such that more than one point of vehicular access would be expected. The eastern boundary of the site is contiguous with the A6, providing ample frontage for improved access to the site. Multiple access points also create the optimal situation for creation of new or re-routing of existing public transport services.

4.3 Feasibility design has been undertaken for new vehicular access points to serve the site, from the existing roundabout connecting the A6 with the M6 at junction 33, and with a further new junction further south on the A6. General arrangement designs for each of these are provided at Appendix A of this Note.

4.4 The design work undertaken to date comfortably demonstrates that suitable means of vehicular access can be provided, commensurate with the nature and scale of development under consideration.

Assessment Scope

4.5 An assessment has been undertaken of the impact of bringing forward Ellel Gardens to meet the shortfall in five year housing supply.

4.6 The method used in the assessment is based on that used by WYG. This has been undertaken in this way to provide consistency with the approach accepted by Lancaster City Council, Lancashire County Council and Highways England. As with the WYG study, the inherent limitations of the method lead to a worst-case assessment of future transport conditions.

2023 Trip Generation

4.7 The trip generation forecast is attached as Appendix C.

4.8 The residential trip rates have been taken from Appendix D of the WYG study. The trip rates are the same as those forecast by WYG for allocated sites across Lancaster.

4.9 It has been assumed for the purposes of the assessment that there will be circa 1,000sqm of employment uses provided at the site (excluding employment associated with retail, community and leisure facilities). The trip rates for the employment uses have been taken from Appendix D of the WYG study and are the same as those used for Bailrigg.

4.10 The proposal includes circa 2,400sqm of retail and food/drink facilities. In line with the WYG study of Bailrigg Garden Village it has been assumed that some of this will be local centre type uses that will not generate significant external trips. Again, in line with the WYG study, worst-case food retail trip rates have been used for the remainder (2,000sqm). These trip rates have been discounted to allow for passby/linked trips in line with the method presented in Appendix D of the WYG study.

4.11 The hotel trip rates have been taken from the TRICS database and the output is attached as Appendix D.

4.12 The proposal includes some small areas of visitor destinations, such as a small petting farm and a virtual zoo. These are leisure destinations that will largely generate trips during the day or at the weekend and so have been excluded from the peak hour assessments.

4.13 The traffic flows used in the assessment are presented in Appendix C.

2023 Trip Distribution

4.14 The WYG distribution is based on a zonal method using Census data. The Site sits with Zone L0019. The distribution proportions for employment and residential trips have been replicated from Appendix E of the WYG study. The Site distribution is attached as Appendix E.

4.15 The trips have been assigned to the network using quickest route software. The resulting assignment for each trip type is attached as Appendix E. It has been assumed that the hotel trips will be concentrated on movements between the Site and the M6.

2023 Base & Development Traffic Flows

4.16 The WYG Do-Something traffic flows have been used as the 2023 base traffic scenario in this TA. These flows take account of surveyed traffic, TEMPRO growth, committed developments, and Local Plan Allocations, as set out in the WYG study. These flows are replicated in Appendix F.

4.17 The 2023 development traffic flows have been added to the WYG Do-Something flows to create the 2023 base with development traffic flows.

Highway Assessment Method

4.18 The proposed site access junctions and those junctions covered in the WYG study along the A6 corridor north of the site, up to and including The Pointer junction have been tested for the 2023 Do-Something scenario with and without the proposed development at Ellel.

4.19 Where possible, the modelling contained within the WYG study has been replicated, in the interests of consistency. Exceptions to this are the site access junction layouts which are naturally not represented in the WYG study, and the A6 junctions with Bigforth Drive and Barton Road for which model details were not included within the WYG study report.

4.20 Junction forms including localised mitigation identified in the WYG report have been used as the basis for testing. The affected junctions are the A6/Hazelrigg Lane which is modified to include an access to the proposed Bailrigg Garden Village allocation area in the Do-Something scenario, and the A6 junctions with Hala Road and Bowerham Road (The Pointer), each of which is identified as requiring improvement in the WYG study even in the absence of any of the LP proposed allocations. Indicative junction improvements are included within the WYG study report, together with details of the assessment models for each.

4.21 The results of the assessments of the junctions on the A6 corridor, including the proposed site access junctions, are provided in Appendix G and are summarised in Table 4.1. As in the WYG study report, the maximum degree of saturation (DoS) is presented in the case of traffic signal

junctions and the maximum ratio of flow to capacity (RFC) is presented in the case of roundabouts and other priority controlled junctions.

4.22 The assessment results have been assigned a colour rating using the same methodology as applied in the WYG study, in the junctions predicted to operate comfortably within capacity are shown as green, those that are approaching capacity are shown amber and those for which capacity is predicted to be exceeded are shown red.

Description	2023 AM DS	2023 PM DS	2023 AM DS + Development	2023 PM DS + Development
A6 / Stoney Ln / Salford Rd	88.8%	93.8%	93.3%	99.6%
A6 / Hazelrigg Rd / SG1 Access	74.5%	76.3%	78.9%	81.4%
A6 / Bigforth Dr	34.5%	41.5%	36.4%	44.5%
A6 / Hala Rd / Ashford Rd	81.4%	96.0%	83.5%	99.4%
A6 / Barton Road	0.968	0.726	0.989	0.760
A6 / Bowerham Rd / Ashton Rd	97.3%	89.4%	99.3%	92.0%
Site Access North / A6 / M6 J33 slips	-	-	0.480	0.539
Site Access South (A6)	-	-	0.080	0.108

Table 4.1: Junction Assessments Summary

4.23 The assessment results are comparable with those reported in the WYG study in that all of the junctions are predicted to operate within capacity in the 2023 Do-Something scenario when the mitigation measures identified in the WYG study are taken into account. Similarly, a number of junctions are nonetheless predicted to be approaching capacity, these are the A6 junctions with Stoney Lane/Salford Road at Galgate, Hala Road/Ashford Road, Barton Road and Bowerham Road/Ashton Road (The Pointer).

4.24 It is noted that the Do-Something scenario presented in the WYG study is acknowledged to represent a worst-case scenario in that the traffic demand forecasting takes no account of traffic reassignment across other routes nor is any account taken of the beneficial effects of strategy measures to enhance sustainable transport facilities and services.

4.25 Whilst these assessments represent a worst-case traffic flow scenario for 2023, the addition of traffic from the proposed Ellel development does not result in capacity being exceeded at any of the key junctions on the A6 corridor.

5 Change for Good – Sustainable Transport Strategy

Ellel Gardens Ethos

5.1 Full details of the proposal are provided on the following website: www.ellelgardens.co.uk.

5.2 The applicant is committed to developing a new community where people can work, live and play. The scheme reflects this and seeks to create homes that can be rented or bought, including assisted living accommodation. Work and education spaces, and retail and leisure places are sensitively embedded into the proposal with the aim of enabling people to meet their needs a short walk from their doorstep. The commercial space will be purpose designed workshops and retail outlets to allow artisan businesses to set up shop, underpinned by community loan opportunities. Play destinations will be comprised of both formal leisure facilities (food and drink destinations and a leisure centre) and informal leisure areas that take advantage of the surrounding environment (canalside walks, open space and play areas).

5.3 The proposal will include a mix of housing connected to community destinations by pathways that embed healthy living in from the outset and seek to accommodate every stage of life (buggies, scooters, wheelchairs, cyclists). The layout and density of the development will be suitable for walking and cycling, with lower distances to key nodes to reduce the need to use, or even own, a car. Because real freedom is not being dependent on your car to move around.

5.4 Importantly it is the applicant's intention to deliver housing and community uses simultaneously so that sustainable living practices are embedded from a very early phase. The development seeks to embrace the digital revolution to allow people to work where they live and also have information on how to travel off site at their finger-tips if they need to travel into Lancaster city centre or other areas of south Lancaster. This will include real time information and a mobile phone apps that set out the travel choices available to them.

5.5 The type of sustainable development proposed and the transport strategy underpinning it is entirely in keeping with the location of the site in Lancaster. The public consultation response to Lancashire County Council's Highways and Transport Masterplan showed very clearly that there is a high support from Lancaster residents for prioritising the environment and bringing forward sustainable interventions. For example, 74% of respondents agreed with the strategy to introduce a Bus Rapid Transit scheme, 68% of respondents agreed with the provision of a Bus Rapid Transit Park & Ride at Junction 33 to reduce traffic through the city, and 60% agreed with the Electric Vehicle strategy for the city. It is also the case that when residents of Lancaster live in locations that are locally served by workspace, community, leisure and retail facilities that the take-up of walking is high, such as found in Lancaster city centre (36%).

Sustainable Transport Strategy

5.6 A comprehensive and sympathetic pedestrian route network will be developed that enables people to comfortably and safely move around the site. These routes will provide connections to both utility and leisure routes on the wider network, and will make use of the existing canal side routes and extensive PROW network.

5.7 There are currently no cycle routes directly serving the site, but Routes 6 and 90 of the National Cycle Network are present nearby. The proposal will include measures to allow residents and the wider community to cycle around the site and provide appropriate facilities to connect to the wider network.

5.8 The site is identified as requiring two points of access which would provide ready opportunities for improved penetration of public transport routes, and initial feedback following consultation with the Local Highway Authority is that provision of a dedicated bus service would be a planning requirement. The applicant will introduce an electric bus to serve the site and forge connections with the wider network and other key transport nodes, such as the Junction 33 Park & Ride facility.

5.9 To further support sustainable movements across the site and off-site the following measures are included in the transport strategy:

- Filtered permeability and transit orientated development principles
- Co-location of leisure, workspace, retail and community uses
- Pedestrian and cycle routes that prioritise these movements and create efficient connections to existing off-site routes
- Electric bus service that links to key nodes on and off site
- Electric Vehicle charging points
- Car share scheme
- Car club vehicles
- Electric hire bikes
- Water taxis
- Phone apps providing transport route information
- In-house infrastructure that allows connection to real time travel information

5.10 The applicant is supportive of the sustainable measures set out to serve south Lancaster, including the Bus Rapid Transit, Cycle/Pedestrian Superhighway and A6 corridor improvements.

Opportunities exist to connect these routes to the site to further enhance connections between the site and the city centre and other key destinations in south Lancaster.

5.11 The transport strategy has been developed to dove-tail with that set out by Lancaster City Council and Lancashire County Council to support development to the south of Lancaster, but also to ensure that the development is underpinned by a strategy that can stand on its own two feet.

5.12 The proposed sustainable transport interventions have a high potential for reducing external site trips and offering a real opportunity to embed a reduction in single occupancy car journeys from an early phase in the development. The impact of this strategy has not been modelled in the traffic impact analysis in this TA to allow a worst-case assessment in line with that set out in the WYG study. Even with the worst-case assessment it is shown that the proposal will not have an unacceptable degree of impact on the highway network. This being the case, the site offers an opportunity to bring forward at an early stage in the Local Plan period a robustly considered sustainable community.

Updated SA Accessibility Appraisal

5.13 The SA Site Appraisal attached as Appendix B shows the impact of delivering a mix of uses on site and substantial benefits of the transport strategy proposed. The assessment shows that with these measures the site meets the maximum criteria threshold.

6 Conclusions

6.1 Proposals have been developed in detail for a residential-led mixed use sustainable new community on land at Ellel on the western side of the A6, south of Lancaster. The proposals include a range of commercial and leisure uses to be brought forward in the early phases of development, helping to ensure the benefits of these are locked-in in relation to sustainable movement patterns. Full details of the proposal are provided on the following website: www.ellelgardens.co.uk.

6.2 The proposed development aligns with the strategy outlined in the emerging Local Plan to focus development within the A6 corridor south of Lancaster. Strategic highway improvement proposals and sustainable transport measures are identified within the highway authority's transport masterplan for the area that are consistent with this development strategy.

6.3 Irrespective of the strategic highway and sustainable transport proposals, the impact of developing the site has been tested using the worst-case assessment methodology adopted in the Transport Assessment work undertaken for Lancaster City Council by WYG to test the preferred allocations in the emerging Local Plan and one omission site. This demonstrates that the proposed development at Ellel can come forward in the early part of the Plan period without having an undue negative effect on local highway conditions and is not reliant on strategic improvements over which there is greater uncertainty regarding timescales for delivery.

Appendix A


N
TOWPATH MEWS
THE LANES
NEW BRIDGE
THE QUARRY
THE GREEN
RETIREMENT VILLAGE
THE MARKETPLACE
THE SCHOOL
CANALSIDE PARK
MARKET GARDEN
FLAT WOOD
THE MEADOWS
STRIDE TREGLOWN ARCHITECTURE

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NOTES

Preston Lancaster Road

Revision Details	By / Check	Date	Suffix

Drawing Number

SK21756-001

Ellel, Lancaster

Drawing Title

Southern Access Junction
Preliminary Layout

Scale at A1	
1:500	
Drawn: KAB	Approved: JAT
Check: JAT	Date: 20.11.17

SK Transport Planning Ltd
Albion Wharf | Manchester | M1 5LN
www.sktransport.co.uk
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NOTES

Revision Details	By / Check	Date	Suffix

Drawing Number
SK21756-002

Ellel, Lancaster

Drawing Title
Northern Access Junction
Preliminary Layout

Scale at A1
1:500

Drawn	Approved
KAB	JAT
Check	**Date**
JAT	21.11.17

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Appendix B

		Existing	LCC Local Plan		Proposed	Development	
Sub-Topic	Criteria		Sub-total Score	SA Score		Sub-total Score	SA Score
Health	GP	within 1km Galgate Health Centre	+	+	New GP	++	++
Health	Site provides play area or sports facility available to existing residents	within 1km Galgate Sports Fields	+		New play areas/open space	++	
Health	Site provides significant new PROW or cycle connections available to existing residents	within 500m PROW	+		New walking & cycling connections of benefit to wider community	++	
Cultural, Leisure & Community	Library or museum	none near by	o		Event space/community centre	++	
Cultural, Leisure & Community	Local centre	Galgate within 1km	+		Local centre	++	
Cultural, Leisure & Community	Town/village hall or church	Ellel within 1km	+		Event space/community centre	++	
Education	Primary	Ellel St Johns (exceeds thresholds)	o	o	New primary school	++	++
Education	Secondary	Lancaster (exceeds threshold)	o				
Access	Access to open countryside	within 500m of open space	+	+	Open space/woodlands/countryside access	++	++
Access	Bus stops/services	within 1km of bus stops	+		New bus services for residents & wider community	++	
Access	Highways infrastructure	States no known capacity issues	+		Site will contribute to LCC masterplan providing capacity & safety benefits	++	

Appendix C

Trip Rates (WYG Local Plan TA: Bailrigg Trip Rates for Housing & Retail, & Bailrigg Business Park for Employment) (Hotel taken from TRICS)

	Housing (per unit)			Retail (per 100sqm GFA)			Employment (per 100sqm GFA)			Hotel (per bed)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	0.136	0.398	0.534	4.219	2.82	7.039	1.195	0.086	1.282	0.209	0.261	0.470
PM	0.353	0.174	0.527	8.546	9.018	17.564	0.086	0.924	1.010	0.209	0.162	0.371

Ellel Traffic Flows - 5 Year Completions 50%

	Housing			Retail			Employment			Hotel		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	34	100	134	42	28	70	11	1	12	21	26	47
PM	88	44	132	85	90	176	1	9	9	21	16	37

Ellel Traffic Flows - Total Completions 50%

	Housing			Retail			Employment			Hotel		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	102	299	401	42	28	70	11	1	12	21	26	47
PM	265	131	395	85	90	176	1	9	9	21	16	37

Appendix D

Calculation Reference: AUDIT-443201-190329-0346

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	BU	BUCKINGHAMSHIRE	1 days
03	**SOUTH WEST**		
	DV	DEVON	1 days
	GS	GLOUCESTERSHIRE	1 days
05	**EAST MIDLANDS**		
	LE	LEICESTERSHIRE	1 days
08	**NORTH WEST**		
	LC	LANCASHIRE	1 days
09	**NORTH**		
	TW	TYNE & WEAR	1 days
10	**WALES**		
	CF	CARDIFF	1 days

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

Secondary Filtering selection:

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

Parameter: Number of bedrooms
Actual Range: 60 to 227 (units:)
Range Selected by User: 50 to 250 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/11 to 23/10/18

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

Selected survey days:

Wednesday	3 days
Thursday	2 days
Friday	2 days

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

Selected survey types:

Manual count	7 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	4

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

Selected Location Sub Categories:

Industrial Zone	1
Commercial Zone	1
Development Zone	1
Residential Zone	3
Out of Town	1

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

Secondary Filtering selection:

Use Class:

C1	7 days

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

Population within 1 mile:

5,001 to 10,000	3 days
10,001 to 15,000	1 days
20,001 to 25,000	2 days
100,001 or More	1 days

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

Population within 5 miles:

25,001 to 50,000	1 days
100,001 to 125,000	1 days
250,001 to 500,000	5 days

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

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	4 days

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

Travel Plan:

No	7 days

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

PTAL Rating:

No PTAL Present	7 days

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

LIST OF SITES relevant to selection parameters

1 **BU-06-A-02** **HOLIDAY INN** **BUCKINGHAMSHIRE**
NEW ROAD
AYLESBURY
WESTON TURVILLE
Edge of Town
Out of Town
Total Number of bedrooms: 139
Survey date: WEDNESDAY *01/10/14* *Survey Type: MANUAL*

2 **CF-06-A-05** **PARK INN BY RADISSON** **CARDIFF**
CIRCLE WAY EAST
CARDIFF
LLANEDEYRN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of bedrooms: 132
Survey date: WEDNESDAY *21/03/18* *Survey Type: MANUAL*

3 **DV-06-A-03** **FUTURE INN** **DEVON**
WILLIAM PRANCE ROAD
PLYMOUTH

Edge of Town
Industrial Zone
Total Number of bedrooms: 110
Survey date: WEDNESDAY *18/07/12* *Survey Type: MANUAL*

4 **GS-06-A-02** **PREMIER INN** **GLOUCESTERSHIRE**
GLOUCESTER ROAD
CHELTENHAM SPA
SAINT MARKS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of bedrooms: 67
Survey date: THURSDAY *28/11/13* *Survey Type: MANUAL*

5 **LC-06-A-04** **BEST WESTERN** **LANCASHIRE**
LEYLAND WAY
LEYLAND

Edge of Town
Residential Zone
Total Number of bedrooms: 93
Survey date: FRIDAY *21/10/11* *Survey Type: MANUAL*

6 **LE-06-A-01** **MARRIOTT** **LEICESTERSHIRE**
SMITH WAY
LEICESTER
ENDERBY
Edge of Town
Commercial Zone
Total Number of bedrooms: 227
Survey date: THURSDAY *12/07/18* *Survey Type: MANUAL*

7 **TW-06-A-02** **TRAVELODGE** **TYNE & WEAR**
CASPER WAY
GATESHEAD
SWALWELL
Suburban Area (PPS6 Out of Centre)
Development Zone
Total Number of bedrooms: 60
Survey date: FRIDAY *13/11/15* *Survey Type: MANUAL*

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

TRIP RATE for Land Use 06 - HOTEL, FOOD & DRINK/A - HOTELS

VEHICLES

Calculation factor: 1 BEDRMS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	7	118	0.092	7	118	0.196	7	118	0.288
08:00 - 09:00	7	118	0.209	**7**	**118**	**0.261**	**7**	**118**	**0.470**
09:00 - 10:00	**7**	**118**	**0.245**	7	118	0.167	7	118	0.412
10:00 - 11:00	7	118	0.150	7	118	0.124	7	118	0.274
11:00 - 12:00	7	118	0.098	7	118	0.145	7	118	0.243
12:00 - 13:00	7	118	0.171	7	118	0.118	7	118	0.289
13:00 - 14:00	7	118	0.181	7	118	0.178	7	118	0.359
14:00 - 15:00	7	118	0.121	7	118	0.126	7	118	0.247
15:00 - 16:00	7	118	0.145	7	118	0.190	7	118	0.335
16:00 - 17:00	7	118	0.144	7	118	0.171	7	118	0.315
17:00 - 18:00	7	118	0.175	7	118	0.159	7	118	0.334
18:00 - 19:00	7	118	0.209	7	118	0.162	7	118	0.371
19:00 - 20:00	7	118	0.176	7	118	0.153	7	118	0.329
20:00 - 21:00	7	118	0.124	7	118	0.086	7	118	0.210
21:00 - 22:00	7	118	0.074	7	118	0.077	7	118	0.151
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.314			2.313			4.627

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

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

Parameter summary

Trip rate parameter range selected:	60 - 227 (units:)
Survey date date range:	01/01/11 - 23/10/18
Number of weekdays (Monday-Friday):	7
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

Appendix E

Ellel, Lancaster: Local Plan Reps Trip Distribution

Residential Distribution

	L0019	A6N	M6N	A6S	M6S	Salford Rd	Bigforth Drive	Hala Rd	Ashford Rd	Barton Rd	Bowerham Rd	Ashton Rd
A	1%		1%									
B	1%		1%									
C	3%		3%									
D	0%		0%									
E	0%		0%									
F	0%		0%									
G	0%		0%									
H	0%		0%									
I	1%		1%									
J	34%				34%							
K	2%			2%								
L	1%			1%								
M	1%			1%								
N	0%	0%				0%						
O	0%		0%									
L001	1%		1%									
L002	0%		0%									
L003	1%		1%									
L004	0%		0%									
L005	2%		2%									
L006	2%		2%									
L008	0%		0%									
L009	0%		0%									
L010	2%		2%									
L011	1%	1%										
L013	3%	3%										
L014	18%	18%										
L015	3%	3%									3%	
L016	2%		2%									
L017	2%	2%							1%			1%
L018	2%	2%						1%		1%		
L019	15%	15%		3%		2%	10%					
L020	1%	1%										
Total	99%	45%	16%	7%	34%	2%	10%	1%	1%	1%	3%	1%

Site Access 1

IN 67%

OUT 67%

	IN	OUT
A6N	30%	30%
M6N	11%	11%
M6S	23%	23%
A6S	5%	5%

Site Access 2

IN 33%

OUT 33%

	IN	OUT
A6N	15%	15%
M6N	5%	5%
M6S	11%	11%
A6S	2%	2%

Employment Distribution

	L0019	A6N	M6N	A6S	M6S	Salford Rd	Bigforth Drive					
A	1%		1%									
B	1%		1%									
C	2%		2%									
D	0%		0%									
E	0%		0%									
F	0%		0%									
G	0%		0%									
H	0%		0%									
I	1%		1%									
J	17%				17%							
K	1%			1%								
L	0%			0%								
M	0%			0%								
N	0%	0%				0%						
O	0%		0%									
L001	2%		2%									
L002	2%		2%									
L003	2%		2%									
L004	1%		1%									
L005	3%		3%									
L006	2%		2%									
L008	1%		1%									
L009	1%		1%									
L010	1%		1%									
L011	3%	3%										
L013	5%	5%										
L014	10%	10%										
L015	5%	5%									5%	
L016	2%		2%									
L017	10%	10%							5%			5%
L018	6%	6%						3%		3%		
L019	16%	16%				5%	10%					
L020	4%	4%										
Total	99%	59%	22%	1%	17%	5%	10%	3%	5%	3%	5%	5%

Site Access 1

IN 67%

OUT 67%

	IN	OUT
A6N	39%	39%
M6N	15%	15%
M6S	11%	11%
A6S	1%	1%

Site Access 2

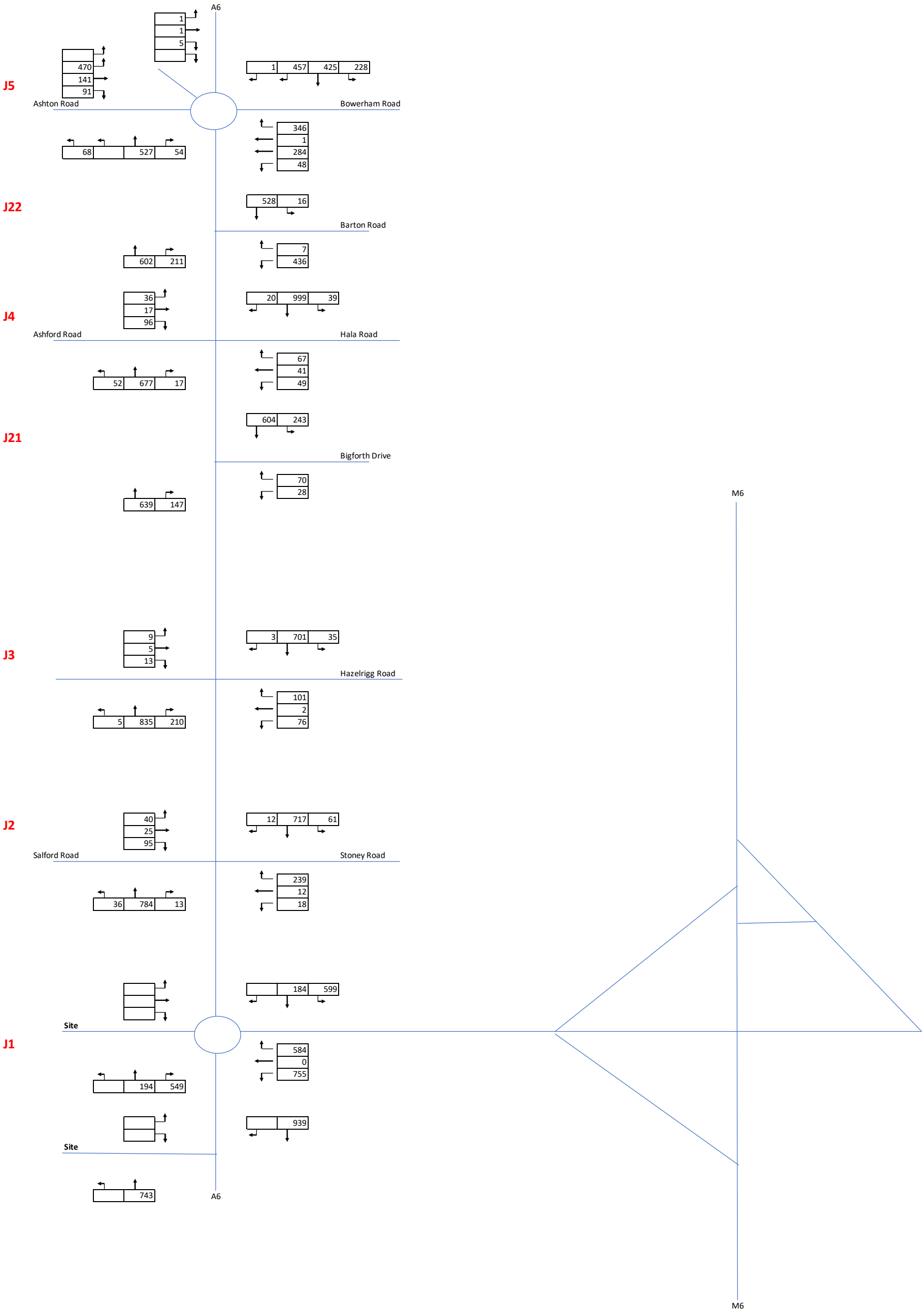
IN 33%

OUT 33%

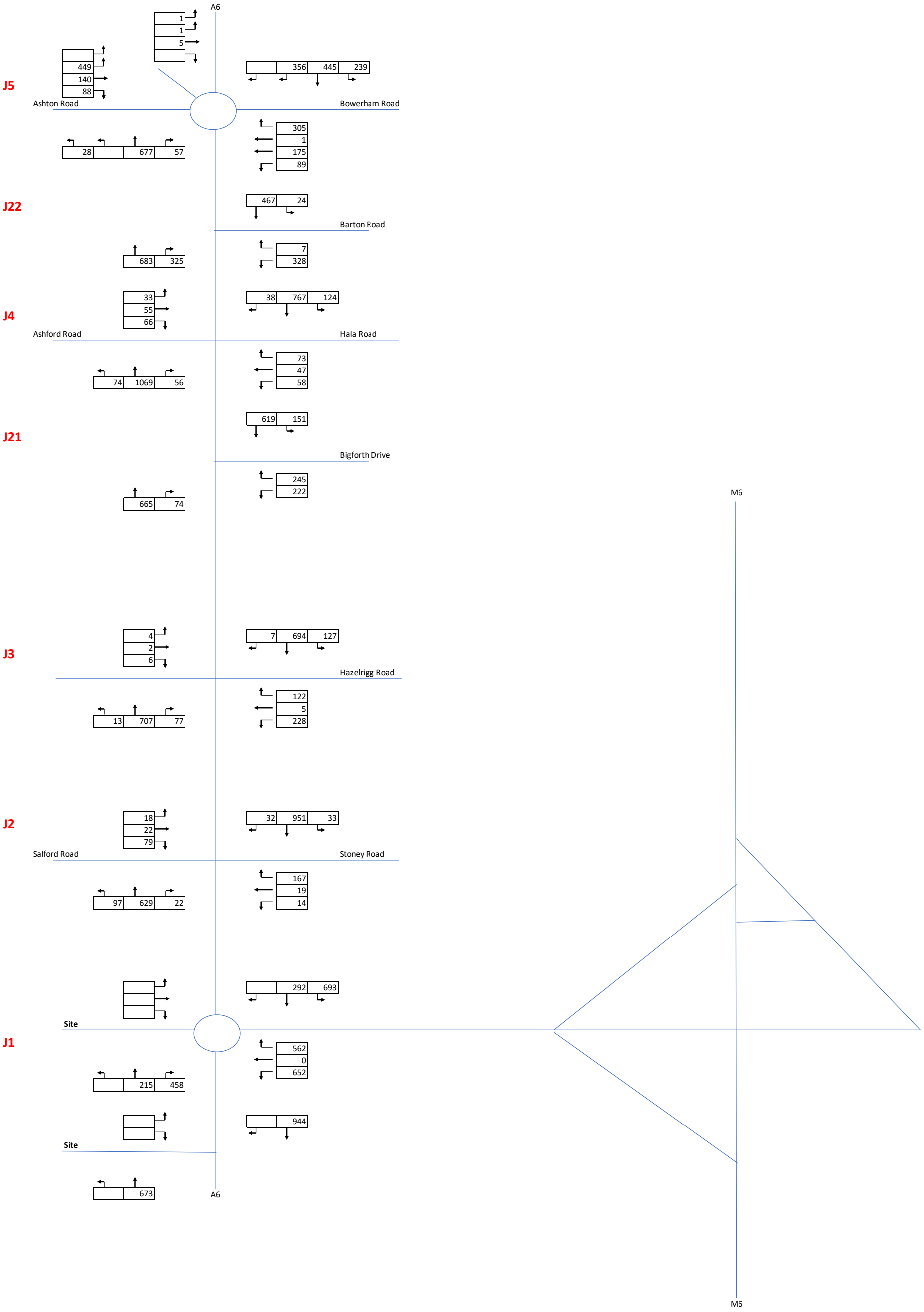
	IN	OUT
A6N	20%	20%
M6N	7%	7%
M6S	6%	6%
A6S	0%	0%

Appendix F

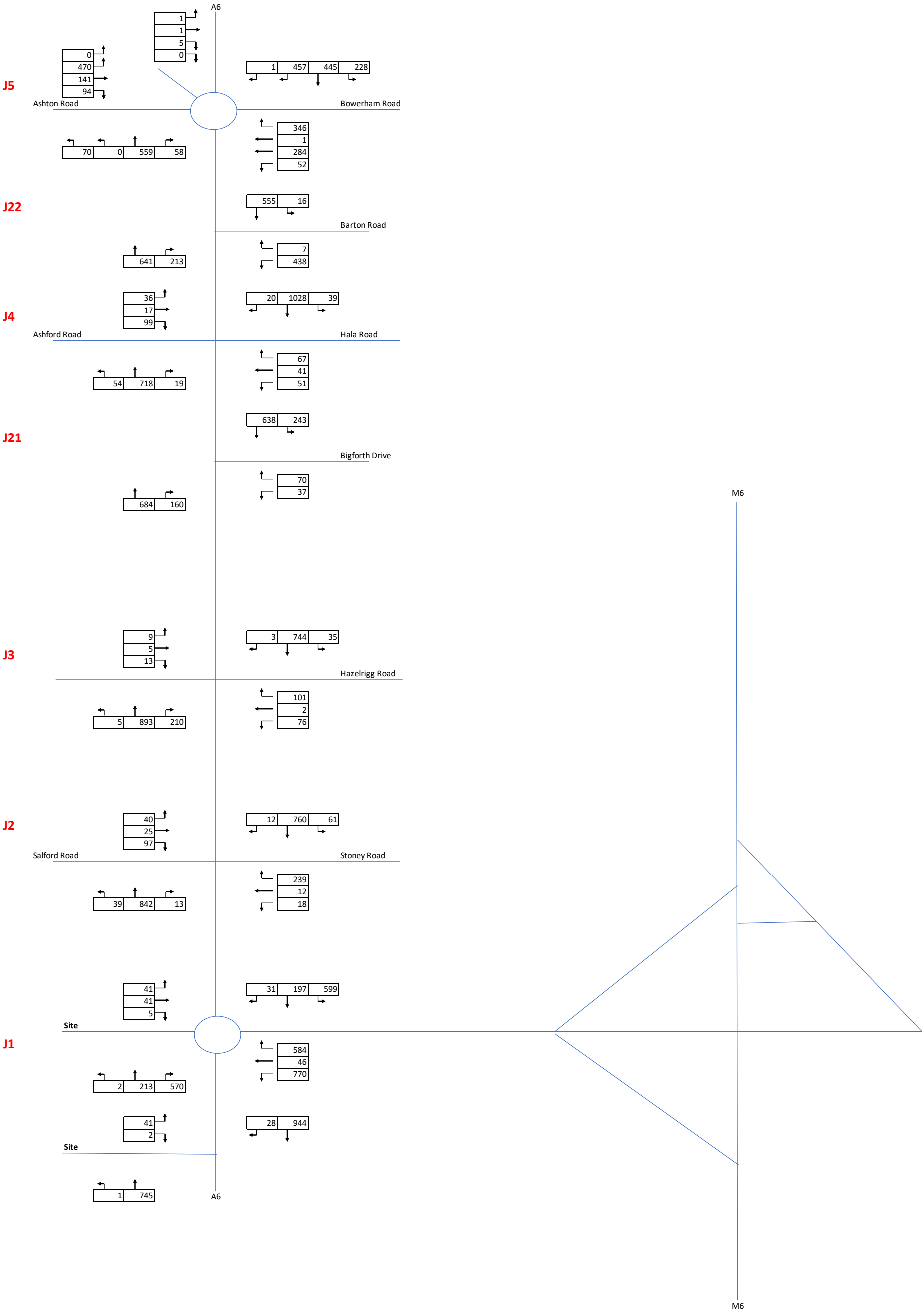
Ellel, Lancaster: 2023 Do-Something AM Peak Flows



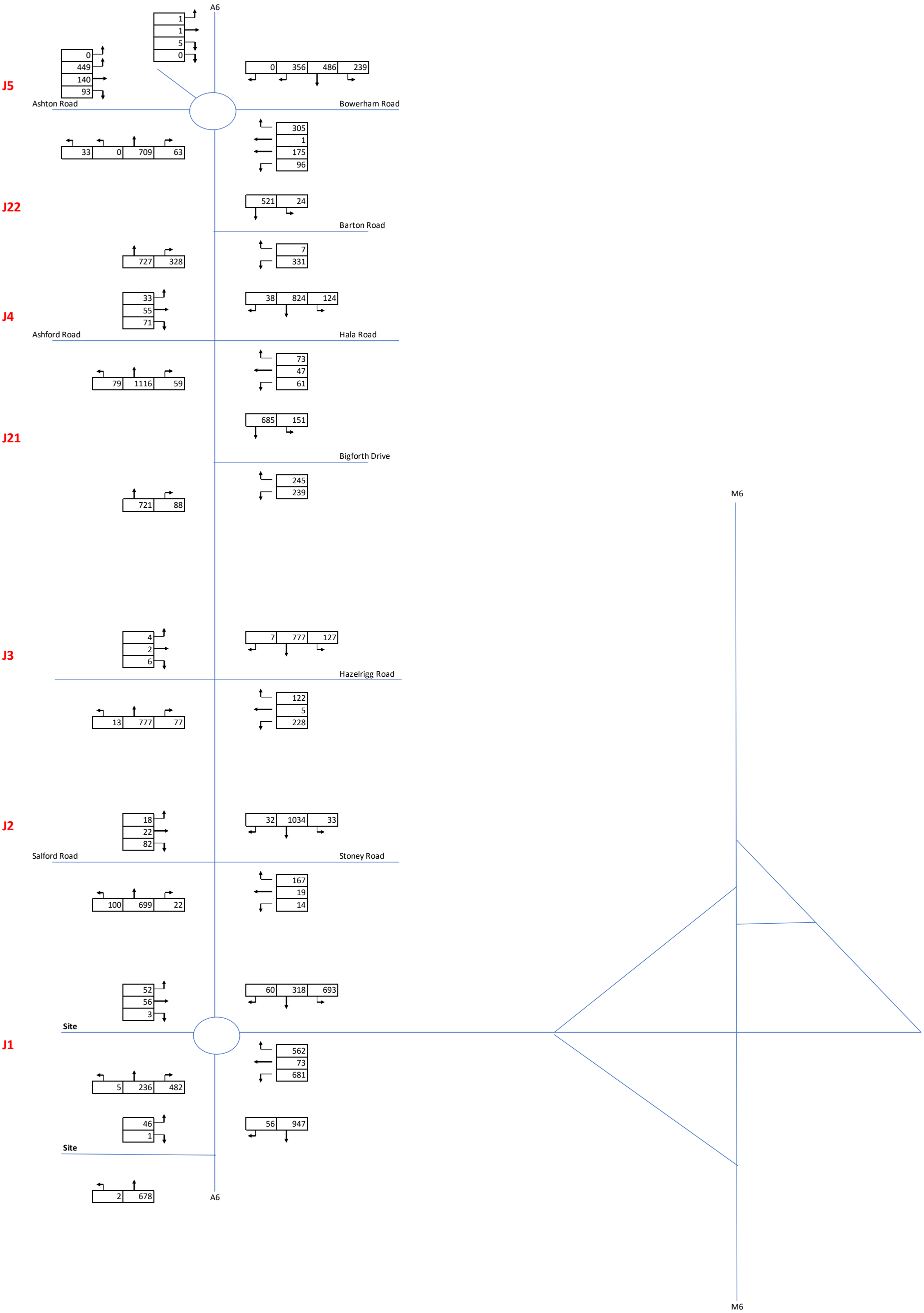
Ellel, Lancaster: 2023 Do-Something PM Peak Flows



Ellel, Lancaster: 2023 Base & Development Flows AM Peak



Ellel, Lancaster: 2023 Base & Development Flows PM Peak



Appendix G

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.4.487 [15039,24/03/2014]

Filename: M6 J33 - A6 - Access.arc8
Path: S:\Projects\SK21756 Ellel\Junction Assessments\EIP
Report generation date: 01/04/2019 10:20:28

File summary

Title	M6 Junction 33 / A6 w Ellel Access
Location	Lancaster
Site Number	
Date	01/04/2019
Version	
Status	
Identifier	
Client	
Jobnumber	SK21756
Enumerator	
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

2023, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationshi
2023, AM	2023	AM	with Development	FLAT	07:30	08:30	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4				2.67	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A6 (N)	
2	2	M6 J33 Overbridge	
3	3	A6 (S)	
4	4	Ellel Access (N)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	4.25	7.30	86.80	39.40	91.40	14.00	
2	8.00	9.20	25.60	79.60	91.40	5.50	
3	5.00	8.00	66.30	147.20	91.40	12.00	
4	4.00	8.00	69.10	30.00	91.40	36.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.555	2287.116
2		(calculated)	(calculated)	0.675	3073.457
3		(calculated)	(calculated)	0.598	2550.820
4		(calculated)	(calculated)	0.528	2224.478

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	827.00	100.000
2	FLAT	✓	1400.00	100.000
3	FLAT	✓	785.00	100.000
4	FLAT	✓	87.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:30-07:45	1	827.00	827.00		
07:30-07:45	2	1400.00	1400.00		
07:30-07:45	3	785.00	785.00		
07:30-07:45	4	87.00	87.00		
07:45-08:00	1	827.00	827.00		
07:45-08:00	2	1400.00	1400.00		
07:45-08:00	3	785.00	785.00		
07:45-08:00	4	87.00	87.00		
08:00-08:15	1	827.00	827.00		
08:00-08:15	2	1400.00	1400.00		
08:00-08:15	3	785.00	785.00		
08:00-08:15	4	87.00	87.00		
08:15-08:30	1	827.00	827.00		
08:15-08:30	2	1400.00	1400.00		
08:15-08:30	3	785.00	785.00		
08:15-08:30	4	87.00	87.00		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	599.000	197.000	31.000
	2	584.000	0.000	770.000	46.000
	3	213.000	570.000	0.000	2.000
	4	41.000	41.000	5.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.72	0.24	0.04
	2	0.42	0.00	0.55	0.03
	3	0.27	0.73	0.00	0.00
	4	0.47	0.47	0.06	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.43	3.22	0.74	A	827.00	827.00	43.93	3.19	0.73	43.93	3.19
2	0.48	2.37	0.92	A	1400.00	1400.00	54.94	2.35	0.92	54.95	2.36
3	0.36	2.63	0.57	A	785.00	785.00	34.09	2.61	0.57	34.10	2.61
4	0.06	2.54	0.06	A	87.00	87.00	3.67	2.53	0.06	3.67	2.53

Main Results for each time segment

Main results: (07:30-07:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	827.00	206.75	824.06	835.73	614.22	0.00	1946.21	1375.25	0.425	0.00	0.73	3.200	A
2	1400.00	350.00	1396.33	1206.10	232.18	0.00	2916.67	2791.12	0.480	0.00	0.92	2.362	A
3	785.00	196.25	782.72	969.27	659.24	0.00	2156.78	1769.27	0.364	0.00	0.57	2.615	A
4	87.00	21.75	86.76	78.76	1363.19	0.00	1504.53	677.56	0.058	0.00	0.06	2.539	A

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	827.00	206.75	826.99	837.99	615.99	0.00	1945.23	1375.25	0.425	0.73	0.74	3.218	A
2	1400.00	350.00	1399.99	1209.99	233.00	0.00	2916.12	2791.12	0.480	0.92	0.92	2.374	A
3	785.00	196.25	784.99	971.99	660.99	0.00	2155.73	1769.27	0.364	0.57	0.57	2.625	A
4	87.00	21.75	87.00	79.00	1366.99	0.00	1502.53	677.56	0.058	0.06	0.06	2.542	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	827.00	206.75	827.00	838.00	616.00	0.00	1945.22	1375.25	0.425	0.74	0.74	3.218	A
2	1400.00	350.00	1400.00	1210.00	233.00	0.00	2916.12	2791.12	0.480	0.92	0.92	2.374	A
3	785.00	196.25	785.00	972.00	661.00	0.00	2155.73	1769.27	0.364	0.57	0.57	2.625	A
4	87.00	21.75	87.00	79.00	1367.00	0.00	1502.53	677.56	0.058	0.06	0.06	2.542	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	827.00	206.75	827.00	838.00	616.00	0.00	1945.22	1375.25	0.425	0.74	0.74	3.218	A
2	1400.00	350.00	1400.00	1210.00	233.00	0.00	2916.12	2791.12	0.480	0.92	0.92	2.374	A
3	785.00	196.25	785.00	972.00	661.00	0.00	2155.73	1769.27	0.364	0.57	0.57	2.625	A
4	87.00	21.75	87.00	79.00	1367.00	0.00	1502.53	677.56	0.058	0.06	0.06	2.542	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:30-07:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	10.75	0.72	3.200	A	A
2	13.49	0.90	2.362	A	A
3	8.38	0.56	2.615	A	A
4	0.90	0.06	2.539	A	A

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.04	0.74	3.218	A	A
2	13.80	0.92	2.374	A	A
3	8.56	0.57	2.625	A	A
4	0.92	0.06	2.542	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.06	0.74	3.218	A	A
2	13.82	0.92	2.374	A	A
3	8.57	0.57	2.625	A	A
4	0.92	0.06	2.542	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.07	0.74	3.218	A	A
2	13.83	0.92	2.374	A	A
3	8.58	0.57	2.625	A	A
4	0.92	0.06	2.542	A	A

2023, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 3 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 4 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationshi
2023, PM	2023	PM	with Development	FLAT	16:30	17:30	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4				2.94	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A6 (N)	
2	2	M6 J33 Overbridge	
3	3	A6 (S)	
4	4	Ellel Access (N)	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	4.25	7.30	86.80	39.40	91.40	14.00	
2	8.00	9.20	25.60	79.60	91.40	5.50	
3	5.00	8.00	66.30	147.20	91.40	12.00	
4	4.00	8.00	69.10	30.00	91.40	36.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.555	2287.116
2		(calculated)	(calculated)	0.675	3073.457
3		(calculated)	(calculated)	0.598	2550.820
4		(calculated)	(calculated)	0.528	2224.478

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

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	1071.00	100.000
2	FLAT	✓	1316.00	100.000
3	FLAT	✓	723.00	100.000
4	FLAT	✓	111.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:30-16:45	1	1071.00	1071.00		
16:30-16:45	2	1316.00	1316.00		
16:30-16:45	3	723.00	723.00		
16:30-16:45	4	111.00	111.00		
16:45-17:00	1	1071.00	1071.00		
16:45-17:00	2	1316.00	1316.00		
16:45-17:00	3	723.00	723.00		
16:45-17:00	4	111.00	111.00		
17:00-17:15	1	1071.00	1071.00		
17:00-17:15	2	1316.00	1316.00		
17:00-17:15	3	723.00	723.00		
17:00-17:15	4	111.00	111.00		
17:15-17:30	1	1071.00	1071.00		
17:15-17:30	2	1316.00	1316.00		
17:15-17:30	3	723.00	723.00		
17:15-17:30	4	111.00	111.00		

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	693.000	318.000	60.000
	2	562.000	0.000	681.000	73.000
	3	236.000	482.000	0.000	5.000
	4	52.000	56.000	3.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.65	0.30	0.06
	2	0.43	0.00	0.52	0.06
	3	0.33	0.67	0.00	0.01
	4	0.47	0.50	0.03	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.000	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.54	3.93	1.17	A	1071.00	1071.00	69.18	3.88	1.15	69.20	3.88
2	0.47	2.40	0.88	A	1316.00	1316.00	52.19	2.38	0.87	52.20	2.38
3	0.34	2.55	0.51	A	723.00	723.00	30.48	2.53	0.51	30.49	2.53
4	0.07	2.50	0.08	A	111.00	111.00	4.61	2.49	0.08	4.61	2.49

Main Results for each time segment

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	1071.00	267.75	1066.37	847.70	539.48	0.00	1987.70	1441.58	0.539	0.00	1.16	3.888	A
2	1316.00	329.00	1312.51	1226.49	379.36	0.00	2817.28	2716.91	0.467	0.00	0.87	2.388	A
3	723.00	180.75	720.96	998.81	693.06	0.00	2136.57	1718.95	0.338	0.00	0.51	2.540	A
4	111.00	27.75	110.69	137.53	1276.49	0.00	1550.33	710.16	0.072	0.00	0.08	2.500	A

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	1071.00	267.75	1070.98	849.99	541.00	0.00	1986.85	1441.58	0.539	1.16	1.16	3.930	A
2	1316.00	329.00	1315.99	1230.98	380.99	0.00	2816.18	2716.91	0.467	0.87	0.87	2.399	A
3	723.00	180.75	722.99	1001.99	694.99	0.00	2135.41	1718.95	0.339	0.51	0.51	2.548	A
4	111.00	27.75	111.00	138.00	1279.99	0.00	1548.48	710.16	0.072	0.08	0.08	2.503	A

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	1071.00	267.75	1070.99	850.00	541.00	0.00	1986.85	1441.58	0.539	1.16	1.17	3.930	A
2	1316.00	329.00	1316.00	1230.99	381.00	0.00	2816.17	2716.91	0.467	0.87	0.88	2.399	A
3	723.00	180.75	723.00	1002.00	695.00	0.00	2135.41	1718.95	0.339	0.51	0.51	2.548	A
4	111.00	27.75	111.00	138.00	1280.00	0.00	1548.47	710.16	0.072	0.08	0.08	2.503	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	1071.00	267.75	1071.00	850.00	541.00	0.00	1986.85	1441.58	0.539	1.17	1.17	3.930	A
2	1316.00	329.00	1316.00	1231.00	381.00	0.00	2816.17	2716.91	0.467	0.88	0.88	2.399	A
3	723.00	180.75	723.00	1002.00	695.00	0.00	2135.40	1718.95	0.339	0.51	0.51	2.548	A
4	111.00	27.75	111.00	138.00	1280.00	0.00	1548.47	710.16	0.072	0.08	0.08	2.503	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	16.79	1.12	3.888	A	A
2	12.82	0.85	2.388	A	A
3	7.50	0.50	2.540	A	A
4	1.14	0.08	2.500	A	A

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	17.42	1.16	3.930	A	A
2	13.11	0.87	2.399	A	A
3	7.65	0.51	2.548	A	A
4	1.16	0.08	2.503	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	17.47	1.16	3.930	A	A
2	13.13	0.88	2.399	A	A
3	7.66	0.51	2.548	A	A
4	1.16	0.08	2.503	A	A

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	17.49	1.17	3.930	A	A
2	13.14	0.88	2.399	A	A
3	7.67	0.51	2.548	A	A
4	1.16	0.08	2.503	A	A

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
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EMAIL: software@trl.co.uk

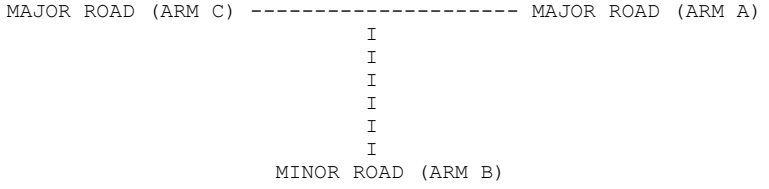
Run with file:-
"S:\Projects\SK21756 Ellel\Junction Assessments\EIP\Southern Access.vpi"
(drive-on-the-left) at 10:24:29 on Monday, 1 April 2019

RUN INFORMATION

RUN TITLE	: A6 Preston Lancaster Road / Southern Access
LOCATION	: Ellel
DATE	: 20/11/17
CLIENT	:
ENUMERATOR	:
JOB NUMBER	: SK21756
STATUS	: Preliminary
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A6 Preston Lancaster Road (South)
ARM B IS Southern Access
ARM C IS A6 Preston Lancaster Road (North)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.50 M.
- VISIBILITY	(VC-B)200.00 M.
- BLOCKS TRAFFIC (SPACES)	NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 120.0 M.
- VISIBILITY TO RIGHT	(VB-A) 120.0 M.
- LANE 1 WIDTH	(WB-C) -
- LANE 2 WIDTH	(WB-A) -
WIDTH AT 0 M FROM JUNCTION	10.00 M.
WIDTH AT 5 M FROM JUNCTION	8.00 M.
WIDTH AT 10 M FROM JUNCTION	7.30 M.
WIDTH AT 15 M FROM JUNCTION	5.00 M.
WIDTH AT 20 M FROM JUNCTION	3.65 M.
- LENGTH OF FLARED SECTION	DERIVED: 2 PCU

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.00	0.00	0.00

* Due to the presence of a flare, data is not available

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
0.00	0.00	0.00	0.00	0.00

* Due to the presence of a flare, data is not available

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
787.38	0.29	0.29

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 AM Peak DS (LCC TA) with Development

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	9.32	13.99	9.32
ARM B	15.00	45.00	75.00	0.54	0.81	0.54
ARM C	15.00	45.00	75.00	12.15	18.22	12.15

Demand set: 2023 AM Peak DS (LCC TA) with Development

TIME	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C
07.30 - 09.00	ARM A	0.000	0.001	0.999
		0.0	1.0	745.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.047	0.000	0.953
		2.0	0.0	41.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.971	0.029	0.000
		944.0	28.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 AM Peak DS (LCC TA) with Development
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-C	0.51	10.78	0.048		0.00	0.05	0.7		0.10
B-A	0.03	5.04	0.005		0.00	0.00	0.1		0.20
C-A	11.84								
C-B	0.35	10.39	0.034		0.00	0.03	0.5		0.10
A-B	0.01								
A-C	9.35								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	0.61	10.22	0.060		0.05	0.06	0.9		0.10
B-A	0.03	4.21	0.007		0.00	0.01	0.1		0.24
C-A	14.14								
C-B	0.42	9.86	0.043		0.03	0.04	0.6		0.11
A-B	0.01								
A-C	11.16								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	0.75	9.45	0.080		0.06	0.09	1.3		0.11
B-A	0.04	3.07	0.012		0.01	0.01	0.2		0.33
C-A	17.32								
C-B	0.51	9.13	0.056		0.04	0.06	0.9		0.12
A-B	0.02								
A-C	13.67								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	0.75	9.45	0.080		0.09	0.09	1.3		0.12
B-A	0.04	3.07	0.012		0.01	0.01	0.2		0.33
C-A	17.32								
C-B	0.51	9.13	0.056		0.06	0.06	0.9		0.12
A-B	0.02								
A-C	13.67								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	0.61	10.22	0.060		0.09	0.06	1.0		0.10
B-A	0.03	4.21	0.007		0.01	0.01	0.1		0.24
C-A	14.14								
C-B	0.42	9.86	0.043		0.06	0.04	0.7		0.11
A-B	0.01								
A-C	11.16								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.51	10.78	0.048		0.06	0.05	0.8		0.10
B-A	0.03	5.04	0.005		0.01	0.01	0.1		0.20
C-A	11.84								
C-B	0.35	10.39	0.034		0.04	0.04	0.5		0.10
A-B	0.01								
A-C	9.35								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	56.4	37.6	6.0	0.11	6.0	0.11
B-A	2.8	1.8	0.7	0.26	0.7	0.26
C-A	1299.3	866.2				
C-B	38.5	25.7	4.1	0.11	4.1	0.11
A-B	1.4	0.9				
A-C	1025.4	683.6				
ALL	2423.9	1615.9	10.8	0.00	10.8	0.00

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.00	0.00	0.00

* Due to the presence of a flare, data is not available

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
0.00	0.00	0.00	0.00	0.00

* Due to the presence of a flare, data is not available

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
787.38	0.29	0.29

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 PM Peak DS (LCC TA) with Development

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START TO RISE	NUMBER OF MINUTES FROM START TO TOP OF PEAK	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	8.50	12.75	8.50
ARM B	15.00	45.00	75.00	0.59	0.88	0.59
ARM C	15.00	45.00	75.00	12.54	18.81	12.54

Demand set: 2023 PM Peak DS (LCC TA) with Development

TIME	FROM/TO	TURNING PROPORTIONS TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
16.15 - 17.45	ARM A	0.000	0.003	0.997
		0.0	2.0	678.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.021	0.000	0.979
		1.0	0.0	46.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.944	0.056	0.000
		947.0	56.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 PM Peak DS (LCC TA) with Development
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
B-C	0.58	11.06	0.052		0.00	0.05	0.8		0.10
B-A	0.01	5.10	0.002		0.00	0.00	0.0		0.20
C-A	11.88								
C-B	0.70	10.63	0.066		0.00	0.07	1.0		0.10
A-B	0.03								
A-C	8.51								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.69	10.56	0.065		0.05	0.07	1.0		0.10
B-A	0.01	4.29	0.003		0.00	0.00	0.1		0.23
C-A	14.19								
C-B	0.84	10.15	0.083		0.07	0.09	1.3		0.11
A-B	0.03								
A-C	10.16								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.84	9.86	0.086		0.07	0.09	1.4		0.11
B-A	0.02	3.17	0.006		0.00	0.01	0.1		0.32
C-A	17.38								
C-B	1.03	9.48	0.108		0.09	0.12	1.8		0.12
A-B	0.04								
A-C	12.44								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.84	9.86	0.086		0.09	0.09	1.4		0.11
B-A	0.02	3.17	0.006		0.01	0.01	0.1		0.32
C-A	17.38								
C-B	1.03	9.48	0.108		0.12	0.12	1.8		0.12
A-B	0.04								
A-C	12.44								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-C	0.69	10.56	0.065		0.09	0.07	1.1		0.10
B-A	0.01	4.29	0.003		0.01	0.00	0.1		0.23
C-A	14.19								
C-B	0.84	10.15	0.083		0.12	0.09	1.4		0.11
A-B	0.03								
A-C	10.16								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-C	0.58	11.06	0.052		0.07	0.06	0.8		0.10
B-A	0.01	5.09	0.002		0.00	0.00	0.0		0.20
C-A	11.88								
C-B	0.70	10.63	0.066		0.09	0.07	1.1		0.10
A-B	0.03								
A-C	8.51								

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.1
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.1
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	63.3	42.2	6.5	0.10	6.5	0.10
B-A	1.4	0.9	0.3	0.25	0.3	0.25
C-A	1303.5	869.0				
C-B	77.1	51.4	8.4	0.11	8.4	0.11
A-B	2.8	1.8				
A-C	933.2	622.1				
ALL	2381.2	1587.5	15.3	0.01	15.3	0.01

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

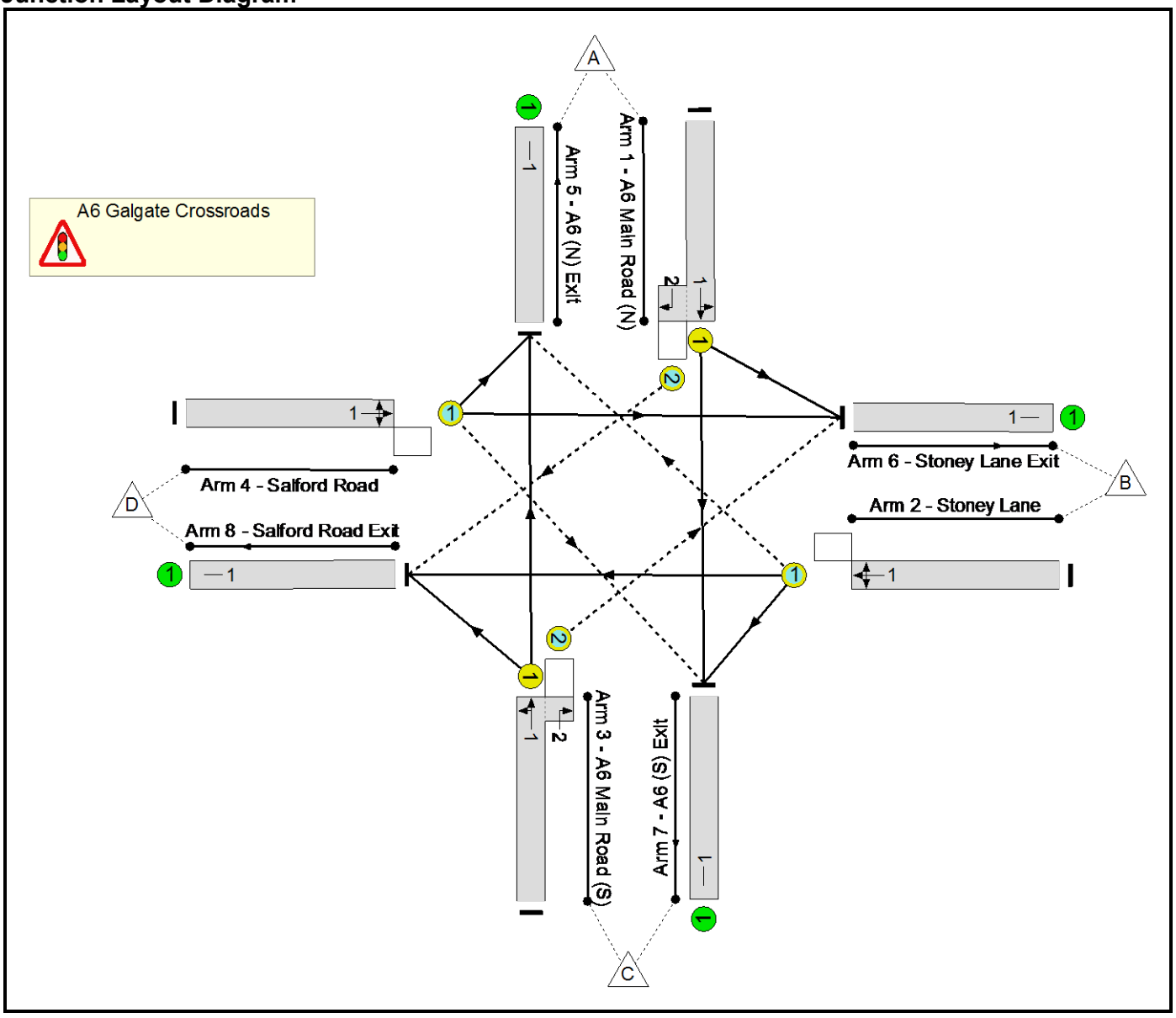
Printed at 10:24:54 on 01/04/2019]

Full Input Data And Results

User and Project Details

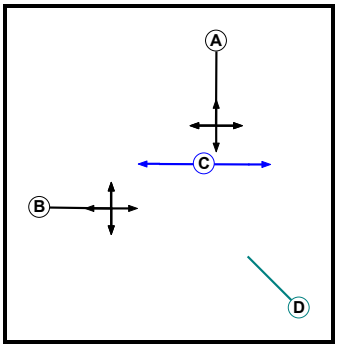
Project:	**Ellel, Lancaster**
Title:	**Galgate Crossroads**
Location:	
Company:	SK
Address:	
Notes:	

Junction Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Pedestrian		6	6
D	Dummy		3	3

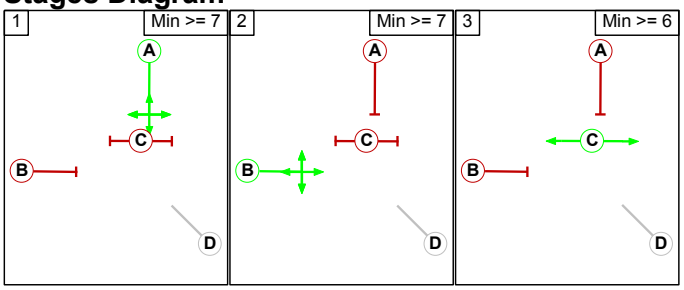
Phase Intergreens Matrix

	Starting Phase			
Terminating Phase	A	B	C	D
A		9	9	-
B	9		9	-
C	10	10		-
D	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B
3	C

Stages Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Changes

From Stage	To Stage 1	To Stage 2	To Stage 3
1		9	9
2	9		9
3	10	10	

Give-Way Link Input Data

Junction: A6 Galgate Crossroads

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/2 (A6 Main Road (N))	8/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00
2/1 (Stoney Lane)	5/1 (Right)	1439	0	4/1	1.09	To 5/1 (Left) To 6/1 (Ahead)	2.00	2.00	0.50	2	2.00
3/2 (A6 Main Road (S))	6/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
4/1 (Salford Road)	7/1 (Right)	1439	0	2/1	1.09	To 7/1 (Left) To 8/1 (Ahead)	2.00	2.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: A6 Galgate Crossroads

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A6 Main Road (N))	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Left	6.57
											Arm 7 Ahead	Inf
1/2 (A6 Main Road (N))	O	A	2	3	1.9	Geom	-	2.50	0.00	Y	Arm 8 Right	2.70
2/1 (Stoney Lane)	O	B	2	3	60.0	Geom	-	3.35	0.00	Y	Arm 5 Right	12.53
											Arm 7 Left	5.07
											Arm 8 Ahead	Inf
3/1 (A6 Main Road (S))	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	8.93
3/2 (A6 Main Road (S))	O	A	2	3	1.3	Geom	-	2.00	0.00	Y	Arm 6 Right	2.70
4/1 (Salford Road)	O	B	2	3	60.0	Geom	-	3.80	0.00	Y	Arm 5 Left	4.00
											Arm 6 Ahead	Inf
											Arm 7 Right	12.30
5/1 (A6 (N) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Stoney Lane Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A6 (S) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Salford Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

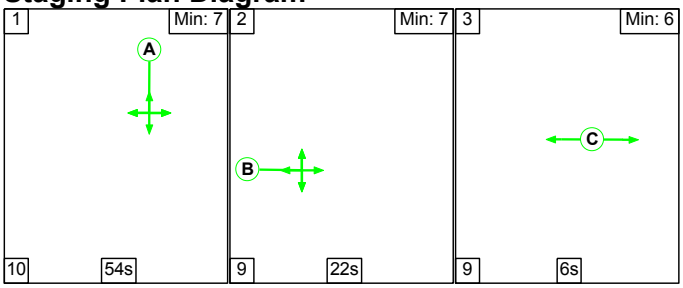
Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
5: '2023 AM Peak DS (LCC TA)'	07:30	08:30	01:00	

Full Input Data And Results

Scenario 1: '2023 AM DS' (FG5: '2023 AM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

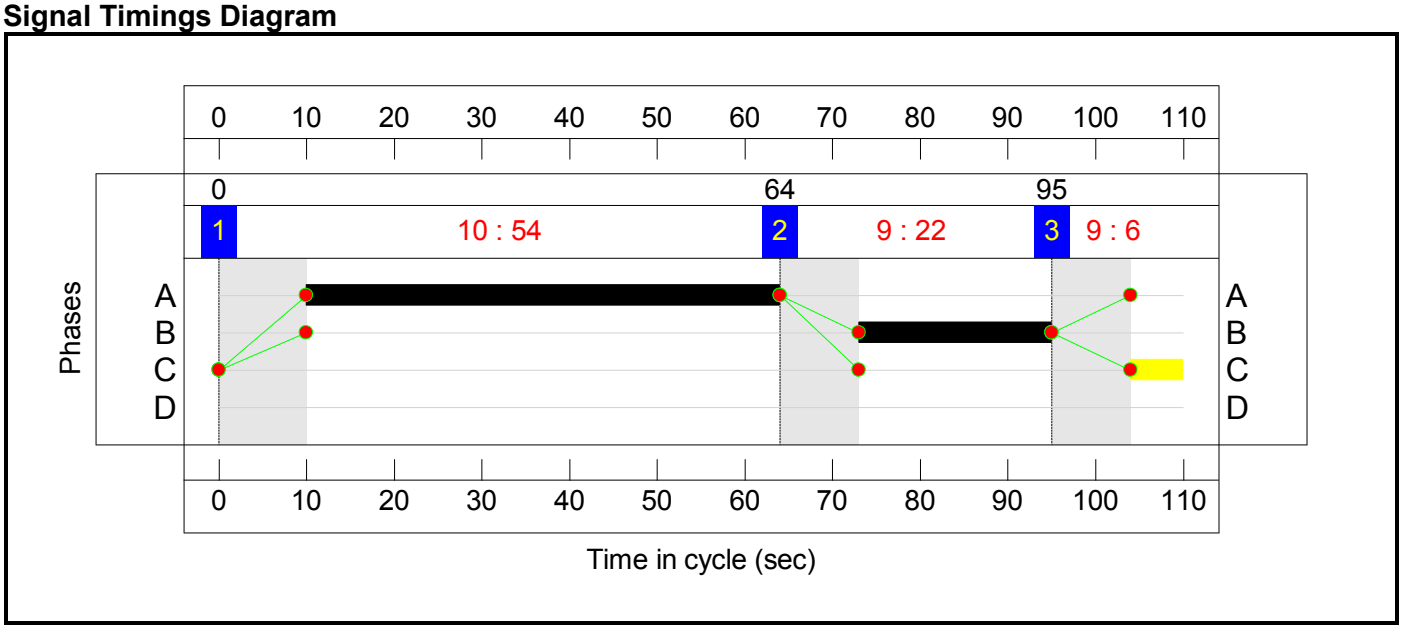
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	54	22	6
Change Point	0	64	95

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Galgate Crossroads	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.8%**
A6 Galgate Crossroads	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.8%**
1/1+1/2	A6 Main Road (N) Left Ahead Right	U+O	N/A	N/A	A		1	54	-	790	1881:1199	932+14	83.5 : 83.5%
2/1	Stoney Lane Right Left Ahead	O	N/A	N/A	B		1	22	-	269	1732	303	88.8%
3/1+3/2	A6 Main Road (S) Ahead Right Left	U+O	N/A	N/A	A		1	54	-	833	1901:1167	930+15	88.1 : 88.1%
4/1	Salford Road Left Ahead Right	O	N/A	N/A	B		1	22	-	160	1711	358	44.7%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Galgate Crossroads	**-**	**-**	**350**	**0**	**9**	**15.7**	**9.7**	**0.4**	**25.7**	**-**	**-**	**-**	**-**
A6 Galgate Crossroads	**-**	**-**	**350**	**0**	**9**	**15.7**	**9.7**	**0.4**	**25.7**	**-**	**-**	**-**	**-**
1/1+1/2	790	790	12	0	0	5.1	2.4	0.1	7.7	34.9	20.4	2.4	22.8
2/1	269	269	230	0	9	3.2	3.3	0.2	6.7	89.5	8.0	3.3	11.3
3/1+3/2	833	833	13	0	0	5.7	3.5	0.1	9.2	39.8	22.7	3.5	26.1
4/1	160	160	95	0	0	1.7	0.4	0.0	2.1	47.0	4.2	0.4	4.6

C1 PRC for Signalled Lanes (%): 1.4 Total Delay for Signalled Lanes (pcuHr): 25.66 Cycle Time (s): 110

PRC Over All Lanes (%): 1.4 Total Delay Over All Lanes(pcuHr): 25.66

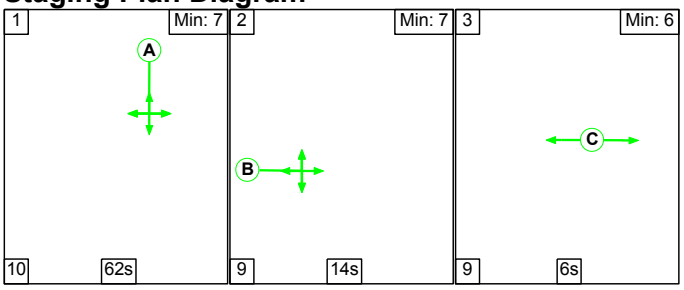
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
6: '2023 PM Peak DS (LCC TA)'	16:30	17:30	01:00	

Scenario 2: '2023 PM DS' (FG6: '2023 PM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

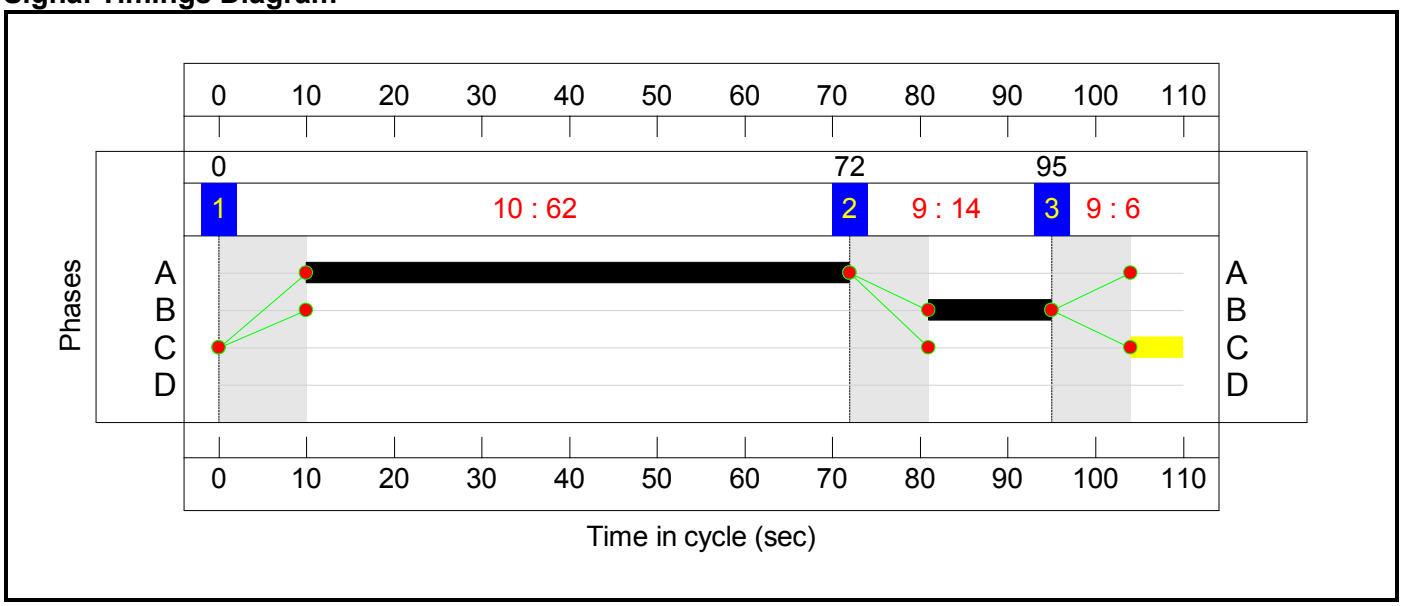
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	62	14	6
Change Point	0	72	95

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Galgate Crossroads	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
A6 Galgate Crossroads	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
1/1+1/2	A6 Main Road (N) Left Ahead Right	U+O	N/A	N/A	A		1	62	-	1016	1900:1199	1049+34	93.8 : 93.8%
2/1	Stoney Lane Right Left Ahead	O	N/A	N/A	B		1	14	-	200	1740	228	87.7%
3/1+3/2	A6 Main Road (S) Ahead Right Left	U+O	N/A	N/A	A		1	62	-	748	1873:1167	1028+31	70.6 : 70.6%
4/1	Salford Road Left Ahead Right	O	N/A	N/A	B		1	14	-	119	1754	239	49.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Galgate Crossroads	-	-	**286**	**0**	**14**	**13.5**	**11.0**	**0.4**	**24.9**	-	-	-	-
A6 Galgate Crossroads	-	-	**286**	**0**	**14**	**13.5**	**11.0**	**0.4**	**24.9**	-	-	-	-
1/1+1/2	1016	1016	32	0	0	6.0	6.3	0.1	12.4	44.1	28.4	6.3	34.8
2/1	200	200	153	0	14	2.6	3.0	0.1	5.7	101.9	5.9	3.0	8.9
3/1+3/2	748	748	22	0	0	3.5	1.2	0.2	4.9	23.4	16.2	1.2	17.4
4/1	119	119	79	0	0	1.5	0.5	0.0	1.9	58.9	3.3	0.5	3.8

C1 PRC for Signalled Lanes (%): -4.2 Total Delay for Signalled Lanes (pcuHr): 24.92 Cycle Time (s): 110

PRC Over All Lanes (%): -4.2 Total Delay Over All Lanes(pcuHr): 24.92

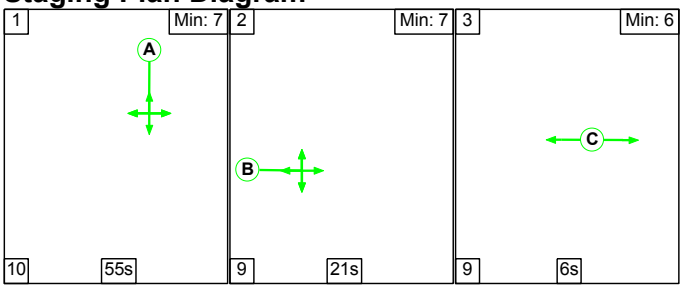
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
7: '2023 AM Peak DS (LCC TA) with Development'	07:30	08:30	01:00	

Scenario 3: '2023 AM with Development' (FG7: '2023 AM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

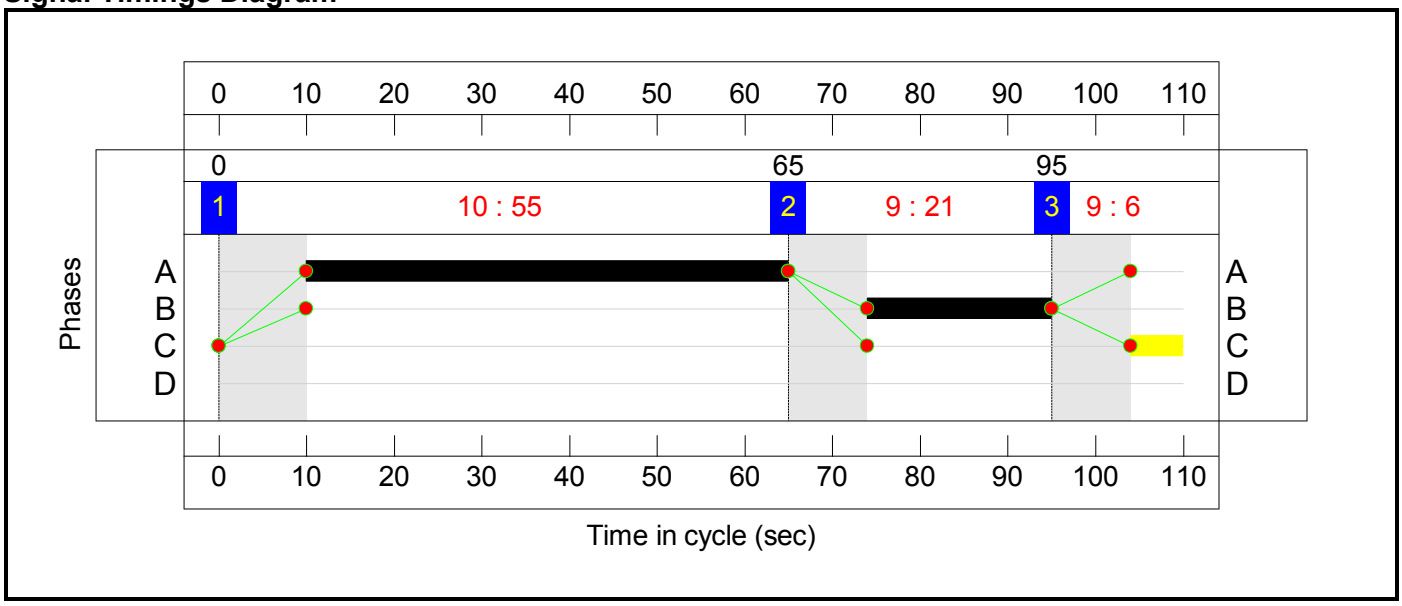
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	55	21	6
Change Point	0	65	95

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Galgate Crossroads	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.3%**
A6 Galgate Crossroads	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.3%**
1/1+1/2	A6 Main Road (N) Left Ahead Right	U+O	N/A	N/A	A		1	55	-	833	1883:1199	951+14	86.3 : 86.3%
2/1	Stoney Lane Right Left Ahead	O	N/A	N/A	B		1	21	-	269	1732	288	93.3%
3/1+3/2	A6 Main Road (S) Ahead Right Left	U+O	N/A	N/A	A		1	55	-	894	1901:1167	949+14	92.8 : 92.8%
4/1	Salford Road Left Ahead Right	O	N/A	N/A	B		1	21	-	162	1712	342	47.3%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Galgate Crossroads	-	-	**339**	**0**	**22**	**16.6**	**13.7**	**0.4**	**30.8**	-	-	-	-
A6 Galgate Crossroads	-	-	**339**	**0**	**22**	**16.6**	**13.7**	**0.4**	**30.8**	-	-	-	-
1/1+1/2	833	833	12	0	0	5.4	3.0	0.1	8.5	36.9	22.0	3.0	25.0
2/1	269	269	217	0	22	3.2	4.7	0.2	8.1	109.0	8.1	4.7	12.8
3/1+3/2	894	894	13	0	0	6.2	5.6	0.1	11.9	47.8	25.3	5.6	30.9
4/1	162	162	97	0	0	1.7	0.4	0.0	2.2	48.8	4.4	0.4	4.8

C1 PRC for Signalled Lanes (%): -3.7 Total Delay for Signalled Lanes (pcuHr): 30.76 Cycle Time (s): 110

PRC Over All Lanes (%): -3.7 Total Delay Over All Lanes(pcuHr): 30.76

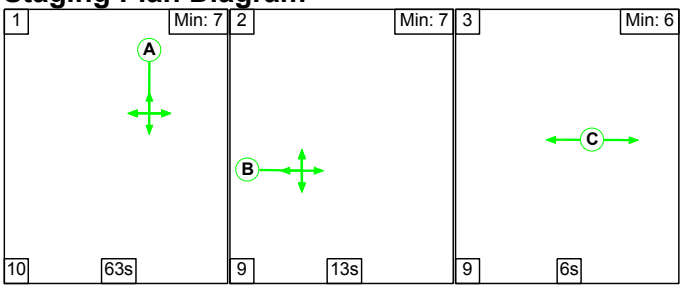
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
8: '2023 PM Peak DS (LCC TA) with Development'	16:30	17:30	01:00	

Scenario 4: '2023 PM with Development' (FG8: '2023 PM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

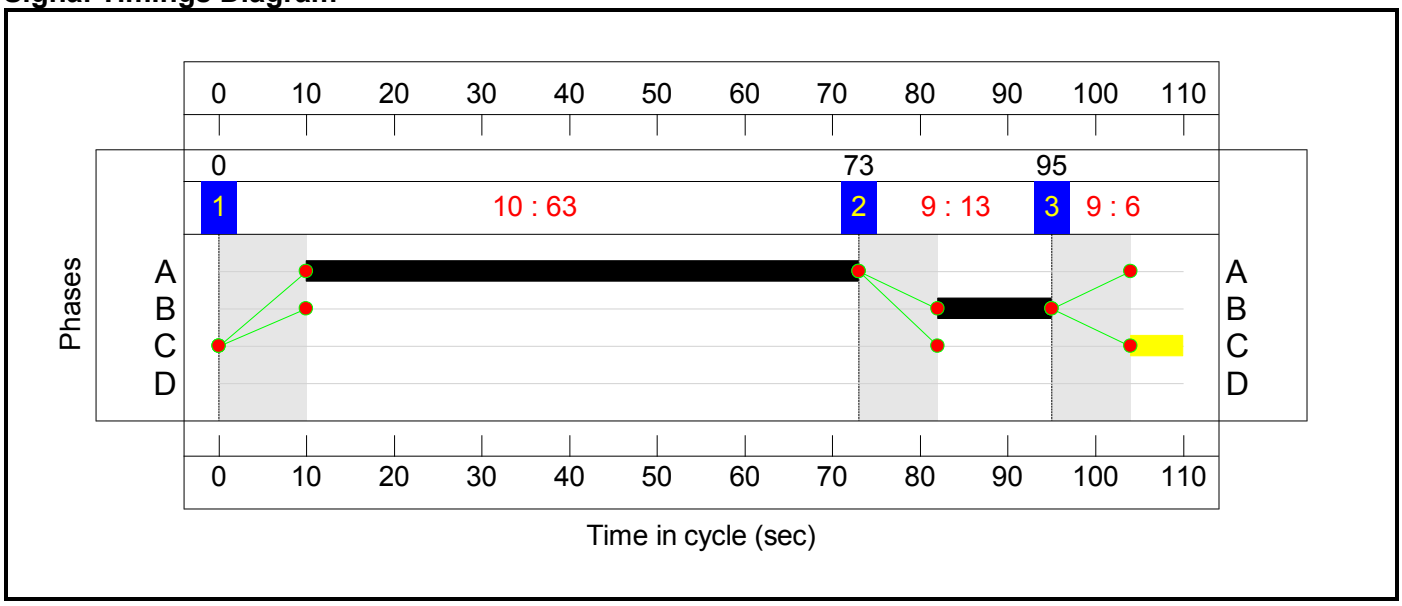
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	63	13	6
Change Point	0	73	95

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Galgate Crossroads	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.6%**
A6 Galgate Crossroads	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.6%**
1/1+1/2	A6 Main Road (N) Left Ahead Right	U+O	N/A	N/A	A		1	63	-	1099	1902:1199	1071+32	99.6 : 99.6%
2/1	Stoney Lane Right Left Ahead	O	N/A	N/A	B		1	13	-	200	1740	212	94.2%
3/1+3/2	A6 Main Road (S) Ahead Right Left	U+O	N/A	N/A	A		1	63	-	821	1876:1167	1050+29	76.1 : 76.1%
4/1	Salford Road Left Ahead Right	O	N/A	N/A	B		1	13	-	122	1754	223	54.7%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Galgate Crossroads	-	-	**254**	**0**	**49**	**15.0**	**22.4**	**0.5**	**37.9**	-	-	-	-
A6 Galgate Crossroads	-	-	**254**	**0**	**49**	**15.0**	**22.4**	**0.5**	**37.9**	-	-	-	-
1/1+1/2	1099	1099	32	0	0	6.9	15.6	0.1	22.6	74.2	33.2	15.6	48.9
2/1	200	200	140	0	27	2.6	4.6	0.1	7.4	133.2	6.1	4.6	10.7
3/1+3/2	821	821	0	0	22	3.9	1.6	0.2	5.7	25.0	18.7	1.6	20.2
4/1	122	122	82	0	0	1.5	0.6	0.0	2.1	62.7	3.5	0.6	4.1

C1 PRC for Signalled Lanes (%): -10.7 Total Delay for Signalled Lanes (pcuHr): 37.88 Cycle Time (s): 110

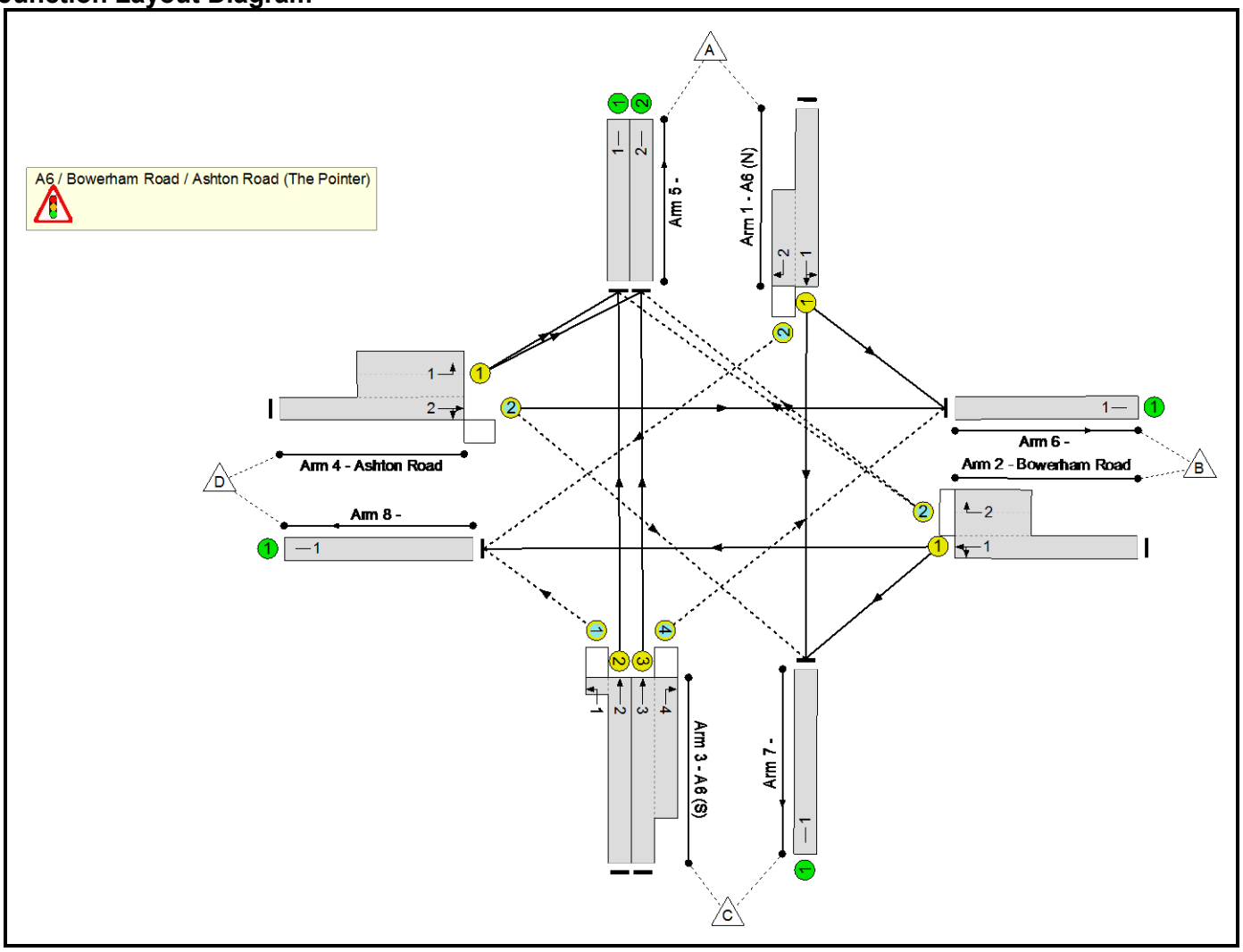
PRC Over All Lanes (%): -10.7 Total Delay Over All Lanes(pcuHr): 37.88

Full Input Data And Results

User and Project Details

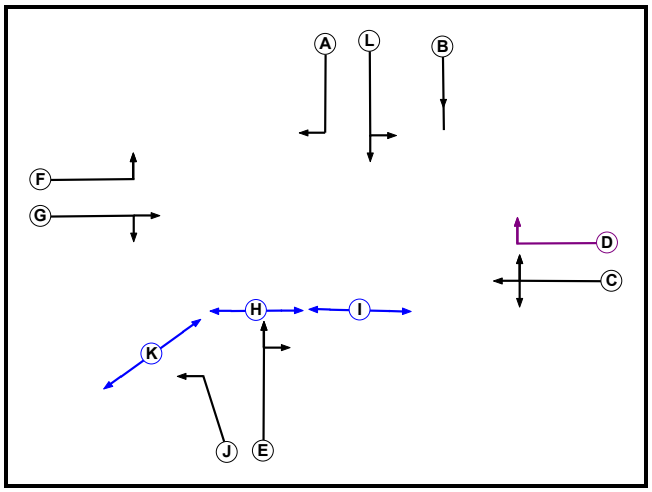
Project:	**Ellel, Lancaster**
Title:	**Pointer Rbt Improvement Model (LCC TA Parameters)**
Location:	
Company:	SK
Address:	
Notes:	

Junction Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

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

Full Input Data And Results

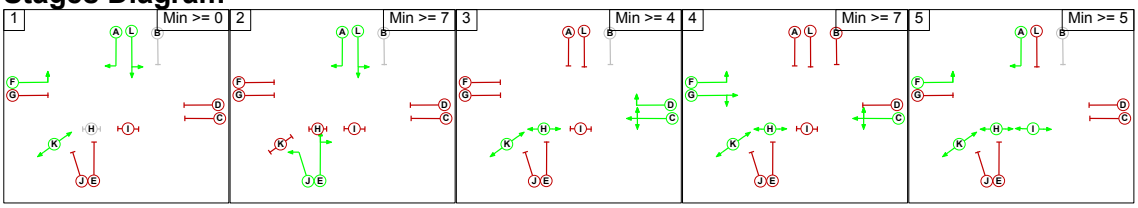
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L
A		-	6	6	-	-	6	-	-	-	-	-
B	-		-	-	-	-	6	-	-	-	-	-
C	6	-		-	-	-	-	-	7	-	-	6
D	6	-	-		-	6	6	-	-	-	-	6
E	-	-	-	-		6	-	5	5	-	-	-
F	-	-	-	6	6		-	-	-	-	-	-
G	6	6	-	6	-	-		-	-	-	-	-
H	-	-	-	-	11	-	-		-	-	-	-
I	-	-	6	-	6	-	6	-		-	-	6
J	-	-	-	-	-	-	-	-	-		5	-
K	-	-	-	-	-	-	-	-	-	5		-
L	-	-	6	6	-	-	-	-	6	-	-	

Phases in Stage

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

Stages Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Changes

From Stage \ To Stage	1	2	3	4	5
1		6	6	6	6
2	6		6	6	6
3	6	11		6	7
4	6	11	6		7
5	6	11	6	6	

Give-Way Link Input Data

Junction: A6 / Bowerham Road / Ashton Road (The Pointer)

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/2 (A6 (N))	8/1 (Right)	1439	0	3/2	1.09	All	2.00	-	0.50	2	2.00
				3/3	1.09	All					
2/2 (Bowerham Road)	5/2 (Right)	1439	0	4/1	1.09	All	2.00	-	0.50	1	2.00
				4/2	1.09	To 6/1 (Ahead)					
	5/1 (Right)	1439	0	4/1	1.09	All					
				4/2	1.09	To 6/1 (Ahead)					
3/1 (A6 (S))	8/1 (Left)	1439	0	1/2	1.09	All	2.00	-	0.50	2	2.00
3/4 (A6 (S))	6/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
4/2 (Ashton Road)	7/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: A6 / Bowerham Road / Ashton Road (The Pointer)

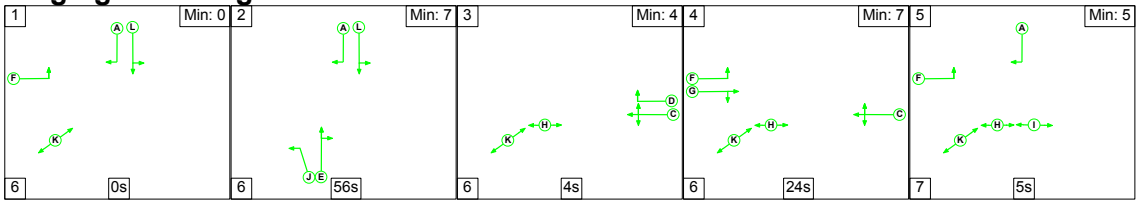
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A6 (N))	U	L	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Left	Inf
											Arm 7 Ahead	Inf
1/2 (A6 (N))	O	A	2	3	6.3	Geom	-	3.00	0.00	Y	Arm 8 Right	16.57
2/1 (Bowerham Road)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	30.00
											Arm 8 Ahead	Inf
2/2 (Bowerham Road)	O	C D	2	3	5.0	User	3400	-	-	-	-	-
3/1 (A6 (S))	O	J	2	3	1.1	Geom	-	3.00	0.00	Y	Arm 8 Left	25.10
3/2 (A6 (S))	U	E	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
3/3 (A6 (S))	U	E	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
3/4 (A6 (S))	O	E	2	3	9.2	Geom	-	3.15	0.00	Y	Arm 6 Right	25.80
4/1 (Ashton Road)	U	F	2	3	7.0	User	3900	-	-	-	-	-
4/2 (Ashton Road)	O	G	2	3	60.0	Geom	-	4.50	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Right	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2023 AM Peak DS (LCC TA)'	07:30	08:30	01:00	

Scenario 1: '2023 AM Peak' (FG1: '2023 AM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

Staging Plan Diagram

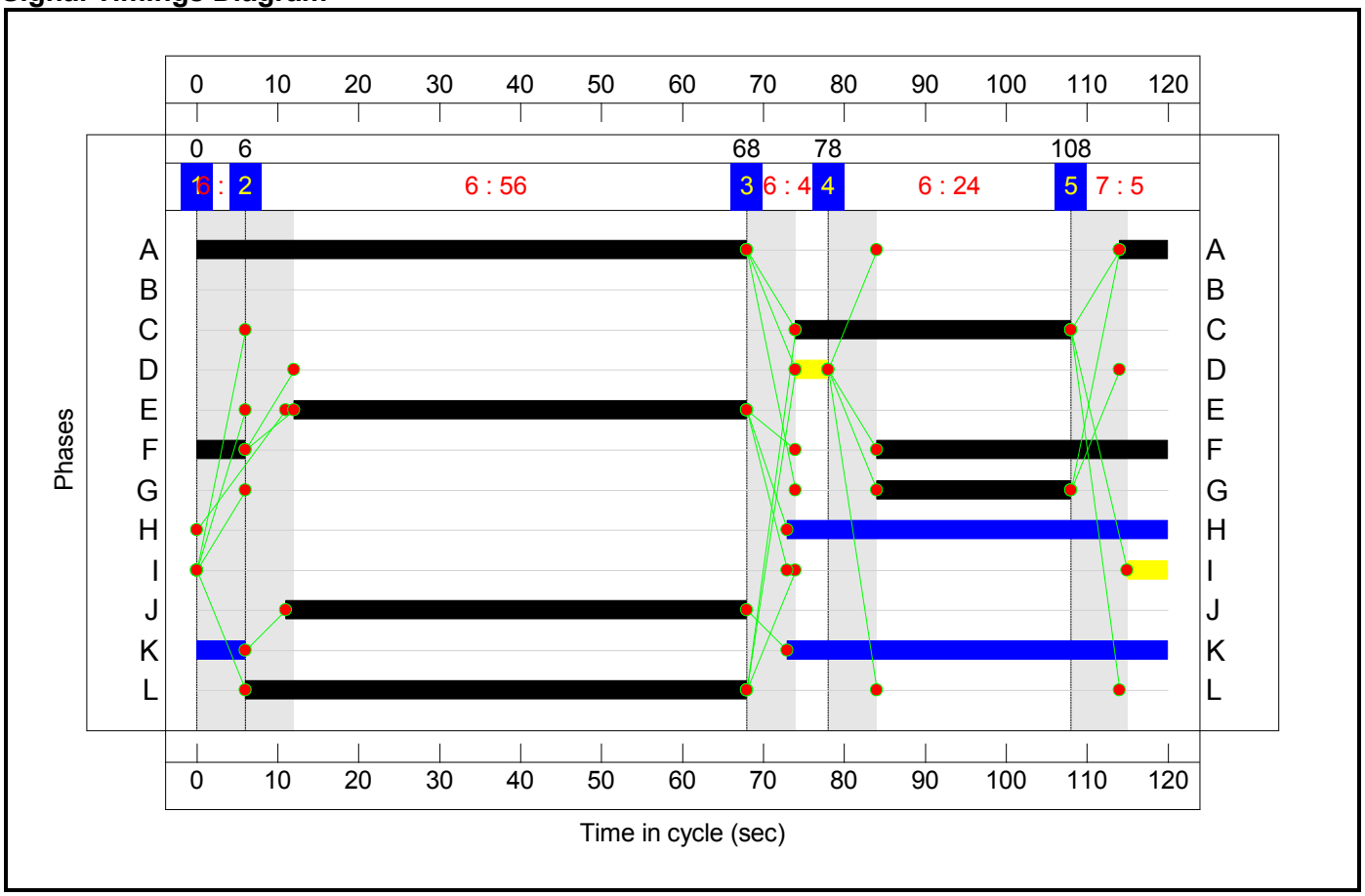


Full Input Data And Results

Stage Timings

Stage	1	2	3	4	5
Duration	0	56	4	24	5
Change Point	0	6	68	78	108

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.3%**
A6 / Bowerham Road / Ashton Road (The Pointer)	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.3%**
1/1+1/2	A6 (N) Left Ahead Right	U+O	N/A	N/A	L A		1	62:74	-	1111	2015:1756	671+471	97.3 : 97.3%
2/1+2/2	Bowerham Road Right Left Ahead	U+O	N/A	N/A	C	D	1	34	4	679	1951:3400	343+356	97.1 : 97.1%
3/2+3/1	A6 (S) Ahead Left	U+O	N/A	N/A	E J		1	56:57	-	304	1940:1807	711+205	33.2 : 33.2%
3/3+3/4	A6 (S) Ahead Right	U+O	N/A	N/A	E		1	56	-	345	1940:1824	814+151	35.8 : 35.8%
4/2+4/1	Ashton Road Left Ahead Right	O+U	N/A	N/A	G F		1	24:42	-	709	2065:3900	282+559	84.3 : 84.3%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	-	-	**665**	**357**	**0**	**26.0**	**22.8**	**0.9**	**49.6**	-	-	-	-
A6 / Bowerham Road / Ashton Road (The Pointer)	-	-	**665**	**357**	**0**	**26.0**	**22.8**	**0.9**	**49.6**	-	-	-	-
1/1+1/2	1111	1111	322	136	0	7.0	10.7	0.3	18.0	58.3	31.1	10.7	41.8
2/1+2/2	679	679	126	220	0	9.0	9.0	0.4	18.3	97.1	16.9	9.0	25.8
3/2+3/1	304	304	68	0	0	1.6	0.2	0.0	1.9	22.2	5.9	0.2	6.2
3/3+3/4	345	345	54	0	0	1.8	0.3	0.1	2.2	23.4	6.0	0.3	6.3
4/2+4/1	709	709	96	0	0	6.5	2.6	0.1	9.2	46.7	7.4	2.6	10.0

C1 PRC for Signalled Lanes (%): -8.1 Total Delay for Signalled Lanes (pcuHr): 49.63 Cycle Time (s): 120
PRC Over All Lanes (%): -8.1 Total Delay Over All Lanes(pcuHr): 49.63

Full Input Data And Results

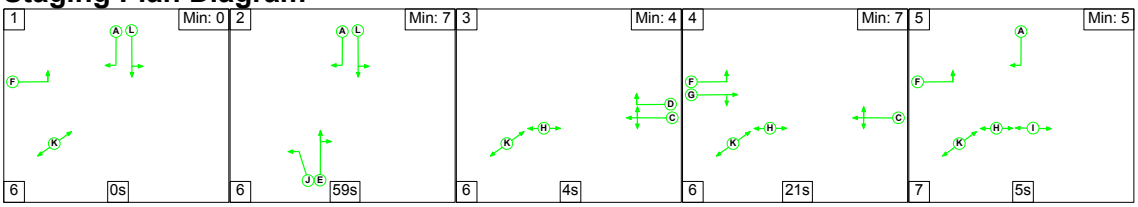
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
2: '2023 PM Peak DS (LCC TA)'	16:30	17:30	01:00	

Scenario 2: '2023 PM Peak' (FG2: '2023 PM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

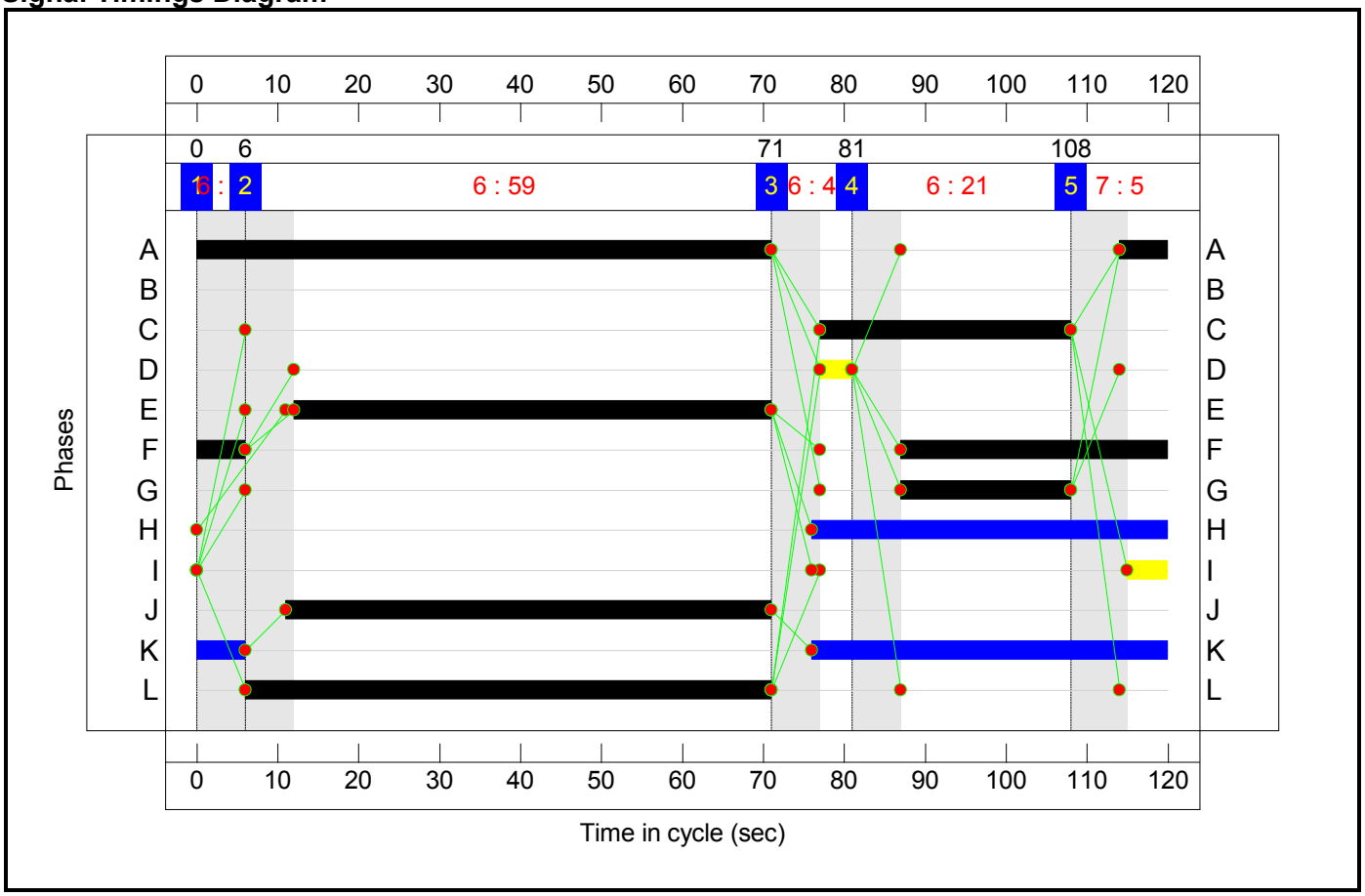
Staging Plan Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	59	4	21	5
Change Point	0	6	71	81	108

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.4%**
A6 / Bowerham Road / Ashton Road (The Pointer)	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.4%**
1/1+1/2	A6 (N) Left Ahead Right	U+O	N/A	N/A	L A		1	65:77	-	1040	2015:1756	765+398	89.4 : 89.4%
2/1+2/2	Bowerham Road Right Left Ahead	U+O	N/A	N/A	C	D	1	31	4	570	1933:3400	310+357	85.4 : 85.4%
3/2+3/1	A6 (S) Ahead Left	U+O	N/A	N/A	E J		1	59:60	-	353	1940:1807	890+77	36.5 : 36.5%
3/3+3/4	A6 (S) Ahead Right	U+O	N/A	N/A	E		1	59	-	409	1940:1824	867+140	40.6 : 40.6%
4/2+4/1	Ashton Road Left Ahead Right	O+U	N/A	N/A	G F		1	21:39	-	684	2065:3900	267+513	87.7 : 87.7%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	**-**	**-**	**537**	**302**	**0**	**23.1**	**10.7**	**1.2**	**34.9**	**-**	**-**	**-**	**-**
A6 / Bowerham Road / Ashton Road (The Pointer)	**-**	**-**	**537**	**302**	**0**	**23.1**	**10.7**	**1.2**	**34.9**	**-**	**-**	**-**	**-**
1/1+1/2	1040	1040	255	101	0	5.8	4.0	0.4	10.1	35.1	26.5	4.0	30.4
2/1+2/2	570	570	104	201	0	6.8	2.8	0.3	9.8	62.1	11.7	2.8	14.4
3/2+3/1	353	353	28	0	0	1.8	0.3	0.0	2.1	21.2	7.1	0.3	7.4
3/3+3/4	409	409	57	0	0	2.0	0.3	0.4	2.8	24.3	7.1	0.3	7.5
4/2+4/1	684	684	93	0	0	6.7	3.3	0.1	10.1	53.3	7.8	3.3	11.1

C1 PRC for Signalled Lanes (%): 0.7 Total Delay for Signalled Lanes (pcuHr): 34.93 Cycle Time (s): 120
PRC Over All Lanes (%): 0.7 Total Delay Over All Lanes(pcuHr): 34.93

Full Input Data And Results

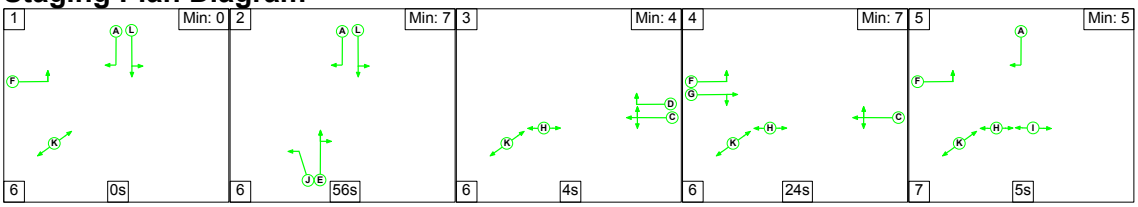
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
3: '2023 AM Peak DS (LCC TA) with Development'	07:30	08:30	01:00	

Scenario 3: '2023 AM Peak with Development' (FG3: '2023 AM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

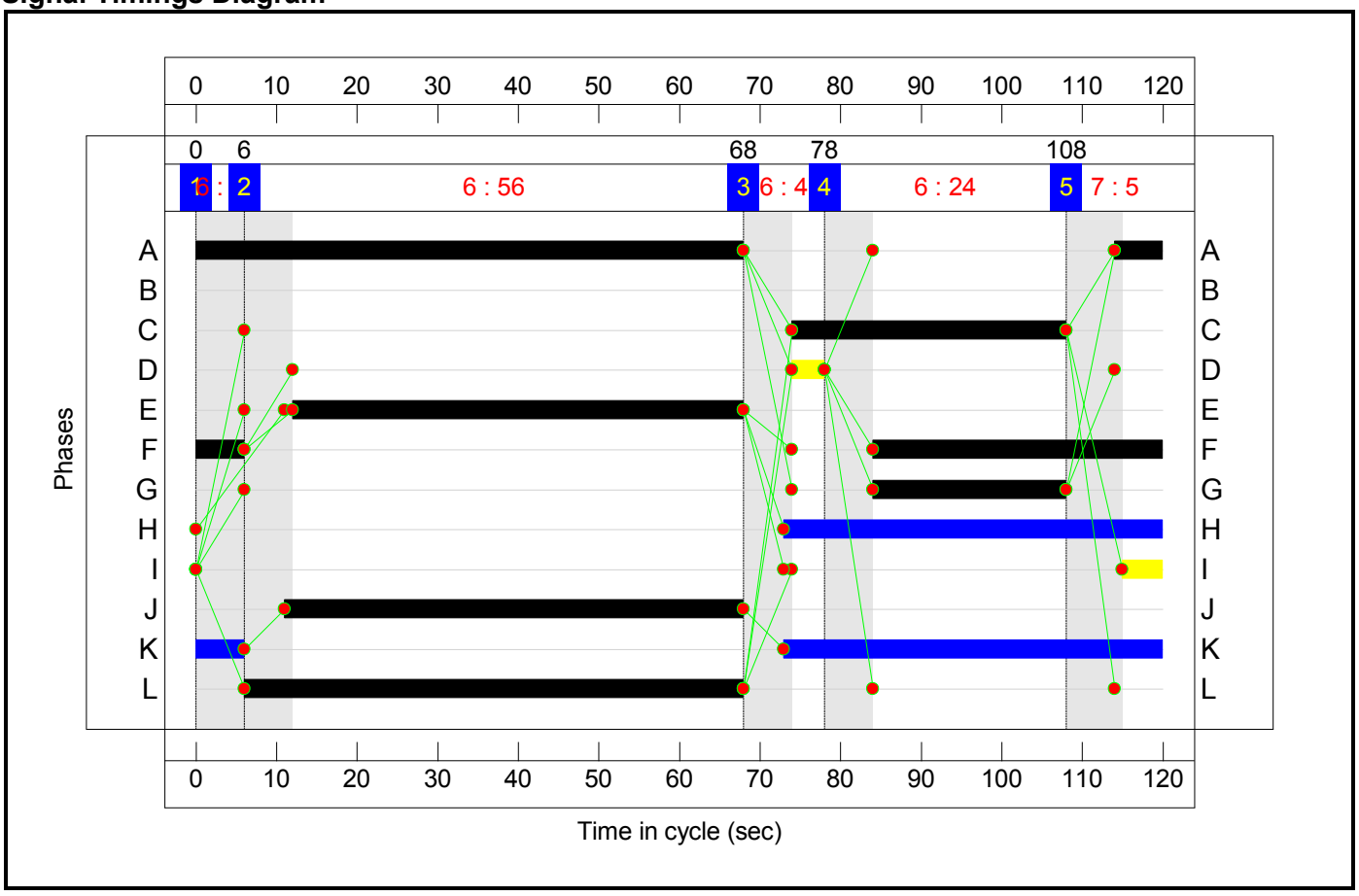
Staging Plan Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	56	4	24	5
Change Point	0	6	68	78	108

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.3%**
A6 / Bowerham Road / Ashton Road (The Pointer)	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.3%**
1/1+1/2	A6 (N) Left Ahead Right	U+O	N/A	N/A	L A		1	62:74	-	1131	2015:1756	677+461	99.3 : 99.3%
2/1+2/2	Bowerham Road Right Left Ahead	U+O	N/A	N/A	C	D	1	34	4	683	1950:3400	344+353	98.0 : 98.0%
3/2+3/1	A6 (S) Ahead Left	U+O	N/A	N/A	E J		1	56:57	-	321	1940:1807	716+200	35.0 : 35.0%
3/3+3/4	A6 (S) Ahead Right	U+O	N/A	N/A	E		1	56	-	366	1940:1824	812+144	37.9 : 40.3%
4/2+4/1	Ashton Road Left Ahead Right	O+U	N/A	N/A	G F		1	24:42	-	712	2065:3900	283+553	85.2 : 85.2%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	-	-	**659**	**357**	**15**	**26.9**	**28.4**	**1.0**	**56.3**	-	-	-	-
A6 / Bowerham Road / Ashton Road (The Pointer)	-	-	**659**	**357**	**15**	**26.9**	**28.4**	**1.0**	**56.3**	-	-	-	-
1/1+1/2	1131	1131	311	132	15	7.4	15.0	0.4	22.8	72.7	32.8	15.0	47.8
2/1+2/2	683	683	122	224	0	9.2	10.0	0.4	19.6	103.2	17.3	10.0	27.2
3/2+3/1	321	321	70	0	0	1.7	0.3	0.0	2.0	22.5	6.4	0.3	6.7
3/3+3/4	366	366	58	0	0	2.0	0.3	0.2	2.4	24.0	6.3	0.3	6.6
4/2+4/1	712	712	99	0	0	6.5	2.8	0.1	9.4	47.7	7.8	2.8	10.5

C1

PRC for Signalled Lanes (%): -10.4
PRC Over All Lanes (%): -10.4

Total Delay for Signalled Lanes (pcuHr): 56.29
Total Delay Over All Lanes(pcuHr): 56.29

Cycle Time (s): 120

Full Input Data And Results

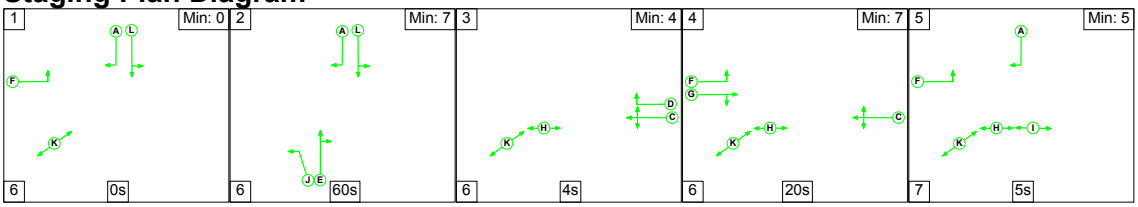
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
4: '2023 PM Peak DS (LCC TA) with Development'	16:30	17:30	01:00	

Scenario 4: '2023 PM Peak with Development' (FG4: '2023 PM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

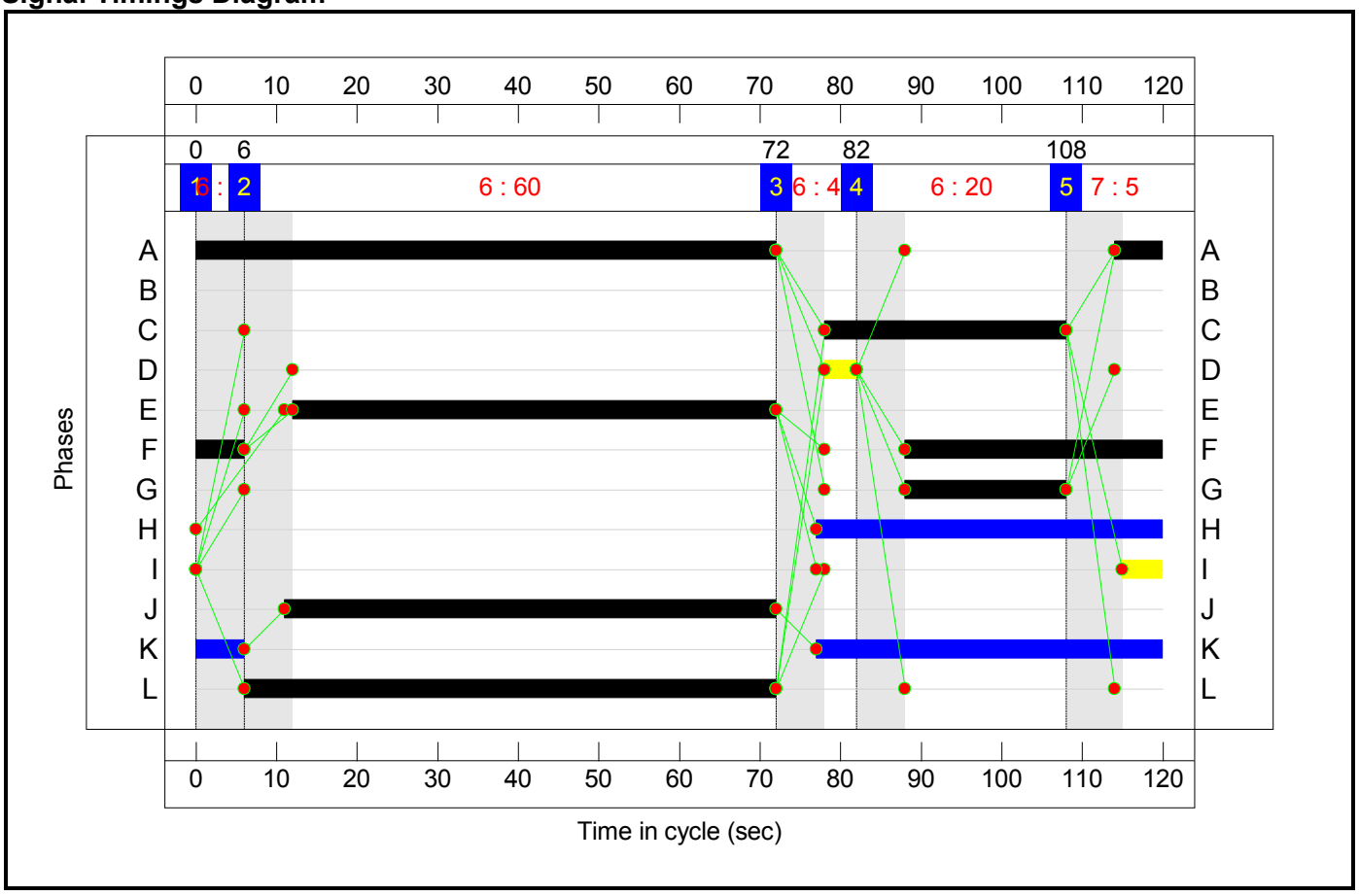
Staging Plan Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	60	4	20	5
Change Point	0	6	72	82	108

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.0%**
A6 / Bowerham Road / Ashton Road (The Pointer)	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.0%**
1/1+1/2	A6 (N) Left Ahead Right	U+O	N/A	N/A	L A		1	66:78	-	1081	2015:1756	788+387	92.0 : 92.0%
2/1+2/2	Bowerham Road Right Left Ahead	U+O	N/A	N/A	C	D	1	30	4	577	1931:3400	306+342	89.0 : 89.2%
3/2+3/1	A6 (S) Ahead Left	U+O	N/A	N/A	E J		1	60:61	-	371	1940:1807	895+87	37.8 : 37.8%
3/3+3/4	A6 (S) Ahead Right	U+O	N/A	N/A	E		1	60	-	434	1940:1824	876+134	42.3 : 47.1%
4/2+4/1	Ashton Road Left Ahead Right	O+U	N/A	N/A	G F		1	20:38	-	689	2065:3900	262+493	91.3 : 91.3%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Pointer Rbt Improvement Model (LCC TA Parameters)	-	-	**541**	**314**	**0**	**24.7**	**14.2**	**1.4**	**40.2**	-	-	-	-
A6 / Bowerham Road / Ashton Road (The Pointer)	-	-	**541**	**314**	**0**	**24.7**	**14.2**	**1.4**	**40.2**	-	-	-	-
1/1+1/2	1081	1081	260	96	0	6.1	5.2	0.4	11.7	39.1	28.7	5.2	33.9
2/1+2/2	577	577	87	218	0	7.6	3.7	0.3	11.7	72.7	12.3	3.7	16.0
3/2+3/1	371	371	33	0	0	1.8	0.3	0.0	2.1	20.8	7.3	0.3	7.6
3/3+3/4	434	434	63	0	0	2.1	0.4	0.6	3.0	25.2	7.4	0.4	7.8
4/2+4/1	689	689	98	0	0	7.0	4.6	0.1	11.7	60.9	8.5	4.6	13.1

C1 PRC for Signalled Lanes (%): -2.2 Total Delay for Signalled Lanes (pcuHr): 40.21 Cycle Time (s): 120
PRC Over All Lanes (%): -2.2 Total Delay Over All Lanes(pcuHr): 40.21

Full Input Data And Results

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

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TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

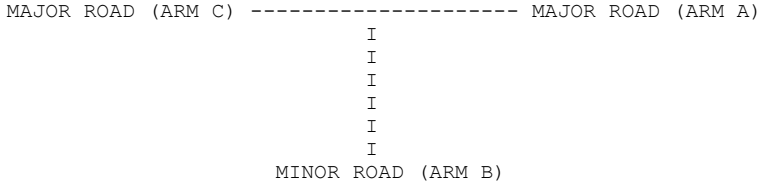
Run with file:-
"S:\Projects\SK21756 Ellel\Junction Assessments\EIP\A6 Barton Road.vpi"
(drive-on-the-left) at 17:23:21 on Monday, 1 April 2019

RUN INFORMATION

RUN TITLE	: A6 Scotforth Road / Barton Road
LOCATION	: Lancaster
DATE	: 01/04/19
CLIENT	:
ENUMERATOR	:
JOB NUMBER	: SK21756
STATUS	:
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS A6 Scotforth Road (N)
ARM B IS Barton Road
ARM C IS A6 Scotforth Road (S)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	3.20 M.
- VISIBILITY	(VC-B)	180.00 M.
- BLOCKS TRAFFIC (SPACES)		NO (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	80.0 M.
- VISIBILITY TO RIGHT	(VB-A)	20.0 M.
- LANE 1 WIDTH	(WB-C)	3.50 M.
- LANE 2 WIDTH	(WB-A)	0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
668.39	0.26	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
538.90	0.25	0.10	0.16	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
752.01	0.29	0.29

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 AM Peak DS (LCC TA)

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	6.80	10.20	6.80
ARM B	15.00	45.00	75.00	5.54	8.31	5.54
ARM C	15.00	45.00	75.00	10.16	15.24	10.16

Demand set: 2023 AM Peak DS (LCC TA)

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
07.15 - 08.45	ARM A	0.000	0.029	0.971
		0.0	16.0	528.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.016	0.000	0.984
		7.0	0.0	436.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.740	0.260	0.000
		602.0	211.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 AM Peak DS (LCC TA)
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-AC	5.56	9.29	0.599		0.00	1.43	19.5		0.26
C-A	7.55								
C-B	2.65	10.54	0.251		0.00	0.33	4.8		0.13
A-B	0.20								
A-C	6.63								
07.30-07.45									
B-AC	6.64	8.92	0.744		1.43	2.64	35.5		0.41
C-A	9.02								
C-B	3.16	10.16	0.311		0.33	0.45	6.5		0.14
A-B	0.24								
A-C	7.91								
07.45-08.00									
B-AC	8.13	8.40	0.968		2.64	9.11	99.4		1.05
C-A	11.05								
C-B	3.87	9.62	0.402		0.45	0.66	9.5		0.17
A-B	0.29								
A-C	9.69								
08.00-08.15									
B-AC	8.13	8.40	0.968		9.11	11.89	159.1		1.54
C-A	11.05								
C-B	3.87	9.62	0.402		0.66	0.67	10.0		0.17
A-B	0.29								
A-C	9.69								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	6.64	8.92	0.744		11.89	3.26	74.9		0.71
C-A	9.02								
C-B	3.16	10.16	0.311		0.67	0.46	7.1		0.14
A-B	0.24								
A-C	7.91								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	5.56	9.28	0.599		3.26	1.55	25.5		0.29
C-A	7.55								
C-B	2.65	10.54	0.251		0.46	0.34	5.2		0.13
A-B	0.20								
A-C	6.63								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.4	*
07.45	2.6	***
08.00	9.1	*********
08.15	11.9	************
08.30	3.3	***
08.45	1.6	**

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.7	*
08.15	0.7	*
08.30	0.5	
08.45	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	609.8	406.5	414.0	0.68	414.2	0.68
C-A	828.6	552.4				
C-B	290.4	193.6	43.1	0.15	43.1	0.15
A-B	22.0	14.7				
A-C	726.8	484.5				
ALL	2477.6	1651.7	457.1	0.18	457.3	0.18

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
668.39	0.26	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
538.90	0.25	0.10	0.16	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
752.01	0.29	0.29

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 PM Peak DS (LCC TA)

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.14	9.21	6.14
ARM B	15.00	45.00	75.00	4.19	6.28	4.19
ARM C	15.00	45.00	75.00	12.60	18.90	12.60

Demand set: 2023 PM Peak DS (LCC TA)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.15 - 17.45				
	ARM A	0.000	0.049	0.951
		0.0	24.0	467.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.021	0.000	0.979
		7.0	0.0	328.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.678	0.322	0.000
		683.0	325.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 PM Peak DS (LCC TA)
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
B-AC	4.20	9.39	0.448		0.00	0.79	11.1		0.19
C-A	8.57								
C-B	4.08	10.74	0.380		0.00	0.60	8.6		0.15
A-B	0.30								
A-C	5.86								
16.30-16.45									
B-AC	5.02	9.03	0.556		0.79	1.21	17.1		0.25
C-A	10.23								
C-B	4.87	10.39	0.469		0.60	0.86	12.4		0.18
A-B	0.36								
A-C	7.00								
16.45-17.00									
B-AC	6.15	8.48	0.725		1.21	2.42	32.4		0.40
C-A	12.53								
C-B	5.96	9.91	0.602		0.86	1.45	20.4		0.25
A-B	0.44								
A-C	8.57								
17.00-17.15									
B-AC	6.15	8.47	0.726		2.42	2.52	37.2		0.43
C-A	12.53								
C-B	5.96	9.91	0.602		1.45	1.48	22.1		0.25
A-B	0.44								
A-C	8.57								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	5.02	9.02	0.556		2.52	1.30	21.0		0.26
C-A	10.23								
C-B	4.87	10.39	0.469		1.48	0.90	14.2		0.18
A-B	0.36								
A-C	7.00								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	4.20	9.39	0.448		1.30	0.83	13.1		0.20
C-A	8.57								
C-B	4.08	10.74	0.380		0.90	0.62	9.7		0.15
A-B	0.30								
A-C	5.86								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.8	*
16.45	1.2	*
17.00	2.4	**
17.15	2.5	***
17.30	1.3	*
17.45	0.8	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.6	*
16.45	0.9	*
17.00	1.5	*
17.15	1.5	*
17.30	0.9	*
17.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	461.1	307.4	131.9	0.29	131.9	0.29
C-A	940.1	626.7				
C-B	447.3	298.2	87.4	0.20	87.4	0.20
A-B	33.0	22.0				
A-C	642.8	428.5				
ALL	2524.4	1682.9	219.3	0.09	219.3	0.09

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
668.39	0.26	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
538.90	0.25	0.10	0.16	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
752.01	0.29	0.29

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 AM Peak DS (LCC TA) with Development

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	7.14	10.71	7.14
ARM B	15.00	45.00	75.00	5.56	8.34	5.56
ARM C	15.00	45.00	75.00	10.68	16.01	10.68

Demand set: 2023 AM Peak DS (LCC TA) with Development

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
07.15 - 08.45				
	ARM A	0.000	0.028	0.972
		0.0	16.0	555.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.016	0.000	0.984
		7.0	0.0	438.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.751	0.249	0.000
		641.0	213.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 AM Peak DS (LCC TA) with Development
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
B-AC	5.58	9.19	0.607		0.00	1.48	20.1		0.26
C-A	8.04								
C-B	2.67	10.45	0.256		0.00	0.34	4.9		0.13
A-B	0.20								
A-C	6.96								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
B-AC	6.67	8.81	0.757		1.48	2.80	37.4		0.43
C-A	9.60								
C-B	3.19	10.04	0.318		0.34	0.46	6.7		0.15
A-B	0.24								
A-C	8.32								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-AC	8.17	8.26	0.989		2.80	10.37	110.1		1.16
C-A	11.76								
C-B	3.91	9.48	0.412		0.46	0.69	9.9		0.18
A-B	0.29								
A-C	10.18								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	8.17	8.26	0.989		10.37	14.18	185.9		1.79
C-A	11.76								
C-B	3.91	9.48	0.412		0.69	0.69	10.4		0.18
A-B	0.29								
A-C	10.18								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	6.67	8.81	0.757		14.18	3.57	92.1		0.87
C-A	9.60								
C-B	3.19	10.04	0.318		0.69	0.47	7.3		0.15
A-B	0.24								
A-C	8.32								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	5.58	9.19	0.607		3.57	1.62	26.8		0.30
C-A	8.04								
C-B	2.67	10.45	0.256		0.47	0.35	5.4		0.13
A-B	0.20								
A-C	6.96								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.5	*
07.45	2.8	***
08.00	10.4	**********
08.15	14.2	**************
08.30	3.6	****
08.45	1.6	**

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.5	
08.00	0.7	*
08.15	0.7	*
08.30	0.5	
08.45	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	612.5	408.3	472.5	0.77	472.6	0.77
C-A	882.3	588.2				
C-B	293.2	195.5	44.6	0.15	44.6	0.15
A-B	22.0	14.7				
A-C	763.9	509.3				
ALL	2573.9	1715.9	517.1	0.20	517.2	0.20

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
668.39	0.26	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
538.90	0.25	0.10	0.16	0.35

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
752.01	0.29	0.29

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2023 PM Peak DS (LCC TA) with Development

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.81	10.22	6.81
ARM B	15.00	45.00	75.00	4.22	6.34	4.22
ARM C	15.00	45.00	75.00	13.19	19.78	13.19

Demand set: 2023 PM Peak DS (LCC TA) with Development

TIME	FROM/TO	ARM A	ARM B	ARM C
16.15 - 17.45				
	ARM A	0.000	0.044	0.956
		0.0	24.0	521.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.021	0.000	0.979
		7.0	0.0	331.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.689	0.311	0.000
		727.0	328.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2023 PM Peak DS (LCC TA) with Development
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
B-AC	4.24	9.20	0.461		0.00	0.83	11.7		0.20
C-A	9.12								
C-B	4.12	10.54	0.390		0.00	0.63	9.0		0.15
A-B	0.30								
A-C	6.54								
16.30-16.45									
B-AC	5.06	8.80	0.576		0.83	1.31	18.4		0.26
C-A	10.89								
C-B	4.91	10.15	0.484		0.63	0.92	13.2		0.19
A-B	0.36								
A-C	7.81								
16.45-17.00									
B-AC	6.20	8.16	0.760		1.31	2.82	37.0		0.46
C-A	13.34								
C-B	6.02	9.62	0.626		0.92	1.60	22.3		0.27
A-B	0.44								
A-C	9.56								
17.00-17.15									
B-AC	6.20	8.16	0.760		2.82	2.97	43.7		0.50
C-A	13.34								
C-B	6.02	9.62	0.626		1.60	1.63	24.3		0.28
A-B	0.44								
A-C	9.56								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	5.06	8.79	0.576		2.97	1.41	23.1		0.28
C-A	10.89								
C-B	4.91	10.15	0.484		1.63	0.96	15.2		0.19
A-B	0.36								
A-C	7.81								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	4.24	9.20	0.461		1.41	0.88	13.9		0.20
C-A	9.12								
C-B	4.12	10.54	0.390		0.96	0.65	10.2		0.16
A-B	0.30								
A-C	6.54								

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.8	*
16.45	1.3	*
17.00	2.8	***
17.15	3.0	***
17.30	1.4	*
17.45	0.9	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.6	*
16.45	0.9	*
17.00	1.6	**
17.15	1.6	**
17.30	1.0	*
17.45	0.7	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	465.2	310.2	147.8	0.32	147.8	0.32
C-A	1000.7	667.1				
C-B	451.5	301.0	94.0	0.21	94.1	0.21
A-B	33.0	22.0				
A-C	717.1	478.1				
ALL	2667.5	1778.3	241.8	0.09	241.9	0.09

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

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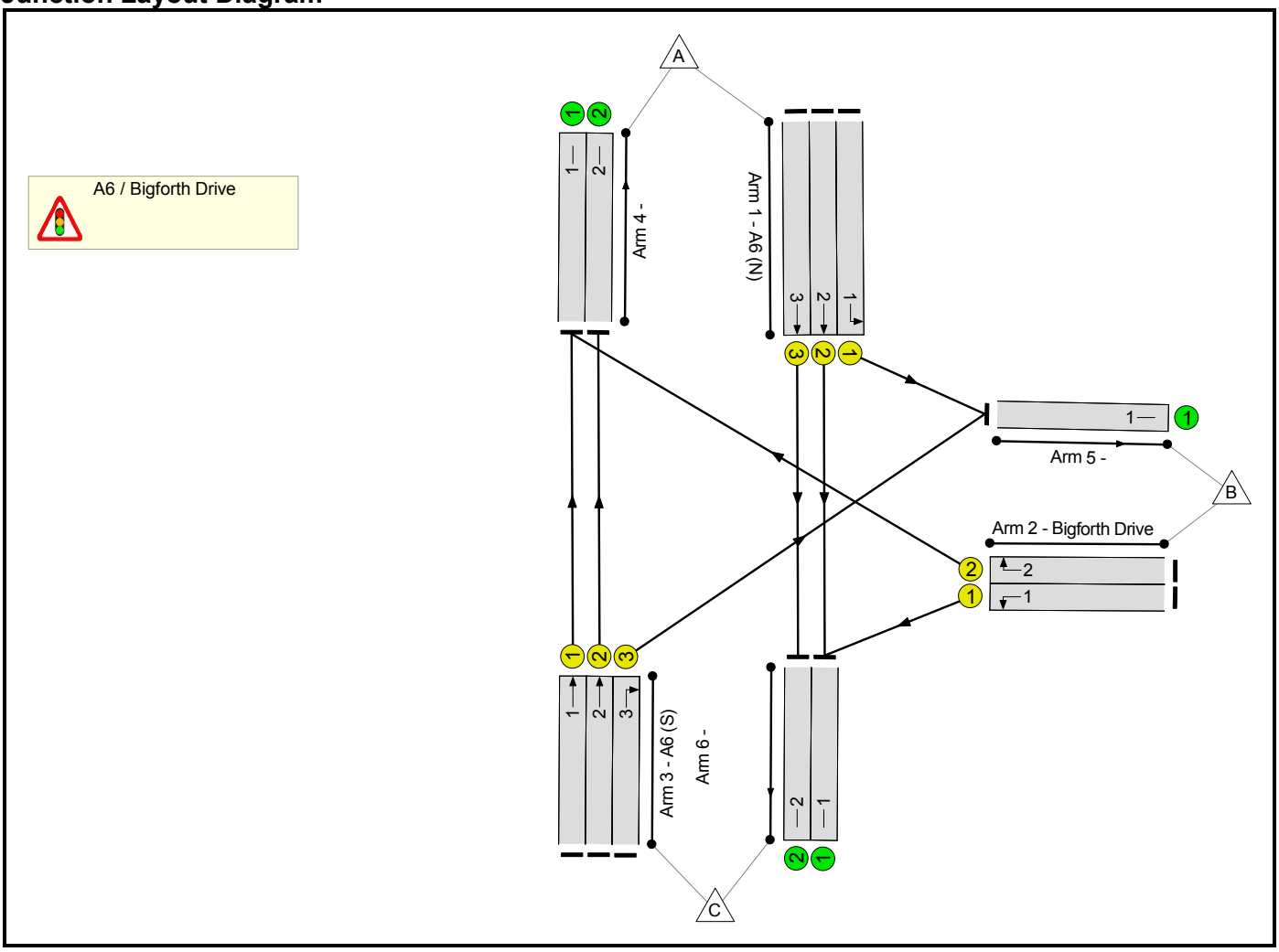
Printed at 17:24:07 on 01/04/2019]

Full Input Data And Results

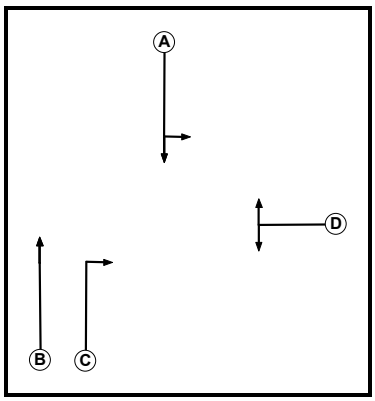
User and Project Details

Project:	**Ellel, Lancaster**
Title:	**A6 / Bigforth Drive**
Location:	
Company:	SK
Address:	
Notes:	

Junction Layout Diagram



Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7

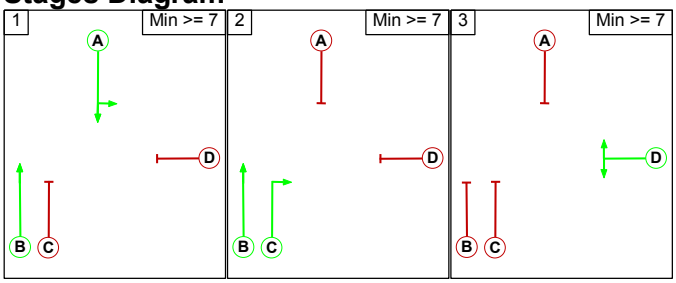
Phase Intergreens Matrix

		Starting Phase			
		A	B	C	D
Terminating Phase	A		-	6	7
	B	-		-	7
	C	7	-		7
	D	6	6	6	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	B C
3	D

Stages Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Changes

		To Stage		
		1	2	3
From Stage	1		6	7
	2	7		7
	3	6	6	

Full Input Data And Results

Give-Way Link Input Data

Junction: A6 / Bigforth Drive
There are no Opposed Lanes in this Junction

Lane Input Data

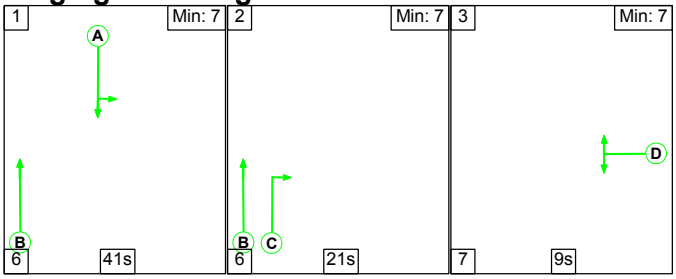
Junction: A6 / Bigforth Drive												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A6 (N))	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Left	20.00
1/2 (A6 (N))	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
1/3 (A6 (N))	U	A	2	3	60.0	Geom	-	3.00	0.00	N	Arm 6 Ahead	Inf
2/1 (Bigforth Drive)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Left	15.00
2/2 (Bigforth Drive)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Right	20.00
3/1 (A6 (S))	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
3/2 (A6 (S))	U	B	2	3	60.0	Geom	-	3.00	0.00	N	Arm 4 Ahead	Inf
3/3 (A6 (S))	U	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	20.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2023 AM Peak DS (LCC TA)'	07:30	08:30	01:00	

Scenario 1: '2023 AM Peak' (FG1: '2023 AM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

Staging Plan Diagram

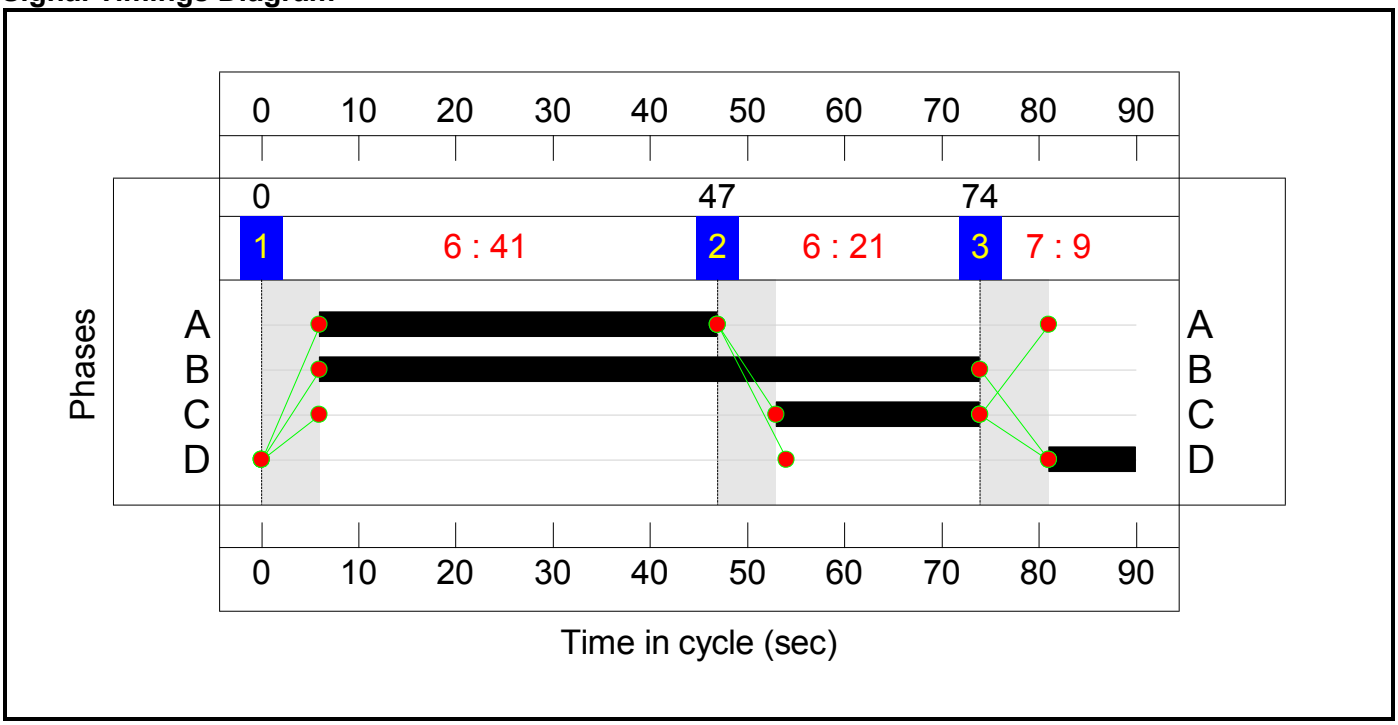


Full Input Data And Results

Stage Timings

Stage	1	2	3
Duration	41	21	9
Change Point	0	47	74

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**34.5%**
A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**34.5%**
1/1	A6 (N) Left	U	N/A	N/A	A		1	41	-	243	1781	831	29.2%
1/2	A6 (N) Ahead	U	N/A	N/A	A		1	41	-	280	1915	894	31.3%
1/3	A6 (N) Ahead	U	N/A	N/A	A		1	41	-	324	2055	959	33.8%
2/1	Bigforth Drive Left	U	N/A	N/A	D		1	9	-	28	1786	198	14.1%
2/2	Bigforth Drive Right	U	N/A	N/A	D		1	9	-	70	1828	203	34.5%
3/1	A6 (S) Ahead	U	N/A	N/A	B		1	68	-	288	1915	1468	19.6%
3/2	A6 (S) Ahead	U	N/A	N/A	B		1	68	-	351	2055	1576	22.3%
3/3	A6 (S) Right	U	N/A	N/A	C		1	21	-	147	1781	435	33.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**6.2**	**1.6**	**0.0**	**7.8**	**-**	**-**	**-**	**-**
A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**6.2**	**1.6**	**0.0**	**7.8**	**-**	**-**	**-**	**-**
1/1	243	243	-	-	-	1.0	0.2	-	1.2	17.9	3.7	0.2	3.9
1/2	280	280	-	-	-	1.2	0.2	-	1.4	17.9	4.4	0.2	4.6
1/3	324	324	-	-	-	1.4	0.3	-	1.6	18.0	5.0	0.3	5.3
2/1	28	28	-	-	-	0.3	0.1	-	0.4	46.7	0.6	0.1	0.7
2/2	70	70	-	-	-	0.7	0.3	-	1.0	50.5	1.6	0.3	1.9
3/1	288	288	-	-	-	0.2	0.1	-	0.4	4.4	1.9	0.1	2.0
3/2	351	351	-	-	-	0.3	0.1	-	0.4	4.4	2.4	0.1	2.6
3/3	147	147	-	-	-	1.1	0.3	-	1.4	34.2	3.0	0.3	3.3

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	161.1	Total Delay for Signalled Lanes (pcuHr):	7.75	Cycle Time (s):	90	
	PRC Over All Lanes (%):	161.1	Total Delay Over All Lanes(pcuHr):	7.75			

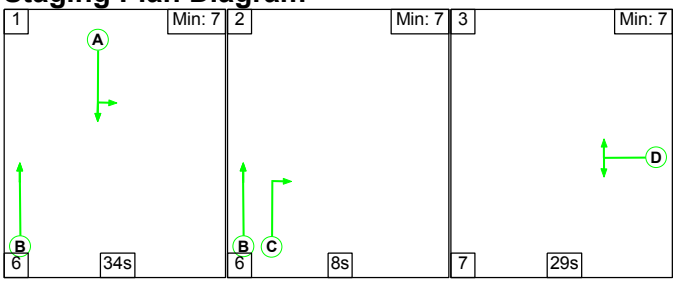
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
2: '2023 PM Peak DS (LCC TA)'	16:30	17:30	01:00	

Scenario 2: '2023 PM Peak' (FG2: '2023 PM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

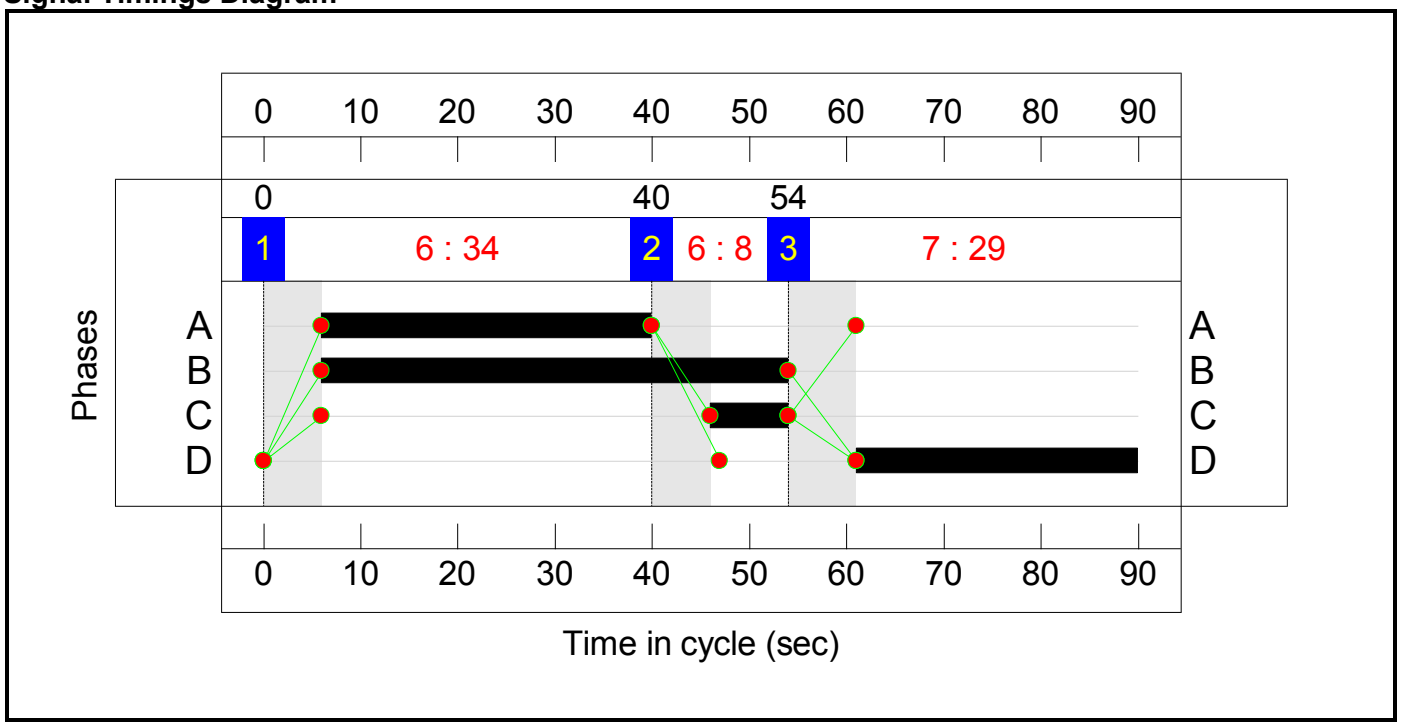
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	34	8	29
Change Point	0	40	54

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**41.5%**
A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**41.5%**
1/1	A6 (N) Left	U	N/A	N/A	A		1	34	-	151	1781	693	21.8%
1/2	A6 (N) Ahead	U	N/A	N/A	A		1	34	-	287	1915	745	38.5%
1/3	A6 (N) Ahead	U	N/A	N/A	A		1	34	-	332	2055	799	41.5%
2/1	Bigforth Drive Left	U	N/A	N/A	D		1	29	-	222	1786	595	37.3%
2/2	Bigforth Drive Right	U	N/A	N/A	D		1	29	-	245	1828	609	40.2%
3/1	A6 (S) Ahead	U	N/A	N/A	B		1	48	-	300	1915	1043	28.8%
3/2	A6 (S) Ahead	U	N/A	N/A	B		1	48	-	365	2055	1119	32.6%
3/3	A6 (S) Right	U	N/A	N/A	C		1	8	-	74	1781	178	41.5%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**10.0**	**2.2**	**0.0**	**12.3**	**-**	**-**	**-**	**-**
A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**10.0**	**2.2**	**0.0**	**12.3**	**-**	**-**	**-**	**-**
1/1	151	151	-	-	-	0.8	0.1	-	0.9	21.7	2.5	0.1	2.7
1/2	287	287	-	-	-	1.6	0.3	-	1.9	23.7	5.1	0.3	5.4
1/3	332	332	-	-	-	1.8	0.4	-	2.2	23.9	6.0	0.4	6.3
2/1	222	222	-	-	-	1.4	0.3	-	1.7	27.7	4.2	0.3	4.5
2/2	245	245	-	-	-	1.6	0.3	-	1.9	28.0	4.7	0.3	5.0
3/1	300	300	-	-	-	0.9	0.2	-	1.1	13.5	4.0	0.2	4.2
3/2	365	365	-	-	-	1.2	0.2	-	1.4	13.7	5.0	0.2	5.2
3/3	74	74	-	-	-	0.8	0.4	-	1.1	55.2	1.7	0.4	2.1

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	116.6	Total Delay for Signalled Lanes (pcuHr):	12.27	Cycle Time (s):	90	
	PRC Over All Lanes (%):	116.6	Total Delay Over All Lanes(pcuHr):	12.27			

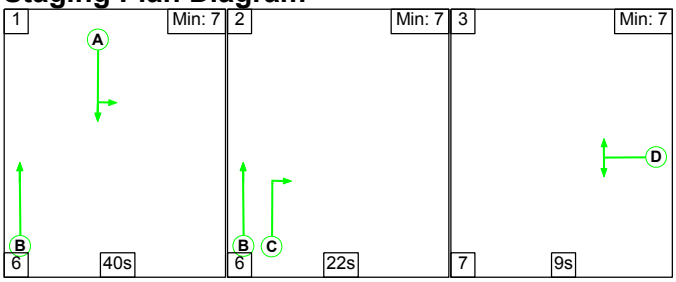
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
3: '2023 AM Peak DS (LCC TA) with Development'	07:30	08:30	01:00	

Scenario 3: '2023 AM Peak with Development' (FG3: '2023 AM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

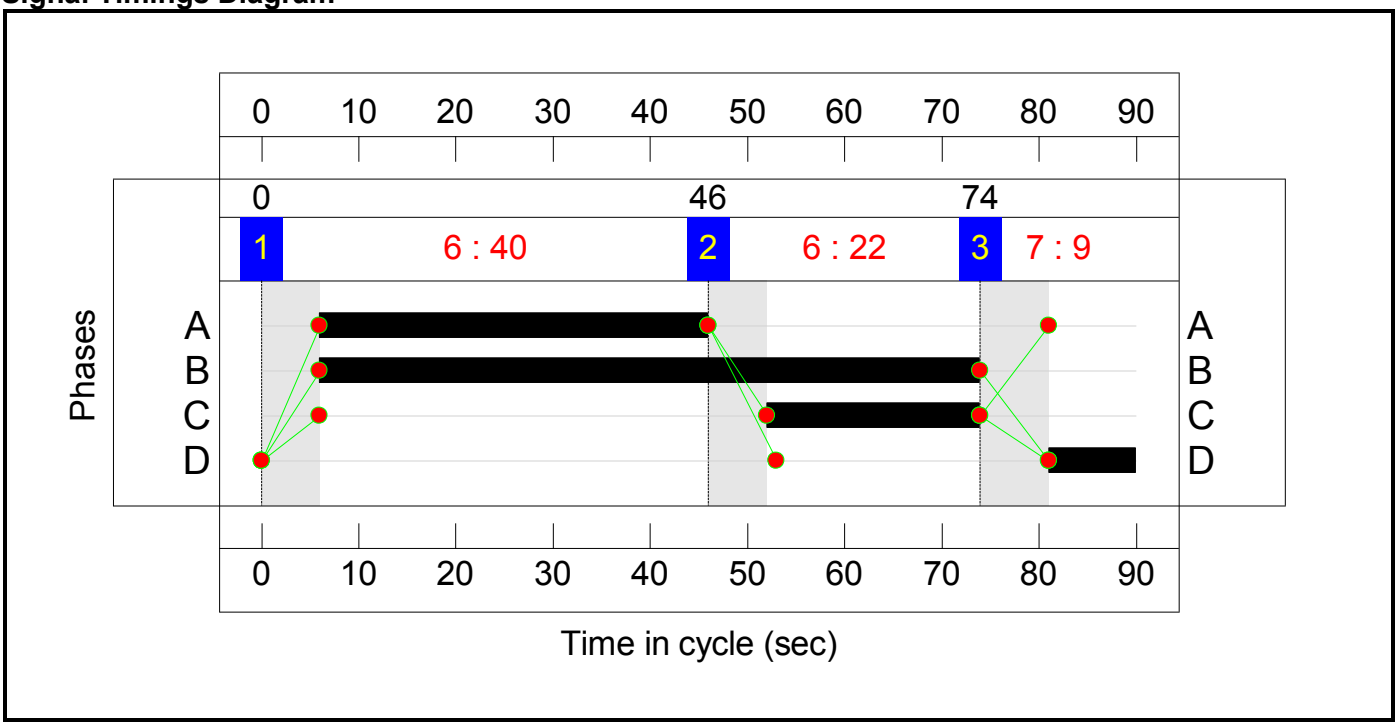
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	40	22	9
Change Point	0	46	74

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**36.4%**
A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**36.4%**
1/1	A6 (N) Left	U	N/A	N/A	A		1	40	-	243	1781	811	30.0%
1/2	A6 (N) Ahead	U	N/A	N/A	A		1	40	-	297	1915	872	34.0%
1/3	A6 (N) Ahead	U	N/A	N/A	A		1	40	-	341	2055	936	36.4%
2/1	Bigforth Drive Left	U	N/A	N/A	D		1	9	-	37	1786	198	18.6%
2/2	Bigforth Drive Right	U	N/A	N/A	D		1	9	-	70	1828	203	34.5%
3/1	A6 (S) Ahead	U	N/A	N/A	B		1	68	-	310	1915	1468	21.1%
3/2	A6 (S) Ahead	U	N/A	N/A	B		1	68	-	374	2055	1576	23.7%
3/3	A6 (S) Right	U	N/A	N/A	C		1	22	-	160	1781	455	35.2%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**6.7**	**1.7**	**0.0**	**8.4**	**-**	**-**	**-**	**-**
A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**6.7**	**1.7**	**0.0**	**8.4**	**-**	**-**	**-**	**-**
1/1	243	243	-	-	-	1.0	0.2	-	1.3	18.6	3.8	0.2	4.0
1/2	297	297	-	-	-	1.3	0.3	-	1.6	18.9	4.7	0.3	5.0
1/3	341	341	-	-	-	1.5	0.3	-	1.8	19.0	5.5	0.3	5.8
2/1	37	37	-	-	-	0.4	0.1	-	0.5	47.5	0.8	0.1	0.9
2/2	70	70	-	-	-	0.7	0.3	-	1.0	50.5	1.6	0.3	1.9
3/1	310	310	-	-	-	0.3	0.1	-	0.4	4.5	2.2	0.1	2.3
3/2	374	374	-	-	-	0.3	0.2	-	0.5	4.5	2.6	0.2	2.8
3/3	160	160	-	-	-	1.2	0.3	-	1.5	33.5	3.2	0.3	3.5

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	147.1	Total Delay for Signalled Lanes (pcuHr):	8.43	Cycle Time (s):	90	
	PRC Over All Lanes (%):	147.1	Total Delay Over All Lanes(pcuHr):	8.43			

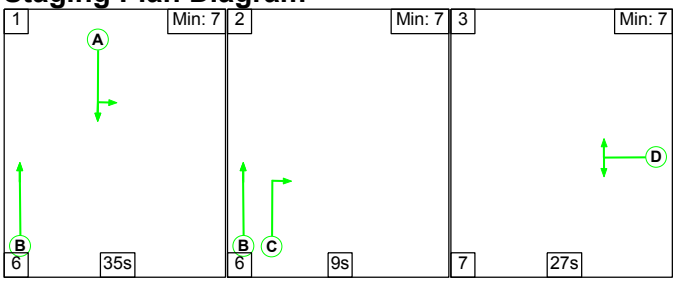
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
4: '2023 PM Peak DS (LCC TA) with Development'	16:30	17:30	01:00	

Scenario 4: '2023 PM Peak with Development' (FG4: '2023 PM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

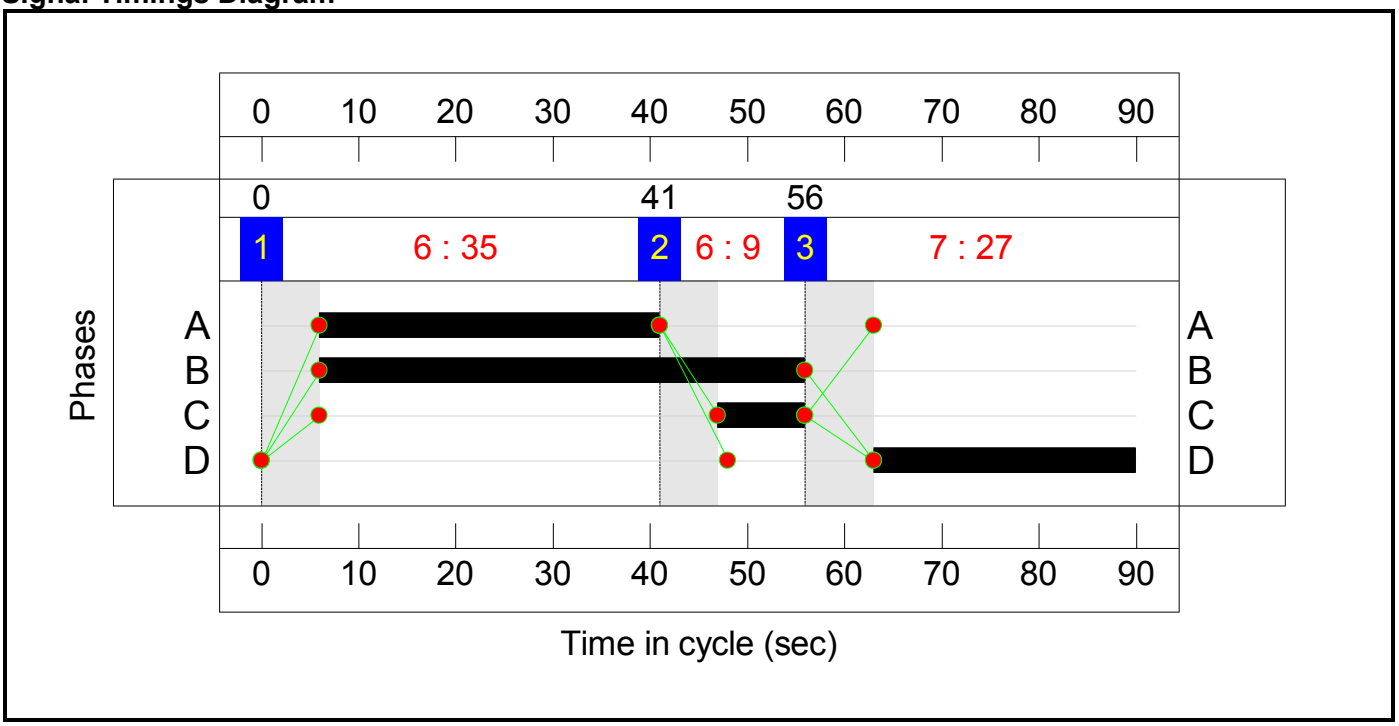
Staging Plan Diagram



Stage Timings

Stage	1	2	3
Duration	35	9	27
Change Point	0	41	56

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**44.5%**
A6 / Bigforth Drive	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**44.5%**
1/1	A6 (N) Left	U	N/A	N/A	A		1	35	-	151	1781	712	21.2%
1/2	A6 (N) Ahead	U	N/A	N/A	A		1	35	-	319	1915	766	41.6%
1/3	A6 (N) Ahead	U	N/A	N/A	A		1	35	-	366	2055	822	44.5%
2/1	Bigforth Drive Left	U	N/A	N/A	D		1	27	-	239	1786	556	43.0%
2/2	Bigforth Drive Right	U	N/A	N/A	D		1	27	-	245	1828	569	43.1%
3/1	A6 (S) Ahead	U	N/A	N/A	B		1	50	-	329	1915	1085	30.3%
3/2	A6 (S) Ahead	U	N/A	N/A	B		1	50	-	392	2055	1164	33.7%
3/3	A6 (S) Right	U	N/A	N/A	C		1	9	-	88	1781	198	44.5%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**10.8**	**2.5**	**0.0**	**13.3**	**-**	**-**	**-**	**-**
A6 / Bigforth Drive	**-**	**-**	**0**	**0**	**0**	**10.8**	**2.5**	**0.0**	**13.3**	**-**	**-**	**-**	**-**
1/1	151	151	-	-	-	0.7	0.1	-	0.9	20.9	2.5	0.1	2.6
1/2	319	319	-	-	-	1.7	0.4	-	2.1	23.5	5.7	0.4	6.0
1/3	366	366	-	-	-	2.0	0.4	-	2.4	23.7	6.6	0.4	7.0
2/1	239	239	-	-	-	1.6	0.4	-	2.0	30.3	4.7	0.4	5.1
2/2	245	245	-	-	-	1.7	0.4	-	2.1	30.2	4.8	0.4	5.2
3/1	329	329	-	-	-	0.9	0.2	-	1.2	12.6	4.3	0.2	4.5
3/2	392	392	-	-	-	1.1	0.3	-	1.4	12.8	5.2	0.3	5.5
3/3	88	88	-	-	-	0.9	0.4	-	1.3	53.7	2.1	0.4	2.5

Full Input Data And Results

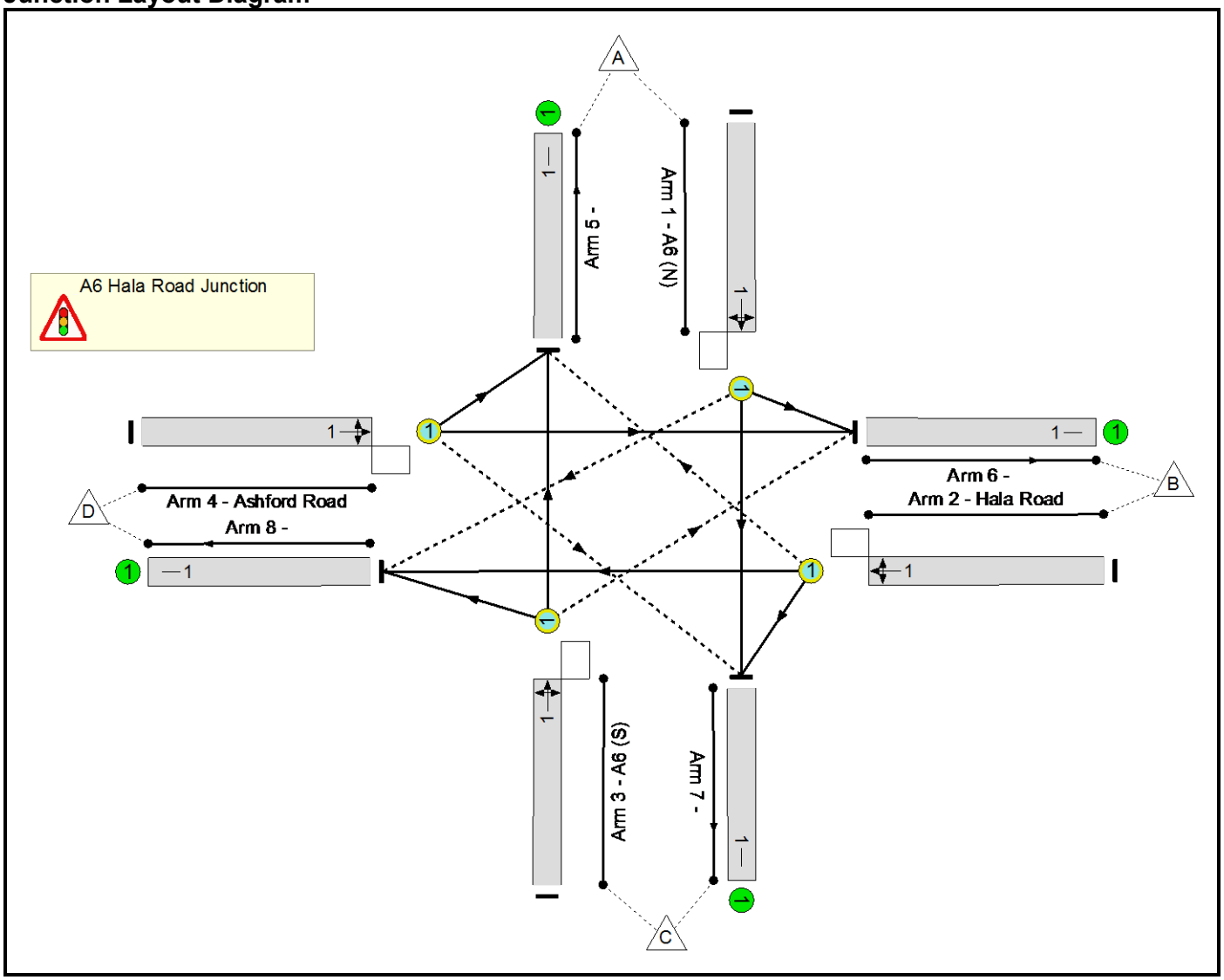
C1	PRC for Signalled Lanes (%):	102.1	Total Delay for Signalled Lanes (pcuHr):	13.28	Cycle Time (s):	90	
	PRC Over All Lanes (%):	102.1	Total Delay Over All Lanes(pcuHr):	13.28			

Full Input Data And Results

User and Project Details

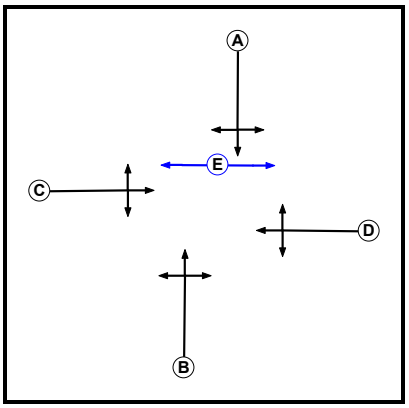
Project:	**Ellel, Lancaster**
Title:	**A6 Scotforth Road / Hala Road / Ashford Road**
Location:	
Company:	SK
Address:	
Notes:	

Junction Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		7	7

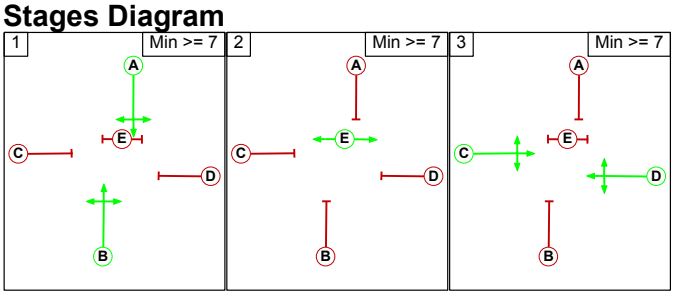
Phase Intergreens Matrix

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	6	6	8
	B	-		6	6	8
	C	7	7		-	8
	D	7	7	-		8
	E	10	10	8	8	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	E
3	C D

Stages Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Changes

From Stage \ To Stage	1	2	3
1		8	6
2	10		8
3	7	8	

Give-Way Link Input Data

Junction: A6 Hala Road Junction

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (A6 (N))	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left)	2.00	2.00	0.50	2	2.00
2/1 (Hala Road)	5/1 (Right)	1439	0	4/1	1.09	To 5/1 (Left) To 6/1 (Ahead)	2.00	2.00	0.50	2	2.00
3/1 (A6 (S))	6/1 (Right)	1439	0	1/1	1.09	To 6/1 (Left) To 7/1 (Ahead)	2.00	2.00	0.50	2	2.00
4/1 (Ashford Road)	7/1 (Right)	1439	0	2/1	1.09	To 7/1 (Left) To 8/1 (Ahead)	2.00	2.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: A6 Hala Road Junction

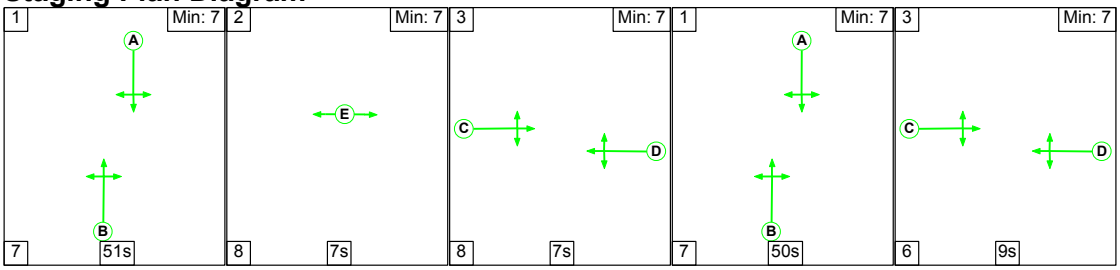
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A6 (N))	O	A	2	3	60.0	Geom	-	4.25	0.00	Y	Arm 6 Left	8.00
											Arm 7 Ahead	Inf
											Arm 8 Right	10.00
2/1 (Hala Road)	O	D	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 5 Right	10.00
											Arm 7 Left	10.00
											Arm 8 Ahead	Inf
3/1 (A6 (S))	O	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	10.00
											Arm 8 Left	17.00
4/1 (Ashford Road)	O	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Left	12.00
											Arm 6 Ahead	Inf
											Arm 7 Right	10.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2023 AM Peak DS (LCC TA)'	07:30	08:30	01:00	

Scenario 1: '2023 AM Peak' (FG1: '2023 AM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

Staging Plan Diagram

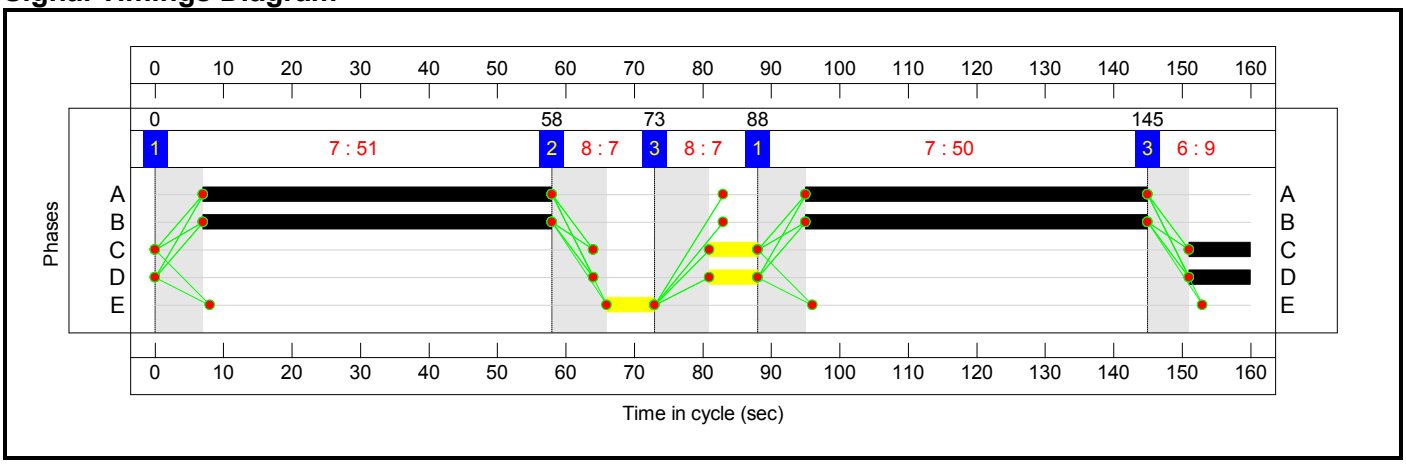


Full Input Data And Results

Stage Timings

Stage	1	2	3	1	3
Duration	51	7	7	50	9
Change Point	0	58	73	88	145

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.4%**
A6 Hala Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.4%**
1/1	A6 (N) Left Ahead Right	O	N/A	N/A	A		2	101	-	1058	2020	1300	81.4%
2/1	Hala Road Right Left Ahead	O	N/A	N/A	D		2	16	-	157	1742	196	80.1%
3/1	A6 (S) Ahead Right Left	O	N/A	N/A	B		2	101	-	746	1946	1253	59.5%
4/1	Ashford Road Left Ahead Right	O	N/A	N/A	C		2	16	-	149	1744	193	77.1%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**165**	**0**	**35**	**8.2**	**6.3**	**0.2**	**14.7**	**-**	**-**	**-**	**-**
A6 Hala Road Junction	**-**	**-**	**165**	**0**	**35**	**8.2**	**6.3**	**0.2**	**14.7**	**-**	**-**	**-**	**-**
1/1	1058	1058	20	0	0	3.4	2.1	0.0	5.5	18.8	22.0	2.1	24.2
2/1	157	157	67	0	0	1.5	1.8	0.0	3.4	77.4	3.8	1.8	5.6
3/1	746	746	17	0	0	1.8	0.7	0.1	2.6	12.7	12.0	0.7	12.8
4/1	149	149	61	0	35	1.4	1.6	0.1	3.1	75.4	3.6	1.6	5.2

C1

PRC for Signalled Lanes (%): 10.6
PRC Over All Lanes (%): 10.6

Total Delay for Signalled Lanes (pcuHr): 14.65
Total Delay Over All Lanes(pcuHr): 14.65

Cycle Time (s): 160

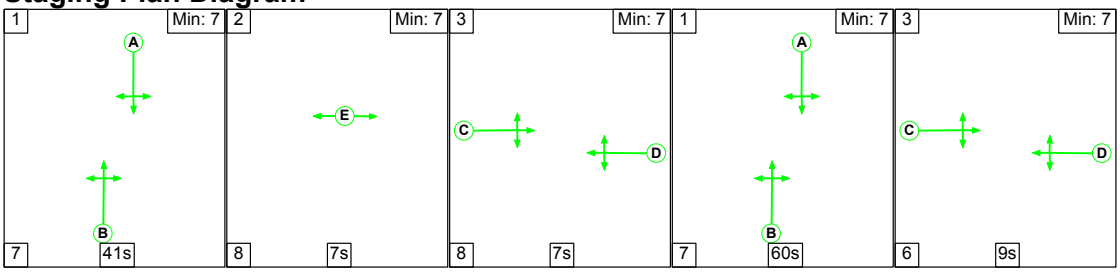
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
2: '2023 PM Peak DS (LCC TA)'	16:30	17:30	01:00	

Scenario 2: '2023 PM Peak' (FG2: '2023 PM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

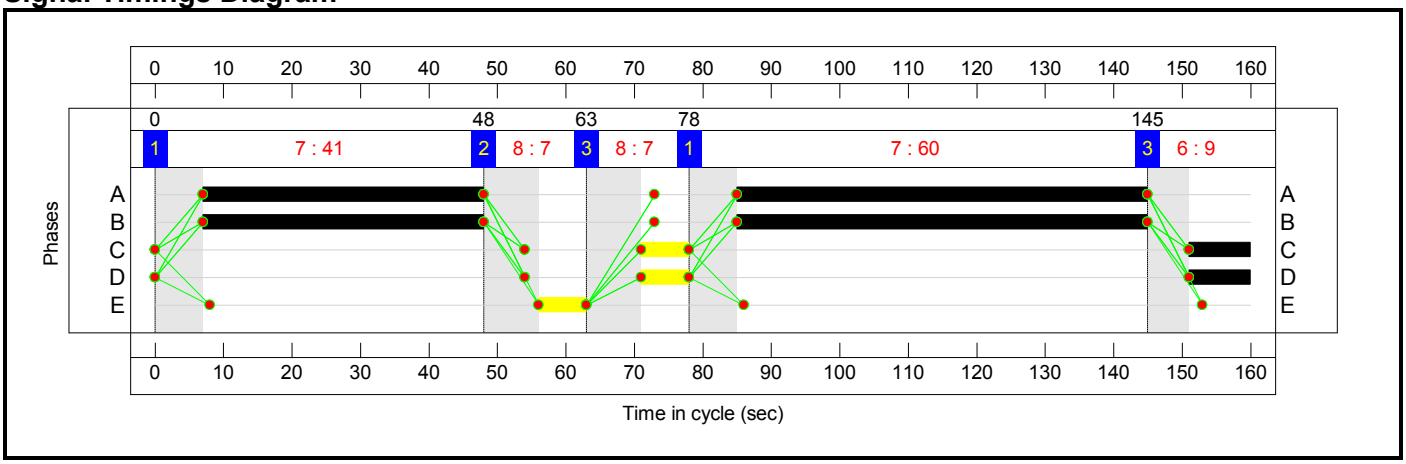
Staging Plan Diagram



Stage Timings

Stage	1	2	3	1	3
Duration	41	7	7	60	9
Change Point	0	48	63	78	145

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.0%**
A6 Hala Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.0%**
1/1	A6 (N) Left Ahead Right	O	N/A	N/A	A		2	101	-	929	1978	1273	73.0%
2/1	Hala Road Right Left Ahead	O	N/A	N/A	D		2	16	-	178	1743	196	90.8%
3/1	A6 (S) Ahead Right Left	O	N/A	N/A	B		2	101	-	1199	1941	1250	96.0%
4/1	Ashford Road Left Ahead Right	O	N/A	N/A	C		2	16	-	154	1801	203	76.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**178**	**0**	**55**	**10.6**	**15.2**	**0.6**	**26.3**	**-**	**-**	**-**	**-**
A6 Hala Road Junction	**-**	**-**	**178**	**0**	**55**	**10.6**	**15.2**	**0.6**	**26.3**	**-**	**-**	**-**	**-**
1/1	929	929	12	0	26	2.6	1.3	0.3	4.3	16.7	17.3	1.3	18.6
2/1	178	178	63	0	10	1.7	3.5	0.0	5.3	107.5	4.0	3.5	7.5
3/1	1199	1199	56	0	0	4.7	8.8	0.1	13.7	41.0	31.3	8.8	40.1
4/1	154	154	47	0	19	1.5	1.5	0.1	3.0	70.7	3.3	1.5	4.8

C1 PRC for Signalled Lanes (%): -6.6 Total Delay for Signalled Lanes (pcuHr): 26.31 Cycle Time (s): 160
PRC Over All Lanes (%): -6.6 Total Delay Over All Lanes(pcuHr): 26.31

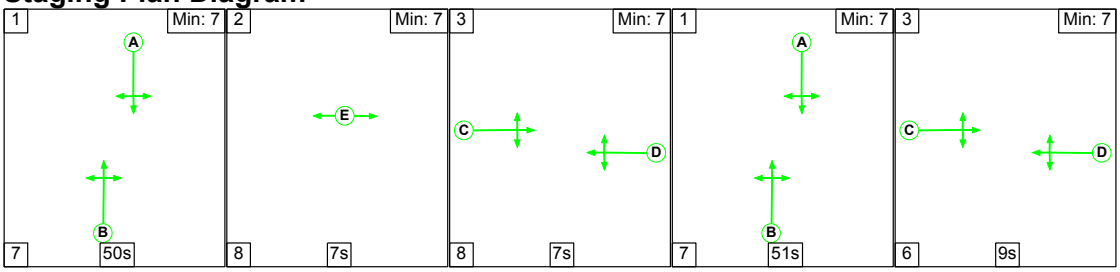
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
3: '2023 AM Peak DS (LCC TA) with Development'	07:30	08:30	01:00	

Scenario 3: '2023 AM Peak with Development' (FG3: '2023 AM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

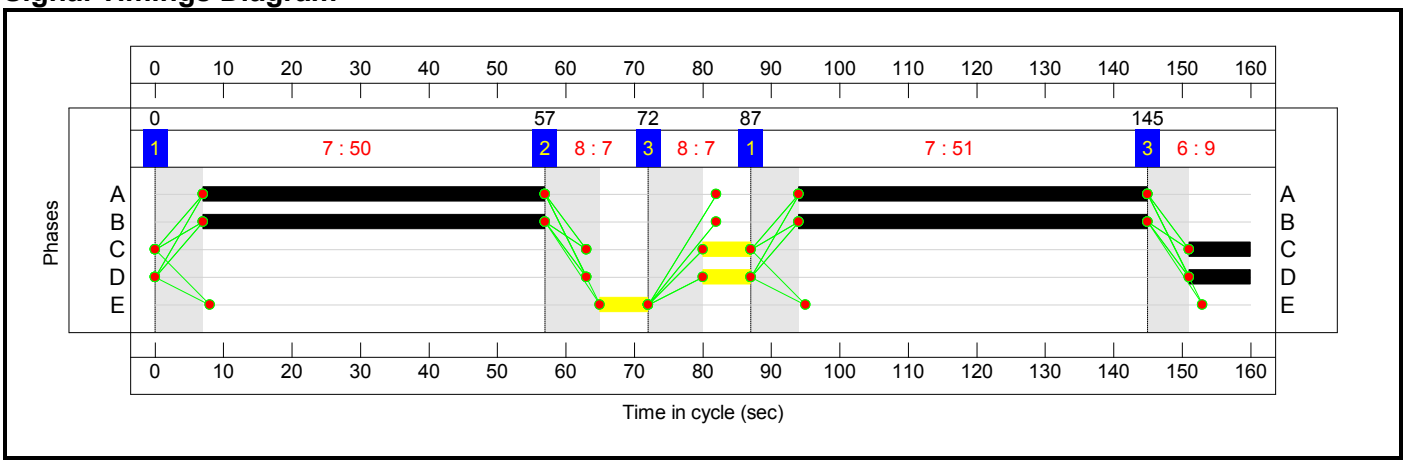
Staging Plan Diagram



Stage Timings

Stage	1	2	3	1	3
Duration	50	7	7	51	9
Change Point	0	57	72	87	145

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.5%**
A6 Hala Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.5%**
1/1	A6 (N) Left Ahead Right	O	N/A	N/A	A		2	101	-	1087	2021	1301	83.5%
2/1	Hala Road Right Left Ahead	O	N/A	N/A	D		2	16	-	159	1741	196	81.2%
3/1	A6 (S) Ahead Right Left	O	N/A	N/A	B		2	101	-	791	1946	1253	63.1%
4/1	Ashford Road Left Ahead Right	O	N/A	N/A	C		2	16	-	152	1743	191	79.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**168**	**0**	**37**	**8.6**	**7.1**	**0.2**	**15.9**	**-**	**-**	**-**	**-**
A6 Hala Road Junction	**-**	**-**	**168**	**0**	**37**	**8.6**	**7.1**	**0.2**	**15.9**	**-**	**-**	**-**	**-**
1/1	1087	1087	20	0	0	3.5	2.5	0.0	6.1	20.1	23.2	2.5	25.7
2/1	159	159	67	0	0	1.6	2.0	0.0	3.5	79.3	3.8	2.0	5.7
3/1	791	791	19	0	0	2.0	0.9	0.1	3.0	13.5	13.2	0.9	14.0
4/1	152	152	62	0	37	1.5	1.8	0.1	3.4	80.2	3.6	1.8	5.4

C1 PRC for Signalled Lanes (%): 7.7 Total Delay for Signalled Lanes (pcuHr): 15.90 Cycle Time (s): 160
PRC Over All Lanes (%): 7.7 Total Delay Over All Lanes(pcuHr): 15.90

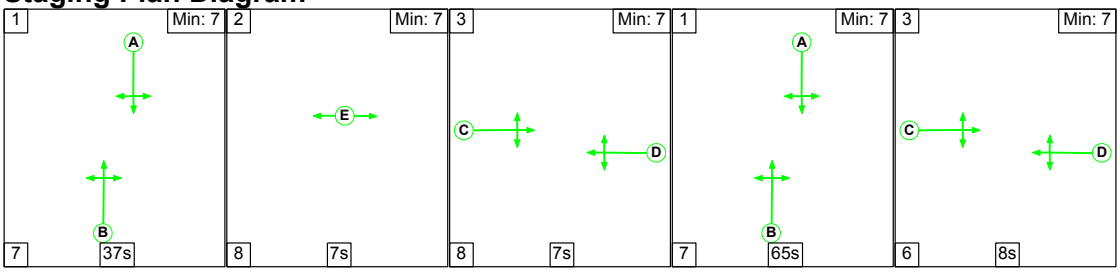
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
4: '2023 PM Peak DS (LCC TA) with Development'	16:30	17:30	01:00	

Scenario 4: '2023 PM Peak with Development' (FG4: '2023 PM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

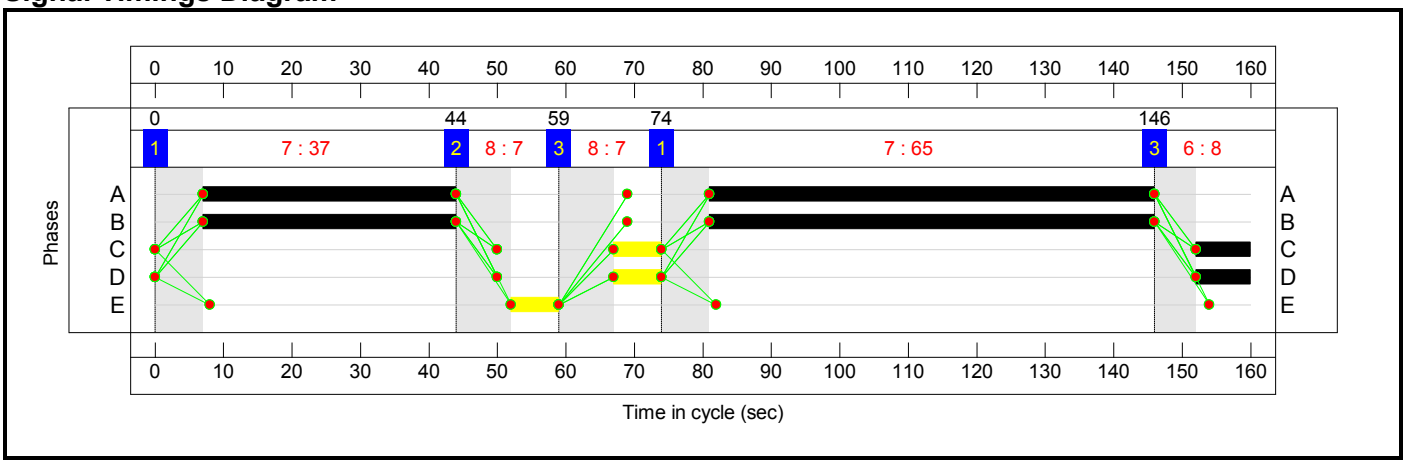
Staging Plan Diagram



Stage Timings

Stage	1	2	3	1	3
Duration	37	7	7	65	8
Change Point	0	44	59	74	146

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.4%**
A6 Hala Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.4%**
1/1	A6 (N) Left Ahead Right	O	N/A	N/A	A		2	102	-	986	1982	1288	76.5%
2/1	Hala Road Right Left Ahead	O	N/A	N/A	D		2	15	-	181	1742	185	97.8%
3/1	A6 (S) Ahead Right Left	O	N/A	N/A	B		2	102	-	1254	1941	1262	99.4%
4/1	Ashford Road Left Ahead Right	O	N/A	N/A	C		2	15	-	159	1798	191	83.2%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Scotforth Road / Hala Road / Ashford Road	**-**	**-**	**152**	**0**	**89**	**11.5**	**25.5**	**0.6**	**37.6**	**-**	**-**	**-**	**-**
A6 Hala Road Junction	**-**	**-**	**152**	**0**	**89**	**11.5**	**25.5**	**0.6**	**37.6**	**-**	**-**	**-**	**-**
1/1	986	986	1	0	37	2.9	1.6	0.4	4.9	17.7	19.4	1.6	21.1
2/1	181	181	57	0	16	1.8	5.8	0.0	7.6	151.7	4.3	5.8	10.1
3/1	1254	1254	59	0	0	5.2	15.9	0.2	21.3	61.1	35.2	15.9	51.1
4/1	159	159	35	0	36	1.6	2.2	0.1	3.8	86.2	3.7	2.2	5.9

C1 PRC for Signalled Lanes (%): -10.4 Total Delay for Signalled Lanes (pcuHr): 37.58 Cycle Time (s): 160

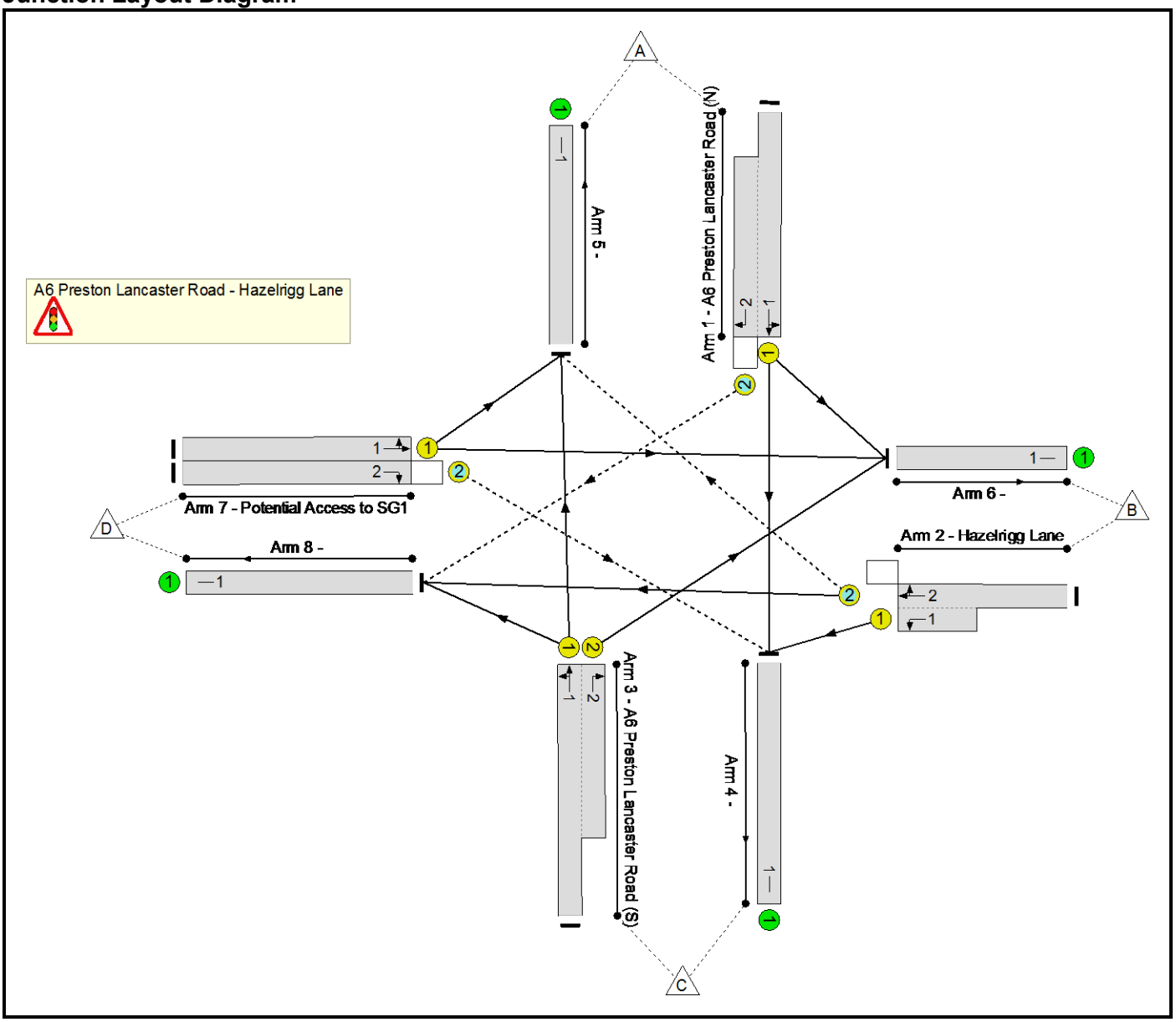
PRC Over All Lanes (%): -10.4 Total Delay Over All Lanes(pcuHr): 37.58

Full Input Data And Results

User and Project Details

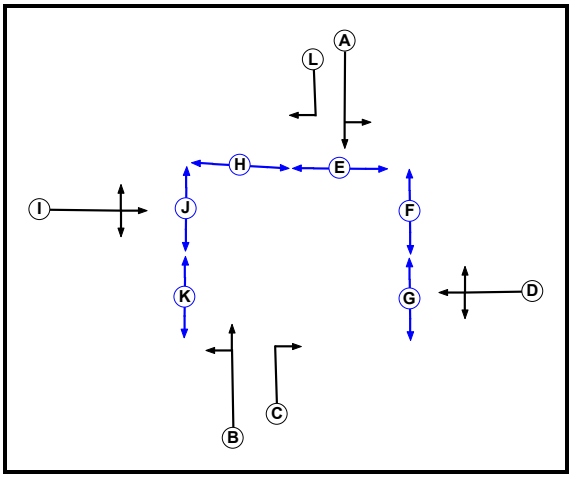
Project:	**Ellel, Lancaster**
Title:	**A6 Preston Lancaster Road - Hazelrigg Lane**
Location:	
Company:	SK
Address:	
Notes:	

Junction Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	4
D	Traffic		7	7
E	Pedestrian		6	6
F	Pedestrian		6	5
G	Pedestrian		6	6
H	Pedestrian		6	6
I	Traffic		7	7
J	Pedestrian		6	6
K	Pedestrian		6	6
L	Traffic		7	7

Full Input Data And Results

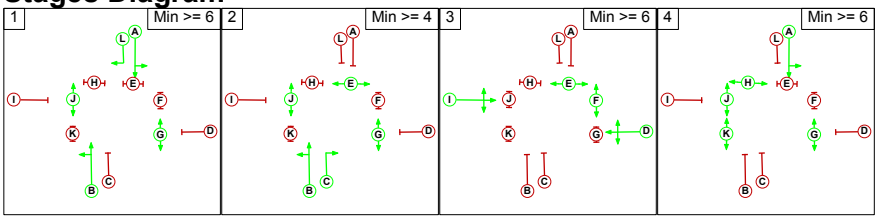
Phase Intergreens Matrix

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

Phases in Stage

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

Stages Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	3	A	Losing	2	2
1	3	B	Losing	3	3
2	1	C	Losing	3	3
2	3	B	Losing	3	3
2	3	C	Losing	3	3
2	4	B	Losing	9	9
2	4	C	Losing	3	3
3	1	F	Losing	3	3
3	2	F	Losing	1	1
3	4	D	Losing	2	2
3	4	F	Losing	3	3
4	3	H	Losing	3	3

Prohibited Stage Changes

		To Stage			
		1	2	3	4
From Stage	1		7	9	7
	2	9		10	16
	3	9	7		10
	4	7	7	9	

Give-Way Link Input Data

Junction: A6 Preston Lancaster Road - Hazelrigg Lane

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/2 (A6 Preston Lancaster Road (N))	8/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00
2/2 (Hazelrigg Lane)	5/1 (Right)	1439	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
7/2 (Potential Access to SG1)	4/1 (Right)	1439	0	2/1	1.09	All	2.00	-	0.50	2	2.00
				2/2	1.09	To 8/1 (Ahead)					

Full Input Data And Results

Lane Input Data

Junction: A6 Preston Lancaster Road - Hazelrigg Lane

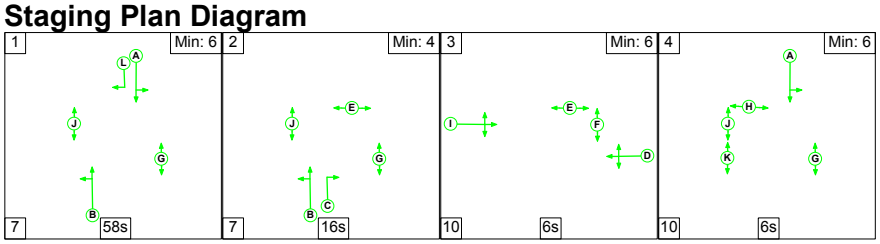
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A6 Preston Lancaster Road (N))	U	A	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 4 Ahead	Inf
											Arm 6 Left	15.91
1/2 (A6 Preston Lancaster Road (N))	O	L	2	3	14.0	Geom	-	3.10	0.00	Y	Arm 8 Right	Inf
2/1 (Hazelrigg Lane)	U	D	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 4 Left	16.00
2/2 (Hazelrigg Lane)	O	D	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	12.00
											Arm 8 Ahead	Inf
3/1 (A6 Preston Lancaster Road (S))	U	B	2	3	60.0	Geom	-	3.02	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	Inf
3/2 (A6 Preston Lancaster Road (S))	U	C	2	3	11.0	Geom	-	3.00	0.00	Y	Arm 6 Right	11.75
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Potential Access to SG1)	U	I	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Left	20.00
											Arm 6 Ahead	Inf
7/2 (Potential Access to SG1)	O	I	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Right	12.00
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2023 AM Peak DS (LCC TA) '	07:30	08:30	01:00	

Scenario 1: '2023 AM Peak DS Base' (FG1: '2023 AM Peak DS (LCC TA) ', Plan 1: 'Network Control Plan 1')

Staging Plan Diagram

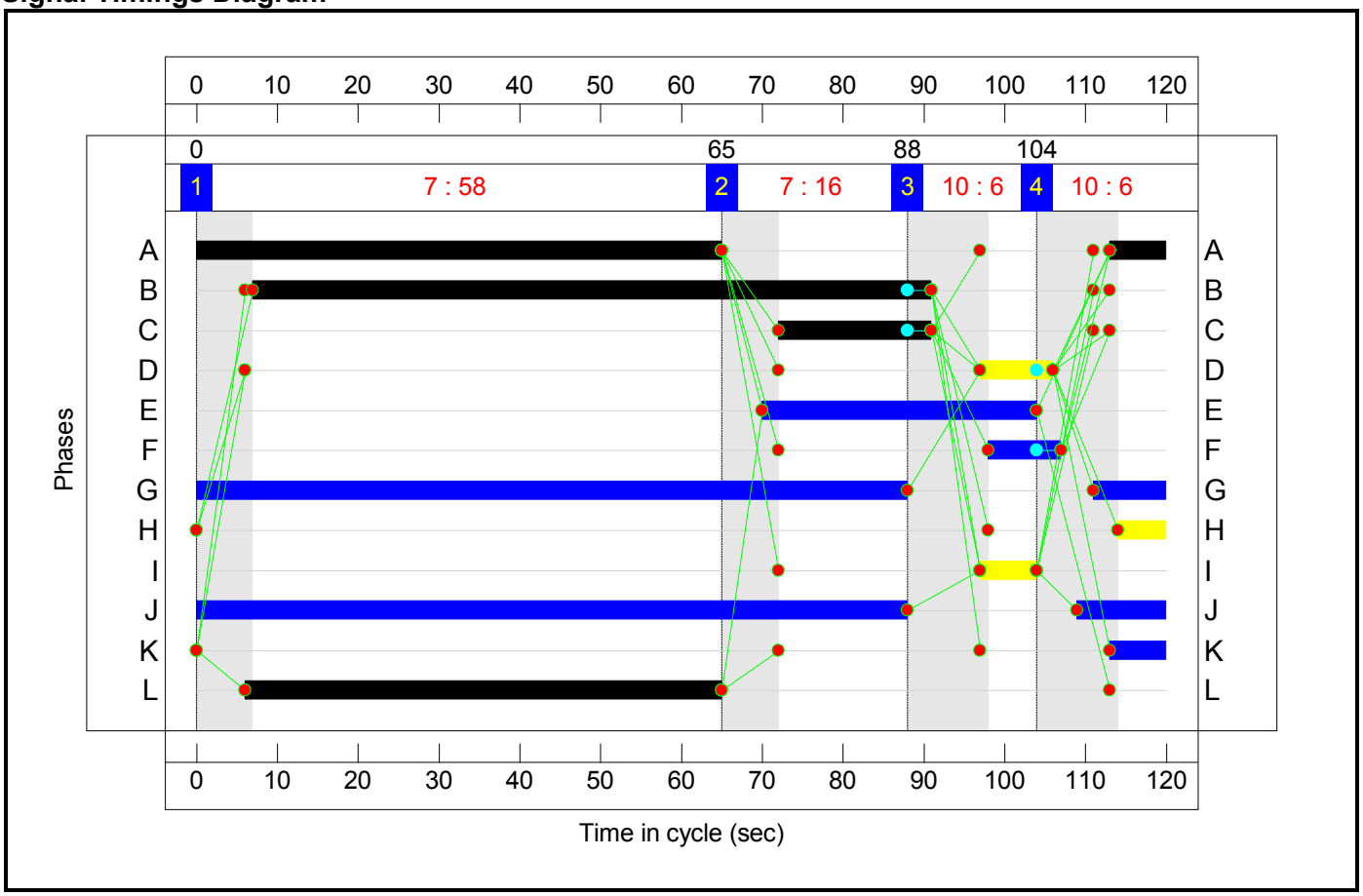


Full Input Data And Results

Stage Timings

Stage	1	2	3	4
Duration	58	16	6	6
Change Point	0	65	88	104

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.5%**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.5%**
1/1+1/2	A6 Preston Lancaster Road (N) Ahead Left Right	U+O	N/A	N/A	A L		1	72:59	-	739	1916:1925	1166+5	63.1 : 63.1%
2/2+2/1	Hazelrigg Lane Left Right Ahead	O+U	N/A	N/A	D		1	9	-	179	1706:1751	142+105	72.5 : 72.5%
3/1+3/2	A6 Preston Lancaster Road (S) Ahead Right Left	U	N/A	N/A	B C		1	84:19	-	1050	1917:1698	1127+282	74.5 : 74.5%
7/1	Potential Access to SG1 Left Ahead	U	N/A	N/A	I		1	7	-	14	1827	122	11.5%
7/2	Potential Access to SG1 Right	O	N/A	N/A	I		1	7	-	13	1702	60	21.7%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**99**	**0**	**18**	**11.1**	**3.8**	**0.1**	**14.9**	**-**	**-**	**-**	**-**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**99**	**0**	**18**	**11.1**	**3.8**	**0.1**	**14.9**	**-**	**-**	**-**	**-**
1/1+1/2	739	739	3	0	0	3.1	0.9	0.0	3.9	19.2	15.5	0.9	16.4
2/2+2/1	179	179	83	0	18	2.6	1.3	0.0	4.0	79.6	3.3	1.3	4.6
3/1+3/2	1050	1050	-	-	-	4.9	1.4	-	6.4	21.9	16.8	1.4	18.3
7/1	14	14	-	-	-	0.2	0.1	-	0.3	69.4	0.4	0.1	0.5
7/2	13	13	13	0	0	0.2	0.1	0.0	0.3	95.7	0.4	0.1	0.5

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	20.8	Total Delay for Signalled Lanes (pcuHr):	14.91	Cycle Time (s):	120
	PRC Over All Lanes (%):	20.8	Total Delay Over All Lanes(pcuHr):	14.91		

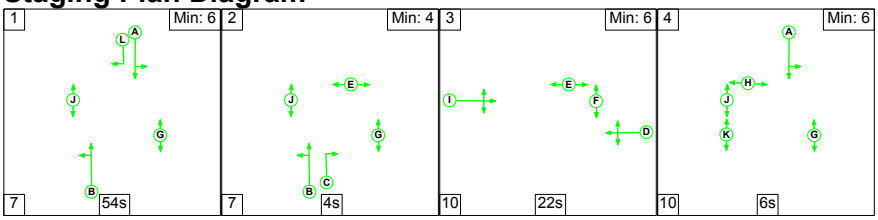
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
2: '2023 PM Peak DS (LCC TA)'	16:30	17:30	01:00	

Scenario 2: '2023 PM Peak DS Base' (FG2: '2023 PM Peak DS (LCC TA)', Plan 1: 'Network Control Plan 1')

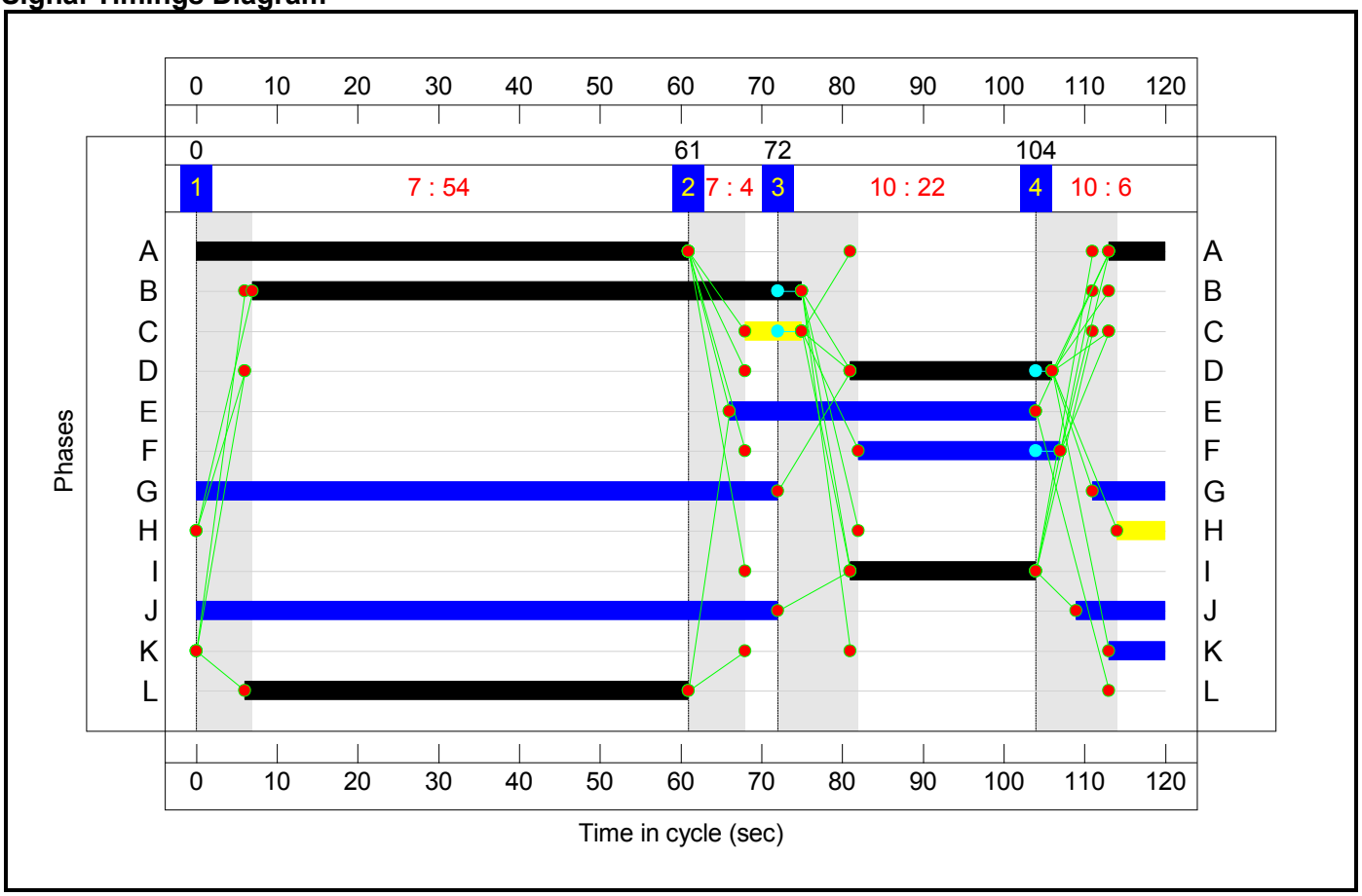
Staging Plan Diagram



Stage Timings

Stage	1	2	3	4
Duration	54	4	22	6
Change Point	0	61	72	104

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.3%**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.3%**
1/1+1/2	A6 Preston Lancaster Road (N) Ahead Left Right	U+O	N/A	N/A	A L		1	68:55	-	828	1897:1925	1078+9	76.1 : 76.1%
2/2+2/1	Hazelrigg Lane Left Right Ahead	O+U	N/A	N/A	D		1	25	-	355	1710:1751	166+299	76.3 : 76.3%
3/1+3/2	A6 Preston Lancaster Road (S) Ahead Right Left	U	N/A	N/A	B C		1	68:7	-	797	1917:1698	1014+108	71.0 : 71.0%
7/1	Potential Access to SG1 Left Ahead	U	N/A	N/A	I		1	23	-	6	1824	365	1.6%
7/2	Potential Access to SG1 Right	O	N/A	N/A	I		1	23	-	6	1702	124	4.9%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**133**	**0**	**2**	**13.4**	**4.4**	**0.1**	**17.9**	**-**	**-**	**-**	**-**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**133**	**0**	**2**	**13.4**	**4.4**	**0.1**	**17.9**	**-**	**-**	**-**	**-**
1/1+1/2	828	828	7	0	0	4.4	1.6	0.0	6.0	26.3	20.6	1.6	22.2
2/2+2/1	355	355	120	0	2	4.2	1.6	0.0	5.7	58.2	8.1	1.6	9.6
3/1+3/2	797	797	-	-	-	4.7	1.2	-	5.9	26.7	17.4	1.2	18.6
7/1	6	6	-	-	-	0.1	0.0	-	0.1	43.8	0.2	0.0	0.2
7/2	6	6	6	0	0	0.1	0.0	0.0	0.1	64.5	0.2	0.0	0.2

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	17.9	Total Delay for Signalled Lanes (pcuHr):	17.86	Cycle Time (s):	120	
	PRC Over All Lanes (%):	17.9	Total Delay Over All Lanes(pcuHr):	17.86			

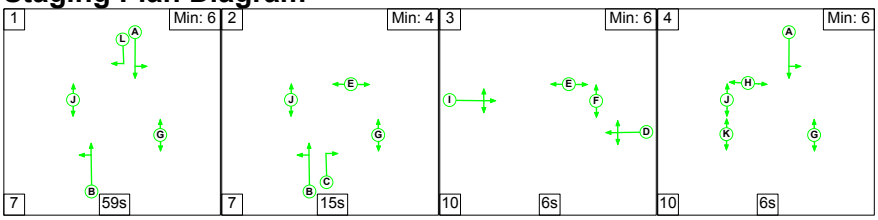
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
3: '2023 AM Peak DS (LCC TA) with Development'	07:30	08:30	01:00	

Scenario 3: '2023 AM Peak DS with Development' (FG3: '2023 AM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

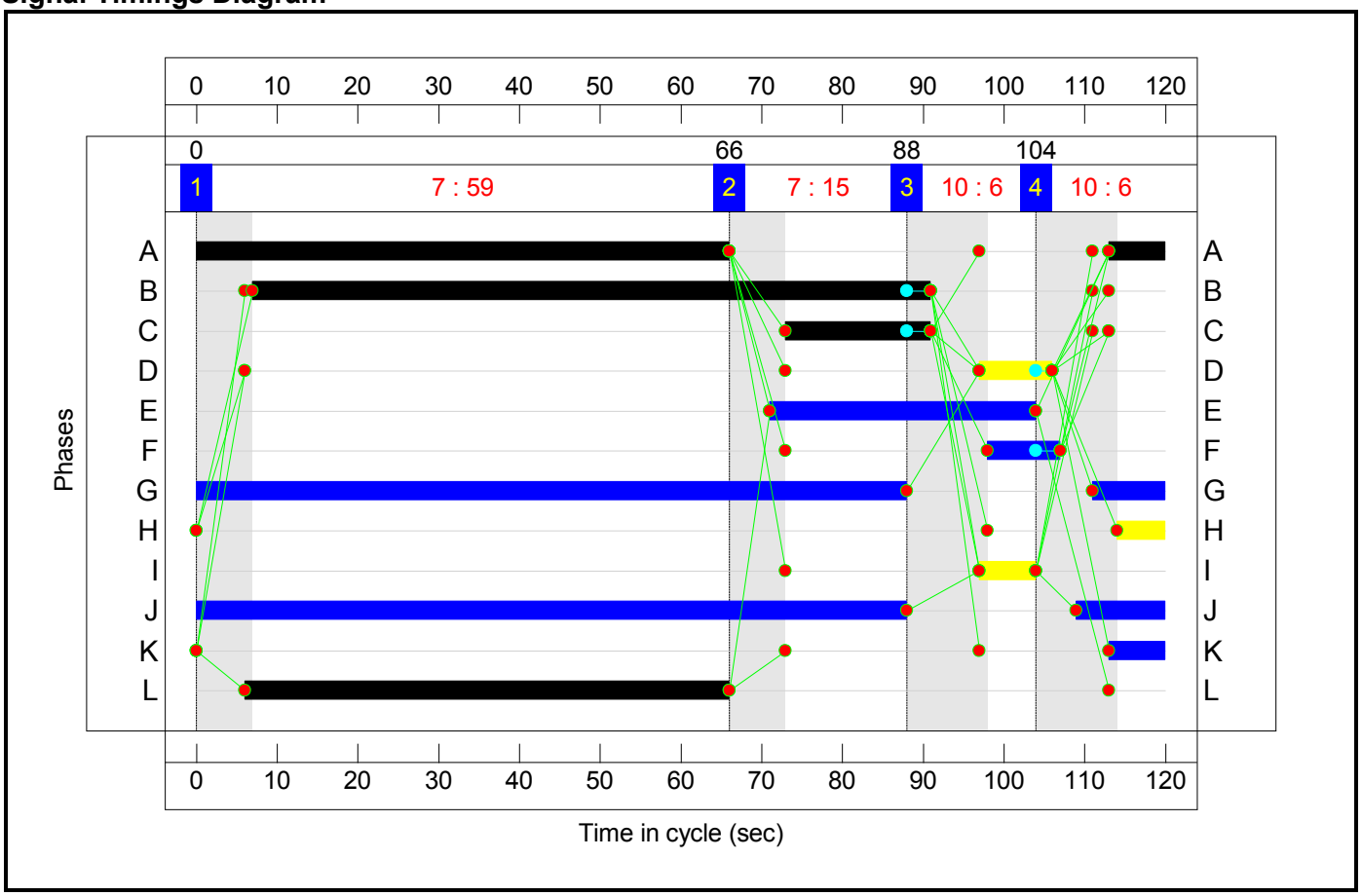
Staging Plan Diagram



Stage Timings

Stage	1	2	3	4
Duration	59	15	6	6
Change Point	0	66	88	104

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.9%**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.9%**
1/1+1/2	A6 Preston Lancaster Road (N) Ahead Left Right	U+O	N/A	N/A	A L		1	73:60	-	782	1917:1925	1182+5	65.9 : 65.9%
2/2+2/1	Hazelrigg Lane Left Right Ahead	O+U	N/A	N/A	D		1	9	-	179	1706:1751	142+105	72.5 : 72.5%
3/1+3/2	A6 Preston Lancaster Road (S) Ahead Right Left	U	N/A	N/A	B C		1	84:18	-	1108	1917:1698	1139+266	78.9 : 78.9%
7/1	Potential Access to SG1 Left Ahead	U	N/A	N/A	I		1	7	-	14	1827	122	11.5%
7/2	Potential Access to SG1 Right	O	N/A	N/A	I		1	7	-	13	1702	60	21.7%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**99**	**0**	**18**	**11.6**	**4.3**	**0.1**	**15.9**	**-**	**-**	**-**	**-**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**99**	**0**	**18**	**11.6**	**4.3**	**0.1**	**15.9**	**-**	**-**	**-**	**-**
1/1+1/2	782	782	3	0	0	3.2	1.0	0.0	4.2	19.4	16.8	1.0	17.8
2/2+2/1	179	179	83	0	18	2.6	1.3	0.0	4.0	79.6	3.3	1.3	4.6
3/1+3/2	1108	1108	-	-	-	5.3	1.8	-	7.2	23.3	19.9	1.8	21.7
7/1	14	14	-	-	-	0.2	0.1	-	0.3	69.4	0.4	0.1	0.5
7/2	13	13	13	0	0	0.2	0.1	0.0	0.3	95.7	0.4	0.1	0.5

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	14.1	Total Delay for Signalled Lanes (pcuHr):	15.95	Cycle Time (s):	120	
	PRC Over All Lanes (%):	14.1	Total Delay Over All Lanes(pcuHr):	15.95			

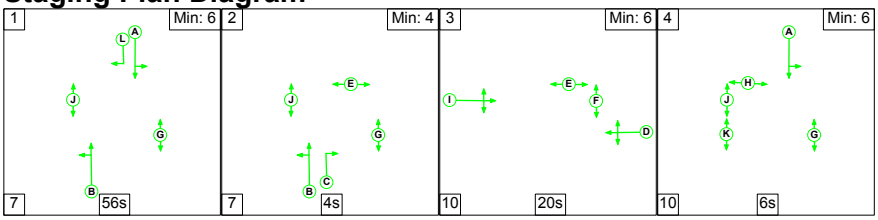
Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
4: '2023 PM Peak DS (LCC TA) with Development'	16:30	17:30	01:00	

Scenario 4: '2023 PM Peak DS with Development' (FG4: '2023 PM Peak DS (LCC TA) with Development', Plan 1: 'Network Control Plan 1')

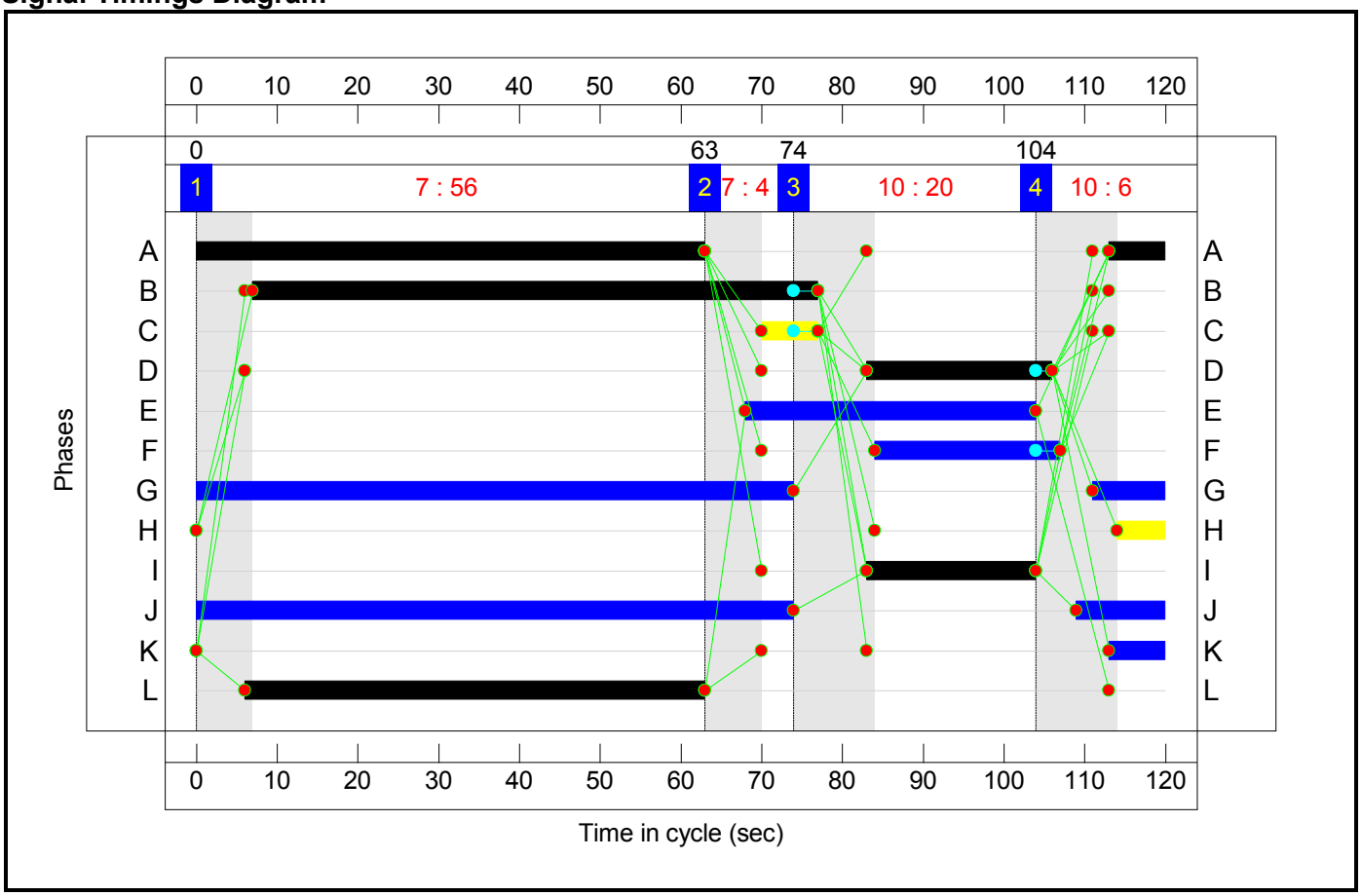
Staging Plan Diagram



Stage Timings

Stage	1	2	3	4
Duration	56	4	20	6
Change Point	0	63	74	104

Signal Timings Diagram



Full Input Data And Results

Link Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.4%**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.4%**
1/1+1/2	A6 Preston Lancaster Road (N) Ahead Left Right	U+O	N/A	N/A	A L		1	70:57	-	911	1900:1925	1111+9	81.3 : 81.3%
2/2+2/1	Hazelrigg Lane Left Right Ahead	O+U	N/A	N/A	D		1	23	-	355	1710:1751	156+280	81.4 : 81.4%
3/1+3/2	A6 Preston Lancaster Road (S) Ahead Right Left	U	N/A	N/A	B C		1	70:7	-	867	1917:1698	1050+102	75.3 : 75.3%
7/1	Potential Access to SG1 Left Ahead	U	N/A	N/A	I		1	21	-	6	1824	334	1.8%
7/2	Potential Access to SG1 Right	O	N/A	N/A	I		1	21	-	6	1702	100	6.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**133**	**0**	**2**	**14.3**	**5.8**	**0.1**	**20.2**	**-**	**-**	**-**	**-**
A6 Preston Lancaster Road - Hazelrigg Lane	**-**	**-**	**133**	**0**	**2**	**14.3**	**5.8**	**0.1**	**20.2**	**-**	**-**	**-**	**-**
1/1+1/2	911	911	7	0	0	4.9	2.1	0.0	7.1	27.9	23.7	2.1	25.8
2/2+2/1	355	355	120	0	2	4.3	2.1	0.0	6.4	65.3	8.3	2.1	10.3
3/1+3/2	867	867	-	-	-	5.0	1.5	-	6.5	26.9	19.6	1.5	21.1
7/1	6	6	-	-	-	0.1	0.0	-	0.1	45.9	0.2	0.0	0.2
7/2	6	6	6	0	0	0.1	0.0	0.0	0.1	70.3	0.2	0.0	0.2

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	10.6	Total Delay for Signalled Lanes (pcuHr):	20.17	Cycle Time (s):	120	
	PRC Over All Lanes (%):	10.6	Total Delay Over All Lanes(pcuHr):	20.17			

ELLEL GARDENS COMMUNITY VILLAGE

LEVEL 3 PRE-APPLICATION PRESENTATION TO MEMBERS

NOVEMBER 2018

ELLEL GARDENS

STRIDE TREGLOWN

GOVT COMMITMENT TO 'SIGNIFICANTLY BOOST THE SUPPLY OF HOUSING' EQUATES TO 300,000 NEW HOMES PER YEAR.

LANCASTER'S DPD IDENTIFIES AN OBJECTIVELY ASSESSED NEED OF 650-700 HOMES PER YEAR.

THE DPD PROPOSES TO DELIVER 455 HOMES PER YEAR (60% OF THE ACTUAL 'NEED').

THE DPD SEEKS TO RETAIN AND CREATE A TOTAL OF 54,000 (FTE) JOBS BY 2031.

DPD SUBJECT TO EXAMINATION AND HEARINGS BEFORE ADOPTION. MAY BE SUBJECT TO FURTHER CHANGE.

ELLEL GARDENS WAS CONCEIVED AS AN ADDITIONAL STRATEGIC SITE TO BE PROMOTED IN THE DPD. THIS REMAINS OUR REPRESENTATION

THE DEVELOPMENT SITS ALONGSIDE BAILRIGG GARDEN VILLAGE/LANCASTER SOUTH AND HELPS DRIVE ECONOMIC GROWTH.

THE PREVIOUS LACK OF A 5 YEAR SUPPLY MEANT WE HAVE WORKED TOWARDS MAKING AN OUTLINE PLANNING APPLICATION.

NEED TO TAKE STOCK IN LIGHT OF THE DELAYS TO DPD AND CHANGES TO HOUSING PROJECTIONS.

THE SITE IS DELIVERABLE AND UNDER ONE OWNERSHIP. IT WILL DELIVER A SUSTAINABLE, DISTINCTIVE, HEALTHY AND COHESIVE COMMUNITY.

ELLEL GARDENS

STRIDE TREGLOWN

FOR TODAY:

OUR VISION FOR ELLEL GARDENS

OUR WORK AND CONSULTATION TO DATE

SITE ASSESSMENT

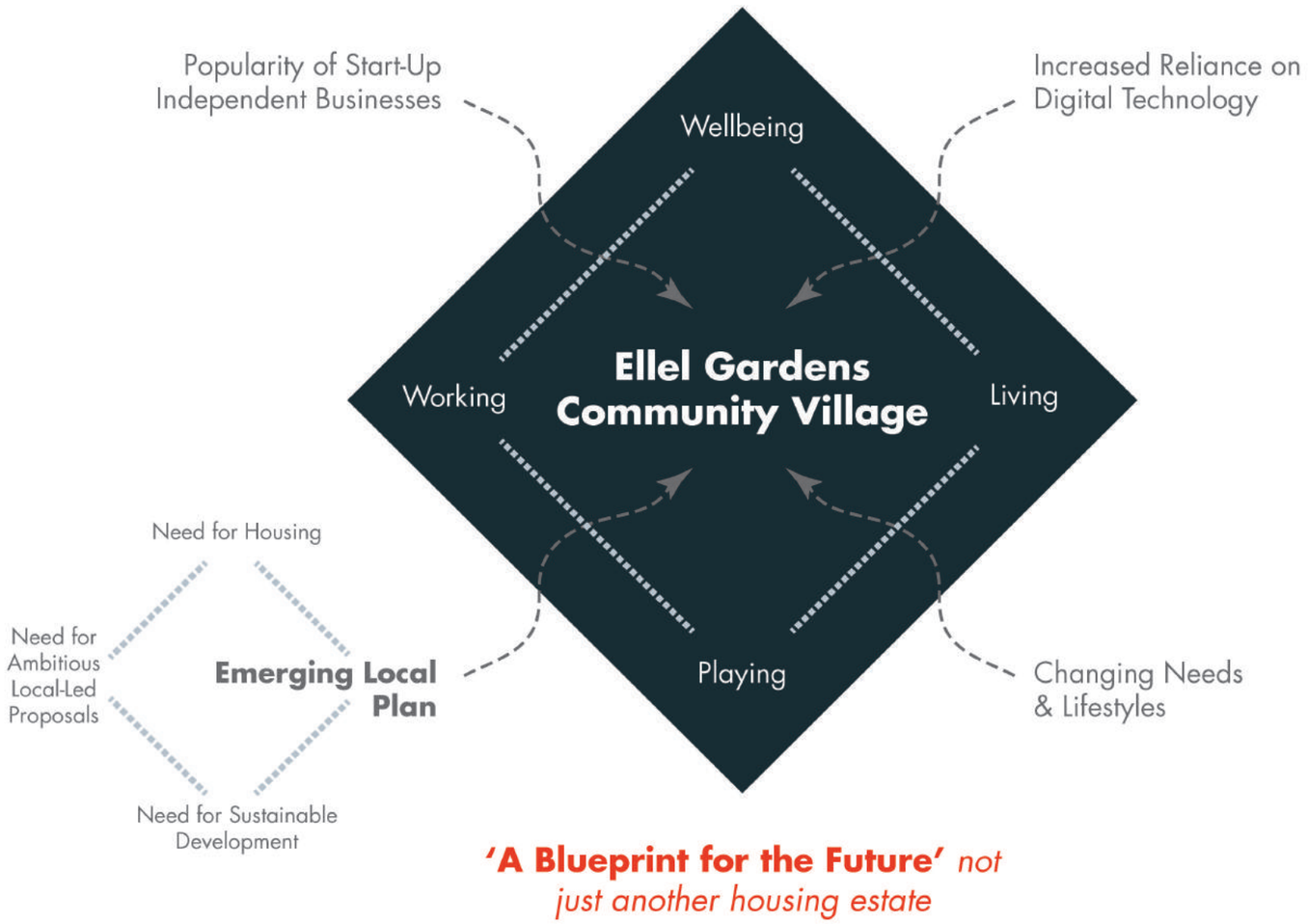
THE EMERGING PROPOSAL

DELIVERABILITY AND PHASING

ELLEL GARDENS

STRIDE TREGLOWN

Ellel Gardens Is.... Founded on Garden City Design Principles



'A Blueprint for the Future' *not just another housing estate*

'An indivisible & interlocking framework for delivery of successful communities'

Strong Vision, Leadership & Community Engagement

- Engagement with Local Plan Process, Officers & Key Stakeholders
- Engagement with Parish Council and Cloud
- Galgate Action Group
- Our Website & Social Media Platforms

Land Value Capture for Community Benefit

- Owner/Developer already have the land and can take a different view of its uplift in value, enabling a greater pot for community benefits

Community Land Ownership & Long-term Stewardship of assets

- Residents will have a freehold share in the Community Land

Mixed-tenure homes and housing types that are affordable for ordinary people


Sustainable Transport, Holland

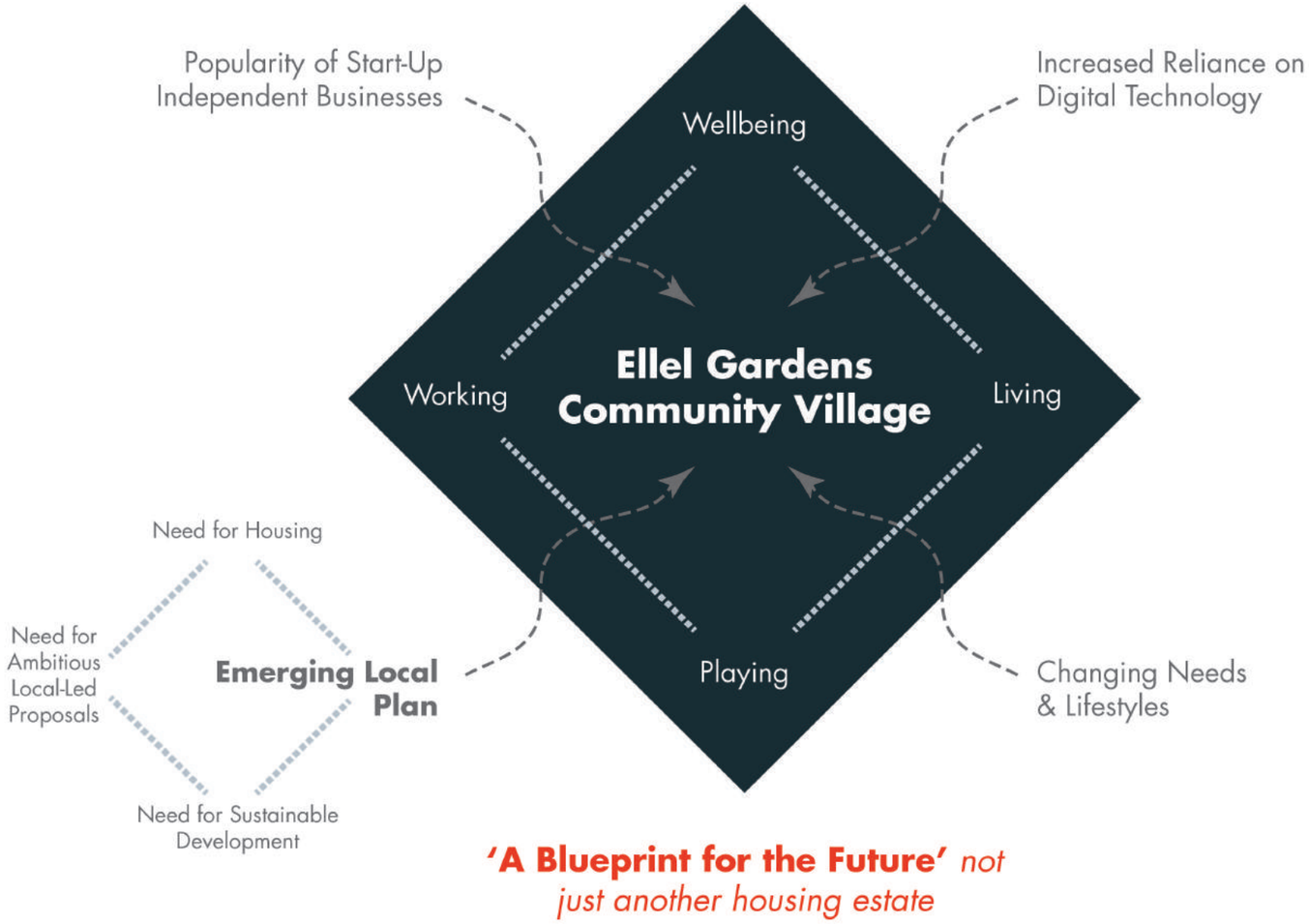

Village of Tomorrow, Effekt Architects


Canalside Cottage, Absolute Architecture


Lancaster Canal Junction Bridge


Fresh Artisan Produce

Ellel Gardens Is.... Founded on Garden City Design Principles



'A Blueprint for the Future' *not just another housing estate*

Beautifully and imaginatively designed homes with gardens in healthy communities

A strong local jobs offer in the Garden City itself and within easy commuting distance

Opportunities for residents to grow their own food, including allotments

Generous green space, including:
Surrounding countryside belt to prevent sprawl
Well connected and biodiversity-rich public parks
High quality gardens; tree-lined streets; open spaces

Strong cultural, recreational and shopping facilities in walk-able neighbourhoods

Integrated and accessible transport systems


Sustainable Transport, Holland


Village of Tomorrow, Effekt Architects


Canalside Cottage, Absolute Architecture


Lancaster Canal Junction Bridge


Fresh Artisan Produce

ELLEL GARDENS

Bournville Village Trust
Creating Flourishing Communities since 1900

Ellel Gardens Is.... In Committed, Safe Hands

WE ARE COMMITTED TO LONG TERM STEWARDSHIP OF ELLEL GARDENS IN PARTNERSHIP WITH BOURNVILLE VILLAGE TRUST.

OUR STEWARDSHIP MODEL:

- High quality design and master planning
- Excellent environmental standards and high quality management of public open space.
- Management of building alterations to protect the future integrity of the development
- Management of community facilities
- Facilitates resident involvement in activities which
  - *Achieve social cohesion*
  - *Create social capital*
  - *Reduce anti-social behaviour*
  - *Actively Promote Residents' Well-being*
- Commitment to offer affordable homes for rent and low cost home ownership
- Pepper-potted across the community to ensure a mixed neighbourhood which reflects our values


Pedestrian Routes

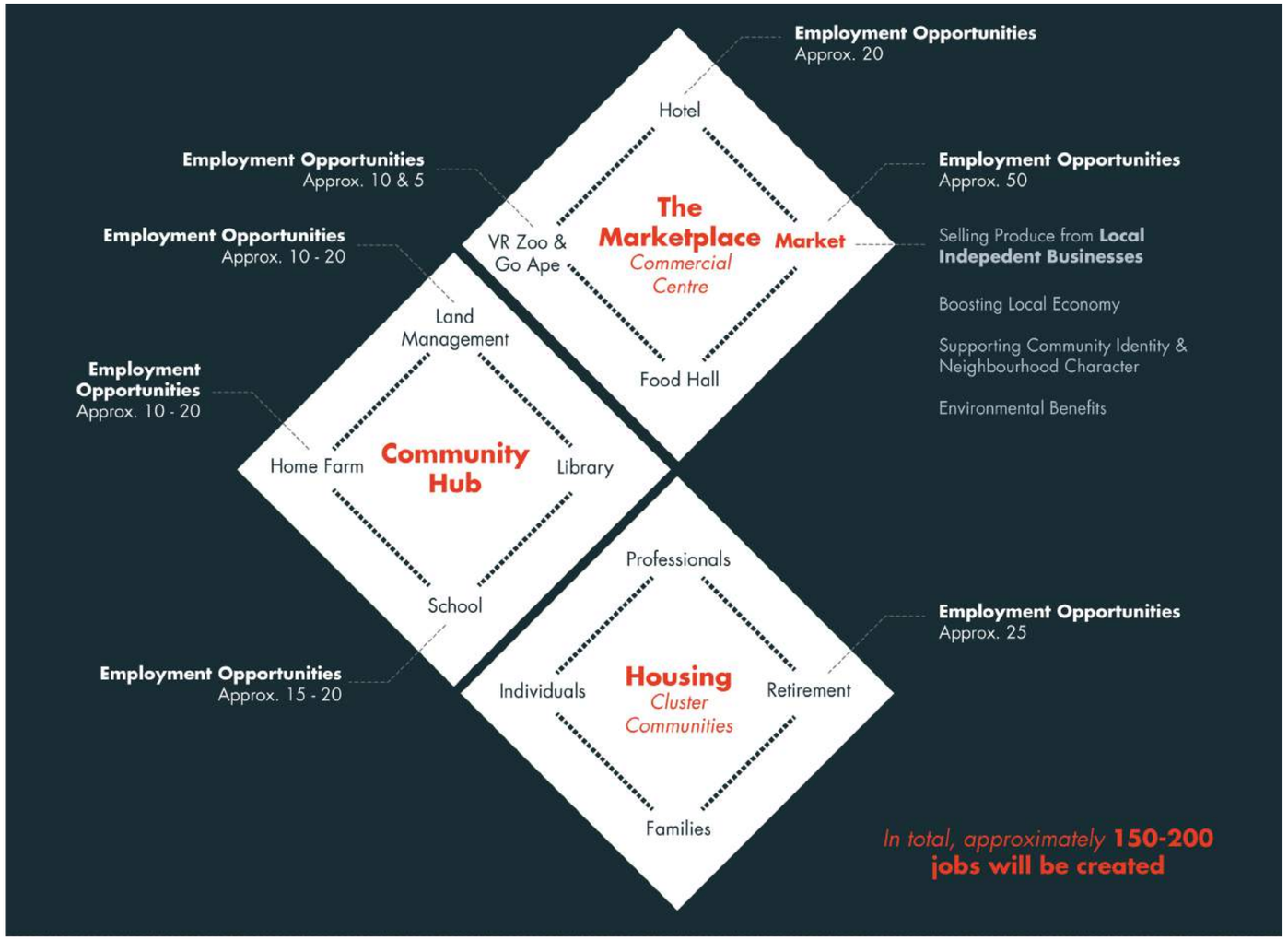
Cycle Paths


Outdoor Activities


Social Activities


Shared Allotments

Ellel Gardens Is.... A Force for Enterprise which Supports the Local Economy



WE WILL BE 'MASTER DEVELOPER'

- Long term financial commitment to the project
- Geared up for long-term return on capital investment in major infrastructure
- Create small oven-ready sites for bespoke developer partners

WE WILL BE LOCAL LANDLORD

- Our commercial operations will create jobs
- We will invest in local businesses start-ups
- We will create Live-work facilities which respond to our digital future
- We will act as Local Utility Company

WE WILL DELIVER COMMUNITY FACILITIES

- School
- Community Library
- Community Transport Services
- Market Garden


Atkinson's Coffee Roasters

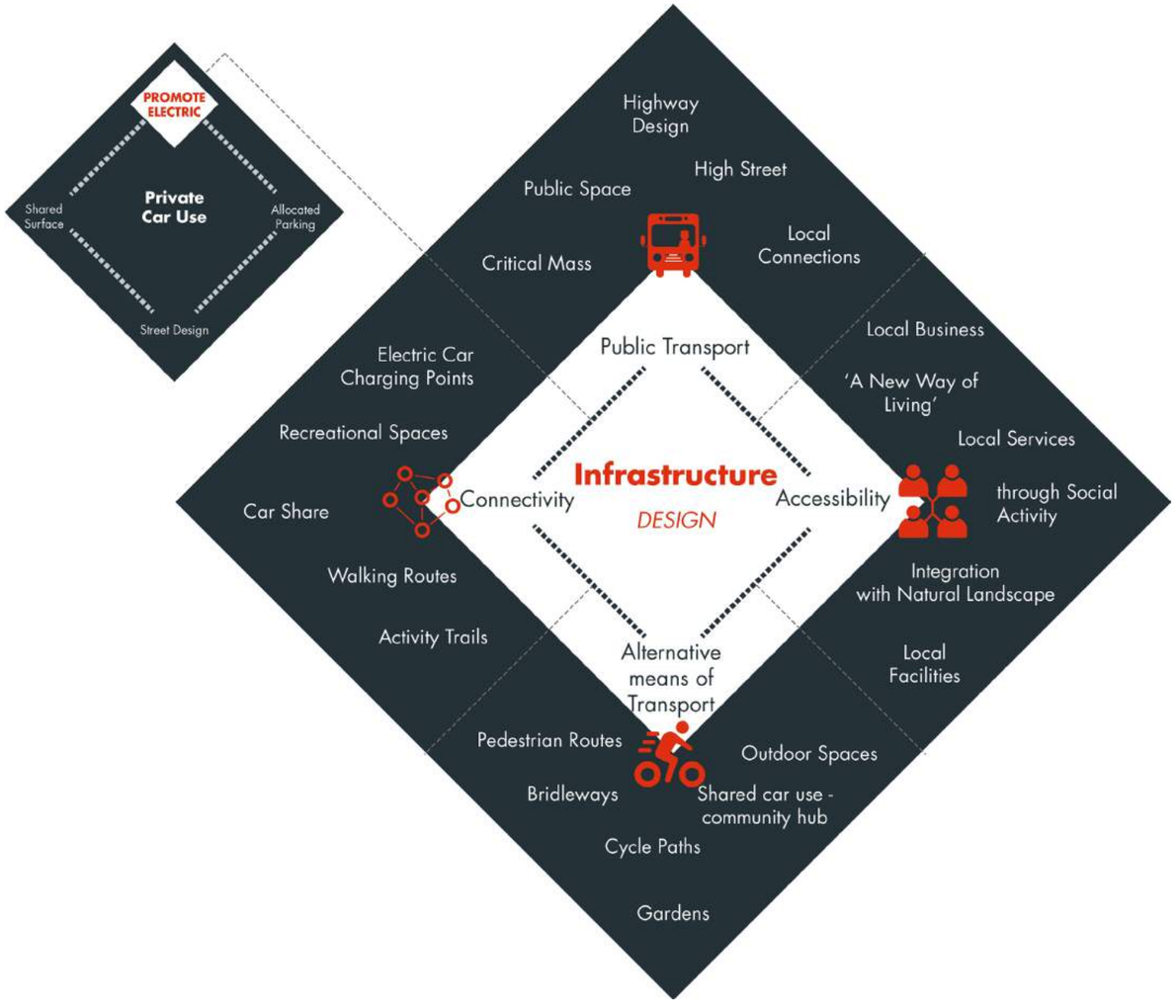

Atkinson's Coffee Roasters

Bill's Burgers


More? Artisan Bakery


More? Artisan Bakery

Ellel Gardens Is....Designed around People, rather than Cars



Critical Mass of development required

To support Local Services & Facilities

A Walk-able Neighbourhood

- Home, Work and Shopping in close proximity
- Existing pathways to be extended and enhanced
- Integration into the wider area
- Secure links to network of green spaces

Great Public Open Spaces

- At the heart of the village. Accessible to all.
- Providing a safe and healthy environment
- Encouraging walking and cycling
- A Better Quality of Life

New Public Transport Links to be Created

- Less reliance on car use
- Increases physical activity
- Promotes well being
- Reduces pollution
- Reduces accident rates

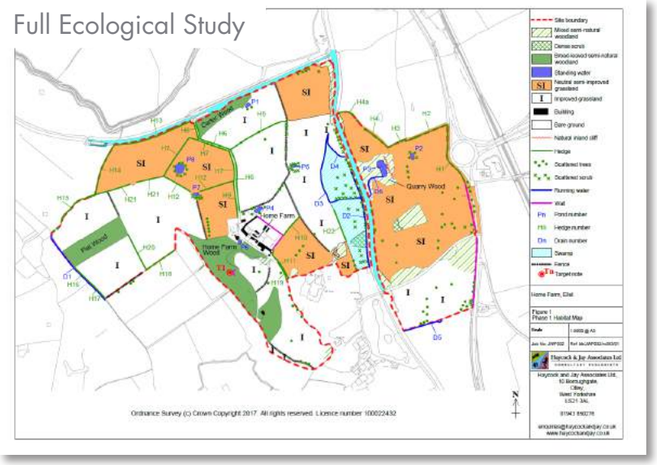




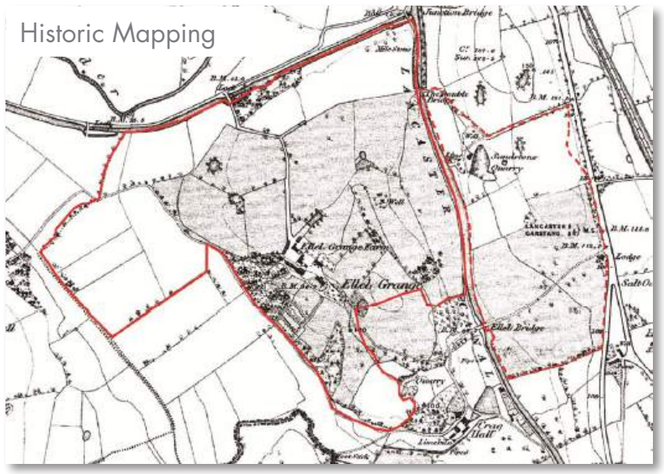

Our Work & Consultation So Far

Early Reps Submission

Full Ecological Study



Historic Mapping



Full Tree Survey

						Scaled Tree Diagram (m)	Notes	Recommendations: Priority	Recommendations: Inspect Tree (yrs)	Physiological Condition / Structural Condition	Life Expectancy (yrs) / Retention Category
T109	Over-Mature Ash *Fraxinus excelsior*	T6	2	1310	5		1: Twin stemmed specimen at 2m. 2: Large branch failure at 2m. 3: Previous branch failures evident and deadwood throughout crown. 4: Decay fungus observed at base. 5: Consider remedial works if land use changes.	No action required.	n/a / 5	Fair / Fair	40+ / B
G110	Mature Hawthorn *Crataegus monogyna*	av 5	av 1	av 250	av 4 4 4 each		1: Lapsed hedgerow. 2: Low target area. 3: Acceptable condition at present. 4: Consider remedial works if land use changes.	No action required.	n/a / 0	Good / Fair	40+ / C
G111	Semi-Mature Aspen *Populus tremula*	av 10	av 2	av 350	av 5.5 5.5 5.5 each		1: One specimen with branch failure at 2.5m. 2: Minor deadwood within crowns. 3: Bark damage at base on one specimen within group. 4: Consider remedial works if land use changes.	No action required.	n/a / 3	Good / Fair	40+ / C
G112	Mature Sessile Oak *Quercus petraea*	av 18	av 2	av 600	av 6 4 4 each		1: Deadwood throughout crowns of group. 2: Low target area currently. 3: Deadwood if current land use changes.	No action required.	n/a / 5	Good / Good	40+ / A
T113	Mature Sessile Oak *Quercus petraea*	24	2	1150	10 10 10		1: Deadwood throughout crown. 2: Previous branch failures evident. 3: Low target area. 4: Consider remedial works if land use changes.	No action required.	n/a / 3	Good / Good	40+ / A
G114	Semi-Mature Mixed Species	av 10	av 2	av 400	av 4 4 4 each		1: Mixed group forming linear boundary consisting of oak, wild cherry and sycamore. 2: No significant defects observed.	No action required.	n/a / 3	Good / Good	40+ / B

Local Plan Reps Submissions

LCC Pre-Application Advice Received

- Forms the basis of emerging proposals

Statutory Consultees:

- Canal & River Trust
- Lancashire Highways
- HSE
- Essar (Pipeline Operators)

EIA Scoping

- Ecological Assessment
- Transport Assessment
- Heritage Assessment
- Archaeological Assessment
- Arboricultural Assessment
- Landscape Visual Impact Assessment
- Energy Statement
- Hydrology and Flood Risk Reports
- Noise Level Survey/Acoustics Report

FOR TODAY:

OUR VISION FOR ELLEL GARDENS

OUR WORK AND CONSULTATION TO DATE

SITE ASSESSMENT

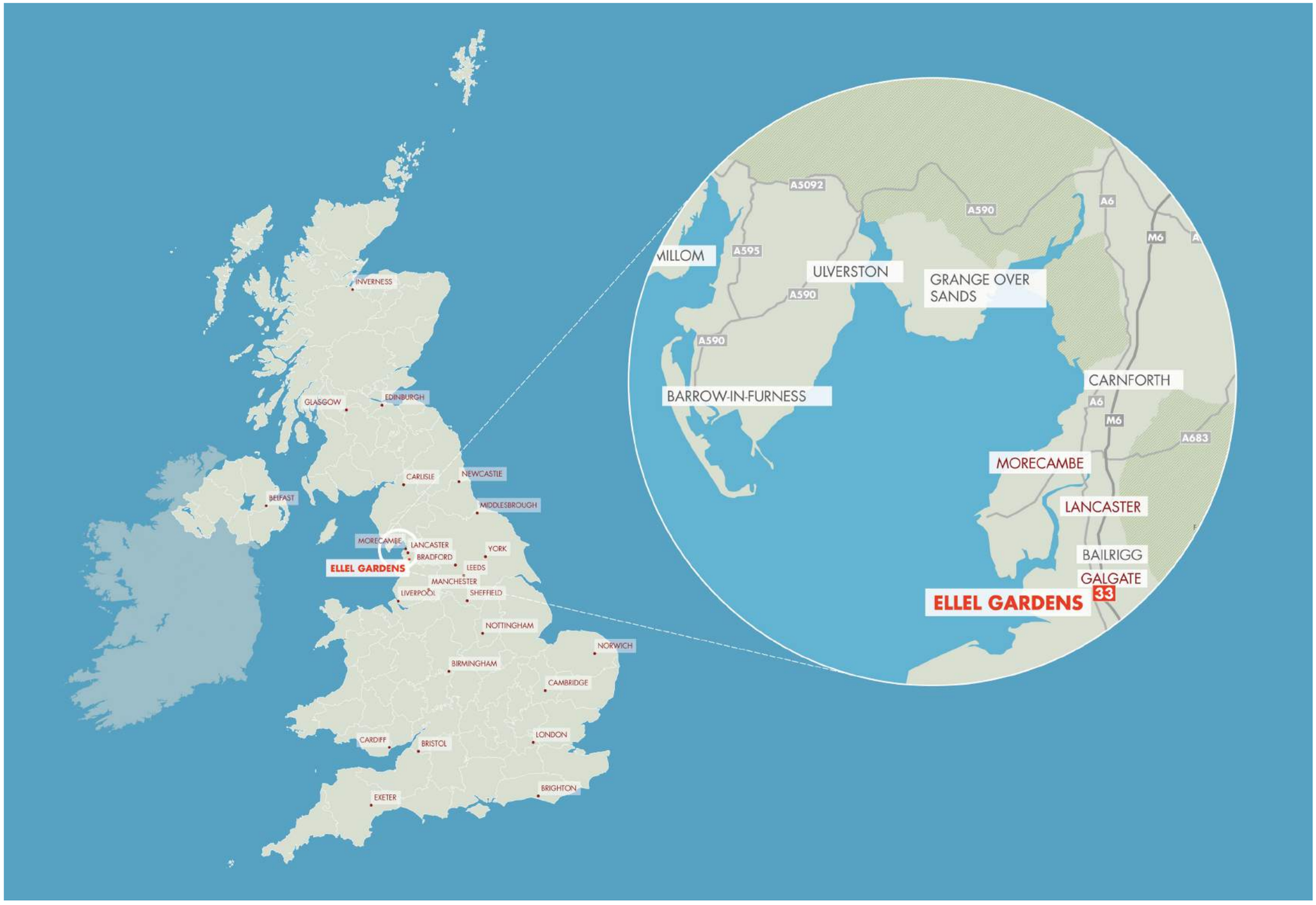
THE EMERGING PROPOSAL

DELIVERABILITY AND PHASING

ELLEL
GARDENS

ELLEL GARDENS

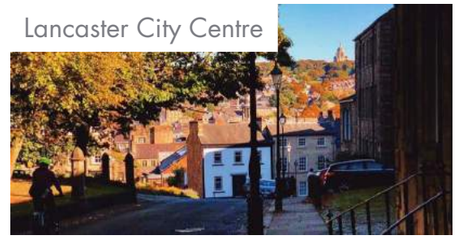
National Connectivity



Lancaster Rooftops

Williamson Park, Lancaster

Lancaster City Centre



Lancaster Castle

River Lune at Lancaster

ELLEL GARDENS

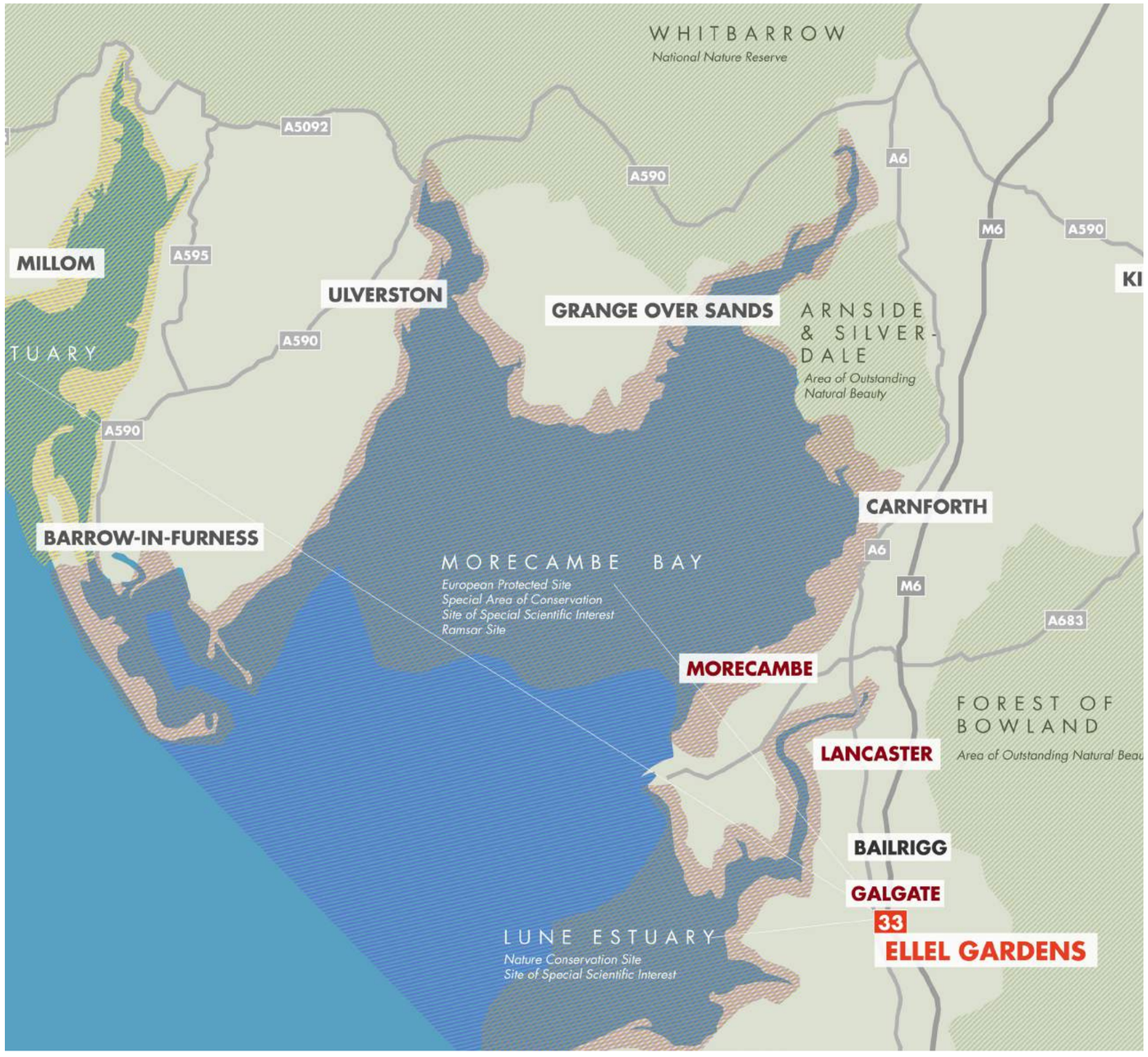
Proximity to Recreational Sites & AONB

Forest of Bowland

Morecambe Bay

Arnside & Silverdale

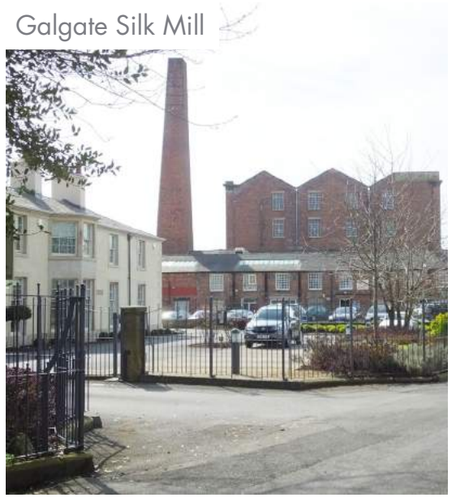
Lune Estuary



Regional Connectivity

Galgate Marina

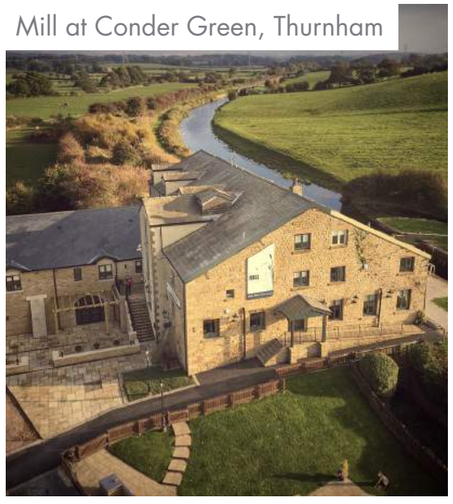
Galgate Silk Mill



Lancaster University

Bailrigg Property

Mill at Conder Green, Thurnham



Lower Thurnham

Glasson Dock Locks

ELLEL GARDENS

Surrounding Vehicular & PRoW Networks

PRoW

Lancaster Canal Towpath

Home Farm Access Road

A6 (Preston Lancaster Road)

Signage on Site

ELLEL GARDENS

Site Orientation

Red Line is Site Boundary

Site approx 150 acres

J33 - A6/Hampson Green

Lancaster Canal & Branch to Glasson Dock

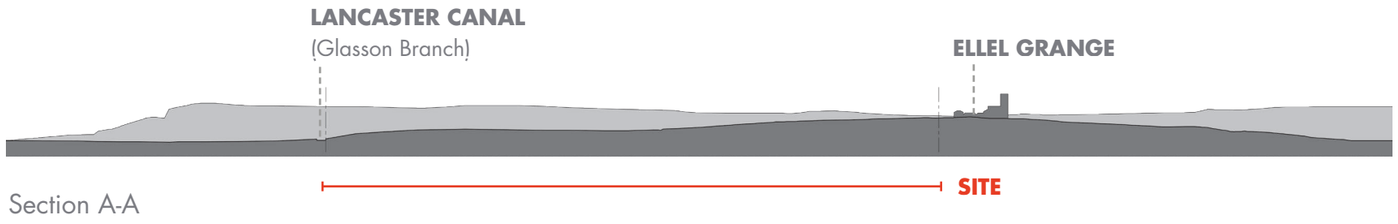
Home Farm Buildings & Walled Garden

Ellel Grange

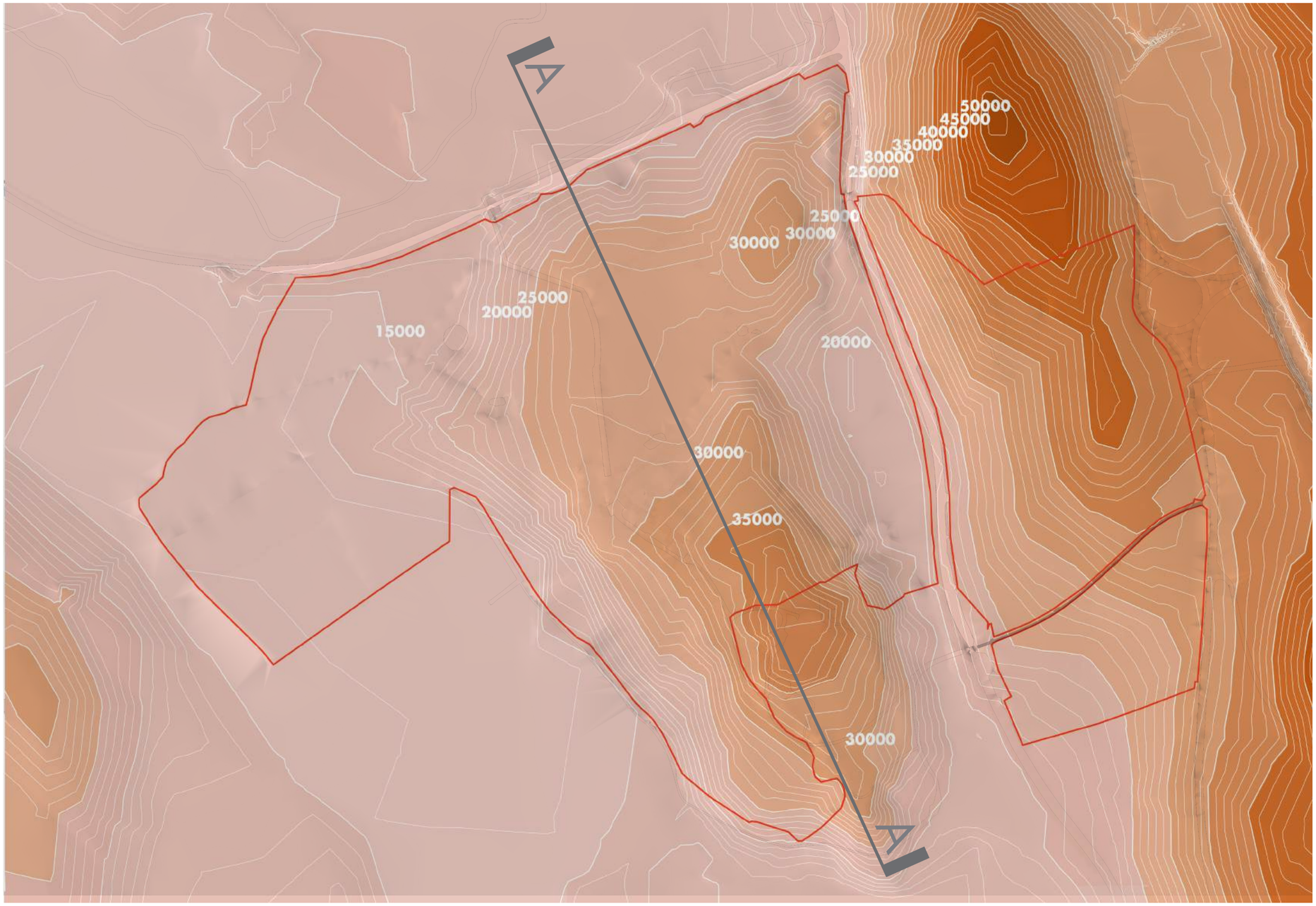
Driveway Access Road

NW Auction Mart Site to North

Topography & Landscape - Low Coastal Drumlins



Section A-A



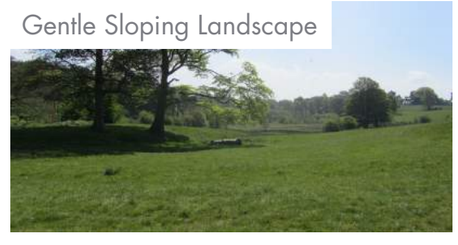
Gentle, rolling countryside

Two raised drumlins with valleys between

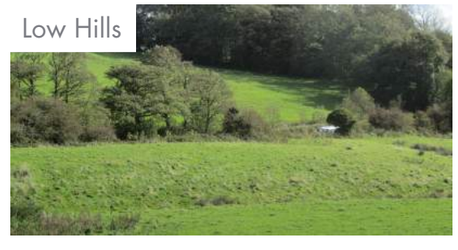
Rivers:
Conder to the north
Cocker to south

Low Coastal Drumlins

Gentle Sloping Landscape



Low Hills



ELLEL GARDENS

Hydrological Networks & Features

Lancaster Canal

Lancaster Canal

River Conder

Canal Locks

Lake at Ellel Grange Wood

Distinct Habitats & Ecological Features

Quarry Wood

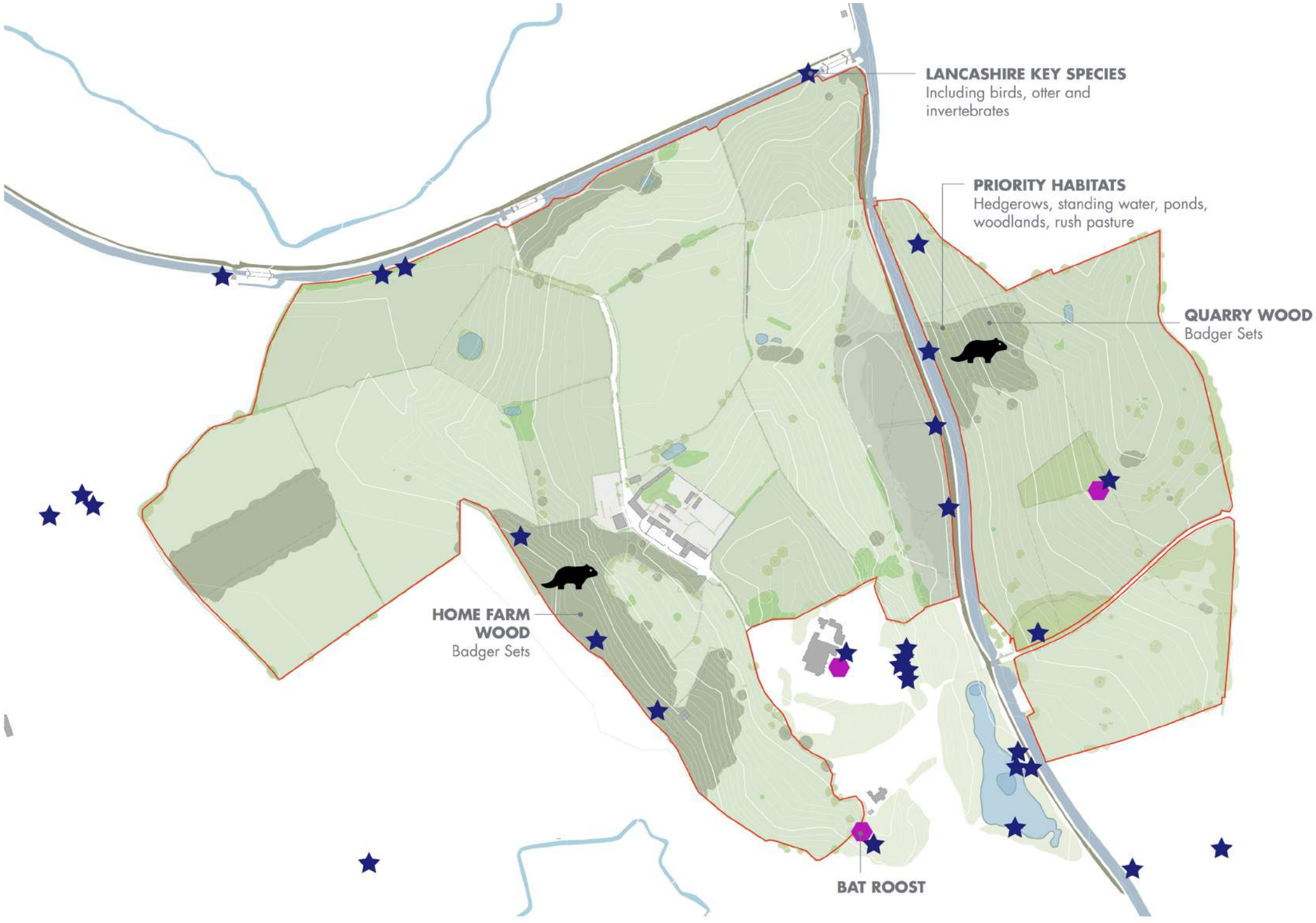
Woodland below Quarry Wood

Mature Trees

Ellel Grange

Scrub & Hedgerows

Presence of Protected & Notable Species



Bat Roosts

Badger Sets

Notable Species - English Bluebell

Notable Species - Brown Hare

Heritage Assets

Ellel Grange Bridge

Mature Trees

Ellel Grange

Home Farm

Junction Bridge

ELLEL GARDENS

Site Connectivity / Movement Networks

PRoW

Canal Towpath

Canal Towpath

Lancaster Canal

Hampson Lane Bus Stop

ELLEL GARDENS

Our Starting Point - Assessment Based Constraints

Ellel Grange

Bat Roosts

Lancaster Canal

Junction Bridge

PRoW

FOR TODAY:

OUR VISION FOR ELLEL GARDENS

OUR WORK AND CONSULTATION TO DATE

SITE ASSESSMENT

THE EMERGING PROPOSAL

DELIVERABILITY AND PHASING

ELLEL GARDENS

ELLEL GARDENS

Enhancing Pedestrian Movement
Pathways & Habitat Corridor

All existing paths & PRoWs retained and improved

New Bridleway link along existing lane

Habitat Corridors

Canal Tow-path Improvements

Lovely Canal Bridges utilised for pedestrian and cycleways

New connections through different landscape features

Board-walk through Lowland Fen

Circular walking routes pass through The Marketplace

ELLEL GARDENS

Primary Vehicular Routes

4th exit off Hampson Green Roundabout

Provides main access into development

Opens up access to NWA site

Follows Line of Ethylene Pipe

Secondary A6 access

Two New Canal Bridges required

ELLEL GARDENS

Secondary Vehicular Routes
Residential Roads

Residential Roads

Extend from primary routes

Provide Access to development clusters

Roads designed with pedestrian, equine and cyclists needs

ELLEL GARDENS

Pockets of Development
Commercial, Community & Residential

Pockets of Development

Cluster Communities respond to site context

Proposed Landscaping

Outdoor recreational spaces weave through the site

Existing landscape features retained and enhanced

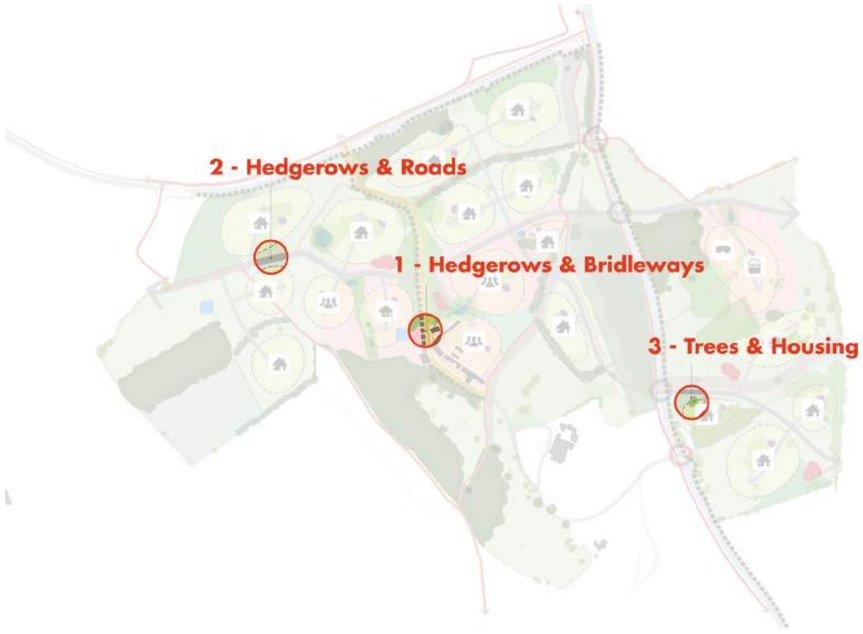
Biodiversity cherished and improved

Follows Guidance for Outdoor Sport & Play
LAP, NEAP & LEAP areas throughout the development

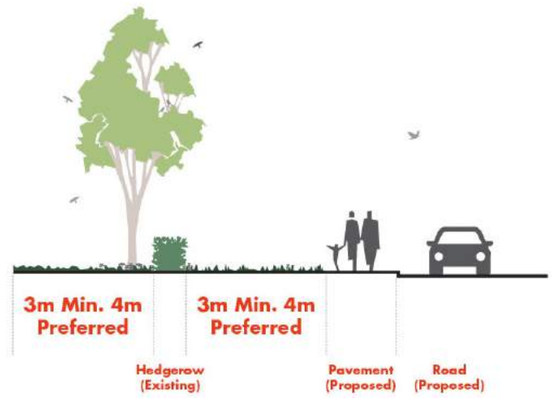
Bridle-Way
Edible Trails
Orchard
Market Garden Allotments

ELLEL GARDENS

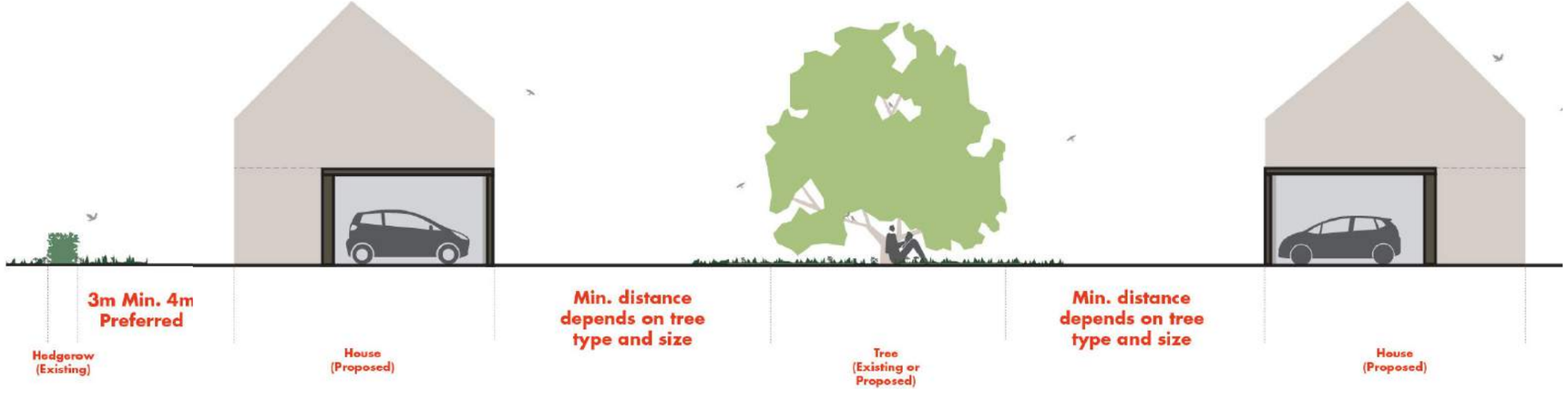
Strategy for Integrating Development with Landscape



1 - Hedgerows & Bridleways



2 - Hedgerows & Roads



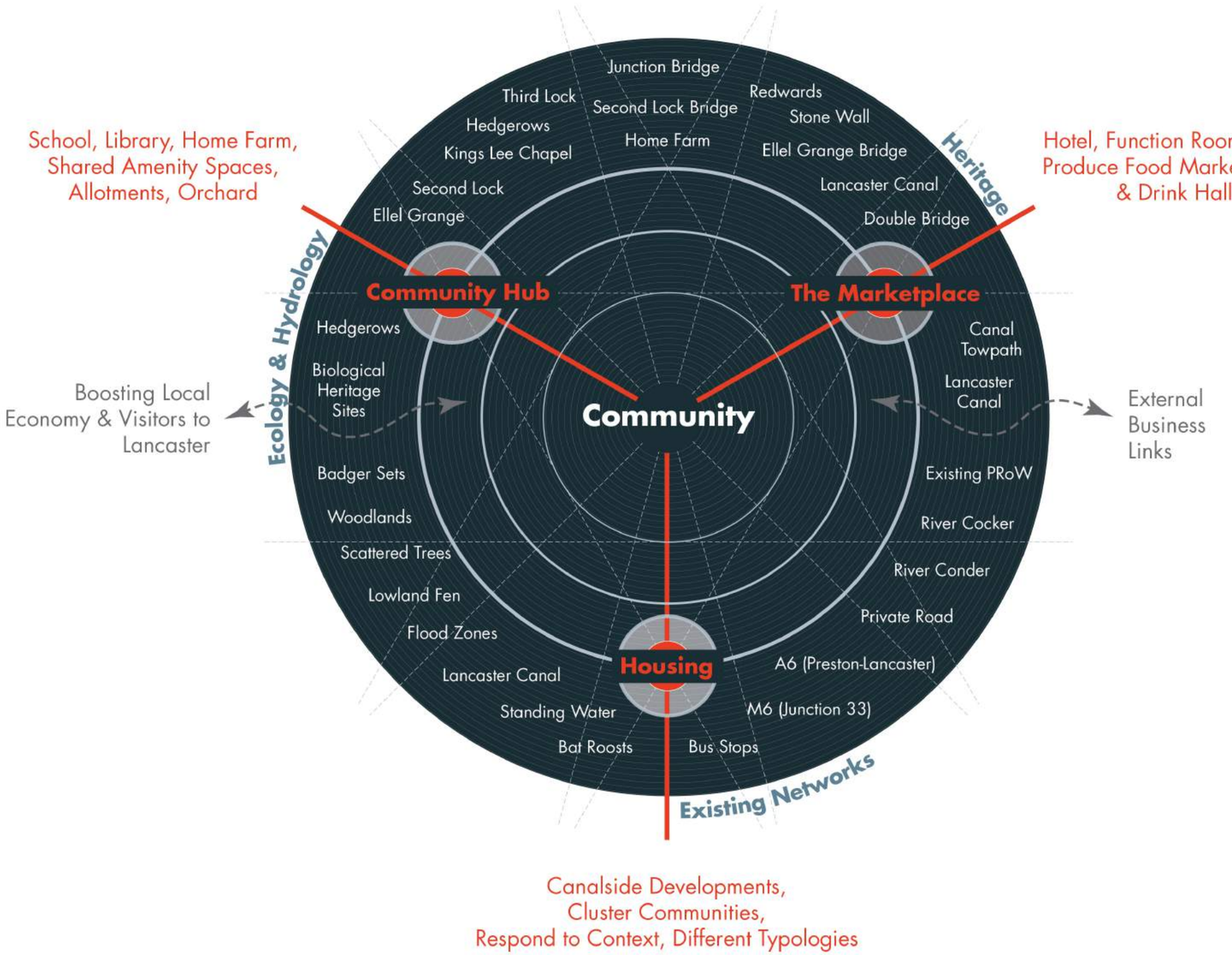
3 - Trees & Housing

Secondary hedge planting creates habitat corridor along Bridleway

Natural strip between existing hedges and new roadways

Minimum zones between new development and existing trees and hedgerows

Village Concept



The 3 Pillars which underpin the proposal:

The Community Hub

The Marketplace

The Housing

1. The Community Hub

Home Farm Restoration

Home Farm - Building Restoration

Workplace

High Street

Walled Garden Centre

School & Community Library

Shared Open Space & Pathways

Communal Gathering

Fantastic Existing Farm Buildings

Home Farm - Existing Stone Wall

Play Areas & Street Furniture

Allotments & Gardens

Home Farm

1. The Community Hub

School Precedent

Hilden Grange Primary School, Hawkins Brown

Recreational Outdoor Space

Open Green Space

Orchard

Workspaces

Workshops

Sustainable Transport
Walking, Cycling
Electric Vehicles

Community Library - Precedent

Hebburn Central, Wilmott Dixon

Workshops

Sustainable Transport

Ellel Grange Setting

Outdoor Communal Space - Concept Sketch

Ellel Grange Setting

Orchard

2. The Marketplace

View from North

Hotel Entrance End

Marketplace Entrance

2. The Marketplace

The Market Hall

'The High Street' / Food Hall

THE MARKET HALL:
Vibrant dining experience
Local Chefs cooking Local produce.

THE HIGH STREET:
Fresh local food
Locally made products
Artisan Outlets

THE HOTEL:
100 beds
Dedicated Reception
Large Function Room & Meeting Spaces

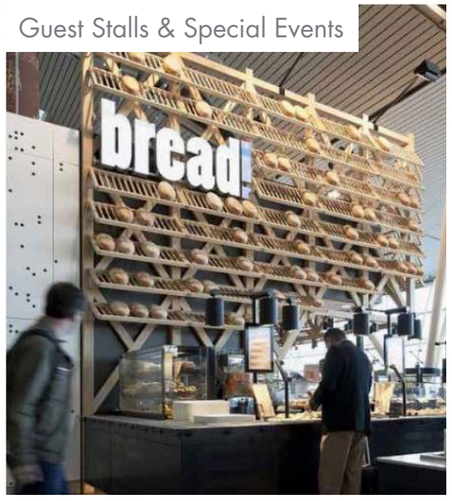
Simplicity in Materials

Pop-Up Kiosks

Zoned Spaces

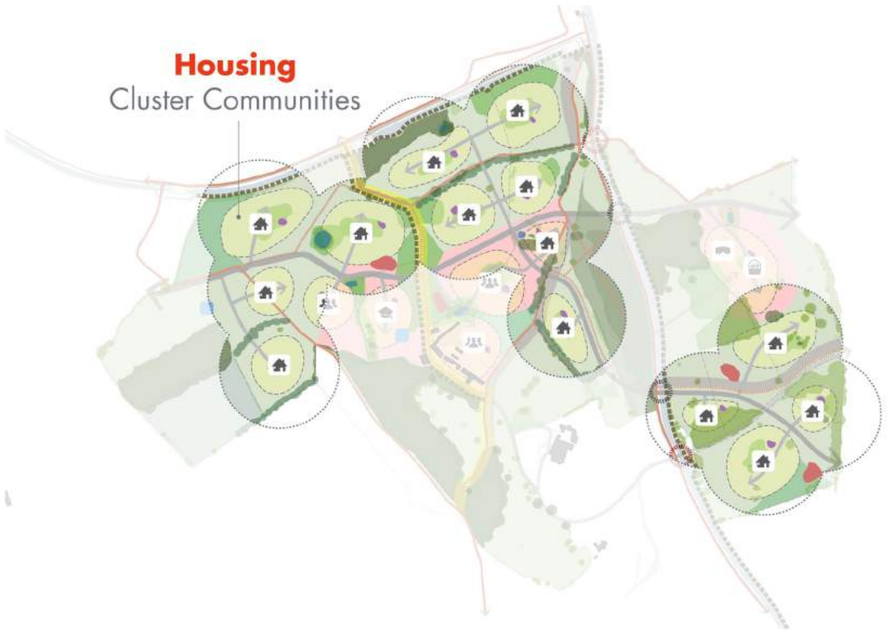
Communal Seating

Guest Stalls & Special Events



Fresh Artisan Products

3. Housing



Housing Precedent


Helsinge Haveby - Village of Tomorrow, Effekt Architects

Multiple Housing Typologies

Parcels of development with a mix of densities

Respond to Context

Form Cluster Communities

Density at Human Scale


Housing in Kirkby Lonsdale

Housing - Concept Sketch

Cluster Communities


Almere Oosterwold, Effekt Architects

Responding to Context


Mountain House, Amalgam Studio

3. Housing

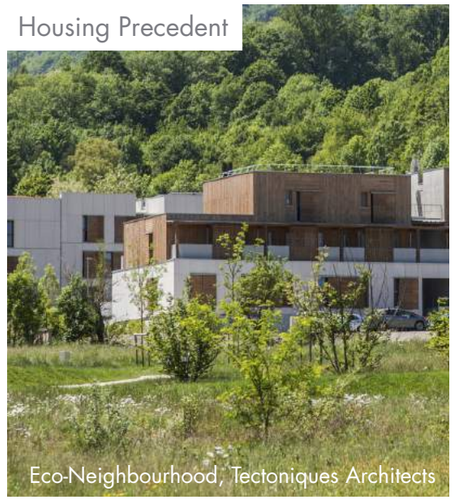
Canalside Developments

Canalside Cottage, Absolute Architecture

Housing Precedent

St. Chad's, Bell Phillips Architects

Housing Precedent



Eco-Neighbourhood, Tectoniques Architects

Incorporate Ponds & Trees into Public Space

Feature Canal-side Development Characteristics

Housing - Concept Sketch

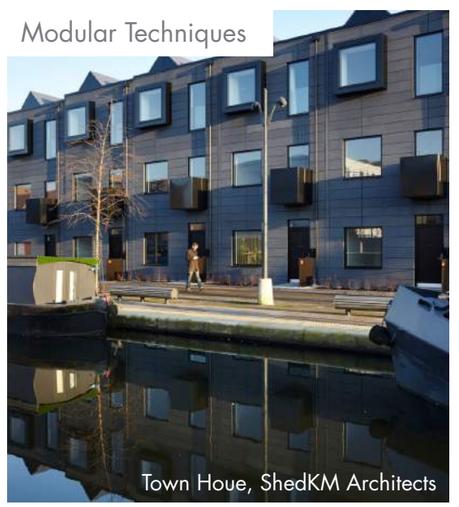
Housing Precedent

LILAC, White Design Associates

Housing Precedent

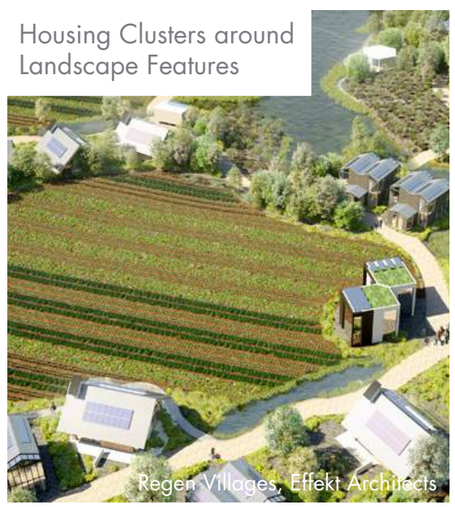
St. Chad's, Bell Phillips Architects

Modular Techniques



Town Houe, ShedKM Architects

Housing Clusters around Landscape Features



Regen Villages, Effekt Architects

FOR TODAY:

OUR VISION FOR ELLEL GARDENS

OUR WORK AND CONSULTATION TO DATE

SITE ASSESSMENT

THE EMERGING PROPOSAL

DELIVERABILITY AND PHASING

ELLEL
GARDENS

Deliverability

EAST OF THE CANAL
Initial development phases
Minimal infrastructure

Mix of Development:
Residential,
Commercial
Leisure

Generates value which
Funds bridge construction

WEST OF THE CANAL
Gradual development
along major infrastructure

Housing Clusters

Home Farm Refurbishment

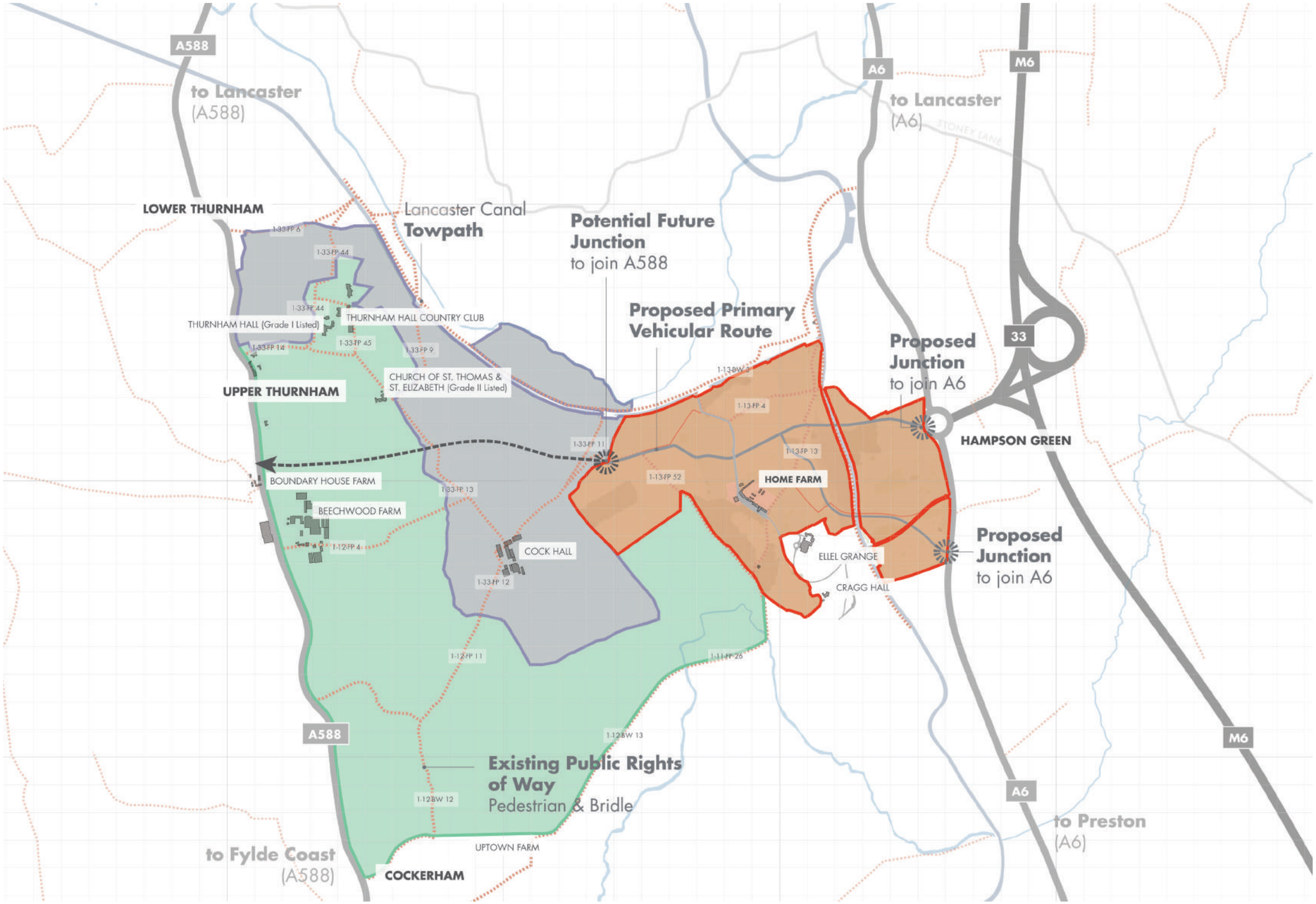
Community Facilities

New School

Integrated Affordable,
Retirement & Elderly Care

ELLEL GARDENS

Future connection to A588
A larger development?



CONNECTION TO A588

Long Term Aspiration of Lancashire Highways

- Relieves A6 at Galgate
- More Robust Network

Potential for major strategic development

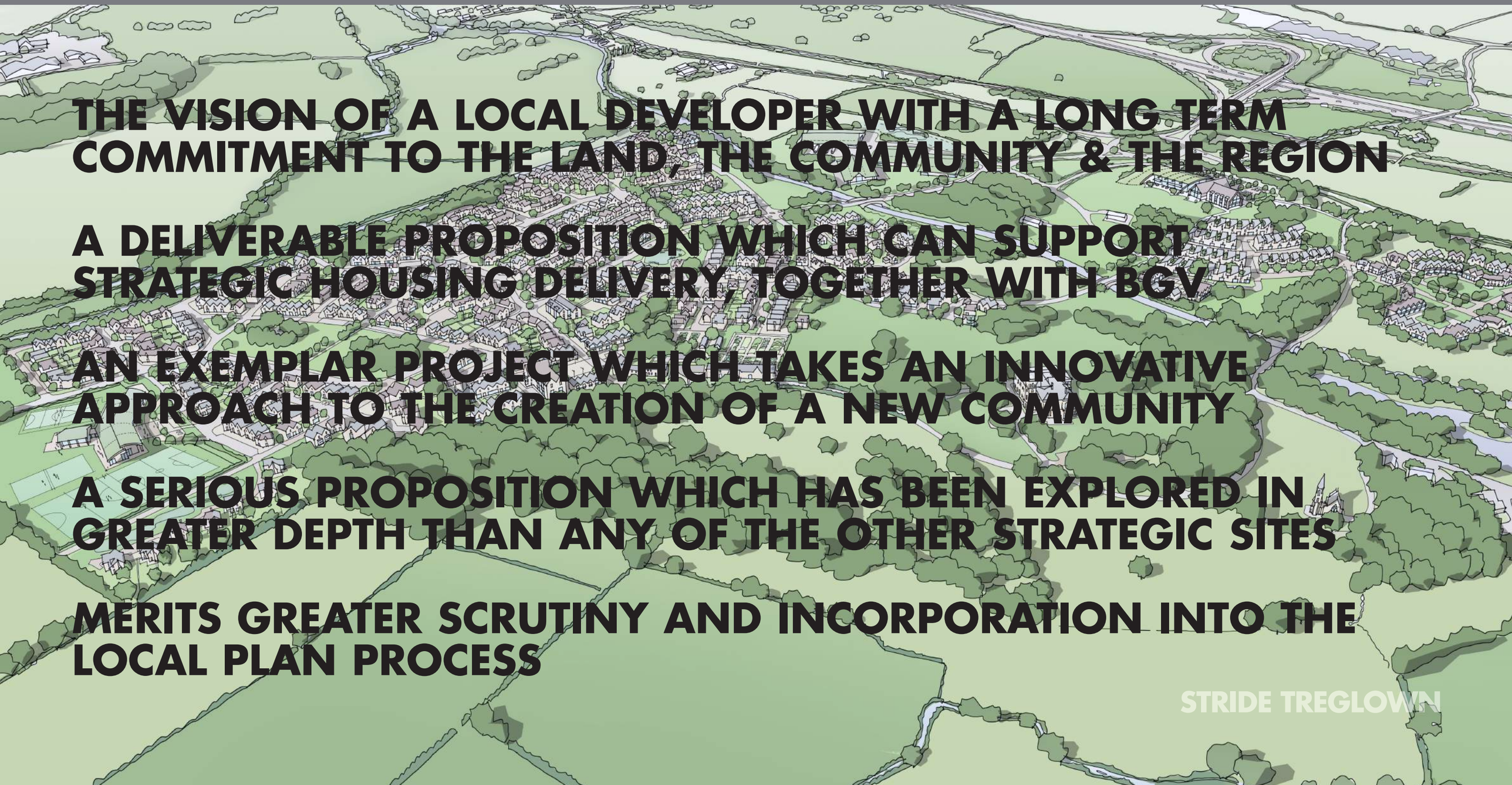
Stand-alone settlement of 2000+ homes

Infrastructure Upgrade

Readily deliverable

Simple land ownership

ELLEL GARDENS



THE VISION OF A LOCAL DEVELOPER WITH A LONG TERM COMMITMENT TO THE LAND, THE COMMUNITY & THE REGION

A DELIVERABLE PROPOSITION WHICH CAN SUPPORT STRATEGIC HOUSING DELIVERY, TOGETHER WITH BGV

AN EXEMPLAR PROJECT WHICH TAKES AN INNOVATIVE APPROACH TO THE CREATION OF A NEW COMMUNITY

A SERIOUS PROPOSITION WHICH HAS BEEN EXPLORED IN GREATER DEPTH THAN ANY OF THE OTHER STRATEGIC SITES

MERITS GREATER SCRUTINY AND INCORPORATION INTO THE LOCAL PLAN PROCESS

STRIDE TREGLOWN

LANCASTER CITY COUNCIL
Promoting City, Coast & Countryside

Pre-Application Advice

Home Farm, Ellel Grange, Main Road, Galgate, Lancaster
Lancashire
LA2 0HN

Proposed strategic development of site for 695 dwellings, associated village centre, open spaces with employment and commercial uses and creation of new access from Hampson Green roundabout

8 November 2018

Reference Number: 18/00663/PRE3

Level of Advice

You have requested Level 3 – 'Detailed Advice' from the Development Management Team within the Regeneration and Planning Service. This advice is based upon the information you have provided and has involved a site visit and the Member Engagement Forum is scheduled for 28th November 2018 at Morecambe Town Hall.

Context

Strategic development site consisting of circa 695 dwellings, associated village centre, open spaces, employment and commercial use, creation of access from Hampson Green roundabout, provision of new access onto the A6, and link to Agri-Business site to the north. It is expected that the development would be delivered in phases across a twenty year period.

The main site is circa 51 hectares in area (edged in red) and would principally comprise of the retirement village, new dwellings, primary school and community hub and associated open space. The land to the east of the canal (highlighted edged in blue) would include the commercial hub to include the market place and hotel, Canalside Park and some residential development of the southern fringes of the site. It is fair to say there are two separate sites although are interlinked.

Site Constraints

The site has a number of constraints which can be seen below;

- Biological Heritage Site (the Lancaster and Glasson stretch of the Lancaster Canal and Ellel Grange Woods);
- Forest of Bowland AONB located 3.7km to the west of the site;
- Morecambe Bay SPA, RAMSAR, SAC and SSSI (4km to the west);
- Western extent of the site falls within Flood Zones 2 and 3;
- Scheme falls within a Canal Consultation Zone;
- The Shell Stanlow-Grangemouth Ethylene pipeline runs through the northern part of the site (just to the north of Home Farm);
- Mineral Safeguard Zone;
- Lancaster Canal is a allocated as PPG17 Open Space;
- Ellel Grange (and associated bridge) and St Marys Church are Grade II listed and are all located within 50 metres of the boundary of the site. The canal locks along the Lancaster Canal (Glasson Branch are all Grade II listed);
- Kings Lee Chapel is Grade II* listed and is within 25 metres of the boundary of the site;

- There are a number of public rights of way that cross the site (namely Footpaths 4, 13 and 52);
- The site is allocated as Countryside Land within the adopted Local Plan (and continuing within the emerging local plan).

As expressed previously the development is of a scale that would warrant an Environmental Impact Assessment being submitted and the Local Authority provided a Scoping Opinion of what should be included within the Environmental Statement in 2018 (17/01582/EIO).

Most Relevant Development Plan Policies

Adopted Policy

Development Management DPD Policies DM15, DM20, DM21, DM22, DM23, DM25, DM26, DM27, DM28, DM29, DM30, DM31, DM32, DM33, DM34, DM35, DM36, DM37, DM38, DM39, DM40, DM41, DM42, DM48 and DM49.

Lancaster District Core Strategy Policies SC1 (Sustainable Development), SC5 (Quality in design), ER3 (Employment land allocations) and E2 (Transportation Matters).

Lancaster District Local Plan – Policy E4 (Countryside Area) and EC5 (Employment)

Emerging Policy

Draft Land Allocations Document

Policy SP1 – Presumption in favour of sustainable development, SP2 Lancaster District Settlement Hierarchy, SP3 – Development Strategy for Lancaster District, SP4- Priorities for economic growth, SP5 – The Delivery of New Jobs, SP6 – The delivery of new homes, SP7-Maintaining Lancaster Districts Unique Character, SP8 – Protecting the Natural Environment, SP9 – Maintaining Strong and Vibrant Communities, SP10 – Improving Transport Connectivity, SG1 – Broad Location for Growth – Bailrigg Garden Village, SG3 – Infrastructure Delivery for Growth in South Lancaster, SG4 –Infrastructure Requirements and Delivery for Growth in South Lancaster, EC3 –Junction 33 Agri-Business Centre, EN5- The Open Countryside, EN11 – Air Quality Management Areas.

Review of Development Management DPD

Policy DM1 – New Residential Development and Meeting Housing Needs, DM2 – Housing Standards DM3 – The delivery of Affordable Housing, DM4 – Residential development outside main urban areas, DM14 – Proposals involving Employment Land and Premises, DM19 – Retail Development outside defined centres, DM22 – Leisure Facilities and Attractions, DM26- Public realm and civic space, DM27 – Open space, sports and recreational facilities, DM29 – Key design principles, DM30 - Sustainable Design, DM31 - Air Quality and Pollution, DM32 – Contaminated Land, DM33 – Development Flood Risk, DM34 – Surface Water Run-Off , DM36 – Protecting Water Resources, DM37-41 Cultural Heritage, DM42-45 The Natural Environment, DM57-58 Infrastructure, DM59-63 Transport, Accessibility and Connectivity.

Assessment

There are **13** main issues to consider at this stage, namely:

- Principle of Development;
- Highways;
- Landscape and Visual Impact Assessment;
- Design and Layout;
- Heritage;
- Drainage;
- Education;
- Open Space;
- Noise / Air Quality;
- Agricultural Land / Ecology;
- Community Involvement;
- Infrastructure; and,
- Other Matters.

Principle of development

You will be aware that the Local Planning Authority previously provided pre-application advice on the site under application reference 17/00416/PRETWO. Whilst this scheme is fundamentally the same, it is quite evident that substantial work has been ongoing in the background to inform the design we see today. We still maintain that rather than an extension of Galgate the scheme represents the creation of a new village, and in many ways your own submission echoes this viewpoint. We do accept that new settlements such as that proposed have the potential to play a key role in meetings the districts housing needs in the short term, but also in providing a stable pipeline supply (assuming that the development is sustainable and also truly deliverable).

Given the scale of this development and its mixed-use nature (with the mixed use element increasing since 2017), and the challenges that it poses (for example, you acknowledge that access is a current constraint), we still maintain the most appropriate procedure to allow proper scrutiny and evaluation is through the formal Local Plan process. This will allow testing in relation to the overall sustainability of the proposal, relevant consultation, the Council's evidence base and most importantly Independent Examination (which is where we find ourselves now). Proposals of this strategic nature which come forward in advance of the Local Plan remove it from the statutory planning system effectively pre-empting decisions on the spatial distribution of development and the overall levels of growth planned for the district. Proposals of this strategic nature would pre-judge the Council's decisions on the most appropriate places to locate development and would undermine the work undertaken to date on preparing the Local Plan.

Principle of Development - Emerging Local Plan Position

The National Planning Policy Framework (NPPF) clearly sets out in Paragraph 15 that plans should be genuinely plan-led, empowering local people to shape their surroundings, with succinct local and neighbourhood plans setting out a positive vision for the future of the area.

We maintain in many ways the stance we adopted previously, that a scheme of this nature should come forward as part of the plan making process. The Local Planning Authority did consider the site via the SHEELA, however it was considered not to take the site forward due to concerns on landscape, ecology, the pipeline crossing the site, heritage and critically access. We note that you have made a commitment to engage in the Local Plan process to promote the residential allocation. From review of the submissions made, there has been little challenge to the Councils concerns over sustainability. There has been a move however to suggest that the LPA have not delivered sufficient levels of housing in the plan and that this development may well assist in meeting Wyre Borough Councils housing needs.

The proposal is detached from the strategic highway network and as per the submission a new access directly off the roundabout is being considered (together with a new access onto the A6). Inevitably the views of the County Council and Highways England will be critical to the success or otherwise of any application/potential allocation. We note reference made to the Agri-Business Park, and whilst the City Council have set out support in principle towards the delivery of a new Agri-Business Centre via draft Policy EC3 this can be no certainty that the site will be included within the final adopted version of the plan, nor does it provide any certainties over timescales on delivery.

It should be noted that the proposed development is located South of Galgate and in close proximity to the border with Wyre Borough Council (circa 150 metres away). Given the scale of growth proposed this may have significant implications on plan preparations not only for Lancaster City Council but also for Wyre Borough Council. The ability to consider cross boundary issues, via the Duty-to-Cooperate process, can only be properly be considered through the Local Plan process. The submission of this proposal via a planning application in advance of the Local Plan cannot adequately address and assess its cross boundary implications. Notwithstanding this, it has been suggested by your agents that this development would assist in Wyre Borough Councils housing delivery however this issue has been discussed at Wyre's Local Plan Examination in early 2018 and Wyre have delivered sufficient housing to meet its needs over the plan period and therefore this argument falls away.

As you will be aware the Local Authority have advanced an ambitious local plan that is aspirational, but deliverable, and one of the key areas we see for growth is South Lancaster, and in particular Bailrigg Garden Village. The scheme proposed represents a fundamental shift in the adopted and emerging strategic policy as this proposal essentially is a new settlement (as it is not defined within the settlement hierarchy), and our belief is that needs to be plan led. Whilst we have sought not to include the site within the emerging plan you are engaged within the Local Plan process and will have the opportunity to put forward the case as to why the Plan should include this site.

It is clear that you have spent time and resource, advancing these proposals, and we will come back to you on matters associated with layout at a later section of this report. I would add this scheme proposes a more coherent form of development as opposed to previously, but whilst this assists in

helping us provide advice as part of this pre-application advice, it fails to address the concerns that are raised as part of this submission as a whole.

One of the principle concerns previously was how could this scheme come forward and provide the required infrastructure (this includes affordable housing provision and education for example), based on less than 700 units and for which requires the level of investment in terms of new road infrastructure for example and new school. It is clear that your proposals have advanced with greater detail and presumably a more detailed evidence base, but critically we remain to be convinced from a deliverability perspective.

Principle of Development - Adopted Plan Position

Any application made in advance of the new Local Plan must be considered on the basis of the existing policy position, in particular the policies contained within the Development Management DPD, adopted by the City Council in December 2014. The site is identified as Open Countryside in both the adopted and emerging Local Plan. Policy DM42 'Managing Rural Housing Growth' of the Development Management DPD is therefore perhaps the most relevant policy. Policy DM42 recognises the village of Galgate as a sustainable settlement where growth which is proportionate will be supported, however this proposal (without the support of the Local Plan) is not considered proportionate and is considered to be significantly isolated from the existing settlement area. In the absence of support through an allocation any early planning application would have to be determined on this basis.

A development of this size would be expected to be accompanied by substantial supporting infrastructure. Whilst reference to this is made within the pre-application submission it is unclear what is proposed and the extent to which the City Council could have confidence on its delivery. The reference made to the provision of a hotel on the site would also need to be assessed having regard to more sequentially preferable locations (given its definition as a main town centre use in the NPPF). The marketplace area for instance contains a food hall and market place, it is not clear what area of floorspace the scheme will adopt, however a sequential assessment and retail impact assessment will be required in support of any submission. We note the reference made within the supporting statement with regards to providing affordable homes and your ambitions to build a cohesive and inclusive community and – leaving location aside - this is something we encourage. We noted within your original submission that Policy DM3 of the Review of Development Management DPD has been subject to your client's objection; we would be concerned if you was seeking to depart from providing the required 40% affordable and given the contents of the submission this raises some alarms as to whether the site truly can be delivered. A further point is that a bridge will be required to cross the canal, we would assume that the agreement of the Canal and Rivers Trust would be required and therefore is this achievable and would encourage discussions with them as this would be fundamental to the implementation of the village element of the development.

Questions such as the function and it's inter relationship with Lancaster and other employment and service centres need to be considered. We would also suggest that a development of the proposed scale does need to be considered in relation to alternatives – a role that would be played out by the Local Plan process.

Given the scale of this development and its mixed-use nature, and the challenges that it poses (for example, you acknowledge that access is a current constraint), the most appropriate procedure to

allow proper scrutiny and evaluation is through the formal Local Plan process (with the site being considered in relation to alternatives). This will allow testing in relation to the overall sustainability of the proposal, relevant public consultation, the Council's evidence base and most importantly Independent Examination. Proposals of this strategic nature which come forward in advance of the Local Plan remove it from the statutory planning system effectively pre-empting decisions on the spatial distribution of development and the overall levels of growth planned for the district. Proposals of this strategic nature would pre-judge the Council's decisions on the most appropriate places to locate development and would undermine the work undertaken to date on preparing the Local Plan. Questions such as the function and it's inter relationship with Lancaster and other employment and service centres need to be considered. We would also suggest that a development of the proposed scale does need to be considered in relation to alternatives – a role that would be played out by the Local Plan process.

Principle of Development - Conclusion

It is accepted that there is great debate at present regarding how local authorities should calculate a five year housing land supply, but notwithstanding this point, critically the tilted balance is engaged given the local authority do not have an up-to-date development plan. As per previously we welcome the engagement with you on this site, and whilst the local authority have not sought to allocate the site within the emerging local plan the site can be considered during the Local Plan Examination process.

The information submitted in support of the scheme does take a positive step forward in illustrating a sustainable new settlement, and does feel more coherent than when we last considered the scheme. I think a key question for us is whilst your ambitions are laudable, and aspirational, are they truly deliverable. We maintain our view that an early, stand-alone planning application would not currently be supported. The settlement you are proposing is aspirational but it does not, at this early stage, indicate how the basic needs of its future residents would be met within the settlement (which would require considerable service provision and job creation. If this is not the case, or if it proves difficult to deliver, then the consequential impacts upon the highway network, including the M6, could be severe.

We recall from the previous submission you recognised the potential of Bailrigg Garden Village to deliver housing south of Lancaster, but you considered that the "considerable infrastructure investment" (amongst other matters) would affect shorter-term delivery. The Bailrigg Garden Village proposal is being advanced through the Local Plan process. This process will ensure that we can deliver housing needs and the necessary infrastructure in a well-planned, high-quality form. I cannot see how the scale of your development would not warrant a similar proposal.

Given the draft allocation within the local plan for the agri-business centre (Policy EC2 and EC3) we do feel that there could have been some benefit in potentially exploring linking this development to Galgate (by utilising additional land to the north), however from reviewing the constraints to the north, there would be land affected by significant constraints such as Flood Zone 3 and the like. Nevertheless this is an approach you may wish to consider as ensuring viable development is essential and we have reservations as to whether a scheme that proposes up to 695 homes (and meets our affordable housing needs) could support the necessary infrastructure that would be required to support such a scheme, given the need to construct a bridge to cross the canal, provision of the access

off the roundabout and a 1.5 form entry primary school. I will re-iterate that this is a large scale scheme and I cannot see how a planning application is the appropriate avenue to advance this scheme and would prejudge decisions and the direction of the emerging local plan. We do have concerns that this should could have on the development strategy as set out in the emerging local plan and its implications on housing delivery.

Highways

Unlike previously two points of access/egress off the A6 have now been proposed (one being served off the A6 and one off the M6 J33). We understand from past discussions you have been discussing the potential for the agri business park which is allocated under the emerging local plan to the north to utilise a similar spur off the motorway roundabout. Given the age and geometry of the roundabout, there is significant doubt that it is of a standard to facilitate an additional spur to your proposed development. The County Council have previously made it clear that development on the A6 corridor is likely to be curtailed until the problems associated with Junction 33 are resolved. You will be aware of the Lancaster District Highways and Transport Masterplan which discusses the potential of a reconfigured Junction 33 to support the significant growth of South Lancaster including the Garden Village and Health Innovation Campus. The exact detail of the new junction is not yet known, however a number of options will be modelled, one of which is likely to include the relocation of the junction further north, towards South Lancaster. You maybe aware that a 'potential route' has been safeguarded within the emerging local plan. However, these proposals are unfunded and are therefore uncertain. Given that the emerging Local Plan acknowledges that the constraints posed by the existing village crossroads junction will have to be resolved before large-scale development of this type within South Lancaster can be progressed, this lends itself further to the view that that development of the site at Ellel would be deemed premature until such time as the delivery of an appropriate solution this problem is secured. We do understand that there has been engagement with the County as Highway Authority and there will be some value in you discussing this through the member engagement forum, for instance in terms of the road and the future connection to the A588 how has this been arrived at. The primary vehicular access road runs along the ethylene pipeline and therefore we assume there has been some form of agreement with Shell on this. Furthermore have the County agreed to this as it's inevitable for a road of this scale it would need to be adopted. We know from experience where infrastructure is beneath a road that could be put forward from adoption there is often hesitance to adopt, this requires some clarification.

We understand that you have engaged with the County Council on highway matters and you will note that as part of the scoping process for the Environmental Statement that discussions where had with the scheme. What would be useful for members is understanding the discussions that have occurred with both Highways England and the County as Highways Authority. You will be aware of the queues that are generated along the A6 from the Hampson Green Roundabout into Galgate during peak hours, and therefore we have concerns that this situation will be exacerbated as this stretch would appear already at full capacity. Traffic counts and an operational assessment of the junction will be required to enable the County Council and Highways England to conclude whether the scheme is likely to result in a severe impact.

It is common knowledge that the Hampson Green roundabout experiences operational difficulties that can make it difficult for traffic to leave the motorway and we would expect that Highways England will expect to see that a full, operational modelled assessment of the impacts of the development upon the operation of Junction 33 is included as part of any Transport Assessment (TA) for weekday AM and PM peak periods, plus the Saturday peak period. An assessment of the additional traffic arising from the development at these periods should also be included for M6 Junction 34. These assessments should be based upon recent, valid traffic count data taken from a neutral period and reflect current, relevant committed development proposals as defined by the City Council. These assessments should be based upon both the opening year of the development (based upon a full site buildout) and also at a point ten years from the date of the registration of the planning application. It is essential that the TA takes account of permitted and also proposed development in the form of the proposed land allocations.

Landscape and Visual Appraisal

The site is identified as countryside land in the adopted and also emerging local plan and falls within the Coastal Plain local character type. From visiting the site it is apparent that the landscape here is quite diverse, and certainly contains at a local level a variety of different landscape characters. There are a number of public rights of way that cross through the sites and therefore any scheme should seek to retain these and incorporate them into the development proposals. Linkages to the canal are essential, making these accessible may be a challenge especially on the eastern side of the site where levels in places do appear to create an issue. The Lancaster Canal towpath is well used, and therefore improvements to the surfacing of this are likely to be a requirement of any scheme (discussion with the Canal and River Trust should occur).

The development would be seen from higher elevations locally, such as travelling along Bay Horse Road, heading towards Quernmore, and along the towpath on the Lancaster Canal. One of the positives of the previous application was the sensitively designed market place which appears to have been removed for quite a homogenous building, as expressed previously the site is located on a drumlin and therefore, if the principle of development is proven, a sensitive design would be required, because views of the site would be experienced from higher ground and also along the A6 corridor. I feel the previous iteration was more sensitively designed and worked with the landform. How this is viewed from the A6 will require some consideration.

The site at present is a mixture of woodland, grazed pastureland and does have a quite intimate feel to it, and is enjoyed by those who use the public footpaths that and there are landscape features such as the mature trees that would need to be retained as part of any scheme. We would advocate

that any scheme is presented by a robust LVIA that examines the potential effects of the proposed development on the individual landscape features and elements, the landscape character and also the visual amenity and the people who view the landscape. As yet we remain unconvinced that the sensitivity of the landscape has the potential to accommodate a development of this scale and therefore this would need assessing as would identifying and describing any changes arising from the development relating to landscape and visual issues. Since the pre-application advice shared in 2017, Arcadis on behalf of the local authority undertook a landscape assessment of the site and considered that, as we did in the pre-application advice from 2017, that the site has a rich and diverse texture with mixed and ornamental woodland and prominent isolated trees and copses which provide excellent amenity and habitat around prominent listed buildings. The farmland has preserved its post medieval enclosure pattern. We still have concern as to whether it is possible to achieve a feel and design of development that respects the landscape character of the site.

Should a planning application proceed, landscape has to be assessed as part of the Environmental Statement. Viewpoint selection would be critical, and we would be wishing to see the use of photomontages included within any submission; we would of course be happy to work with you to agree the location of the proposed viewpoints.

Design and Layout

The scheme has been re-designed significantly since 2017 and now provision has been made for a retirement village, the meadows to the east of the canal, Canalside Park and also the open space associated with flat wood. In terms of the retirement living and extra care facilities this is something we support the principle of however what is the make-up of this part of the development, is this included within the 695 unit calculation or in addition too, is it mostly over 55's properties or is it extra care, we are supportive of the inclusive of accommodation for older persons accommodation and maybe further detail needs to be teased out in this regard. The school and community hub provides for open space, allotments, orchards, workshops and workspaces, it is unclear from the plans as to whether Home Farm and the Stables for example are converted as part of the development proposals

A high quality designed scheme would be an essential requirement of any potential development. For a development of this scale (if the Planning Inspectorate resolved to allocate development) a detailed design statement/development brief would be required (as part of your submissions to the Planning Inspectorate are you considering submitting such a brief in support of the application). Naturally design and landscaping would have to be sympathetic and create a strong sense of place, and I feel you have made some positive inroads with respect to this since last time we saw the scheme. From being on site there are some strong natural features on the site such as the drumlins, historic woodland and also a variety of ponds. Development has to be in harmony with the existing features. We assume that Home Farm, and also The Stables and their associated buildings would remain as part of the development proposals. Whilst not listed, the walled gardens are an attractive feature and we would advocate that these are retained as part of any scheme.

The Lancaster and Glasson stretch of the Canal essentially forms the boundary of the eastern and northern elements of the housing site. If development were to occur, there would be a need to provide an active frontage to the canal, promoting access to the waterways and incorporating the towpath into the development. Inevitably the development is relying on the canal towpath to

provide part of its sustainable transport strategy then it is likely that one of the planning obligations would include a financial contribution to the ongoing maintenance/required upgrading of the surface.

It is noted that you consider the site can deliver 40 dwellings per hectare, this does raise some concern to us as in order to provide a high quality development we struggle to see how this development could provide that level of density based on the information before us, not forgetting that the level changes across the site. We are supportive of the principle should you be able to achieve a high quality development but as yet, how can you provide a density of this figure whilst preserving the character of the area.

There is an emphasis in terms of the provision of the retail offering and the marketplace development as part of the submission before us. What the local planning authority would not wish for, is for there to be an out of town retail centre on the site and therefore what mechanisms will be put in place to ensure that the housing does come forward as this is the principle aspect of this scheme.

Heritage

There are a number of sensitivities with respect to listed buildings adjacent to the site, and from a review of the first edition maps the site and its surroundings feel very much the same as it did back in the 1840's. Ellel Grange for example is an impressive Country House and there are many views of this from across the site, including the impressive main tower structure (now used by Ellel Ministries). The site visit was undertaken in April 2017 and the trees were started to come into leaf and views to the former chapel of St Mary in the grounds of Ellel Grange were rather limited (this is a Grade II* building). There are a number of other listed structures notably in the form of canal bridges and therefore consideration of all of this would be a requirement of any heritage statement.

Given the historical connections here the possibility of below ground archaeology cannot be ruled out (for instance the historic maps make reference to lime kilns and wells). We would advocate liaising with Peter Iles from Lancashire Archaeological Advisory Service and it may well be that a geophysical survey of the site to map below surface features may well be needed which can help establish whether the site has the potential for archaeological remains. Should an application come forward we would require a formal heritage assessment and any proposals which would impact the site of the original grange or suspected medieval features should also be subject to field investigations and the result of that work provided within the heritage statement.

Drainage

Parts of the north western element of the site fall within Flood Zones 2 and 3 and therefore if development was to be proposed here we would wish to see a sequential assessment submitted in support of the scheme. Our advice is that these areas should not be developed but could form part of the developments open space or drainage arrangements. The majority of the site benefits from being within Flood Zone 1. It is apparent from walking across the site there is former evidence of mineral working potentially in the form of sand and gravel and there is a limestone outcrop adjacent to Junction Bridge. There is therefore the potential that some of the site may be suitable for infiltration methods of drainage.

This is a significant development and due regard will need to be considered regarding draining the site. There is naturally the canal and therefore the Canals and Rivers Trust should be involved in the evolution of this project. There are also a number of watercourses across the site (notably to the east of the main site). Given the nature of this development, we would advocate discussions occurring with the Lead Local Flood Authority too. Well planned and executed Sustainable Urban Drainage Systems (SuDS) can be beneficial to amenity, nature conservation and the environment. Drainage should be considered at the forefront of any development and I feel given the flooding events of 2017 in Galgate that we need to understand how the development has been arranged around drainage matters and not vica-versa. Whilst surface water drainage was not included within the scope of the Environmental Statement

Education

We note within your submission reference is made towards to the provision of a new primary school. Given the number of units proposed we would agree with you that there would be the requirement for a new school as part of the development proposals. We shared advice in 2017 that a financial contribution of circa £4.5 million for primary provision of £3.2 million for secondary school provision was required. It is vital here that engagement with the County occurs as it seems to be commonly accepted that a primary school is needed, but is the location proposed favoured by the County? With respect to Secondary provision will a new school also be required, is it possible to increase capacity at the likes of Ripley St Thomas, Garstang Academy or Central Lancaster?

Open Space

This is a large scheme, divorced as it stands from the likes of Galgate and Cockerham and therefore we would be expecting any development proposal to provide a package of useable and high quality open space. Compared to the previous iteration of the scheme it is clear that you have considered the response we provided last time. One area of concern is the land to the north-west where allotments are proposed within Flood Zone 3 and also the sports pitches, are these in connection with the school and community hub or are these stand-alone pitches. If pitches are to be proposed within flood zone 3, are the ground conditions as such that you are proposing pitches on saturated ground, or will remedial measures be carried out to address this issue.

As part and parcel of any forthcoming scheme we would be seeking to see that a scheme proposed a park and garden, accessible natural green space, equipped play areas and also young person's provision would all be required. The Councils Planning Advice Note on Open Space in New Residential Development can be accessed here (if reading this via PDF), we would encourage liaison with the

Councils Public Realm Development Manager (Helen Ryan), (her contact details can be seen on Page 14 of this response). It may be prudent given the sports pitch provision to liaise with Sport England regarding the playing pitches that have been proposed as part of the scheme to ensure what is proposed meets there standards.

Noise/Air Quality

Given the scale and nature of the development proposals these will inevitably have impacts on the Air Quality Management Areas in Lancaster City Centre and Galgate. You will be aware that the Local Authority considered that Air Quality had to be considered within the scope of the Environmental Statement. Any forthcoming scheme would need to include a robust Air Quality Assessment as there will be impacts on the AQMAs, not just from the road network but also – potentially – arising from businesses on the proposed agricultural business park such as an abattoir – this would need assessing as part of any future proposed scheme. The use of electric vehicles is an important measure in reducing emissions locally and therefore the provision of the necessary infrastructure which promote the use of such vehicles would be essential. With regards to public transport provision, have any discussions occurred with the County as to whether it would be feasible to provide a bus route to serve the site, or the diversion of the existing routes, as this can assist in reducing harmful pollutants within the AQMA. Whilst quite removed from the M6, there were parts of the site where motorway noise was clearly evident (notably eastern periphery of the site) and therefore noise would have to be factored into the scheme.

Agricultural Land, Ecology and Trees

Parts of the site are used as grazing land with cattle and sheep being noted on the site visit. From a review of the Agricultural Land Classification for the North West Region published by Natural England would suggest that the site benefits from Grade 3 agricultural land. As part of any application we would be wishing to see an agricultural land classification report to be submitted to ensure that the development does not prejudice best and most versatile agricultural land.

Full consideration of the sites potential ecological value would need to be assessed by an independent ecologist not only for the sites potential to accommodate protected species but also crucially whether the fields are used by birds that may utilise the land for foraging purposes in connection with the Morecambe Bay RAMSAR, SPA, SAC and SSSI. The site has pockets of woodland, and there a number of mature trees dotted around the site. The Lancaster Canal is a Biological Heritage Site runs through the site and forms the northern boundary of the site and part of the site also includes Ellel Grange Woods BHS. Given the habitat on the site it is clear that bats, badgers and otters may well use the site. Given the extent of the site, will need to understand whether wintering birds utilise the site for foraging purposes and therefore would imagine that wintering bird work would be require to support any future scheme. With respect to trees, there are attractive copses of woodland scattered across the site at present, and these are subject to a tree preservation order. The retention of the existing trees and hedgerow would be a critical consideration of any scheme.

Community Involvement

This is a proposal of a strategic nature and scale, and as per our earlier advice we consider that any scheme should be pursued via the Local Plan and not via the planning application route. If however, you wished to pursue a scheme in advance of the conclusion of the Local Plan process we would be expecting there to be significant engagement with the Local Community regarding the proposals. I note that a dedicated website has been created which is both easy to use and informative, however have the local community been made aware of the scheme by letter and the like?

Infrastructure

The Shell Stanlow-Grangemouth Ethylene pipeline cuts across the northern portion of the site and therefore this is significant in terms of the ability to development the site. We did raise this in 2017 and would continue to urge you to speak to Shell UK Oil as the inner buffer alone may remove the ability to develop a large proportion of the site, bringing into question the deliverability of the scheme. The indicative plan appears to site development (in the form of the main spine road) immediately above the pipeline and therefore we would advise speaking to Shell at your earliest opportunity to understand their requirements.

There are 400 KV pylons located to the west of the site however these should not be prohibitive to development proposals, assuming that there is a buffer provided.

There are a number of low level services that run through the site, any scheme would need to have full regard to existing services that run through the site.

Other Matters

Parts of the site are covered by a mineral safeguarding allocation and therefore as part of any site investigation work we would be wishing to understand the below-ground geology to enable us to take a view on the mineral that could be potentially worked here and we would be expecting you to evidence if there was mineral that was present would it be feasible to adopt a prior extraction approach. There could be some benefit in speaking with the Minerals and Waste team at the County Council.

Planning Obligations

If you proceed to planning application submission, the following contributions may reasonably be requested in the form of a Section 106 agreement (Town and Country Planning Act 1990); a Unilateral Undertaking; or an agreement under Section 278 Highways Act 1980.

- Securing 40% of the units to be affordable homes (given the greenfield status of the land);

- An Education Contribution, and potential provision of a primary school;
- Contribution towards the upgrading of the Lancaster Canal (including Glasson Stretch) towpath;
- The provision of a dedicated bus service/re-routing of existing services;
- The provision of off-road cycle route connections leading from this site towards Lancaster University; and,
- A potential contribution towards Highway Improvements associated with development within South Lancaster.

Supporting Information Required to Accompany an Application

The City Council's website (www.lancaster.gov.uk/planning) provides details of the application forms, plans and fee calculation necessary. You will be aware that as part of the Scoping Opinion issued in March 2018 the Council concluded that there was a requirement for a Landscape and Visual Impact Assessment, Ecological Impact Assessment, Highways and Transportation Impact Assessment and Air Quality Impact Assessment to be considered in the context of the Environmental Statement and the matters below need to be submitted in support of any planning application.

- Affordable Housing Statement (any deviation from providing 40% of the units to be affordable homes should be evidenced by a financial viability assessment, and we would require the costs of review by an independent consultant to be covered by the applicant);
- Agricultural Land Classification Report;
- Air Quality Report (assessed within the Environmental Statement);
- Biodiversity Report (assessed within the Environmental Statement);
- Contaminated Land Assessment (Phase 1 and 2 contamination study);
- Noise/Vibration Survey;
- Foul and Surface Water Drainage Report;
- Flood Risk Assessment;
- Heritage Statement;
- Transport Assessment (assessed within the Environmental Statement);
- Landscape and Visual Impact Assessment (assessed within the Environmental Statement);
- Arboricultural Assessment;
- Utilities Assessment;
- Planning Statement;
- Statement of Community Involvement (Scope to be agreed with the LPA);
- Retail Sequential Assessment (Retail Impact Assessment may be required also if the scheme proposes 2500m² of retail development).

Other Consultees You May Wish to Engage Prior to Submission

- Highways England – Warren Hilton, Assistant Asset Manager, Warren.Hilton@highwaysengland.co.uk

- Lancashire County Highways -Neil Stevens -Highway Development Control Manager neil.stevens@lancashire.gov.uk
- Environmental Health – Rachel Stainton rstainton@lancaster.gov.uk
- Public Realm Development Manager – Helen Ryan hryan@lancaster.gov.uk
- Wyre Borough Council - planningpolicy@wyre.gov.uk
- Ramblers Association - b.jones@physics.org
- Canal and Rivers Trust –Deborah McCormick (Utility Surveyor) 01942 405766, Tim Bettany-Simmons (Area Planner) 07342 057926
- Ellel Parish Council – Gill Mason - clerk@ellelparishcouncil.co.uk 01253 812731
- Dianne Taylor (Local Lead Flood Authority – Lancashire County Council) The LLFA has produced 'standing pre-application advice' to provide developers with guidance in relation to surface water drainage issues. This can be accessed via: http://www.lancashire.gov.uk/council/planning/sustainable-drainage-systems.aspx

Planning Obligations

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- Securing 40% of the units to be affordable homes (given the greenfield status of the land);
- An Education Contribution for secondary education and provision of a new primary school;
- Contribution towards the upgrading of the Lancaster Canal (including Glasson Stretch) towpath;
- The provision of a dedicated bus service/re-routing of existing services;
- The provision of off-road cycle route connections leading from this site towards Lancaster University; and,
- A potential contribution towards Highway Improvements associated with development within South Lancaster.

Summary

It is fair to suggest that recently there has been a paradigm shift in planning rhetoric, with new settlements based on the Garden City/Village principles. Whilst your proposal describes itself as a "blueprint for the future", it is difficult to envisage (at this early stage) how your proposed settlement will adhere to Garden Village principles. Can a settlement of the size you are proposing truly sustain new retail, commercial, cultural and recreational facilities within walking distance, and be truly deliverable? Will it ensure that there is a step-change in transportation, providing 21st-Century, integrated travel solutions that do not rely on the private motor car? If it is a Garden village, we appreciate the movements made by comparison to Bourneville Garden Village but how will you ensure community ownership of land and long-term stewardship of assets, or land-value capture for the benefit of the local community? The concept of stewardship is an interesting one, and we accept

that this could provide useful in terms of estate management and working towards the creation of a sustainable community, however how is this any different to a management charge levied by a housebuilder which ultimately achieves a very similar aim and therefore further information on this element is required.

These are some of the issues that you will need to resolve if you are committed to advancing this settlement on Garden Village principles. However, as this pre-application advice states on a number of occasions, the correct method to test and try to advance such a proposal is via the Local Plan (accepting you will be advancing this via the omission site process). Advancing such a strategic proposal needs to be plan-led so the full consideration of issues can be appropriately addressed and considered in further detail. A planning application submitted ahead of these considerations is therefore likely to be refused

Whilst the site does have some physical constraints (especially the Shell pipeline running through the central core), for the most part from a landscape, ecological, heritage and flooding perspective is relatively unconstrained. However this does not necessarily mean that the site should be developed. The land is quite divorced from Lancaster, and it does not appear to have any notable connection to the existing village of Galgate. In such circumstances, it will be incumbent upon you to justify the sustainability credentials of your proposal, and for you to demonstrate that the chosen location of the settlement can deliver significant benefits and would be geographically preferable to other (possible) locations for such a quantum of housing and service provision. These are issues that need to be considered in the context of the wider transport plan for South Lancaster and the emerging Local Plan. We would also advocate discussions with the pipeline operator to establish whether this poses a significant constraint to a deliverable scheme.

Since we last shared advice, you will be aware that the local plan has been submitted for examination and therefore it now raises the question as to whether this development could undermine the plan making process by predetermining decisions about scale, location and phasing of new development. We do have serious concerns that what is proposed is so substantial (combined with the cumulative effects of the other development proposed in South Lancaster namely Bailrigg Garden Village), that to grant planning permission could undermine the plan making process by predetermining decisions about the scale and location of new development (notably developing South Lancaster) that is critical to delivering housing land supply in South Lancaster. The emerging local plan concludes that there would need to be infrastructure improvements in South Lancaster to facilitate development and we do consider that this does suggest that delivery of this site could be deemed premature until real solutions are found.

Disclaimer

Please note that in accordance with the Pre-Application Planning Advice Guidance Note, follow-up meetings for Level Three pre-application advice can be arranged to discuss the evolution of your proposals. However a separate fee is required to facilitate this meeting. Details can be found in the Guidance Note which is available via www.lancaster.gov.uk

The advice provided in this advice is informal and it does not constitute a formal decision of the Council. It cannot be held to bind the Council in either its validation or formal determination of any subsequent planning application.

The weight that can be attributed to this advice will diminish over time due to any future changes to national planning legislation or changes to national or local planning policy.

If a planning application is later submitted which fails to take on-board the advice provided, then the City Council reserves the right to refuse the application without further discussion with the applicant or their agent. Additionally the advice provided is based predominantly upon the information you have submitted. If it transpires that this information was inaccurate, then the advice provided ceases to carry any weight. Similarly if new information is revealed during the planning application process, then this can affect the eventual outcome of the planning application.

Representations to Wyre Local Plan

Statement on Matter 1 – April 2018

On behalf of M Capital Development Ltd and TNPG Sandeman

Matter 1 – Legal Compliance, Procedural Requirements and the Duty to Cooperate

Issue 2

2.1 - Is there evidence that the Council has cooperated effectively with adjoining authorities in seeking to meet any unmet housing needs from the District?

We previously made representation to the authority in November 2017 to make them aware of a proposal immediately adjacent to the district boundary, to the north, off Junction 33 of the M6 within Lancaster district. We provided this information to inform the authority of our pre-application discussion and local plan representations with Lancaster to inform dialogue with Lancaster district as both authorities move towards submission of their respective plans; and on the understanding that both authorities have asked each other whether they can meet some of their housing need. A copy of this letter is attached.

The authority's response to our submission, detailed in the response table, simply noted the submission. The Statement of Compliance with the Duty to Cooperate document includes meeting notes between the authorities. At a meeting on the 21st February, Lancaster indicated that they would be unable to assist in meeting unmet need as there are no sites on the border between the authorities. Lancaster also state that they cannot assist Wyre because they are struggling to meet their own OAN. *"It is more an issue of capacity and build out rates than*

available land. None of the site can come forward without support from infrastructure providers".

At a subsequent meetings on the 14th July 2017 the site was raised by Lancaster as a recent pre-app in Lancaster. *"Not considered sustainable or supported but if allowed this could go some way to meeting Lancaster's shortfall, and potentially Wyre's."*

At a meeting on the 14th November 2017, Wyre noted that they had received a representation for a large scale residential development in Lancaster. With the meeting notes stating this will be a matter for Lancaster.

Since November 2017 we have undertaken assessments in preparation of an application, looking at Flood Risk, Transport issues and Landscape, Ecology, Infrastructure and Heritage matters.

On 21st December 2017, the site owners submitted an Environmental Impact Assessment Scoping Request (Local Planning Authority Ref: 17/01582/EIO). A Scoping Opinion was provided by the Local Planning Authority on 7th March 2018.

The Opinion was provided following a considerable consultation process involving 24 consultees, many of which responded and a number of topics were identified for investigation and assessment. The Local Planning Authority agreed with the proposed Scope of the ES and offered guidance on some other matters. Key topics identified are Landscape and Visual Impact, Ecological Matters, Highways and Transportation and Air Quality.

At the time of this submission, evidence gathering and assessment on these topics continues and the owners are preparing a Level 3 Pre-Application submission to Lancaster District Council which entails further dialogue with officers and a forum with Councillors.

In a strategic context, the site is ideally located in an area of Lancaster district identified for considerable growth, underpinned by infrastructure improvements. The District of Lancaster Highways and Transport Masterplan (http://www.lancashire.gov.uk/media/899614/final-lancaster-highways-and-transport-master-plan.pdf) proposed a series of measures to increase capacity on the road and public transport networks including: reconfiguration of Junction 33 of the M6, the Lancaster Reach Rapid Transit Service and other 'superhighway proposals' along the A6 corridor. Opportunities therefore exist for direct and indirect contributions to, and enhancement of, the infrastructure measures identified in the Masterplan. This may be by way of developer contributions (through CIL for example) or through providing a customer-base for services such as Lancaster Reach Rapid Transport service, thus contributing to viability from the time of opening.

The Representors consider that despite both Wyre Borough and Lancaster District currently being unable to adequately address OAN in their respective Local Plans and the Home Farm, Ellel site being presented on more than one occasion as a deliverable site capable of yielding circa 800 dwellings, they have together failed to adequately consider it. It follows that the Council has not cooperated effectively with Lancaster District in seeking to meet unmet housing needs.