

PART B

Reference is made to the appropriate Policy/Appendix numbers in the Draft LDP

- Q1 The overall vision is to improve the quality of life for people living and working in the District and to provide the new homes, jobs and infrastructure required to meet identified needs and support the local economy, whilst protecting the District's heritage and environment.

	<i>Strongly Agree</i>	<i>Agree</i>	<i>No Opinion</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Do you support the overall vision for the District set out on of the Draft LDP? <i>(please tick one box)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Q2 In order to ensure the LDP will meet the requirements set by Government, the Council has reviewed the amount of development required to meet identified housing and employment needs over the next 15 years. As a result, it has been necessary to increase the proposed number of new homes from 3,000 to 4,410 and to allocate 8.4 hectares of additional employment land.

	<i>Strongly Agree</i>	<i>Agree</i>	<i>No Opinion</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Do you support the proposed level of growth in the District ? <i>(please tick one box)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Q3 The main urban areas of Maldon, Heybridge and Burnham-on-Crouch are considered to be the most appropriate locations for new housing. Following consideration of alternative options which are detailed in the Draft LDP , the following distribution is now proposed.

Do you support the proposed distribution of new housing ?

Settlement	Total number of dwellings	<i>Strongly Agree</i>	<i>Agree</i>	<i>No Opinion</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Maldon	1,830	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Heybridge	1,000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Burnham-On-Crouch	450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Q3 If you disagree, is there an alternative distribution of new housing which you would prefer?

Build a completely new village or small town in an open space near a railway line with properly planned facilities and infrastructure links

- Q4 It is proposed to develop two Garden Suburbs in Maldon and Heybridge which will be comprehensively planned to ensure the provision of a mix of housing, community and educational facilities, open space and new transport provision.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Do you agree with the proposals for development in Maldon and Heybridge ? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- Q5 The distribution of new housing in Burnham-on-Crouch has been reviewed in response to comments received during the last consultation. It is now proposed to distribute the new housing between three smaller sites instead of one large site.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Do you support the strategy for housing development in Burnham-on-Crouch ? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- Q6 In response to comments made during the last consultation, the number of new dwellings to be accommodated in North Fambridge has been reduced from 300 to 75.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| Do you support the strategy for housing development in North Fambridge ? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
- Q7 In order to provide for local housing needs and support local services, it is proposed to make provision for a total of 345 new dwellings in other rural villages in the District. A Rural Allocations Development Plan Document will be produced after completion of the LDP in consultation with local communities to identify appropriate sites for development.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Do you support the strategy for housing development in other rural villages ? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- Q8 A policy has been included in the Draft LDP to ensure that the use or display of advertisements do not have an adverse impact on amenity and public safety.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|-----------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Do you agree with this approach ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- Q9 The Draft LDP seeks to provide adequate land to promote employment development, job creation and to allow for the expansion of existing businesses.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|--|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Do you support the proposals for new employment development in Maldon and the extension to the Burnham Business Park ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- Q10 Increasing the supply of affordable housing is one of the Council's key priorities.
- | | <i>Strongly Agree</i> | <i>Agree</i> | <i>No Opinion</i> | <i>Disagree</i> | <i>Strongly Disagree</i> |
|---|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Do you agree with the local requirements for affordable housing provision ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Q11 The Council is committed to working with our partners to improve healthcare facilities within the District

	<i>Strongly Agree</i>	<i>Agree</i>	<i>No Opinion</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Do you support development on an appropriate greenfield location at the edge of Maldon if it were to deliver a new Community Hospital or similar healthcare facilities ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q12 Primrose Meadow is an area of green space situated off Mundon Road, Maldon

	<i>Strongly Agree</i>	<i>Agree</i>	<i>No Opinion</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Do you support the production of a Primrose Meadow Planning Brief to manage the future use of the site ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q13 The Council has produced an updated to support the Draft LDP which is available on the Council's website. Do you have any comments on this?

Q14 Do you wish to comment on the *proposals map* or any other policies in the Draft LDP?

If so, please enter here which *Policy / Paragraph number(s)* you refer to

Please enter your comments in the box below

Q15 If you wish to make any other comments on the Draft LDP, enter your comments in the box below

Maldon district cannot cope with more people and cars as the roads are already overcrowded. There is grossly inadequate parking in towns and at rail stations, including Witham which many in the area use.

MALDON DRAFT LOCAL PLAN CONSULTATION (SEPTEMBER 2013)

Representations on behalf of the RHS and the Tolhurst Family

Policy S1 Sustainable Development

The RHS and the Tolhurst Family support Policy S1 as an appropriate interpretation of the presumption in favour of sustainable development that forms a key thrust of the National Planning Policy Framework (NPPF, 2012). In particular they welcome affirmation of the positive approach to supporting sustainable development proposals, and adoption of a proactive stance to working with applicants to overcome problems to facilitate approval of proposals wherever possible. Recognition of the economic, social and environmental aspects of sustainability, consistent with the definition in the NPPF is also welcomed. Furthermore it is considered that the 13 elements identified in Policy S1 provide a suitable summary of what represents sustainable development in the context of Maldon District. In turn this summary is felt to be consistent with the vision and objectives for the Local Development Plan (LDP).

Policy S2 Strategic Growth

The RHS and the Tolhurst Family support Policy S2 in terms of the growth strategy for the district that this outlines for the plan period. It is welcomed that the level of housing being planned for has been increased to a minimum of 4,410, representing an average of 294 dwellings per annum. As such it is felt that the Council are now better able to demonstrate that they are endeavouring to meet the district's objectively assessed housing need in respect of forecast household projections. The extent to which this factors in consideration of the need for affordable housing, and indeed any unmet backlog in this regard is however unclear, notwithstanding the brief reference to this issue in general terms at paragraph 2.22.

The distribution of housing growth across the district presented within Policy S2 is considered to be appropriate. In particular the re-distribution of growth to three sites around Burnham on Crouch represents a more appropriate and more sustainable response that continues to recognise and fulfil the important role of the settlement within the wider rural hinterland of the Dengie peninsula. The status of Burnham on Crouch as one of the principal receptors of growth, alongside Maldon and Heybridge, in view of the greater opportunities this offers for transport connectivity and achievement of more sustainable patterns of development than would

otherwise result from dispersal across the rural areas, as noted in supporting text at paragraph 2.26, is also supported.

Within previous representations to the emerging LDP we raised concerns that the concentration of development solely to the west of Burnham on Crouch was seemingly at odds with the current designation as both part of the Coastal Protection Zone and Special Landscape Area. Notwithstanding the apparent proposed deletion of these designations it is considered that these clearly identified a degree of landscape sensitivity, which was confirmed within the Landscape Assessment submitted alongside our previous representations. Reduction in the scale of development at this general location would certainly provide better scope for achievement of a scheme which results in less visual impact on this exposed area of the settlement edge, albeit that a degree of concern naturally remains.

By the same token we naturally welcome proposed inclusion of land owned variously by the RHS and the Tolhurst Family to the north of Burnham on Crouch, either side of Southminster Road, as Strategic Allocations. Our previous submissions highlighted the manner in which development could be accommodated within these sites without significant adverse landscape or visual impact, including the ability to retain the visual separation between the main part of Burnham on Crouch and the Stoney Hills area of the settlement, that had been raised as a concern in the earlier consultation document. The sustainability of these sites, in respect of accessibility to a range of facilities and services was also underlined within the Development Framework Document submitted at that stage.

We would like to confirm that the scale of development envisaged within Policy S2 would be capable of being delivered within the timescales identified. Since the above document, which provided a summary of evidence base material available to date, was submitted further assessment work has been undertaken in respect of ecology, highways/transport, and drainage. Further information on these matters is set out in relation to representations on Policy S6, which itself deals with the site specific circumstances of the proposed Strategic Allocations at Burnham on Crouch in greater detail. Additionally we would advise that the landowners have progressed discussions with respected national house-builders and have selected a preferred development partner with whom to take matters forward. The selection process included a particular focus on design quality and a proven track-record of delivering landscape-led developments. Finalisation of an option agreement is at an advanced stage, which it is considered can provide further assurance on the issue of deliverability.

Policy S3 Place Shaping

The RHS and the Tolhurst Family support the approach to place shaping that is presented within Policy S3, and consider that the range of principles are valid to the objective of creating successful places that are attractive, prosperous and safe, and where people will ultimately want to live, work and visit. In particular it is welcomed that this policy includes a degree of variation in approach between the proposed Garden Suburbs and the proposed Strategic

Allocations. Within our previous representations to the Preferred Options consultation we had raised concern that the approach to all of the major allocations was somewhat broad-brush and did not reflect or acknowledge that different circumstances may apply to each of these.

We are especially pleased that references to the provision of Local Centres are clearly related only to the Garden Suburbs, where the scale of development is such that a mix of shops and community uses would be more appropriate than at the Strategic Allocations, where smaller sites are involved and indeed the relationship to existing retail facilities within the Town Centre is somewhat different.

Policy S6 Burnham on Crouch Strategic Growth

The RHS and the Tolhurst Family broadly support Policy S6, which sets out in greater detail the considerations to be applied to development proposals at the Strategic Allocations at Burnham on Crouch, although would also like to make a number of qualifying comments. As expressed within representations to Policy S2, we fully support the re-distribution of growth around Burnham on Crouch and the identification of land north of the settlement, either side of Southminster Road (S2 (i) and S2 (j)) as Strategic Allocations.

The range of measures needing to be addressed within development proposals is considered to be broadly appropriate, although we would like to raise a number of concerns and matters where it is felt that clarification would strengthen the Plan.

2) Whilst the objective of delivering enhanced public transport in association with the Strategic Allocation sites is clearly a positive aspiration it is considered that the wording of this requirement is too rigid. The exact routing of bus services will remain a commercial decision for the bus operators and therefore there can be no guarantee that diversion of routes into the sites would be achieved. The relatively modest scale of each of the three sites is also such that influence over these matters will be more limited. It is therefore felt that a more flexibly worded requirement to seek to secure enhanced public transport provision or to ensure that accessibility to such provision is maximised would be more appropriate in this context.

6) We have noted in relation to Policy S3 that the removal of the previous broad-brush approach to the requirement for community hub and local centre provision applied to all urban extension sites, regardless of their circumstances or the needs of the local area, through application of this solely to the Garden Suburbs, is supported. By the same token, however, the inclusion of a sweeping requirement for community hubs and local centres for the Strategic Allocation sites at Burnham on Crouch, appears to repeat this somewhat unclear approach. Given the split site nature of development at the settlement it is considered that it would be undesirable to insist upon all three sites providing both of these elements, and furthermore would potentially undermine the vitality and viability of the town centre, which should remain the key focus of retail provision in the town, if this requirement were to be taken literally. This is not to say that my clients are seeking to avoid provision of, or contribution towards, vital and justified non-

residential requirements, but that a more considered and clearer approach to these elements across the three sites is needed within this policy.

11) It would be beneficial to either cross refer to Policy H1 as well as adding reference to the need for regard to be had to viability considerations, as noted in that policy, unless this was the intention of the wording “adequate” which it is accepted allows scope for a degree of subjectivity in assessing levels of provision ultimately proposed.

13) It is considered that the principal focus of additional employment development should be the proposed extension to the existing Burnham Business Park (E1 (q)). As with comments above relating to local centre and community hubs it is not felt that this requirement should be insisted upon within each of the development parcels, and that a more considered approach to the amount and type of provision, and indeed whether it would be appropriate for loosely worded “B use” development, which would effectively comprise B1, B2 or B8 uses, to be insisted upon across the board.

In addition to these points of clarification that are sought, we would also like to take the opportunity to comment briefly on a number of the issues by way of underlining the ability of our clients’ sites to meet these requirements, where appropriate. Since the previous Development Framework was produced, and submitted in the context of representations to the Preferred Options consultation, further assessment work has also been undertaken. Attached to these submissions are the following:

- An update letter in respect of on-going ecology work being undertaken by Southern Ecological Solutions, confirming that the site as a whole is currently considered of low ecological value, likely to be of importance on a local geographic scale only, and that there is an opportunity to provide major ecological enhancements on the land.
- A pre-planning assessment report undertaken by Anglian Water in relation to our client’s land north of Burnham on Crouch, based on provision of a total of 450 dwellings plus some associated employment. This confirmed that there is sufficient capacity at the sewage treatment works to accommodate the proposed scale of development. Whilst there is not currently enough capacity in the existing foul drainage network system to meet this additional demand, Anglian Water have undertaken to devise a solution to the network capacity problem, consistent with the identification of this issue within the LDP itself. It is understood that this process is well underway and should report back in the near future.
- A transport assessment report undertaken by MLM Consulting Engineers was previously provided to Maldon District Council on an informal basis earlier this year. This considered traffic associated with my clients’ western site in conjunction with the west of Burnham site, representing the enhanced growth scenario that was under consideration at that stage (260 dwellings and 2,000 sqm employment + 450 dwellings) and therefore its conclusions that sufficient capacity exists to accommodate the scale of development envisaged are felt to be robust, albeit that the subsequent re-distribution of a lower

number of dwellings across the sites has not yet been undertaken. The reduction in envisaged capacity for the site west of Southminster Road is considered to further reinforce the appropriateness of the proposed access strategy. Consideration is also given to potential junction improvement works, site access arrangements and other measures in the local area. The document remains presented as a draft, pending further assessment and receipt of formal comments from the Highway Authority. It is also noted that the boundary for the eastern site differs from that now proposed for allocation, and that the Draft LDP also sees the delivery of this within the initial 5 year period. The annotation referring to this as a “potential future phase” reflected the thinking at that stage, and it can be seen that the 260 assigned to the western site compares relatively closely to the 270 now identified across both sites, (and in turn to the 240 proposed for delivery in the first 5 years).

Policy S8 Settlement Boundaries and the Countryside

The RHS and the Tolhurst Family support the recognition given to Burnham on Crouch within the top tier of the proposed settlement hierarchy for the district in Policy S8. It is considered that the range of facilities and services on offer reinforces the development strategy that has been proposed for the district, including the appropriateness of the scale of growth and Strategic Allocations assigned to the settlement.

Policy D1 Design Quality and Built Environment

The RHS and the Tolhurst Family support the general approach to achieving design quality in the built environment as set out in Policy D1. It is considered that the range of requirements reflect accepted best practice in achieving quality development, consistent with policies of the NPPF, which encourage high quality design as part of the framework’s emphasis on sustainable development.

Policy D2 Climate Change and Environmental Impact of New Development

The RHS and the Tolhurst Family support the proposed approach of Policy D2, which is felt to be reasonably framed in terms of both the expected renewable energy and sustainability standards required, and the recognition given to such targets being applied subject to viability considerations.

Policy H1 Affordable Housing

The RHS and the Tolhurst Family support the proposed affordable housing policy approach. In particular it is welcomed that whilst retaining the previously suggested tiered, sub-area based,



approach the levels of percentage requirements have been amended. The reduction in requirement for the Burnham on Crouch Strategic Allocations to align with that for the surrounding Maldon North and Rural South East Higher, at 30%, in line with our previous submissions at the Preferred Options consultation stage is therefore felt to be more appropriate, given that the differential between these was previously unjustified and illogical.

Reference within the policy to the fact that consideration will be given to relaxation of the specified requirements, if fully justified by a viability assessment, is also considered to be entirely appropriate in the context of the NPPF. In particular this is consistent with paragraph 173 of the national framework, which urges careful attention to viability and costs in plan-making and decision-taking, and ensuring that sites are not subject to such a scale of obligations that their ability to be developed viably is threatened.

Policy N1 Green Infrastructure Network

The RHS and the Tolhurst Family object to Policy N1 on the basis that it is unclear how this policy should be applied to land proposed to be designated as Natural and Semi-Natural Green Space. This submission should be read in conjunction with our objection to the proposed identification of land north of Maldon Road, Burnham on Crouch as site SN41, which is considered to be unwarranted and unjustified.

Assuming that Policy N1 is intended to apply to site SN41, notwithstanding our separate objection to this, it should be clarified that development proposals that would secure alternative provision in the same general locality, and where this would provide benefits in terms of introducing public access where the current resource is inaccessible, would be supported. It is considered that this is implied within the current wording of the policy, but that this could be more clearly stated, for the avoidance of doubt.

Policy N3 Open Space, Sport and Leisure

The RHS and the Tolhurst Family object to Policy N3 on the basis that it is unclear how this policy should be applied to land proposed to be designated as Natural and Semi-Natural Green Space. This submission should be read in conjunction with our objection to the proposed identification of land north of Maldon Road, Burnham on Crouch as site SN41, which is considered to be unwarranted and unjustified.

Assuming that Policy N3 is intended to apply to site SN41, notwithstanding our separate objection to this, it should be clarified that development proposals that would secure alternative provision in the same locality, and where this would provide benefits in terms of introducing public access where the current resource is inaccessible, would be supported.

Proposals Map

The RHS and the Tolhurst Family support the identification of land north of Burnham on Crouch, either side of Southminster Road, as Strategic Growth Allocations within the LDP, for the reasons set out in representations to Policies S2 and S6.

They are however concerned at the proposed designation of part of the land north of Maldon Road as a Natural and Semi-Natural Green Space, and therefore object to this aspect of the Proposals Map. Separate representations in this regard have been made in relation to Policies N1 and N3, largely highlighting a lack of clarity in the application of these to this designation in particular. For the avoidance of doubt, however, this objection is also being made in relation to inclusion of this designation on the Proposals Map itself.

It is considered that this designation is not fully justified within the Green Infrastructure Study evidence base document, which is understood to be the document that is intended to underpin its identification in this regard. This study explains that sites of this type have been identified regardless of their accessibility on one hand, yet on the other it is then suggested that all such are assumed to be accessible to the general public for the purpose of the accessibility assessment that has then been undertaken. Furthermore it is presented, within Figure 5.1, as providing accessible provision to a 2km catchment area surrounding the site, which is clearly and fundamentally flawed given the lack of access available.

For the avoidance of doubt we would confirm that the site identified as SN41 is not publicly accessible to any degree, representing privately owned land that does not have any public right of way crossing it. It is not considered that the site is of any particular special ecological value, and hitherto has not been afforded any statutory or local designation in this regard. Ecological assessment has been, and continues to be, carried out in relation to the site as a whole, with the conclusions of Southern Ecological Solutions as follows:

“The survey work has revealed that the vast majority of the site is of low ecological value and although protected species have been identified, these are considered restricted to site boundaries and off site habitats due to the intensive arable regime on site. The site as a whole is currently considered of low ecological value, likely to be of importance on a local geographic scale only.

There is an opportunity to provide major ecological enhancements on the land. By adopting an ecosystem services approach and with careful design of open spaces there is also significant scope for the provision of accessible open space for new and existing residents.”

As referred to above, and echoed in relation to representations on the related policies themselves, it is evident that considerable scope exists for both ecological enhancement and the delivery of significant areas of well landscaped and managed open space, that would have the added benefit of being accessible to the public in conjunction with proposals for development of the Strategic Allocation S2 (i), and in turn S2 (j) (and no doubt also S2 (h)). As

such it is felt that designation of site SN41 is neither justified in terms of the nature of the resources itself, nor useful in the context of delivering sustainable growth for Burnham on Crouch, given the commitment to ensure enhanced provision in any event.

Retention of this designation, and application of any rigid protection of this, which is not considered to be the intention of associated draft policies of the LDP, would also potentially have an undesirable impact on the form of development on the site. In particular this would potentially result in the focus of development being towards the north and east of the western site, which may be at odds with the principle of achieving separation and avoiding coalescence between the northern and southern parts of Burnham on Crouch that was highlighted in the previous Preferred Options consultation document. This is not to say that a satisfactory form of development could not be achieved, if this were insisted upon, but simply to highlight that this would not represent the most desirable approach when the designation itself is not considered to be warranted, and where such clear scope exists for creation of ecological enhancement and increased open space accessibility in the context of the Strategic Allocation site as a whole.

Boyer Planning Ltd.
October 2013

Matt Clarke
Boyer Planning
15 De Grey Square
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CO1 1PY



By email: mattclarke@boyerplanning.co.uk

Our ref: 012137

1 October 2013

Dear Mr. Clarke,

RE: Land at Burnham-on-Crouch, Essex.

I am writing to confirm that we have been undertaking rigorous ecological survey of Land at Burnham on Crouch as identified in Boyer Planning Drawing: 11.633/152. Land west of Southminster Road has been covered in more detail than land to the east, although in terms of delivery of housing in accordance with best practice and the existing legal framework, it is not considered a constraint. All work follows published guidance, best practice and has been undertaken by experienced ecological surveyors.

The survey work has revealed that the vast majority of the site is of low ecological value and although protected species have been identified, these are considered restricted to site boundaries and off site habitats due to the intensive arable regime on site. The site as a whole is currently considered of low ecological value, likely to be of importance on a local geographic scale only.

There is an opportunity to provide major ecological enhancements on the land. By adopting an ecosystem services approach and with careful design of open spaces there is also significant scope for the provision of accessible open space for new and existing residents.

In our opinion there are no overriding ecological constraints associated with development and that based on our current survey data significant benefits can be achieved with careful design.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Stuart Pankhurst', written over a light green wavy background element.

**Stuart Pankhurst MCIEEM BSc MSc DipIC
Director**

Professional Service • Pragmatic Solutions
Ecology, Arboriculture, Countryside Management

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Royal Horticultural Society

Access Feasibility Study

Land North of Maldon Road, Burnham-on-Crouch, Essex

DRAFT



Multidisciplinary Consulting



www.mlm.uk.com

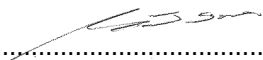
Royal Horticultural Society
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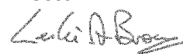
Revision: Draft V1

Date: 05 July 2013

Prepared: Mike Seare BEng(Hons) MCIHT
Principal Transport Planner


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Checked: Les Brown BSc MSc MCIHT CMILT
Technical Director


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Project Revision Sheet

Revision No	Date	Status	Changes	Author	Approved
0	July 2013	DRAFT	n/a	Mike Seare	Les Brown
1	July 2013	DRAFT	Boyer Planning Comments	Mike Seare	Les Brown

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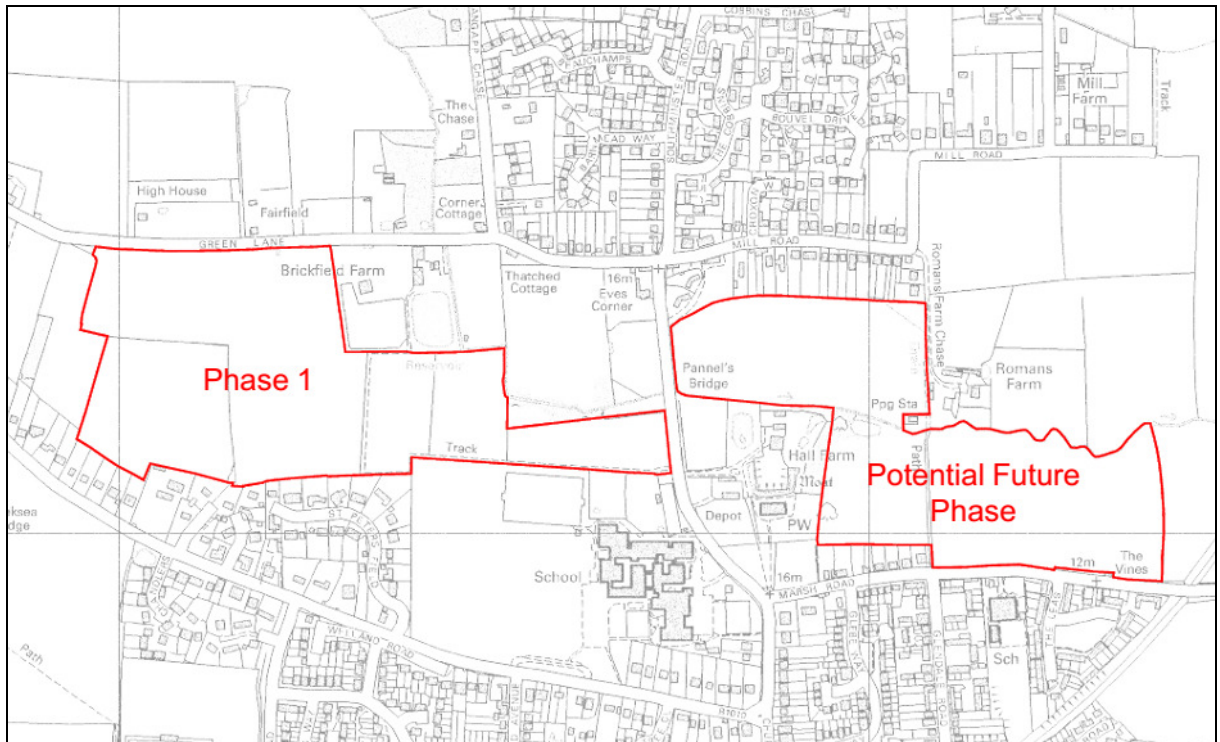
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Appendices

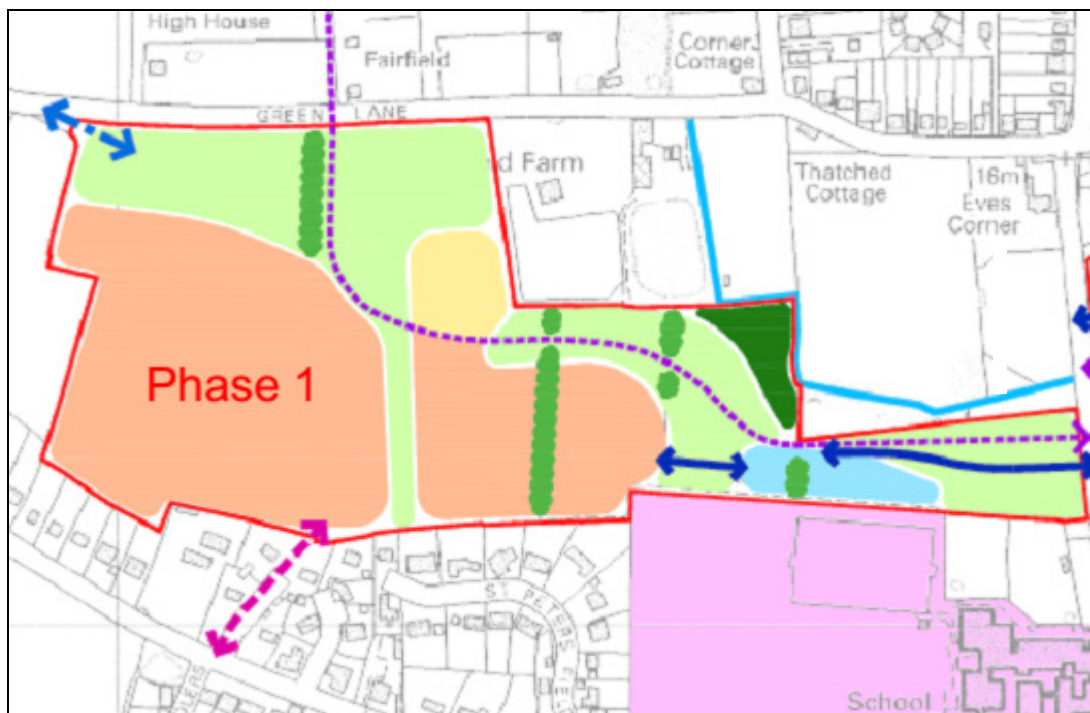
Appendix 1:	Traffic Flow Diagrams
Appendix 2:	Accident Data Location Plan
Appendix 3:	Possible Mini-Roundabout Site Access
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Appendix 6:	Possible Mini-Roundabout at Maldon Rd/Church Rd (south) junction
Appendix 7:	DfT Traffic Advisory Leaflet 2/04

1 Introduction

- 1.1 MLM Consulting Engineers have been instructed by Royal Horticultural Society to prepare an Access Feasibility Study (AFS) in further support of a proposed development site located to the north of Burnham-on-Crouch town north of Maldon Road. A potential additional future site area opposite this site to the east of Southminster Road has not been considered in this study. Refer to Location Plan below.



- 1.2 At this stage the 'Phase 1' development is considered capable of providing 260 dwellings with some accommodation for the elderly in the form of sheltered housing. In addition to this housing, 2,000sqm of commercial business floor space is expected to be provided but half of the site would be left undeveloped including significant areas for landscaping and public open space.
- 1.3 The site is proposed to be served by a single vehicular point of access to Southminster Road to the east of the site along with associated pedestrian facilities. An emergency/foot/cycle access is proposed at the north western corner of the site to Green Lane and a further pedestrian/cycle access is proposed at the south western area of the site connecting to Meadow Way. In addition to these accesses another pedestrian route through the site will link directly to the existing footpath heading north on the Green Lane site frontage. Refer to the indicative site layout extract below.



LEGEND

-  Site Boundary
-  Low Density Residential Development
-  Residential Development
-  Employment
-  Open Space
-  Ecological Area
-  Existing Hedgerow
-  Existing School
-  Access
-  Possible Emergency Access
-  Pedestrian Route
-  Potential Pedestrian and Cycle Link
-  Existing Railway
-  Existing Railway Station
-  Existing Stream

1.4 Discussions with Maldon District Council have raised a number of highway issues with the proposed site on which clarification would be welcomed, as follows:-

- Sole vehicular access from Southminster Road
- Capacity of Maldon Road/Church Road Triangular Junction.
- Safety aspects of increased traffic through the Burnham Bends

- The use of Green Lane as a rat run.

The purpose of this report is to investigate and address these issues. Initial discussions have been held with ECC Highways on the above and although no formal response has yet been received they have indicated that the quantum of development is unlikely to be precluded by having only a single vehicular access point. This report will also take into account the cumulative effect of the 'West of Burnham' proposed allocation site for 450 dwellings favoured within the previous LDP Preferred Options Draft (2012).

- 1.5 This report refers to information contained within Mouchel's report '*Assessment of Impact of Potential Core Strategy Sites on Existing Junctions, Dec 2010*' prepared to support the Maldon LDF Core Strategy.
- 1.6 Section 2 describes the local traffic conditions with Section 3 describing the possible site access arrangements. Section 4 considers the level of predicted vehicle trips generated by the proposed development and the West of Burnham site. Section 5 assesses the potential implications of the development traffic at the new site access on Southminster Road and at the Maldon Road/Church Road 'triangular' junction. Measures required to accommodate the development traffic are also considered for this junction.
- 1.7 Section 6 considers possible measures to improve safety at the Burnham Bends and measures to dissuade the development's traffic from using Green Lane as a rat-run.
- 1.8 Section 7 reviews the work undertaken and also sets out the conclusions of the report.

2 Existing Traffic Conditions

Existing Traffic Flows

- 2.1 Peak hour traffic surveys were carried out on Thursday 19th July, 2012 at several junctions within the vicinity of the development site to establish the existing AM and PM peak hour traffic flow conditions for a weekday. These include vehicle movements at the critical Maldon Road/Church Road junction which has been previously identified in the Mouchel LDF report as having future capacity constraints irrespective of future development in the area. Copies of the survey data is available upon request but the resulting traffic flow diagrams covering this junction and the Southminster site frontage for the observed peak hours are illustrated on Diagrams 1 and 2 attached at **Appendix 1**.
- 2.2 In terms of existing peak hour traffic conditions the surveys indicate that the 2-way vehicle flows for Southminster Road past the site in both weekday AM and PM peak hours of 08:00-09:00hrs and 17:00-18:00hrs respectively are about 550 vehicular movements. These movements are relatively balanced in each direction for the PM peak hour but are in a 60/40 ratio in favour towards the south in the AM peak hour.
- 2.3 Concerns have been raised about the 2012 survey data having been undertaken in July towards the end of the school year. Traffic surveys undertaken in the Mouchel LDF report were undertaken in May 2010 which is considered to be more of a 'neutral' month to undertake traffic surveys. For the Maldon Road/Church Road junction the 2010 survey recorded 1227 movements through the junction in the weekday AM peak hour whereas the 2012 survey recorded an increased 1250 movements; a 1.9% increase. For the PM peak hour the 2010 survey recorded 1191 movements with the 2012 recoding 1226; a 2.9% increase. Therefore the 2012 surveys are considered robust and show a growth in traffic figures despite the observed decline in traffic flows in recent years.
- 2.4 Green Lane has 64 and 84 two-way movements during the weekday AM peak hour at its western end at Maldon Road and its eastern end at Southminster Road respectively. For the PM peak hour there is 81 two - way movements at both its western and eastern ends.

Personal Injury Accidents

- 2.5 A record of personal injury accidents for a recent 3 year period ending July 2012 were obtained from ECC for the Burnham-on-Crouch area. A location plan of these accidents is attached at **Appendix 2**. Full details are available upon request.
- 2.6 Within the study area there were 10 slight and 2 serious accidents with no fatalities reported. This area is very large and there are no clusters of accidents except for two at the Maldon Road/Springfield Road T-junction and two in the vicinity of the Maldon Road/Church Road junction. The accidents at the Maldon Road/Springfield junction involved a motorist pulling out of Springfield Road and colliding with a cyclist (slight accident) with the other being a serious accident involving a motorcyclist overtaking a vehicle that was turning right into Springfield Road.

- 2.7 The two accidents at the Maldon Road/Church Road junction were both of slight severity. One involved a vehicle turning left from Maldon Road and colliding with the back of a vehicle heading north on Church Road. The other involved a vehicle turning right from Maldon Road and colliding with a vehicle travelling south along Church Road.
- 2.8 The other serious accident involved an inexperienced motorcyclist who turned left from Southminster Road into Green Lane but left the manoeuvre too late, braked too suddenly and came off the motorcycle.
- 2.9 Analysis of the accident data indicates that the local highway network would not in itself appear to be a precipitating cause of the accidents.
- 2.10 Most of the accidents are caused by drivers failing to observe properly due to their carelessness. We do not know from the data if the accidents occurred to local residents or whether they may have been visitors to the area. The development proposals are unlikely, therefore, to have a detrimental impact on the accident rate in the area. Any junction improvements at the Maldon Road/Church Road junction that slow through traffic are likely to have a beneficial effect for safety at that junction.

3 Proposed Vehicular Access

- 3.1 As stated in Section 1 it is proposed to serve the site by one main vehicular access to Southminster Road with a separate emergency access and other pedestrian and cycle accesses. The site layout will provide a "permeable" layout, that is, the arrangement of buildings and the proposed access points from the road frontage will ensure that the development is easily accessible for pedestrians and cyclists. As such the number of access points from these external routes will be maximised to ensure flexibility for these users to and from the development and throughout the site.
- 3.2 The proposed access road from Southminster Road is expected to be in the form of a 'Feeder Road' as defined in the Essex Design Guide and is stated as being suitable to serve up to 200 dwellings from a cul-de-sac or 400 dwellings if the access forms a link or loop. The proposed access arrangements are currently being discussed with ECC Highways who have informally commented that a single vehicular access is likely to be possible to serve the proposed 260 dwellings and 2,000sqm commercial floor space.
- 3.3 The format and size of the access junction has been determined by the length of site frontage to Southminster Road which is approximately 80m. A simple T-junction serving a little over an 80 dwelling development is likely to increase side road daily traffic flows in excess of the 500 two-way movements threshold specified in the Design Manual for Roads & Bridges (DMRB) guidance where consideration should be given to implementing a ghosted right turn lane facility rather than a simple T junction. However, the relatively short length of the site frontage and 3rd party land opposite the site precludes a ghosted right turn lane being implemented. Furthermore there are no other ghosted right turn junctions in the area.
- 3.4 A mini-roundabout junction is considered the preferred access junction format for the traffic conditions and nature of Southminster Road adjacent to the site. Refer to **Appendix 3** for a possible mini-roundabout site access layout. The access road has been shown with a 6.75m wide carriageway rather than the standard 6.0m width for a 'Feeder Road' due to the commercial element of the development. This commercial element is expected to be of low-key office use although it may attract a number of vehicles greater than 7.5 Tonnes. The mini-roundabout junction can cater for large vehicles such as refuse vehicles and pantechincons but will not permit large articulated lorries.
- 3.5 The layout of the junction is in accordance with DMRB geometric standards but would require an independent Stage 1 Road Safety Audit. A mini roundabout junction serving the development in this location would act as a traffic calming feature to help suppress vehicle speeds and would also provide uncontrolled pedestrian crossing points across each arm.

- 3.6 The DMRB standards for mini-roundabouts (TD 54/07) states that these junctions must not be used for new junctions or where the daily traffic flow on each arm is less than 500 vehicles/hour. They are also limited to roads with speed limits of 30mph or less and where the 85th percentile speed for the existing road approaches to the possible junction location is less than 35mph. However, the DfT '*Mini roundabouts-good practice guidance*' states that the DMRB mini-roundabout standards are mandatory for trunk roads but are advisory for applications on local roads. The design guidance contained in the DMRB standard would be applicable to all roads but the guidance on siting and use may differ on local roads which are different in character to trunk roads.
- 3.7 At the introduction of the '*Manual for Streets 2*' seminar in London on 29th Sept, 2010 the authors advised delegates that the use of mini-roundabouts related to the context in which they are used as opposed to the local hierarchical designation of the route. This may overcome the DMRB statement that mini-roundabouts cannot be used for new accesses but this needs to be confirmed with ECC Highways.
- 3.8 The semi rural nature of Southminster Road at this location may dissuade ECC from permitting a mini-roundabout at this location. As an alternative to that type of junction a compact normal roundabout layout has been shown at **Appendix 4**. This type of roundabout does not need to comply with the same requirements of the mini-roundabout with regards approach speeds, minimum traffic flows and can stand in isolation for a new site access. The land take for this junction is much greater than for the mini roundabout but would permit large articulated vehicles to enter the site if necessary.
- 3.9 The junction capacity of the possible mini roundabout junction layout is considered in the next section. The capacity of the alternative compact roundabout is much higher than that of the mini-roundabout and has not been assessed.

4 Traffic Generation/Attraction & Distribution

4.1 Notwithstanding the accessibility of the site, the development is likely to attract an appreciable level of vehicular traffic, the impacts of which are addressed below. To consider the suitability of the potential impact that the proposed development may have on the local highway network, it is necessary to determine the level of traffic generation expected during weekday morning and evening peak hour periods. The site will be assessed as a 260 dwelling residential site with 2,000sqm of B1 commercial use.

Proposed Development Trip Generation

4.2 The Mouchel LDF Report determined trip rates for the LDF residential sites it was assessing breaking down the sites into expected housing and tenure types. At this stage it is not known the exact accommodation schedule of the residential site, hence for robustness the more onerous trip rates for privately owned houses have been used for all the proposed 260 dwellings. These are summarised below. These robust trip rates will also be applied to predict the vehicular movements from the 450 dwellings proposed at the 'West of Burnham' site.

Table 4.1: Predicted Peak Hour Vehicular Trip Rates/dwelling for Proposed Residential Development

Development – Land North of Maldon Rd	AM Peak Hour 08:00-09:00		PM Peak Hour 17:00-18:00	
	Arrivals	Dept's	Arrivals	Dept's
Proposed Residential Development (Trips/Dwelling)	0.157	0.457	0.401	0.235
Number of Vehicular Trips for 260 dwellings	41	119	104	61

4.3 The quantum of vehicle trips attracted by the proposed 2000sqm of commercial floorspace in the weekday peak periods has been assessed using the TRICS database 2013(b). Sites from the TRICS database have been obtained from the category 'Business Park' in the range of 1300-4000sqm. The database contains 6 sites of relevance in southern/middle England (excluding London sites), most of which are in edge of town and suburban locations such as the application site. Average trip rates for the selected sites have been adopted due to the lack of subject sites as recommended by TRICS. The TRICS data for the commercial floor space is produced at **Appendix 5** and summarised at Table 4.2 below together with the resultant number of person trips attracted by the proposed development of 2000sqm for the weekday AM & PM peak hour periods. The AM and PM peak hours for the development corresponds with the local highway network AM peak hour of 08:00-09:00 and PM peak hour of 17:00-18:00.

Table 4.2: Predicted Peak Hour Vehicular Trip Rates/dwelling for Proposed Commercial Development

Development – Land north of Maldon Road	AM Peak Hour 08:00-09:00		PM Peak Hour 17:00-18:00	
	Arrivals	Dept's	Arrivals	Dept's
Proposed Commercial Development (Trips/100sqm GFA)	1.769	0.304	0.196	1.442
Number of Vehicular Trips for 2000sqm of B1 use	35	6	4	29

Table 4.3: Predicted Peak Hour Vehicular Movements for Proposed Residential & Commercial Development

Development – Land North of Maldon Road	Weekday AM Peak Hour 08:00-09:00		Weekday PM Peak Hour 17:00-18:00	
	Arr	Dept	Arr	Dept
Proposed 260 Dwellings	41	119	104	61
Proposed 2000sqm of B1 use	35	6	4	29
Total Number of Vehicular Trips	76	125	108	90
2-way Total	201		198	

Trip Distribution and Assignment

4.4 Vehicular movements generated by the proposed residential element of the development have been assigned to the local highway network as per the Mouchel LDF report which is based on the use of census data for journey to work data to local authority/ward areas. These assignments are reversed for the PM peak hour. For simplicity the vehicle movements attracted to the commercial will retain the same distributions. On this basis the likely split of traffic to and from the site for both peak hours has been simplified as:-

- 12.5% north from/to Southminster Road
- 87.5% south from/to Southminster Road
- 80% (of 87.5% south) west at Maldon Rd/Church Rd junction
- 20% (of 87.5% south) south at Maldon Rd/Church Rd junction

For robustness of the development traffic passing through the Maldon Road/Church Road junction it has been assumed that no traffic heading to or coming from the west will travel via Green Lane. Potential rat-running through Green Lane will be dealt with in the next section. The proposed development traffic flows for the site access and the Maldon Road/Church Road triangular junction during the weekday AM & PM peak hours are shown on Diagrams 5 & 6 at **Appendix 1**.

4.5 Similarly for the traffic generated from the 'West of Burnham Site', the likely traffic split is simplified as follows:-

- 75% west from/to Maldon Road
- 25% east from/to Maldon Road
- 50% (of 75% west) north at Maldon Rd/Church Rd junction
- 50% (of 75% west) south at Maldon Rd/Church Rd junction
- 75% (of 50% north) north at Marsh Lane/Church Rd junction
- 25% (of 50% north) east at Marsh Lane/Church Rd junction

The 'West of Burnham' development traffic flows for its access onto Maldon Road, the Maldon Road/Church Road 'triangular' junction and past the proposed Southminster Road site access during the weekday AM & PM peak hours are shown on Diagrams 9 & 10 at **Appendix 1**.

5 Traffic Impact

Traffic Flow Conditions

5.1 The traffic flow diagrams for the observed peak hours and development scenarios on a weekday are attached at Appendix 1 as follows:-

- Diag 1: Weekday AM peak hour 8:00-9:00am observed flows 2012
- Diag 2: Weekday PM peak hour 5.00-6.00pm observed flows 2012
- Diag 3: Weekday AM peak hour base flows 2020
- Diag 4: Weekday PM peak hour base flows 2020
- Diag 5: Weekday AM peak hour Proposed Development traffic flows
- Diag 6: Weekday PM peak hour Proposed Development traffic flows
- Diag 7: Weekday AM peak hour base 2020 + Development Flows
- Diag 8: Weekday PM peak hour base 2020 + Development Flows
- Diag 9: Weekday AM peak hour Proposed West of Burnham flows
- Diag 10: Weekday PM peak hour Proposed West of Burnham flows
- Diag 11: Weekday AM peak hour base 2020 + All Development Flows
- Diag 12: Weekday PM peak hour base 2020 + All Development Flows

Assessment Year

5.2 A full development design/occupation year of 2020 has been assumed and the traffic impact attracted to the site has been assessed for this year.

Traffic Growth

5.3 Growth in base traffic through to the year 2020 from the 2012 traffic surveys has been calculated using TEMPRO methodology which takes into account planning data for allocated sites in the area. The average AM and PM peak hours growth factors for 2012 to 2020 are 1.063 and 1.081 respectively. This growth is despite the recent decline in traffic flows in general but has been used due to the uncertainty of committed developments in the area. The relevant growth factors for the peak hours have thus been applied to the 2012 base year traffic flows and the resultant base flows in 2020 are shown on Diagrams 3 & 4 of **Appendix 1**.

Operational Assessment

5.4 The operational assessments of the possible site access and Maldon Road/Church Road junctions have been undertaken for the morning and evening peak hour periods for the base 2012 and the future year 2020 where applicable.

- 5.5 The roundabout and priority junction assessments have been modelled using ARCADY and PICADY computer programs respectively with the 'OD Tab' option. For the 'OD Tab' option the programs constructs peak synthesised demand profiles for each arm by estimating the flow parameters, given peak hour flows in the form of an origin-destination table. This effectively synthesises a peak within the peak hour, therefore generally producing a worst-case scenario and hence making the traffic analysis robust.
- 5.6 All the traffic models have been used to forecast capacities at the identified junctions, using RFC's (Ratio of Flow to Capacity) and maximum queue lengths.
- 5.7 The theoretical capacity of a junction is taken at the RFC value of 1.0 and the design capacity as a value of 0.85 to 0.90. i.e. 15% or 10% reserve capacity. Values in excess of these values may lead to queuing problems. Geometric parameters of the existing junctions have been measured from the topographical survey.

Junction Assessments

- 5.8 The assessment focuses on the following years and scenarios in the weekday peak hours if applicable to the junction:
- Base Year scenario - 2012
 - Do nothing scenario - 2020
 - Do nothing scenario - 2020 + Development (inc West of Burnham)
 - Do something scenario-2020+Development (inc West of Burnham)
- 5.9 The junctions assessed for capacity are:-
- Possible Site Access Mini-Roundabout at Southminster Road
 - Maldon Road/Church Road (north) T-Junction
 - Maldon Road/Church Road (west) T-Junction
 - Maldon Road/Church Road (south) T-Junction
 - Possible Maldon Road/Church Road (south) Mini-Roundabout

Junction Appraisal

Site Access/Southminster Road Mini-Roundabout Junction

- 5.10 The results of the capacity assessments have been summarised by Ratio of Flow to Capacity (RFC) and Maximum Queue Lengths and are shown in Table 5.1 below. Full printouts are available upon request.

Table 5.1 - Summary of ARCADY Analysis for the Possible Site Access/ B1021 Southminster Rd mini-roundabout - 2020 scenario

MOVEMENT ARM	BASE 2020 FLOWS + PROPOSED DEVT + Western Burnham	
	Max RFC	Max Q (vehicles)
AM PEAK – 08:00-09:00		
B1021 Southminster Rd north	0.510	1.1
B1021 Southminster Rd south	0.360	0.6
Site Access	0.170	0.2
PM PEAK – 17:00-18:00	Max RFC	Max Q (vehicles)
B1021 Southminster Rd north	0.460	0.8
B1021 Southminster Rd south	0.430	0.8
Site Access	0.130	0.2

5.11 The results of the junction capacity tests indicate that the proposed site access would operate well within the design capacity of the junction (RFC < 0.85) in both peaks hours with no vehicle queuing predicted. It can therefore be concluded that the mini-roundabout format can easily accommodate the traffic generation related to the proposed development and the 'West of Burnham' site.

Maldon Road/Church Road (north) T-junction

5.12 The results of the capacity assessments have been summarised by Ratio of Flow to Capacity (RFC) and Maximum Queue Lengths and are shown in Table 5.2 below. Full printouts are available upon request.

Table 5.2 - Summary of PICADY Analysis for the Existing B1021 Church Rd /B1010 Malden Road (north) Junction- 2013 & 2020 scenarios

MOVEMENT ARM	BASE 2012 FLOWS		BASE 2020 FLOWS		BASE 2020 FLOWS + PROPOSED DEVT + Western Burnham	
	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)
AM PEAK – 08:00-09:00						
B1021 Church Rd south	N/A	N/A	N/A	N/A	N/A	N/A
B1010 Malden Road	0.169	0.2	0.180	0.2	0.340	0.5
B1021 Church Rd north	0.221	0.4	0.241	0.5	0.482	1.3
PM PEAK – 17:00-18:00	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)
B1021 Church Rd south	N/A	N/A	N/A	N/A	N/A	N/A
B1010 Malden Road	0.139	0.2	0.153	0.2	0.337	0.5
B1021 Church Rd north	0.113	0.2	0.125	0.2	0.336	0.7

5.13 The results of the junction capacity tests indicate that the northern T-junction would operate well within the design capacity of the junction (RFC < 0.85) in both peaks hours 'with' and 'without' development and a maximum queue length of 1.3 vehicles predicted in the 2020 weekday AM peak hour 'with' development on the Church Road north arm. It can therefore be concluded that no alterations need to be made to the junction to accommodate the traffic generation related to the proposed development.

Maldon Road/Church Road (west) T-junction

5.14 The results of the capacity assessments have been summarised by Ratio of Flow to Capacity (RFC) and Maximum Queue Lengths and are shown in Table 5.3 below. Full printouts are available upon request.

Table 5.3 - Summary of PICADY Analysis for the B1021 Church Rd /B1010 Malden Road (west) Junction- 2013 & 2020 scenarios

MOVEMENT ARM	BASE 2012 FLOWS		BASE 2020 FLOWS		BASE 2020 FLOWS + PROPOSED DEVT + Western Burnham	
	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)
AM PEAK – 08:00-09:00						
B1010 Maldon Road west	N/A	N/A	N/A	N/A	N/A	N/A
B1010 Maldon Road north	0.274	0.4	0.297	0.4	0.603	1.5
B1010 Maldon Road east	0	0	0	0	0	0
PM PEAK – 17:00-18:00						
B1010 Maldon Road west	N/A	N/A	N/A	N/A	N/A	N/A
B1010 Maldon Road north	0.143	0	0.159	0.2	0.470	0.8
B1010 Maldon Road east	0	0	0	0	0	0

5.15 The results of the junction capacity tests indicate that the western T-junction would operate well within the design capacity of the junction (RFC < 0.85) in both peaks hours 'with' and 'without' development and a maximum queue length of 1.5 vehicles predicted in the 2020 weekday AM peak hour 'with' development on the Maldon Road north arm; the short link between Maldon Road and Church Road. It can therefore be concluded that no alterations need to be made to the junction to accommodate the traffic generation related to the proposed development.

Maldon Road/Church Road (south) T-junction

5.16 The results of the capacity assessments have been summarised by Ratio of Flow to Capacity (RFC) and Maximum Queue Lengths and are shown in Table 5.4 below. Full printouts are available upon request.

Table 5.4 - Summary of PICADY Analysis for the B1021 Church Rd /B1010 Maldon Road (south) Junction- 2012 & 2020 scenarios

MOVEMENT ARM	BASE 2012 FLOWS		BASE 2020 FLOWS		BASE 2020 FLOWS + PROPOSED DEVT + Western Burnham	
	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)
AM PEAK – 08:00-09:00						
B1021 Church Rd south	N/A	N/A	N/A	N/A	N/A	N/A
B1010 Maldon Road	0.717	2.4	0.780	3.2	0.874	5.5
B1021 Church Rd north	0	0	0	0	0	0
PM PEAK – 17:00-18:00						
B1021 Church Rd south	N/A	N/A	N/A	N/A	N/A	N/A
B1010 Maldon Road	0.998	13.7	1.111	29.4	1.180	41.0
B1021 Church Rd north	0	0	0	0	0	0

- 5.17 The results of the junction capacity tests indicate that the southern T-junction for the AM peak hour scenarios operates within the design capacity of the junction (RFC < 0.85) for the 2020 year 'without' the developments but is slightly over in the 2020 'with' development scenario. The predicted queue length is only up to 6 vehicles.
- 5.18 The results of the PM peak hour scenarios indicate that the southern T-junction is already operating at its theoretical capacity on the Maldon Road arm in 2012 with a queue length of 13.7 vehicles. For the 2020 year the junction is pushed over capacity. The introduction of the development sites pushes the junction even further over capacity resulting in considerable queue lengths. Therefore improvements are considered necessary at this junction to mitigate the impact of the new development traffic in the area.
- 5.19 As previously stated in the Mouchel LDF report, improvements at this junction are limited by the presence of a large tree positioned on the central triangular junction island. The area of highway land available at this location and the position of private drives preclude a conventional roundabout from being implemented without considerable 3rd party land being required. A reverse in priority at the southern junction would be acceptable in visibility terms but is likely to give rise to more safety issue concerns on the straight northern approach than a mini-roundabout would create.
- 5.20 Should the tree be removed for any reason the complete 'triangular' junction could be replaced by a larger mini-roundabout with two lane entries and pedestrian splitter islands on each approach. However, this would require significant utility diversions.

5.21 The Mouchel LDF report assessed a mini-roundabout option at the junction but this was undertaken on limited detail OS mapping. Therefore a more detailed possible mini-roundabout layout has been shown on the topographical survey of the area which is markedly different from the OS mapping. Due to the straight approach of the Church Road north arm a physical traffic island has been added to this arm but the size of this arm and position has been dictated by permitting access to the adjacent private drive positions. It is unlikely that vehicles will turn left from Maldon Road into Church Road at this junction but is possible by cars. This proposal will require the existing dedicated cycle lane to be removed through the southern junction. Refer to **Appendix 6** for the existing and possible mini-roundabout junction layouts of the Maldon Road / Church Road 'triangular' junction.

5.22 As stated earlier in the report there are some stipulations on Mini-Roundabout locations from the DMRB but the only possible issue with a mini-roundabout at this location is the 85th percentile speed being greater than 35mph on the approaches. This junction format will need to be discussed further with ECC Highways.

Maldon Road/Church Road (south) Possible Mini-Roundabout

5.23 The results of the capacity assessments have been summarised by Ratio of Flow to Capacity (RFC) and Maximum Queue Lengths and are shown in Table 5.5. The 2020 'with' and 'without' development scenarios for the existing T-junction have been copied into the below Table from Table 5.4 for easy comparison. Full printouts of capacity analysis are available upon request.

Table 5.5 - Summary of Capacity Analysis for the existing and improved B1021 Church Rd /B1010 Malden Road (south) Junction- 2020 scenarios

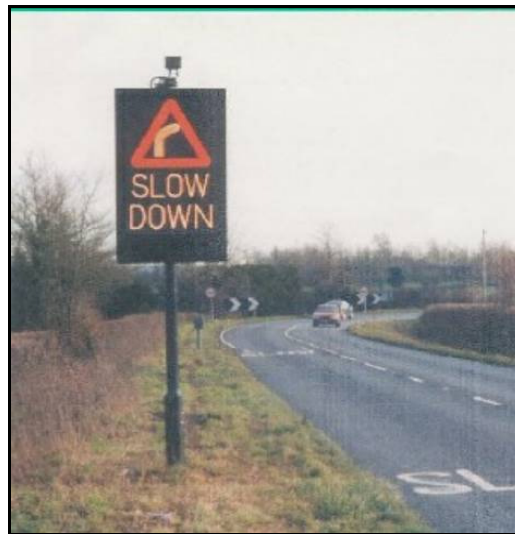
MOVEMENT ARM	BASE 2020 FLOWS Existing T-Junction		BASE 2020 FLOWS + PROPOSED DEVT + Western Burnham Existing T-Junction		BASE 2020 FLOWS + PROPOSED DEVT + Western Burnham Possible Mini-Roundabout	
	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)	Max RFC	Max Q (vehicles)
AM PEAK – 08:00-09:00						
B1021 Church Rd south	N/A	N/A	N/A	N/A	0.680	2.1
B1010 Maldon Road	0.780	3.2	0.874	5.5	0.500	1.0
B1021 Church Rd north	0	0	0	0	0.510	1.0
PM PEAK – 17:00-18:00						
B1021 Church Rd south	N/A	N/A	N/A	N/A	0.650	1.8
B1010 Maldon Road	1.111	29.4	1.180	41.0	0.700	2.3
B1021 Church Rd north	0	0	0	0	0.520	1.1

- 5.24 The results of the junction capacity tests indicate that the possible mini-roundabout would operate well within the design capacity of the junction (RFC < 0.85) in both 2020 peaks hours 'with' development with minimal queuing and shows a vast improvement in capacity over the existing T-junction layout for the 2020 peak hour scenarios 'without' development.

6 The Burnham Bends and Green Lane rat-running

The Burnham Bends

- 6.1 Discussions with Maldon District Council and Councillors have raised issues relating to safety aspects of increased traffic from the development through the Burnham Bends on the B1010 Burnham/Maldon Rd.
- 6.2 Between Althorne and Burnham-on-Crouch on the B1010 there are a series of 10 alternating bends at approximate right angles with varying distances of straight carriageway between the bends. The length of carriageway through these bends is unlit and operates under a 60mph national speed limit. Although the bends are similar in nature they do vary in radii (between 35 to 50m) and in degrees turned. Vehicle speeds of 25-30mph through these bends are comfortable but the straight carriageway approaches can cause some drivers to lessen their concentration on approach.
- 6.3 For the reasons above the majority of these bends are signed with chevron warning signs (some with contrasting backgrounds) and 'SLOW' road markings on approaches. The series of bends also have advanced warning signs with distances indicated for both approaches to the bends rather than individual bend signs for each bend approach. Some of the 'SLOW' markings are under and over lined for emphasis and from a visual inspection the local road surface appears to be in good condition. Unfortunately many motorists see the bends as a challenge to their driving or riding skills and no amount of signage/warnings will dissuade this driving behaviour of travelling through the bends at speed.
- 6.4 The bends are being discussed with ECC Highways and possible measures that could be implemented to improve safety. It is understood that several studies have been undertaken in the past to improve safety at these bends with signage and road markings being amended. Due to the lack of control over adjacent third party land the sharpness of these bends have not been able to be alleviated.
- 6.5 In addition to the existing warning signs further signage could be added although overuse of warning signs can dilute their effectiveness. Anti-skid surfacing could be added around the bends although this may encourage some motorists to travel faster around the bends.
- 6.6 Further discussions will be needed with ECC Highways to decide what improvements can be made although it is likely that a combination of improved signage (possibly with more contrasting backing chevrons), highlighting the 'SLOW' markings with contrasting surfacing and the use of some interactive signage on particular bends (as shown below) would be appropriate. Any proposed improvements would be best covered by a contribution from the development as other developments east of the Bends would need to contribute accordingly.



Green Lane rat-running

- 6.7 The location of the proposed site and the vehicular access to Southminster Road may encourage some motorists travelling west to/ from the site to travel via Green Lane rather than Maldon Road to the south. The route north via Green Lane from the proposed site access on Southminster Road to the Green Lane junction with Maldon Road is approximately 1400m which is approximately 550m shorter than the route south via Maldon Road to the same point.
- 6.8 Green Lane is approximately 1200m long between its junction with Maldon Road to the west and Southminster Road to the east. It operates under 30mph speed limits for short lengths at its ends adjacent to the residential areas of Ostend and Stoneyhills but under a national speed limit of 60mph between the two. It is a local route which is mostly unlit except opposite the side road junctions at the end of the residential areas.
- 6.9 Although the carriageway is relatively straight for the majority of the route the carriageway is effectively a narrow country lane limiting traffic to one-way working and has some formal and informal passing places.
- 6.10 Consideration therefore is given to dissuade traffic from the development using Green Lane as opposed to Maldon Road by making Green Lane less attractive to use. This has to be balanced against existing traffic already using the route from northern Burnham-on-Crouch. Due to the mostly narrow nature of Green Lane any increase in traffic along Green Lane is likely to increase delays in vehicles using this route with vehicles having to give-way to approaching traffic. This will increase the use of the informal passing bay areas with more damaging verge overrun. Therefore a more formal traffic management scheme could be implemented along Green Lane over its national speed limit length by formalising the current single track carriageway with passing bays. Refer to **Appendix 7** for DfT's 'Traffic Advisory Leaflet 2/04' which details a traffic management scheme for a similar carriageway at Bird Lane, Great Warley, Essex.

- 6.11 If a similar scheme to the Bird Lane scheme is implemented at Green Lane this would reduce traffic from the development using this route. Any such scheme would need to go through a consultation process and therefore the development should not be conditional on such a scheme being implemented. Comments from ECC Highways are currently being sought on this issue amongst others.

Summary

- 6.12 In summary after reviewing the local road network by driving, timing the various routes and inspecting the signage and lines on the network various improvements can be undertaken to improve the existing network. The provision of new signs, chevrons, new surfacing and lines will improve their visual impact before drivers undertake manoeuvres.
- 6.13 This will require consultations with the local parish council, local residents and the highway authority.

7 Conclusions

- 7.1 MLM Consultant Engineers have been instructed by the Royal Horticultural Society to provide an Access Feasibility Study to support proposals for a proposed residential development of 260 dwellings and 2,000sqm of commercial floor space on land north of Maldon Road, Burnham-on-Crouch.
- 7.2 The personal injury accident records for the highways surrounding the site have been examined. Analysis of the overall accident data indicates that the local highway network would not in itself appear to be a precipitating cause of the accidents. There is no reason to suppose that the proposed development will compromise the level of safety on the highway.
- 7.3 The site is proposed to be served by a single vehicular point of access to Southminster Road with an emergency/foot/cycle access at the north western corner of the site to Green Lane and a further pedestrian/cycle access at the south western area of the site connecting to Meadow Way. An additional pedestrian footpath will be formed to the Green Lane site frontage to link to an existing footpath heading north.
- 7.4 Initial discussions have been held with ECC Highways regarding the development being served by one access, the access junction format, the capacity of the Maldon Road/Church Road 'triangular' junction, safety issues of the Burnham Bends and prevention of Green Lane being used as a rat-run. ECC Highways have not formally commented on these issues although they have stated informally that it is likely that the development could be served by only one general vehicular access despite Essex Design Guidance 2005 restricting development to 200 dwellings from a cul-de-sac.
- 7.5 Vehicular access to the proposed development is by a possible mini-roundabout junction to Southminster Road. Assessments carried out for the 2020 year 'with' and 'without' the development including the 'West of Burnham' site for 450 dwellings indicate that the possible site access junction can easily accommodate the predicted number of vehicular trips attracted to the developments.
- 7.6 The predicted trip rates for the proposed residential development including the 'West of Burnham' site are based on all dwellings being houses in private ownership which will give a robust junction capacity analysis. The analysis also assumes that the development traffic will not use Green Lane and therefore the assessments for the Maldon Road/Church Road are further robust.

- 7.7 Junction capacity assessments for the Maldon Road/Church Road junction indicate that the junction is currently operating at capacity during the weekday PM peak hour and would be over capacity during the 2020 year 'without' development with significant queuing on the Maldon Road approach. The addition of the development and the 'West of Burnham' site would exacerbate these capacity/queuing issues further. The existing mature tree at this junction limits improvements that can be undertaken to improve capacity but a possible proposal to convert the southern T-junction at this location to a mini-roundabout has been designed. Junction capacity assessments for this proposal indicate that the mini - roundabout junction would operate comfortably within design capacity for the 2020 year 'with' the developments.
- 7.8 Assuming the tree may be removed in the next few years due to condition, damage or other reason this would permit a conventional mini roundabout to be provided.
- 7.9 Possible safety measures to improve the Burnham Bends have been considered and it is likely that a combination of improved signage, road markings and the use of some interactive signage on particular bends would be appropriate. Any proposed improvements would be best covered by a contribution from the development as other developments east of the Bends would need to contribute accordingly.
- 7.10 The use of the narrow Green Lane local route as a rat-run for the development has been considered as it is a shorter route out of Burnham-on-Crouch than the main B1010 Maldon Road route from Church Road. Any increase in traffic along Green Lane is likely to increase delays in vehicles using this narrow route with vehicles having to give-way to approaching traffic. A more formal traffic management scheme could be implemented along Green Lane by formalising the current single track carriageway with passing bays to dissuade rat-running. This form of route management measures have already been used successfully in Essex. Any such scheme would need to go through a consultation process and therefore the development should not be conditional on such a scheme being implemented.
- 7.11 Any future planning application for the development site is likely to have to review junctions further afield from Burnham-on-Crouch such as the B1012 roundabout east of South Woodham Ferrers. Further pre-planning consultations with ECC Highways would enable a scope for any transport supporting documentation for the application to be agreed. This would include further traffic modelling work and junction safety audits.

Appendix 1

Traffic Flow Diagrams

DIAGRAM 1: OBSERVED FLOWS 2012, WEEKDAY 8AM - 9AM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

*Turning Movements at Maldon Road /Green Lane shown only

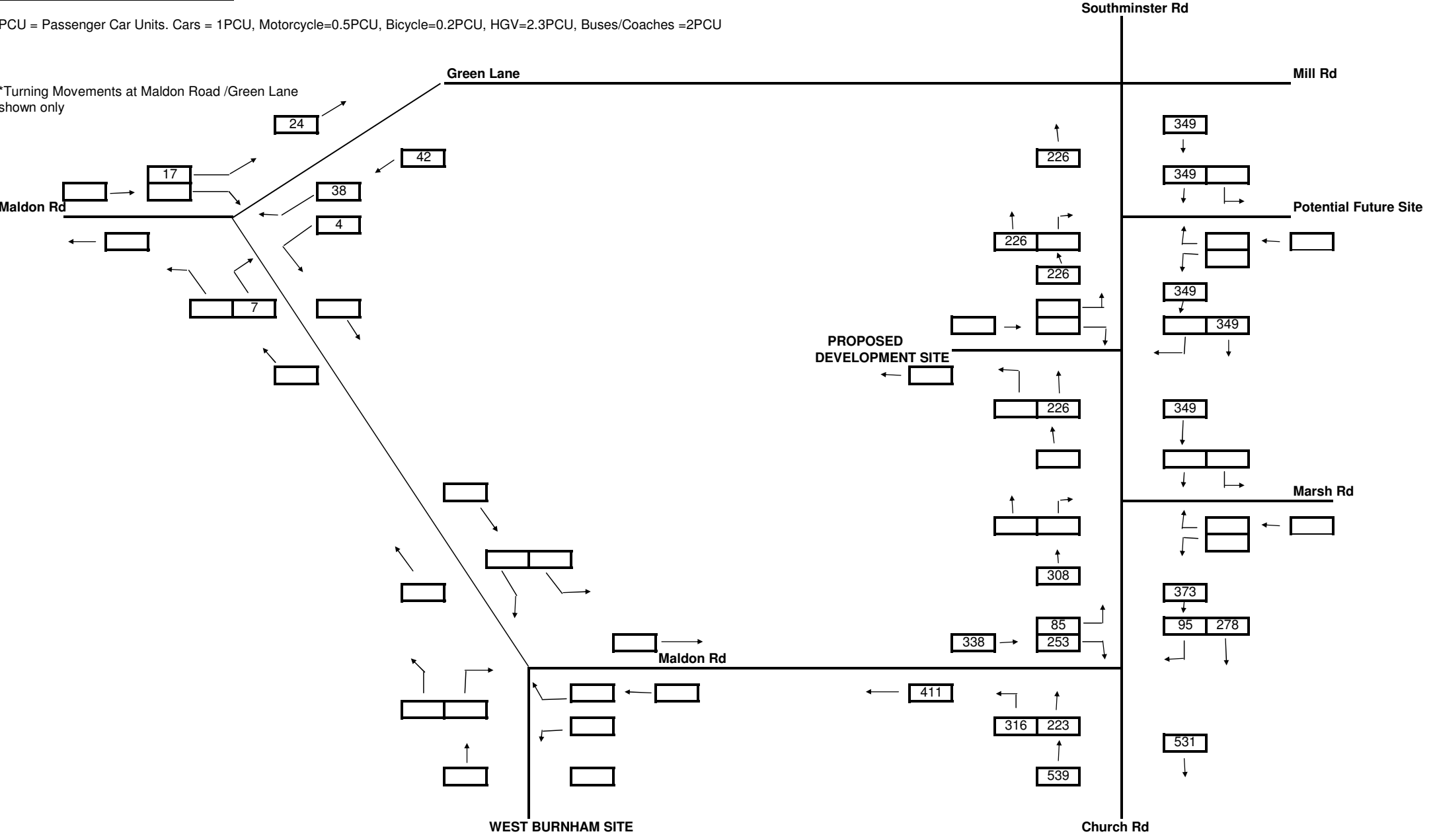


DIAGRAM 3: BASE FLOWS 2020, WEEKDAY 8AM - 9AM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

*Turning Movements at Maldon Road /Green Lane shown only

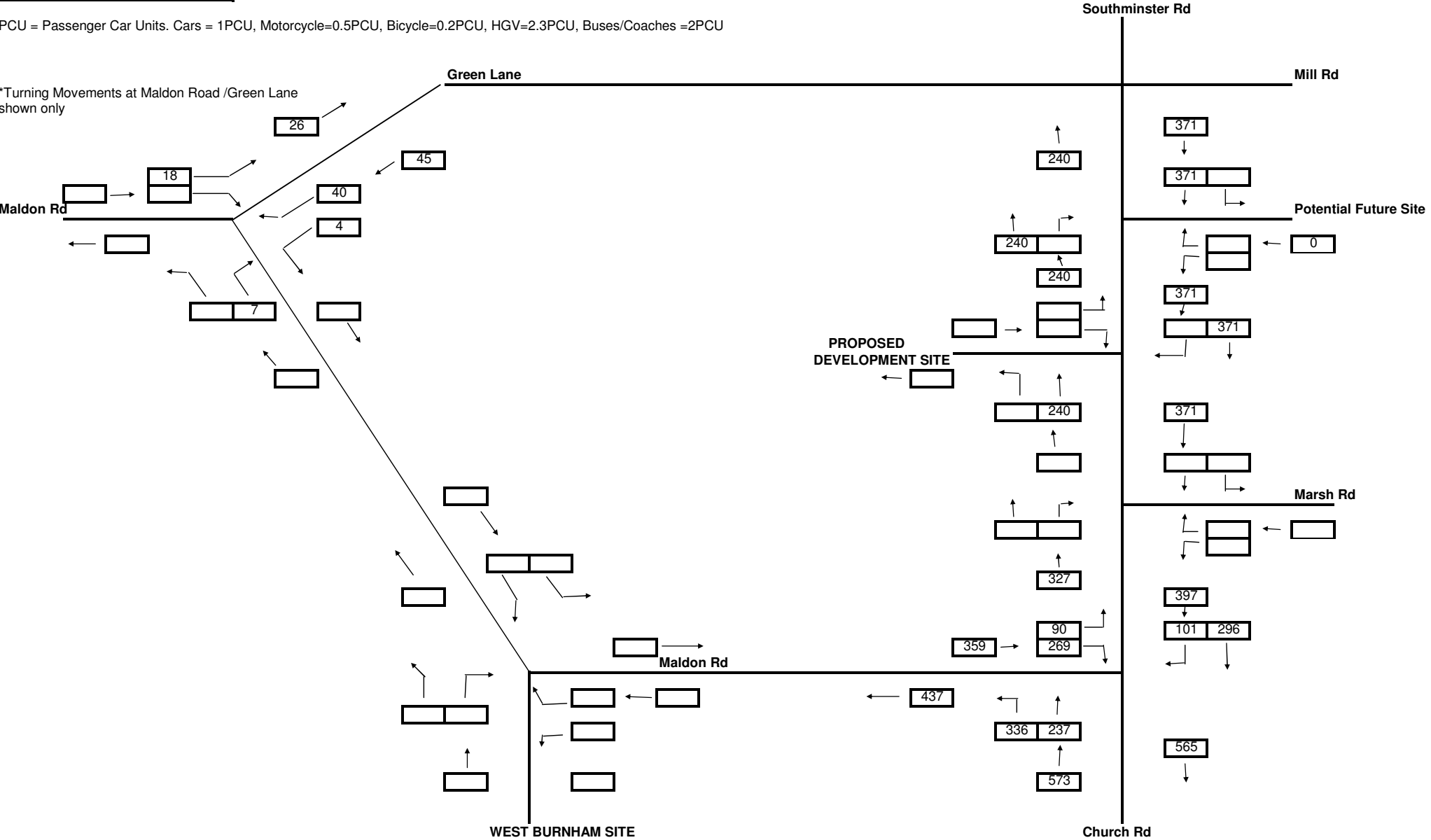


DIAGRAM 4: BASE FLOWS 2020, WEEKDAY 5PM - 6PM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

*Turning Movements at Maldon Road /Green Lane shown only

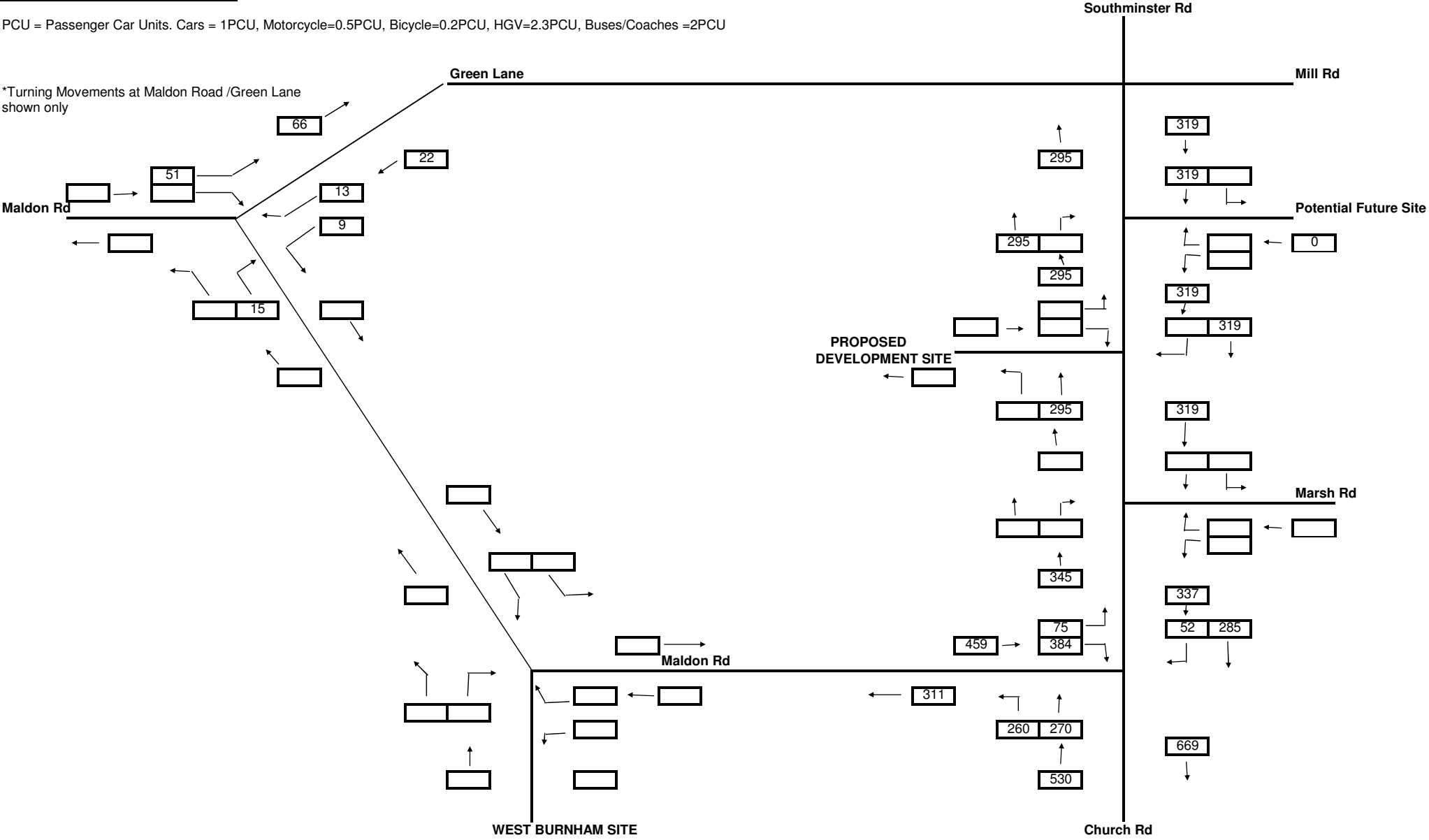


DIAGRAM 5: PROPOSED SITE FLOWS, WEEKDAY 8AM - 9AM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

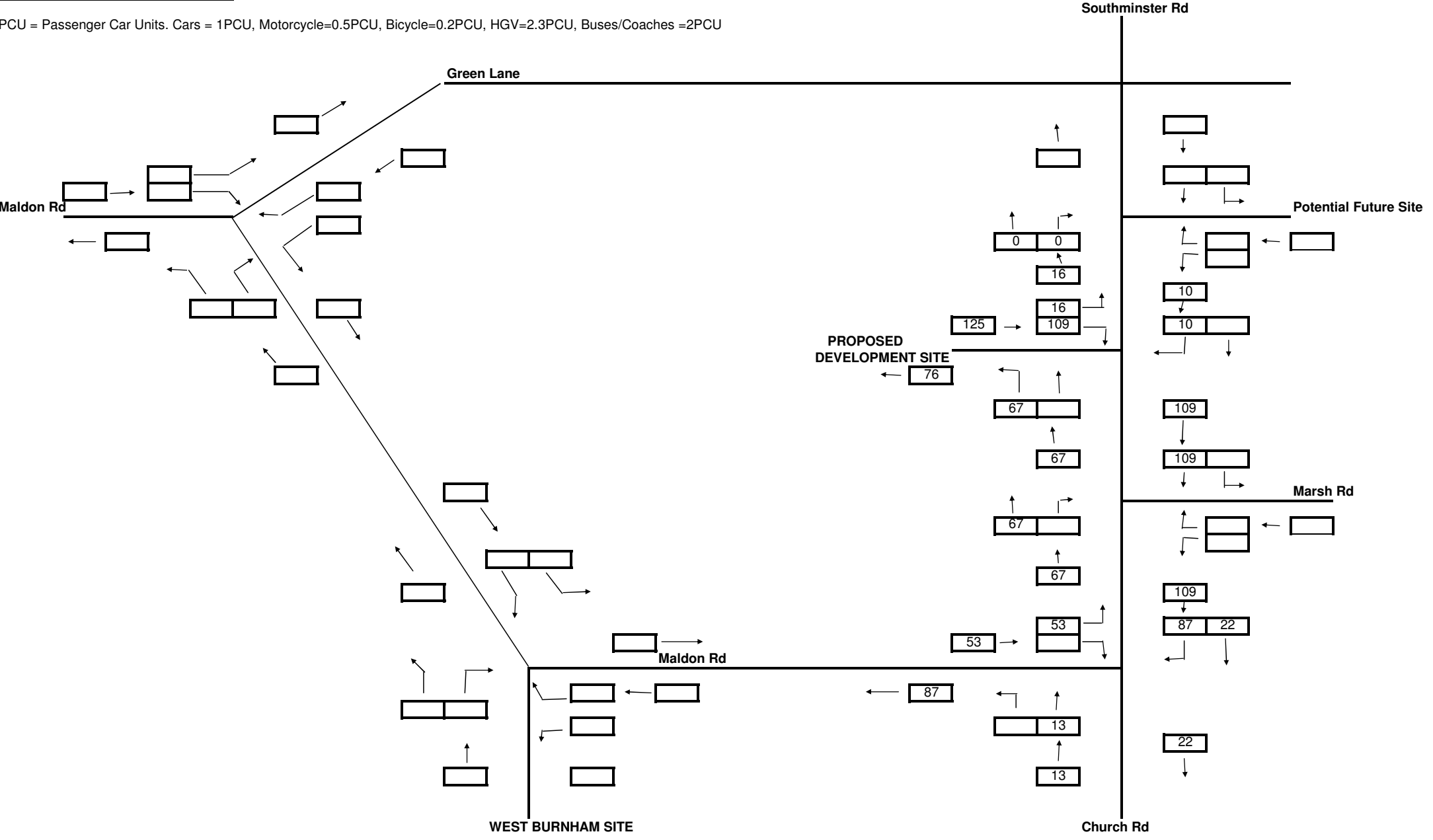


DIAGRAM 6: PROPOSED SITE FLOWS, WEEKDAY 5PM - 6PM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

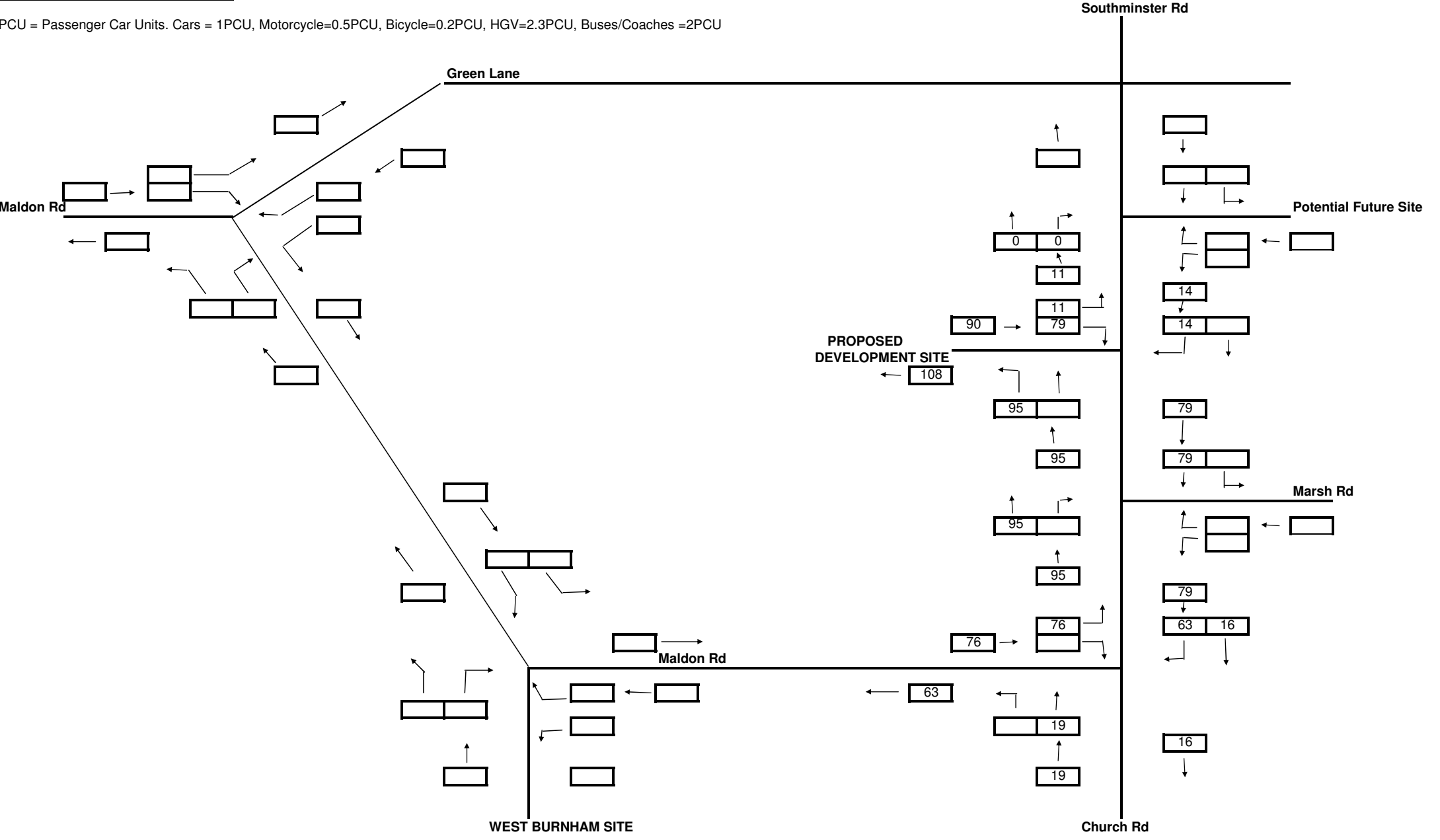


DIAGRAM 7: BASE FLOWS 2020 + PROPOSED SITE, WEEKDAY 8AM - 9AM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

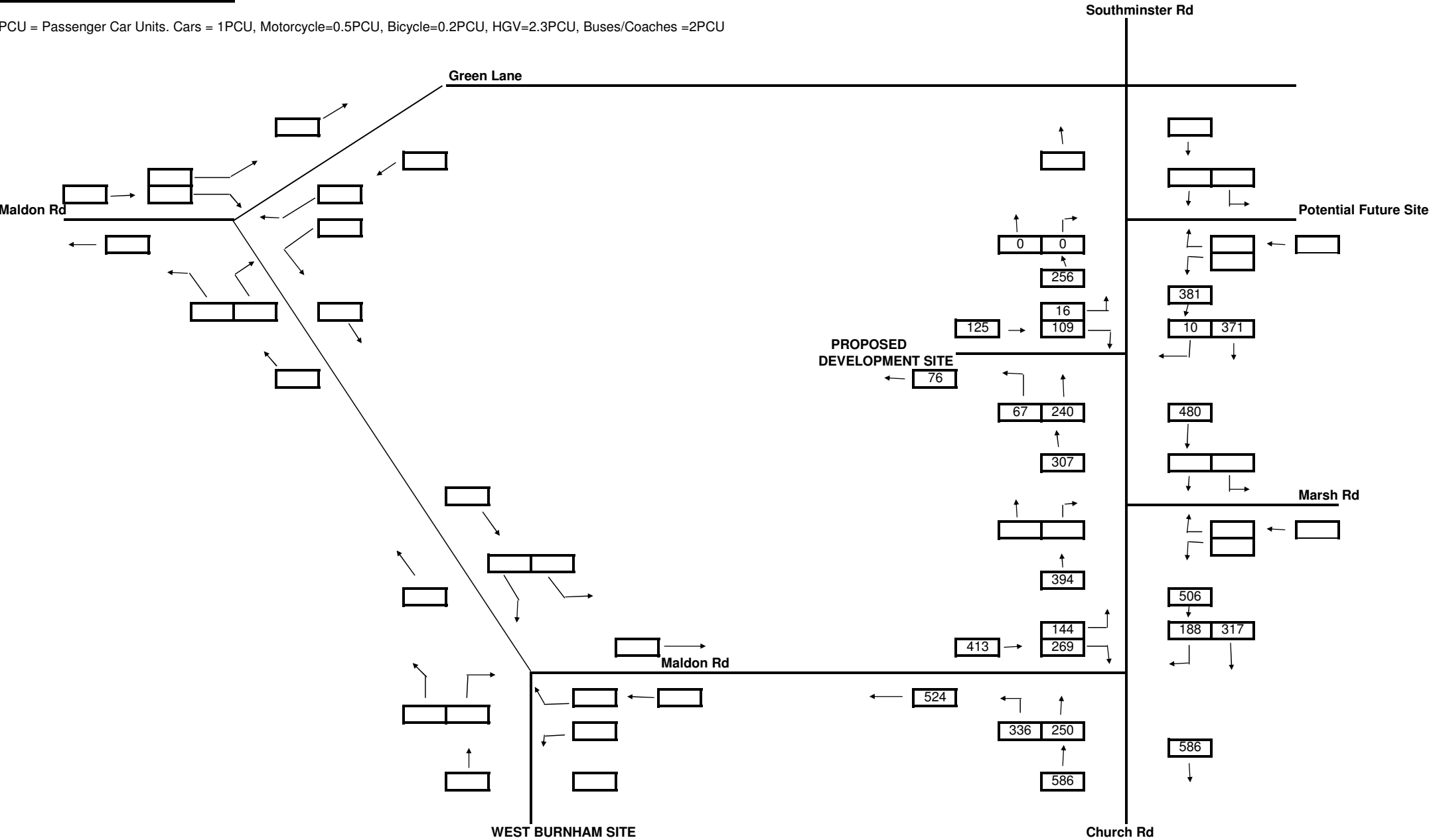


DIAGRAM 9: PROPOSED WEST BURNHAM SITE FLOWS, WEEKDAY 8AM - 9AM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

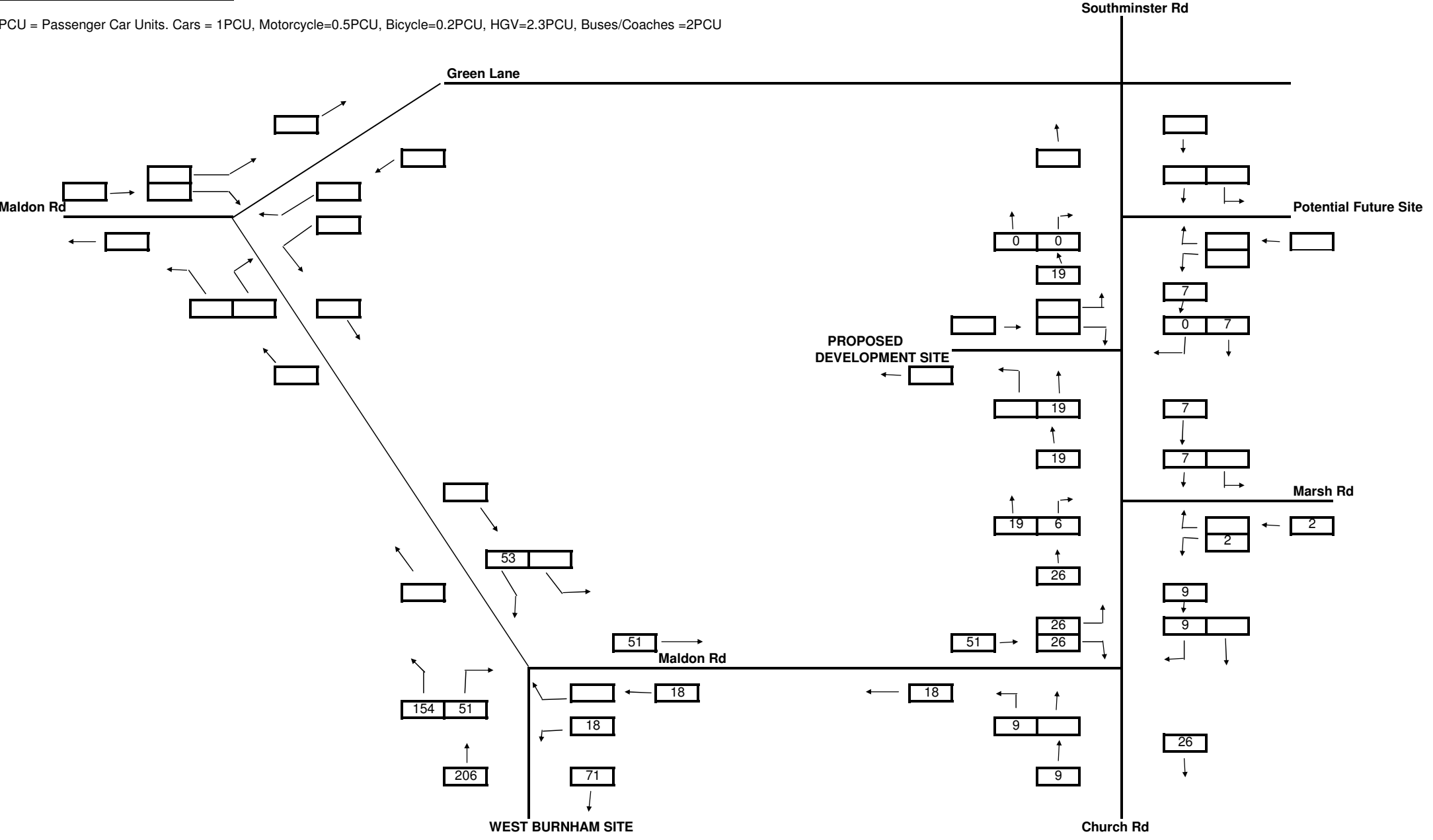


DIAGRAM 10: PROPOSED WEST BURNHAM SITE FLOWS, WEEKDAY 5PM - 6PM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

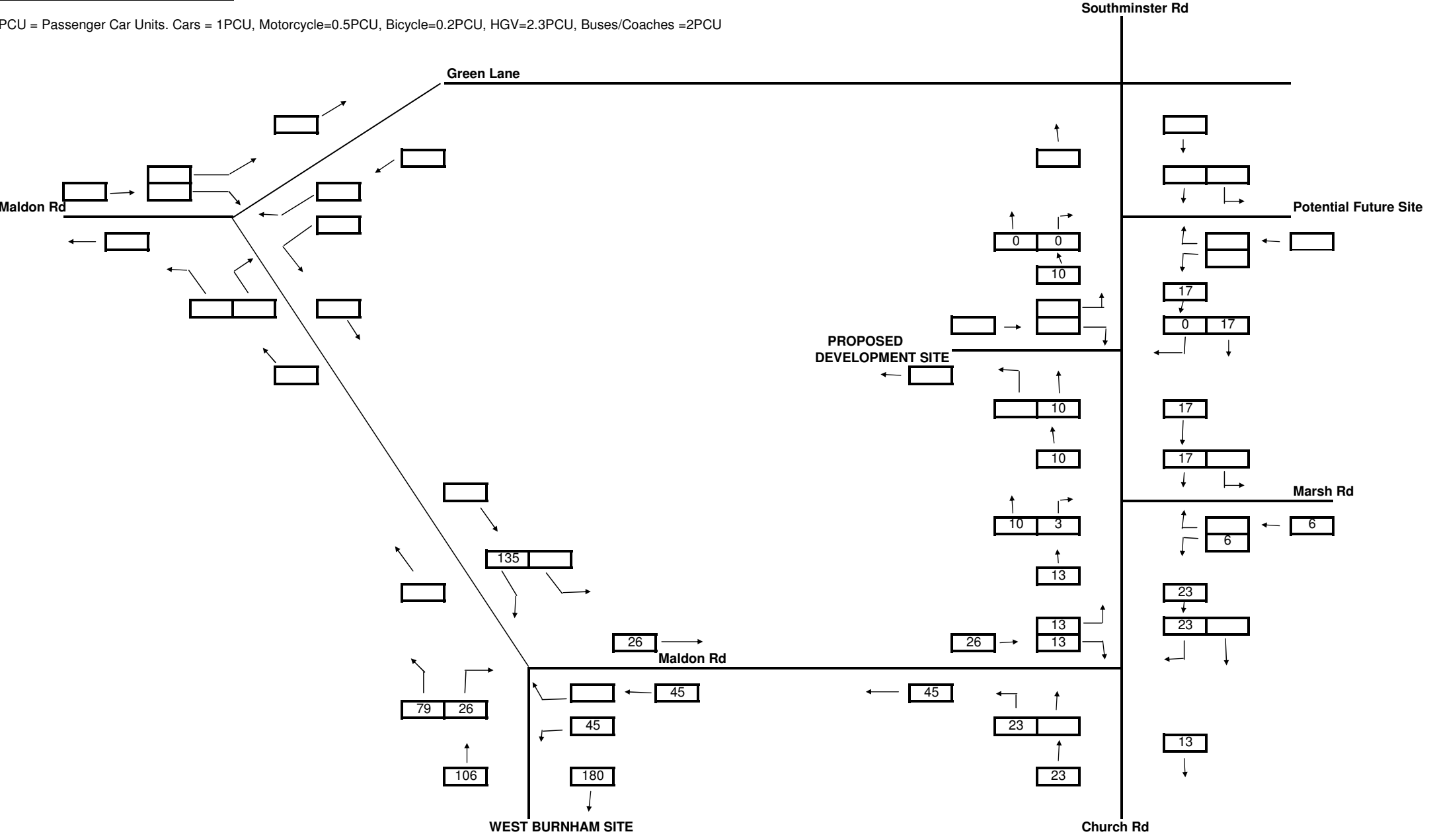


DIAGRAM 11: BASE FLOWS 2020 + PROPOSED SITE + PROPOSED WEST OF BURNHAM, WEEKDAY 8AM - 9AM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU

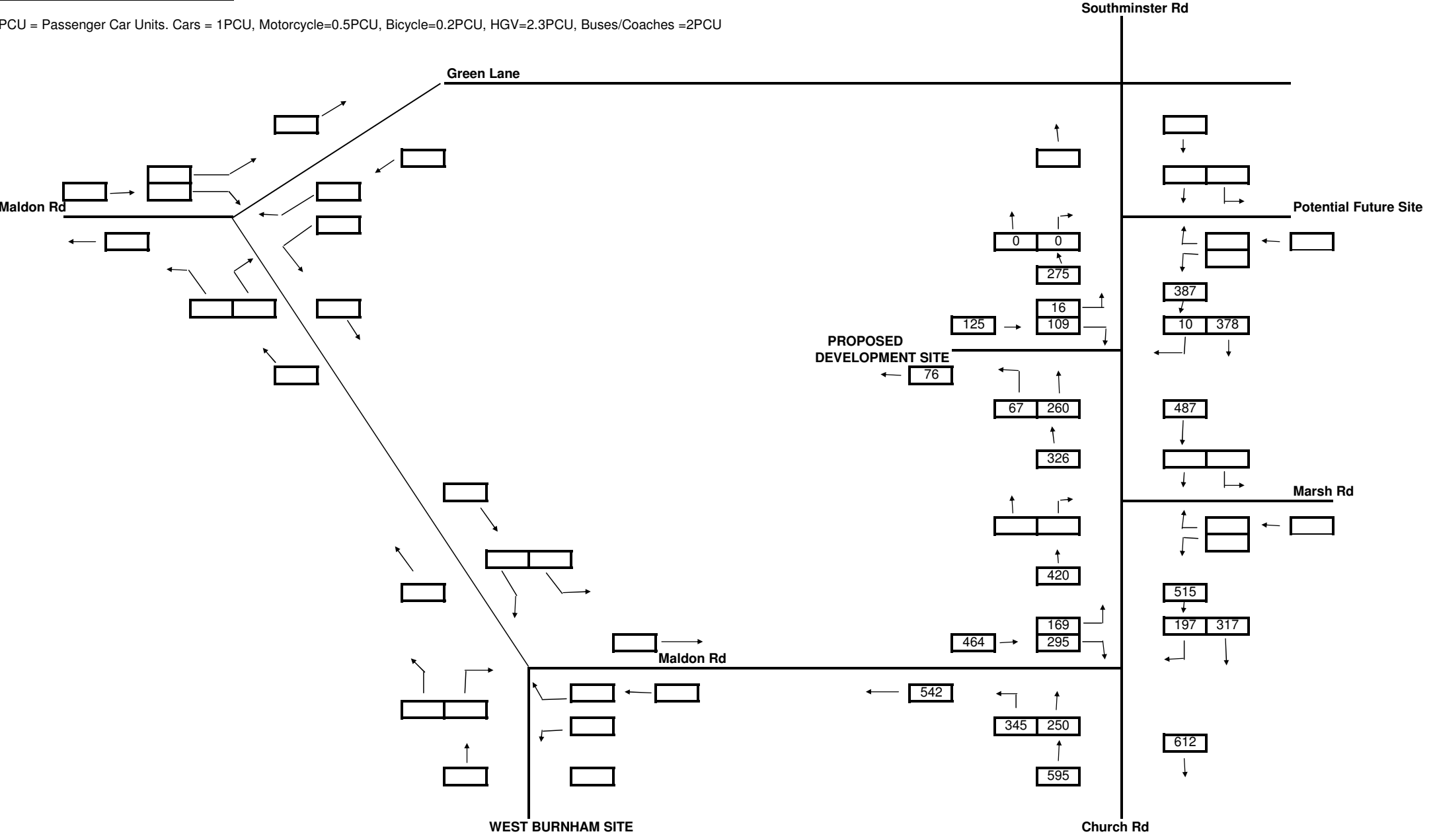
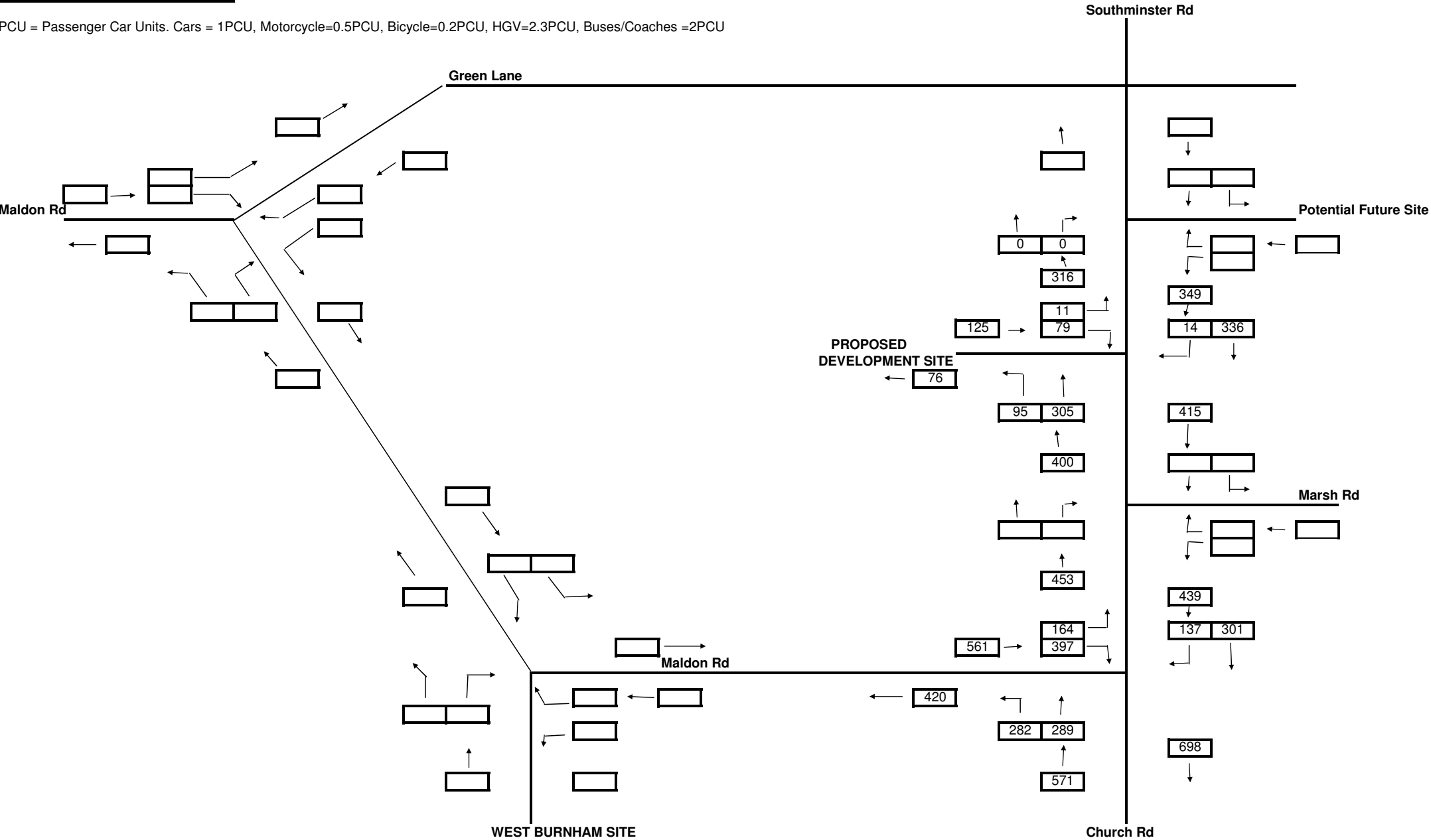


DIAGRAM 12: BASE FLOWS 2020 + PROPOSED SITE + PROPOSED WEST OF BURNHAM, WEEKDAY 5PM - 6PM

KEY
VEHICLE MOVEMENTS (in PCUs)

PCU = Passenger Car Units. Cars = 1PCU, Motorcycle=0.5PCU, Bicycle=0.2PCU, HGV=2.3PCU, Buses/Coaches =2PCU



Appendix 2

Accident Data Location Plan



Colour coding by SEVERITY

- ★ Fatal (0)
- Serious (2)
- ▼ Slight (10)

Dates searched between
01/05/2009 and 30/06/2012

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WORKING TOGETHER

DRAWING TITLE

Burnham On Crouch

SCALE **1 : 13840**

DATE **18/07/2012**

DRAWING No.

DRAWN BY

Appendix 3

Possible Mini-Roundabout Site Access

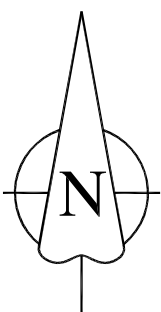
Approx Site Boundary

Possible Mini-Roundabout Site Access

Designed in accordance with DMRB TD54/07 with 35mph 85th %ile approach speed.

- 1.8m wide Pedestrian Islands on each arm
- Blockpave overrun area to NW kerbline .
- 6.75m Access Road Carriageway
- 2m Footways

Approx Site Boundary



615409-APPENDIX 3

LAND NORTH OF MALDON RD
POSSIBLE MINI-ROUNDAABOUT
SITE ACCESS

Scale 1:500@A3

MLM

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Appendix 4

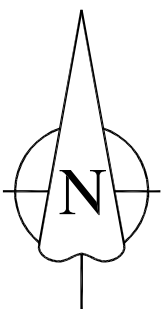
Possible Alternative Compact Normal Roundabout Site Access

Approx Site Boundary

Possible Normal Roundabout Site Access
Designed in accordance with DMRB TD16/07
28m ICD, 5m Circulatory Cway, 4m overrun
Pedestrian Splitter Islands on each arm
-6.75m Access Road Carriageway
-2m Footways

Approx Site Boundary

60m FVS



615409-APPENDIX 4

LAND NORTH OF MALDON RD
POSSIBLE ALTERNATIVE COMPACT
NORMAL -ROUNDAABOUT SITE ACCESS
Scale 1:500@A3

MLM

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Appendix 5

TRICS data

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : B - BUSINESS PARK
 VEHICLES

Selected regions and areas:

03	SOUTH WEST	
	DC DORSET	1 days
	WL WILTSHIRE	1 days
04	EAST ANGLIA	
	SF SUFFOLK	1 days
05	EAST MIDLANDS	
	NT NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS	
	SH SHROPSHIRE	1 days
	WO WORCESTERSHIRE	1 days

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

Filtering Stage 2 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: Gross floor area
 Actual Range: 1300 to 3525 (units: sqm)
 Range Selected by User: 1300 to 4000 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/04 to 16/06/09

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

Selected survey days:

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

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

Selected survey types:

Manual count	6 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 undertaken using machines.

Selected Locations:

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

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	2
Residential Zone	1
Built-Up Zone	1
No Sub Category	2

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.

Filtering Stage 3 selection:

Use Class:

B1 6 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:

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

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

Population within 5 miles:

50,001 to 75,000 1 days
 75,001 to 100,000 1 days
 100,001 to 125,000 2 days
 250,001 to 500,000 2 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 2 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 6 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.

LIST OF SITES relevant to selection parameters

1	DC-02-B-01 BUSINESS PARK, POOLE COMMERCIAL ROAD POOLE Suburban Area (PPS6 Out of Centre) Built-Up Zone Total Gross floor area: 1570 sqm Survey date: THURSDAY 17/07/08	DORSET Survey Type: MANUAL
2	NT-02-B-01 BUSINESS PARK, NOTTINGHAM PARK LANE NOTTINGHAM Suburban Area (PPS6 Out of Centre) No Sub Category Total Gross floor area: 2321 sqm Survey date: THURSDAY 17/05/07	NOTTINGHAMSHIRE Survey Type: MANUAL
3	SF-02-B-01 BUSINESS PK, BURY ST EDMUNDS KEMPSON WAY BURY ST EDMUNDS Edge of Town Industrial Zone Total Gross floor area: 2480 sqm Survey date: WEDNESDAY 10/05/06	SUFFOLK Survey Type: MANUAL
4	SH-02-B-03 BUSINESS CENTRE, TELFORD CASTLE STREET HADLEY TELFORD Suburban Area (PPS6 Out of Centre) No Sub Category Total Gross floor area: 1300 sqm Survey date: TUESDAY 16/06/09	SHROPSHIRE Survey Type: MANUAL
5	WL-02-B-01 BUSINESS PK, WOOTTON BASSETT HIGH STREET COPED HALL WOOTTON BASSETT Edge of Town Residential Zone Total Gross floor area: 2600 sqm Survey date: MONDAY 02/10/06	WILTSHIRE Survey Type: MANUAL
6	WO-02-B-01 BUSINESS PARK, REDDITCH BURNT MEADOW ROAD MOORS MOAT NTH IND. EST REDDITCH Edge of Town Industrial Zone Total Gross floor area: 3525 sqm Survey date: TUESDAY 02/05/06	WORCESTERSHIRE 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 02 - EMPLOYMENT/B - BUSINESS PARK
VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	6	2299	0.138	6	2299	0.029	6	2299	0.167
07:30 - 08:00	6	2299	0.573	6	2299	0.058	6	2299	0.631
08:00 - 08:30	6	2299	0.587	6	2299	0.101	6	2299	0.688
08:30 - 09:00	6	2299	1.182	6	2299	0.203	6	2299	1.385
09:00 - 09:30	6	2299	0.602	6	2299	0.159	6	2299	0.761
09:30 - 10:00	6	2299	0.297	6	2299	0.152	6	2299	0.449
10:00 - 10:30	6	2299	0.341	6	2299	0.217	6	2299	0.558
10:30 - 11:00	6	2299	0.261	6	2299	0.319	6	2299	0.580
11:00 - 11:30	6	2299	0.268	6	2299	0.290	6	2299	0.558
11:30 - 12:00	6	2299	0.217	6	2299	0.362	6	2299	0.579
12:00 - 12:30	6	2299	0.261	6	2299	0.428	6	2299	0.689
12:30 - 13:00	6	2299	0.268	6	2299	0.254	6	2299	0.522
13:00 - 13:30	6	2299	0.399	6	2299	0.290	6	2299	0.689
13:30 - 14:00	6	2299	0.312	6	2299	0.261	6	2299	0.573
14:00 - 14:30	6	2299	0.217	6	2299	0.246	6	2299	0.463
14:30 - 15:00	6	2299	0.196	6	2299	0.174	6	2299	0.370
15:00 - 15:30	6	2299	0.254	6	2299	0.348	6	2299	0.602
15:30 - 16:00	6	2299	0.210	6	2299	0.304	6	2299	0.514
16:00 - 16:30	6	2299	0.174	6	2299	0.406	6	2299	0.580
16:30 - 17:00	6	2299	0.167	6	2299	0.551	6	2299	0.718
17:00 - 17:30	6	2299	0.138	6	2299	0.768	6	2299	0.906
17:30 - 18:00	6	2299	0.058	6	2299	0.674	6	2299	0.732
18:00 - 18:30	6	2299	0.072	6	2299	0.290	6	2299	0.362
18:30 - 19:00	6	2299	0.043	6	2299	0.196	6	2299	0.239
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			7.235			7.080			14.315

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:	1300 - 3525 (units: sqm)
Survey date date range:	01/01/04 - 16/06/09
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK

OGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	6	2299	0.000	6	2299	0.000	6	2299	0.000
07:30 - 08:00	6	2299	0.000	6	2299	0.000	6	2299	0.000
08:00 - 08:30	6	2299	0.007	6	2299	0.000	6	2299	0.007
08:30 - 09:00	6	2299	0.007	6	2299	0.007	6	2299	0.014
09:00 - 09:30	6	2299	0.014	6	2299	0.007	6	2299	0.021
09:30 - 10:00	6	2299	0.007	6	2299	0.014	6	2299	0.021
10:00 - 10:30	6	2299	0.007	6	2299	0.007	6	2299	0.014
10:30 - 11:00	6	2299	0.007	6	2299	0.007	6	2299	0.014
11:00 - 11:30	6	2299	0.007	6	2299	0.014	6	2299	0.021
11:30 - 12:00	6	2299	0.000	6	2299	0.000	6	2299	0.000
12:00 - 12:30	6	2299	0.007	6	2299	0.007	6	2299	0.014
12:30 - 13:00	6	2299	0.007	6	2299	0.007	6	2299	0.014
13:00 - 13:30	6	2299	0.000	6	2299	0.000	6	2299	0.000
13:30 - 14:00	6	2299	0.007	6	2299	0.007	6	2299	0.014
14:00 - 14:30	6	2299	0.000	6	2299	0.000	6	2299	0.000
14:30 - 15:00	6	2299	0.007	6	2299	0.007	6	2299	0.014
15:00 - 15:30	6	2299	0.022	6	2299	0.014	6	2299	0.036
15:30 - 16:00	6	2299	0.000	6	2299	0.000	6	2299	0.000
16:00 - 16:30	6	2299	0.000	6	2299	0.000	6	2299	0.000
16:30 - 17:00	6	2299	0.007	6	2299	0.007	6	2299	0.014
17:00 - 17:30	6	2299	0.000	6	2299	0.000	6	2299	0.000
17:30 - 18:00	6	2299	0.000	6	2299	0.007	6	2299	0.007
18:00 - 18:30	6	2299	0.000	6	2299	0.000	6	2299	0.000
18:30 - 19:00	6	2299	0.000	6	2299	0.000	6	2299	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.113			0.112			0.225

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

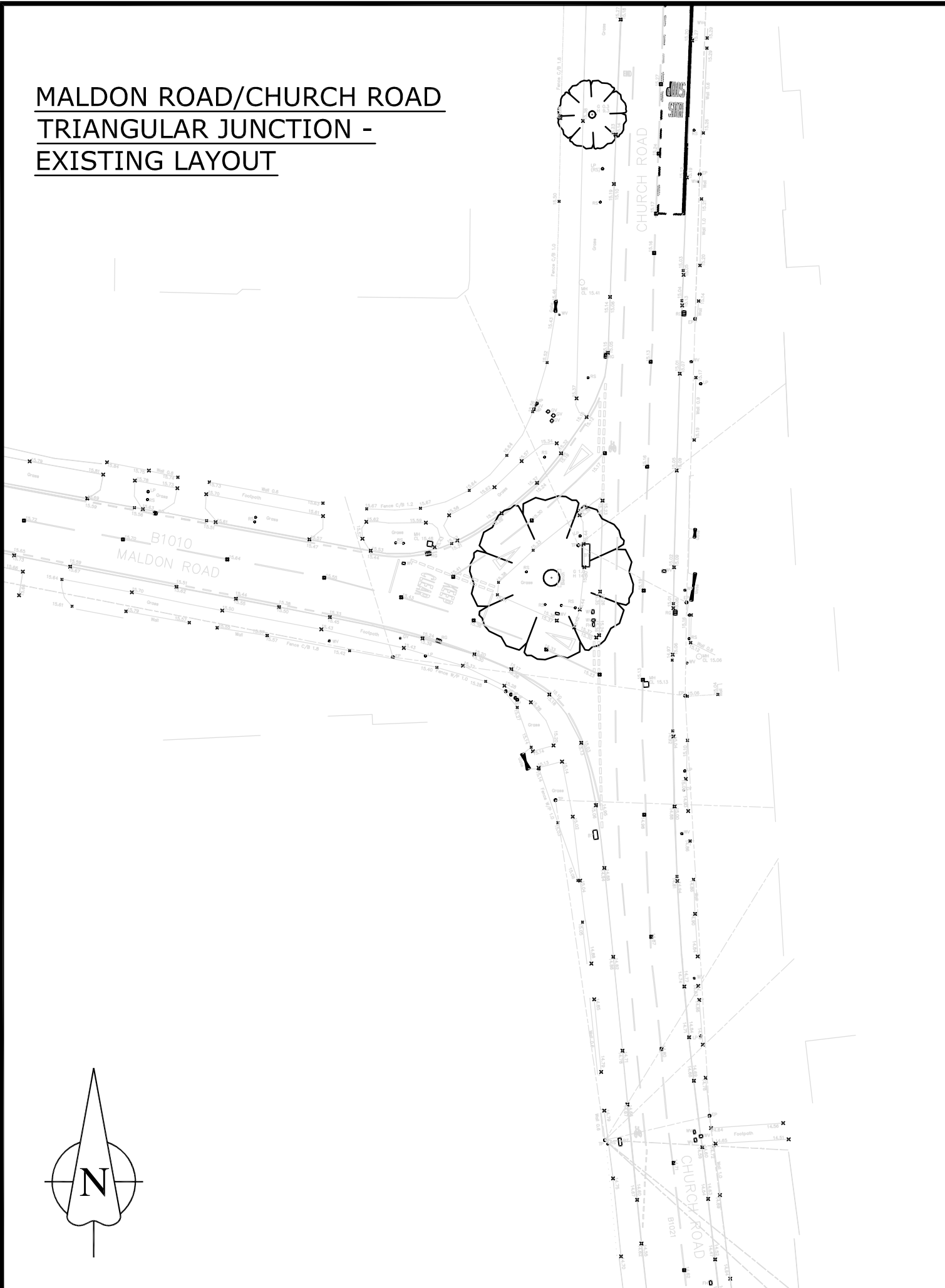
Trip rate parameter range selected:	1300 - 3525 (units: sqm)
Survey date date range:	01/01/04 - 16/06/09
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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.

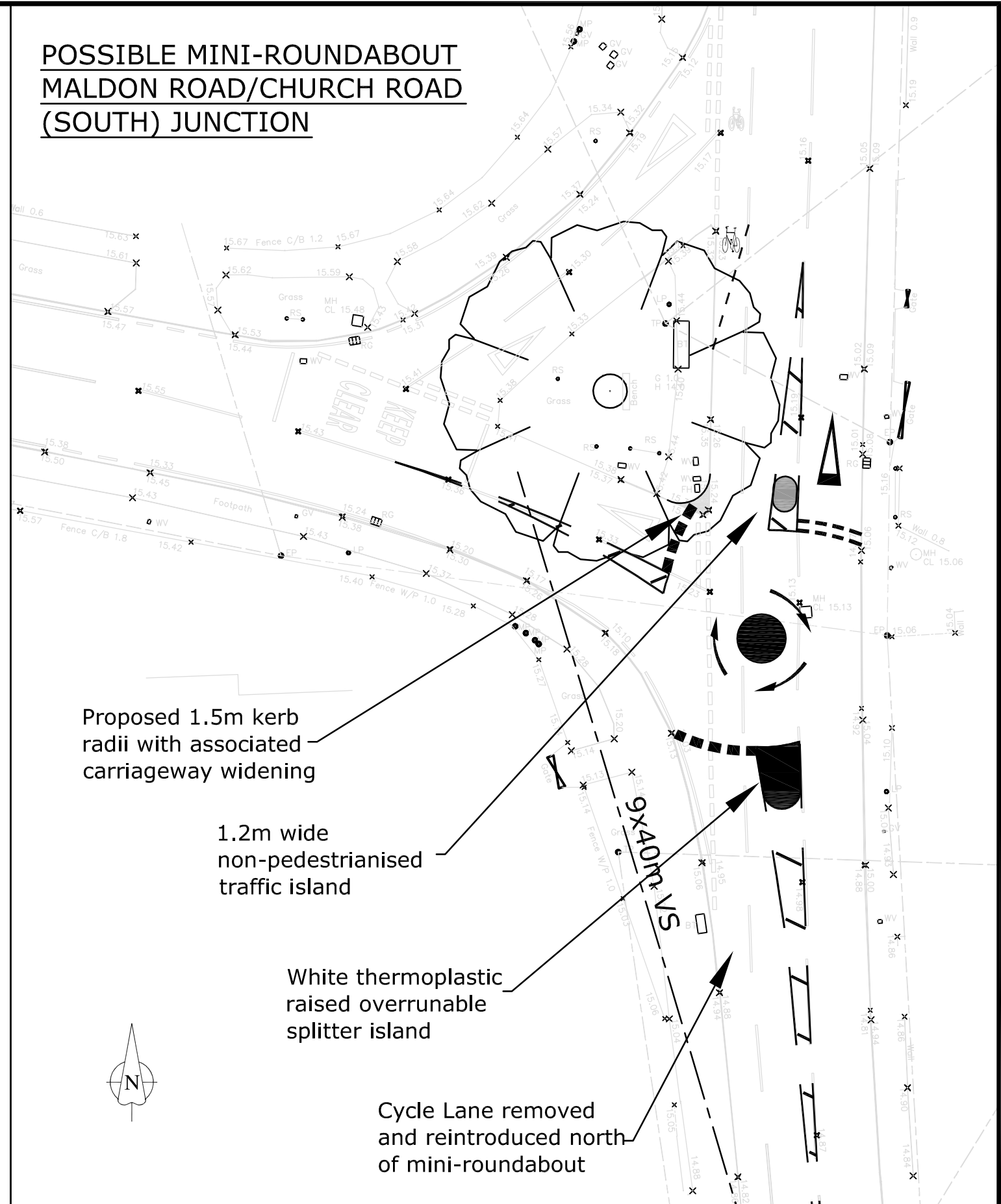
Appendix 6

Possible Mini-Roundabout at Maldo Rd/Church Rd (south) junction

**MALDON ROAD/CHURCH ROAD
TRIANGULAR JUNCTION -
EXISTING LAYOUT**



**POSSIBLE MINI-ROUNDAABOUT
MALDON ROAD/CHURCH ROAD
(SOUTH) JUNCTION**



Proposed 1.5m kerb radii with associated carriageway widening

1.2m wide non-pedestrianised traffic island

White thermoplastic raised overrunable splitter island

Cycle Lane removed and reintroduced north of mini-roundabout

615409-APPENDIX 6

LAND NORTH OF MALDON RD
MALDON RD/CHURCH RD JUNCTION -
EXISTING & POSSIBLE LAYOUTS

Scale 1:250 & 1:500@A3

MLM

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Appendix 7

DfT Traffic Advisory Leaflet 2/04



Rural traffic calming: Bird Lane, Essex

INTRODUCTION

Many rural communities are concerned about traffic growth and high vehicle speeds. Local authorities have to balance the need for traffic management against the desire to maintain rural character. Where roads have low traffic speeds and flows, they may be suitable for designation as Quiet Lanes to maintain these conditions. In Bird Lane designation as a Quiet Lane was considered. However, the high levels of traffic, the speed of vehicles, the perceived and actual risks to non-motorised users, and the lack of other roads to make into a Quiet Lanes network, meant designation was not considered a suitable option. A more interventionist approach was decided upon and a single-track with passing places scheme was implemented.



BACKGROUND

Bird Lane in Essex is a narrow, unlit, rural road about 900m long. It was being used as a rat-run, especially during peak periods, with much of the traffic commuting to a large office complex to the north. The road was 4-5m wide and vehicles passing one another along the lane were degrading the verges. Before scheme implementation, there was no separation between motorised and non-motorised users. This combined with inappropriate motor vehicle speeds created a threatening environment for walkers, cyclists and horse-riders.

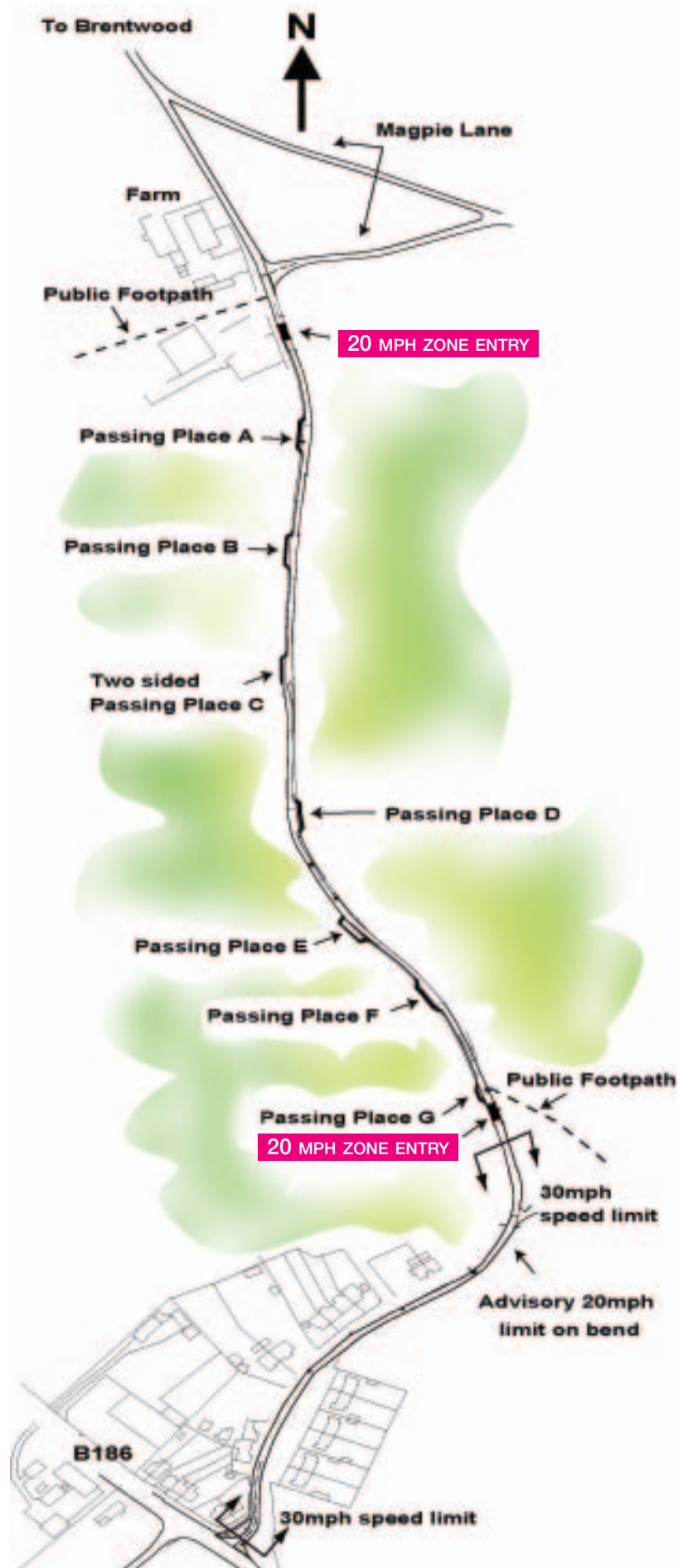
DETAILS OF THE SCHEME

The aim of the scheme was to reduce traffic by deterring rat-running, particularly in the morning peak period, and to encourage non-motorised use of the lane. Prior to scheme, the speed and amount of traffic along Bird Lane concerned all of the non-motorised users surveyed (NB the sample size was very small).

The scheme involved narrowing of the carriageway to 3m for 600m of Bird Lane. The remaining space was re-allocated as a raised way for non-motorised users travelling along the lane. The width of the lane meant that the raised way could not be continued through the passing places and at these points all users shared the road space. Where possible, the passing places were sited on alternate sides of the road to encourage drivers to give way in turn. The passing places were 17m long, enough to accommodate 3 cars.

The length of the scheme was designated as a 20mph zone, using the road narrowing to reduce vehicle speeds; this meant that 20mph repeater signs were not required. Essex County Council has since decided to change the scheme to a 20mph limit with repeater signs as the 20mph zone has not proved self-enforcing. At the northern entry to the zone there was also a small build-out on either side of the carriageway with priority working signs to indicate that drivers entering the scheme should give way to oncoming vehicles.

FIGURE 1 PLAN OF THE SCHEME





Some two-sided passing places were used to encourage giving way in both directions

MONITORING:

The Department for Transport commissioned TRL to carry out before and after monitoring of the scheme.

SPEED

Changes in mean and 85th percentile speeds before and 8 months after scheme implementation can be seen in table 1. This shows that both mean and 85th percentile speeds within the scheme length were significantly reduced after the scheme implementation. Despite these reductions, the traffic calming effect of the scheme was not sufficient to reduce speeds to 20mph or less, with mean speeds remaining in the mid twenties.

A more detailed examination reveals that there were greater reductions in speed during the morning peak period. In general, southbound speeds were reduced more than northbound speeds. Southbound drivers gave way more often even where the passing places were not on their side of the road. This may be partially explained by the fact that the southbound vehicles are travelling downhill and partially by the higher northbound flows, including a high percentage of drivers commuting during

TABLE 1: CHANGES IN 24 HOUR MEAN AND 85TH PERCENTILE SPEEDS ALONG BIRD LANE (IN MPH)

SITE*	MEAN SPEEDS			85TH PERCENTILE SPEEDS		
	BEFORE	AFTER	DIFFERENCE	BEFORE	AFTER	DIFFERENCE
SOUTHERN GATEWAY	25.2	25.0	-0.2	29.3	29.1	-0.2
SOUTHERN ENTRY	27.3	25.5	-1.8	32.6	30.6	-2.0
DOUBLE PASSING PLACE C	31.9	25.5	-6.4	38.0	30.3	-7.7
BETWEEN PASSING PLACES	31.9	25.1	-6.8	38.1	30.3	-7.8
SINGLE PASSING PLACE A	33.5	27.7	-5.8	39.1	33.6	-5.5
NORTHERN ENTRY	31.4	25.3	-6.1	40.7	33.1	-7.6

*For locations of the monitoring sites see TRL report 597



Northern entry to the scheme (left) had a greater speed reducing effect than the southern gateway

TABLE 2: BEFORE AND AFTER 24 HOUR FLOWS ON WEEKDAYS AND WEEKENDS

SITE	WEEKDAY				WEEKEND			
	BEFORE	AFTER	DIFFERENCE	% CHANGE	BEFORE	AFTER	DIFFERENCE	% CHANGE
BIRD LANE	2218	1768	-450	-20.3	1199	950	-249	-20.7
B186	8431	8725	+294	+3.5	4652	4928	+276	+5.9
LITTLE WARLEY HALL LANE	399	461	+62	+15.5	272	247	-25	-9.2
CHILDERDITCH LANE	1286	1285	-1	-0.1	557	531	-26	-4.7

the week to the offices to the north. In addition, the first passing place cannot be seen from the northern entry to the scheme leading to a high level of vehicle reversing at this point, slowing southbound drivers as they first enter the scheme.

VEHICLE FLOWS

The assessment of vehicle flows included an assessment to identify whether the traffic from Bird Lane had simply been transferred to other minor rural roads. Measurements were therefore carried out on the three possible diversion routes as well as on Bird Lane.

Table 2 shows that there has been approximately 20% reduction in traffic flow on Bird Lane since the implementation of the scheme. The majority of the vehicles seem to have diverted onto the B186, with a small number transferring on Little Warley Hall Lane during the week.

ACCIDENTS

Accident frequency was 1.2 accidents/year in the 5 years preceding scheme implementation and 1.0 accident/year in the 1 year after. Longer term monitoring will be required to get a true picture of accident rates following scheme implementation.

NON-MOTORISED USE

The number of non-motorised users (NMUs) travelling along Bird Lane was very low in both the 'before' and 'after' surveys. Table 3 shows the number of non-motorised users recorded during manual classified counts along Bird Lane. On the Friday in 2002 there was heavy rain which is likely to have caused the very low NMu numbers. The number of users on the Saturday in 2002 is more encouraging but is too low to be statistically significant.

The scheme implemented in Bird Lane did not extend the full length of the road. At the southern end the non-motorised area led to an off-road route but then stopped at a bend where there was no separate facility. Also, due to the passing places being on alternate sides of the road, non-motorised users had to cross from one side to the other. This lack of a continuous route for NMUs may have discouraged some people from using the lane.

There is no prescribed sign for a raised way for use by pedestrians, cyclists and horse riders so no signs to this effect were erected on Bird Lane. This led to some confusion amongst non-motorised users; for example some cyclists continued to ride in the carriageway with motorised vehicles. These cyclists reported that, due to

TABLE 3: MANUAL CLASSIFIED COUNTS OF NON-MOTORISED USERS

DATE	DAY	WEATHER	CYCLISTS	PEDESTRIANS	HORSE RIDERS	TOTAL	% CHANGE
'BEFORE' SURVEY							
9/11/01	FRIDAY	FINE	2	6	0	8	-
10/11/01	SATURDAY	FINE	4	3	3	10	-
'AFTER' SURVEY							
8/11/02	FRIDAY	HEAVY RAIN	1	1	0	2	-75%
9/11/02	SATURDAY	FINE	5	13	0	18	+75%



Lack of separate facility to the south of the scheme could put off vulnerable users

the narrower carriageway, they felt less safe travelling along Bird Lane than they had before scheme implementation. The fact that the non-motorised way is fairly narrow (about 1.5m) with a ditch alongside part of it may also have discouraged some cyclists and horse-riders from using this facility.

ATTITUDES

Prior to scheme implementation the number and speed of vehicles along Bird Lane bothered all pedestrians and cyclists on the lane "quite a lot" or "very much". After scheme implementation this decreased to about 50% of the respondents.



Raised way

Over half of all drivers questioned thought driving along Bird Lane was more difficult than before, with a few drivers reporting damage to tyres caused by hitting the kerbs and others mentioning poor or aggressive driver behaviour. The video surveys showed that southbound drivers (the minority) gave way more often, even when the passing bay was located on the opposite side of the carriageway; although this also happened during the off-peak period when flows were more balanced.

Before the scheme most of the small number of residents of Bird Lane felt there was a need to reduce the speed and the amount of traffic along the lane, and were in favour of the proposed scheme. The attitudes of drivers before implementation were different with only 27% in favour of the scheme. Post-implementation 50% of all respondents (drivers and a much wider group of residents) were in favour of the scheme.

ENVIRONMENTAL IMPACT

The scheme avoided traditional urban traffic calming measures and coloured surfacing in favour of the single track with passing places, a style of road that would historically have been found in rural areas. However for safety and accessibility reasons the scheme also involved signs, road markings, reflective posts, and a raised area with a vertical kerb for non-motorised users; these features have had a negative impact on the rural character of Bird Lane. These negative impacts must be weighed against predicted positive impacts, for example improved conditions for non-motorised users in Bird Lane.

COSTS

The cost of the scheme as described was £90,000.

MAINTENANCE

The roadside verge along Bird Lane was considerably eroded before scheme implementation. Unfortunately, the nature of the scheme has led to continuing erosion opposite the passing places, probably because drivers move as far left as possible to wait for oncoming vehicles. Brentwood Borough Council has tried to overcome this problem by placing additional reflective posts at intervals along the lane. This has been only partially successful with vehicles continuing to encroach onto the verge between the posts. One possible alternative would be to use logs or kerbing alongside the carriageway as additional verge protection.



Verge erosion has continued opposite the passing places

There is a need for on-going maintenance of traffic signs associated with the scheme, including cutting back vegetation to ensure signs remain visible.

CONSIDERATIONS WHEN PLANNING A SINGLE TRACK WITH PASSING PLACES SCHEME

- To prevent excessive delay to vehicles, it is recommended that maximum two-way flow should not exceed 300 vehicles per hour. A certain equality of flow is important in order to achieve speed reductions and help prevent vehicles travelling in one direction forcing all others to give way.
- Passing places should have a minimum length of 3 cars. Ideally each passing place should be clearly visible from the last, with spacing no greater than 60m (research shows this is sufficient for vehicle flows of up to 300 vehicles per hour).
- Kerb height should not be too high, to minimise possible tyre damage, nor too low, to discourage abuse by drivers.
- Any non-motorised facility should be thought of in terms of desire lines, for example linking homes to shops or off-road routes.
- Passing places on one side of the road only means that non-motorised users do not have to cross the road; however drivers travelling in one direction may have to give way repeatedly. In reality, visibility requirements may influence the location of passing places.

- Schemes must be designed with operation under all conditions in mind. White lines will help guide drivers past build-outs, but reflective hazard markers may still be required to ensure these are clearly visible when roads are wet or the markings obscured by dirt or leaf mould in the autumn.

- Signs should be kept to a minimum on country lanes.

REFERENCES

Highways (Traffic Calming) Regulations 1999, Statutory Instruments 1999 No. 1026

The Traffic Signs Regulations and General Directions 2002, Statutory Instruments 2002 No. 3113

TRL No 597 Rural traffic calming in Bird Lane, Brentwood (Essex) by J Kennedy, A Wheeler, and C Inwood. TRL Limited, Crowthorne. 2004.(to be published)

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Details of Traffic Advisory Leaflets available on the DfT website can be accessed as follows: www.dft.gov.uk
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The Department for Transport sponsors a wide range of research into traffic management issues. The results published in Traffic Advisory Leaflets are applicable to England, Wales and Scotland. Attention is drawn to variations in statutory provisions or administrative practices between the countries.

The Traffic Advisory Unit (TAU) is a multi-disciplinary group working within the Department for Transport. The TAU seeks to promote the most effective traffic management and parking techniques for the benefit, safety and convenience of all road users.

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