

Proposed Residential Development Land at North Park, Rheda

Technical Note

Issue 3

November 2021

Prepared on Behalf of KCS Agriculture Limited

Document control

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1.0 REPORT AND DEVELOPMENT PROPOSAL UPDATE

- 1.1.1 The report which follows was submitted in substantially the same form to the highway authority in June 2021.
- 1.1.2 Development proposals were not finalised at that stage but for a theoretical development of 15 to 20 units, the report sought clarification on the need for an emergency access and the adequacy of the recently constructed road through Phase 1 to serve Phase 2.
- 1.1.3 It was confirmed that an EVA would not be a firm requirement and that the current Phase 1 road would be adequate to serve Phase 2 (see **Appendix A**).
- 1.1.4 The development proposals have now been drafted up and the only difference to the previously submitted situation is that a proposed site layout plan is now available (see **Plan 2**) and that the number of dwellings proposed is now 22.
- 1.1.5 It should be noted that the TA which accompanied the original Phase 1 application tested the impact from 120 dwellings. The current proposal would only deliver a total of 55 already constructed plus 22, i.e. 77 dwellings.
- 1.1.6 It is therefore considered that the previously submitted draft report is entirely valid and the text which follows is substantially that earlier report, edited in a minor way to reflect the current details.

2.0 INTRODUCTION

- 2.1.1 Tetra Tech has been commissioned by KCS Agriculture Ltd to provide highways and transport advice in relation to a second phase of a previously approved residential development on land at Meadowcroft Road, Rheda, Cumbria.
- 2.1.2 The site is located approximately 1km southwest of Frizington Village.
- 2.1.3 The site has been subject to an outline application (Ref: 4/18/2426/001) which was approved in January 2019.
- 2.1.4 A reserved matters application (Ref: 4/19/2261/0R1) for the first phase of development was approved in March 2020. The first phase of development comprises 55 dwellings and is currently being built out. The applicant now wants to build out a second phase of development to the north of Phase 1, comprising 22 dwellings.
- 2.1.5 Tetra Tech has been informed by the applicant of a potential issue, where the outline application promoted a 5.5m wide access road but the reserved matters application only delivered a 4.8m wide access.

- 2.1.6 This Technical Note (TN) seeks to establish that the 4.8m wide access road could support the delivery of 77 dwellings across Phases 1 and 2, and any associated impact on the local highway network would not be significant.
- 2.1.7 The Local Planning Authority (LPA) is Copeland Borough Council (CBC) and the Local Highway Authority (LHA) is Cumbria County Council (CCC).

3.0 PLANNING HISTORY

- 3.1.1 As stated above the original outline application for the site was approved in January 2019. The Transport Assessment (TA) submitted with that application tested 120 dwellings at the site.
- 3.1.2 The TA that accompanied the planning application showed a site access with a carriageway width of 5.5m with 2m footways either side. The approved access drawing is attached in **Appendix B**. Correspondence and documentation from the outline application is not currently available on the CBC planning portal. Nonetheless, the applicant has provided the outline application decision notice which is attached at **Appendix C**.
- 3.1.3 Following approval, the southern portion of the site was sold and subsequently subject to a reserved matters application for 55 dwellings. This was approved in March 2020, the decision notice is attached in **Appendix D**.
- 3.1.4 Revision H of the Reserved Matters Planning Layout shows internal roads of a 4.8m carriageway with 2m footways. It is not clear whether the change in width was a mistake or intentional, either way it has been approved by the local planning authority. Revision H of the Planning Layout drawing is attached in **Appendix E**.
- 3.1.5 It is understood that CCC stated in their response to the final Planning Layout drawing that *'the proposed carriageway dimensions, whilst acceptable, and lack of secondary access for this proposed site will mean that further development would not be supported by the highway authority'*. This is in relation to Phase 1, i.e. no more than 55 dwellings in Phase 1 should be served by the internal road.

4.0 PROPOSED DEVELOPMENT

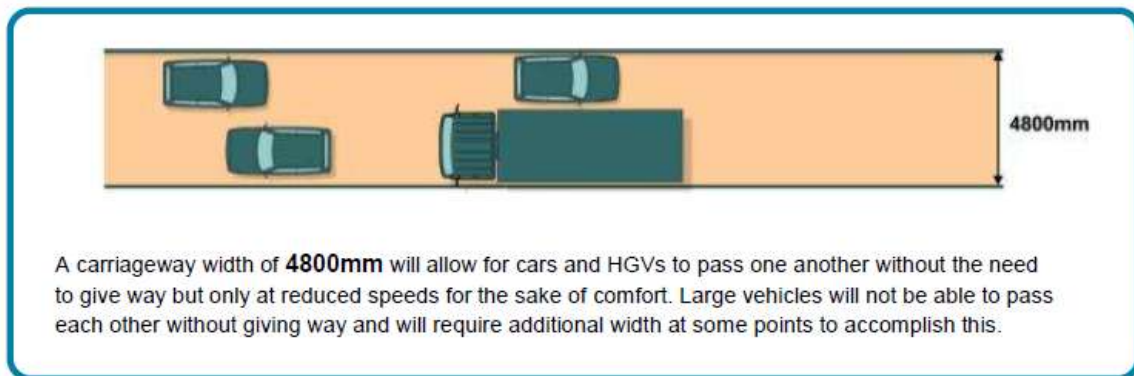
- 4.1.1 The applicant now wishes to deliver 22 dwellings to the north of Phase 1. This would amount to a total of up to 77 dwellings at the site, taking into account the 55 approved in Phase 1.
- 4.1.2 It is proposed that access to the proposed development would be provided from tying into the internal main road from Phase 1 which extends to the northern site boundary.
- 4.1.3 The internal road reflects the most recent design guidance set out in the CCC Development Design Guide and falls within the parameters of a 'Secondary Street'. **Table 3.1** summarises the requirements for this road type.

Table 3.1: Secondary Street Design Parameters

Parameter	Requirements
No. of Dwellings served	Up to and including 300
Additional Access	Emergency Vehicle access required for more than 50 dwellings and secondary vehicular access is required for more than 100 dwellings
Speed Limit	20mph (max)
Footway Width	2m
Carriageway Width	4.8m (3.7m minimum and only at non-access frontages) – provide passing places every 40m where width is reduced
Largest Usable Vehicle	Pantechnicon
Other	Direct access to dwellings permissible if speeds are within a 30mph limit Limited on-street residential and visitor parking to be designed into the layout

- 4.1.4 The development proposals to deliver 22 additional dwellings served by the main internal road should be entirely acceptable, falling well within current guidance. The LHA have confirmed that an emergency vehicular access would not be a firm requirement for the proposals. A secondary vehicular access would not be required.
- 4.1.5 In undertaking the analysis of this matter, a discrepancy within the Development Design Guide has been noticed. In Appendix 4, the document states that a ‘Secondary Road’ should have a width of 5.5m, this contradicts the main text which cites 4.8m. To establish which of these widths should take precedence, three further considerations have been made.
- 4.1.6 Firstly, Appendix 4 seems to have been derived from the now superseded Cumbria Design Guide: Layout of New Residential Developments. The main internal road at the site falls within the category of ‘Minor Access Road’ in that document. These are described as ‘*residential roads with footways*’ and ‘*are expected to serve up to 100 dwellings*’ at paragraph 4.1.20, the relevant extracts are attached in **Appendix F**. For the first 15m, road width should be 5.5m but may be reduced to 4.8m where fewer than 50 dwellings are served, this correlates with the figures in Appendix 4 of the current guidance. Less than ten dwellings are directly served off the main internal road with the remainder being served by ‘Shared Surface Roads’. It is understood the site access was approved at 5.5m under this guidance.
- 4.1.7 In 2017, the current Development Design Guide superseded this guidance. The main internal road fell within the parameters of a ‘Secondary Street’ as previously stated and was subsequently approved at a width of 4.8m.
- 4.1.8 The second consideration is that the current design guide considers different acceptable road widths which appear to be derived from the nationally recognised document Manual for Streets. Those show that a car can pass an HGV within a road of 4.8m, as shown in **Extract 3.1**.

Extract 3.1: Acceptable road width for cars and HGVs

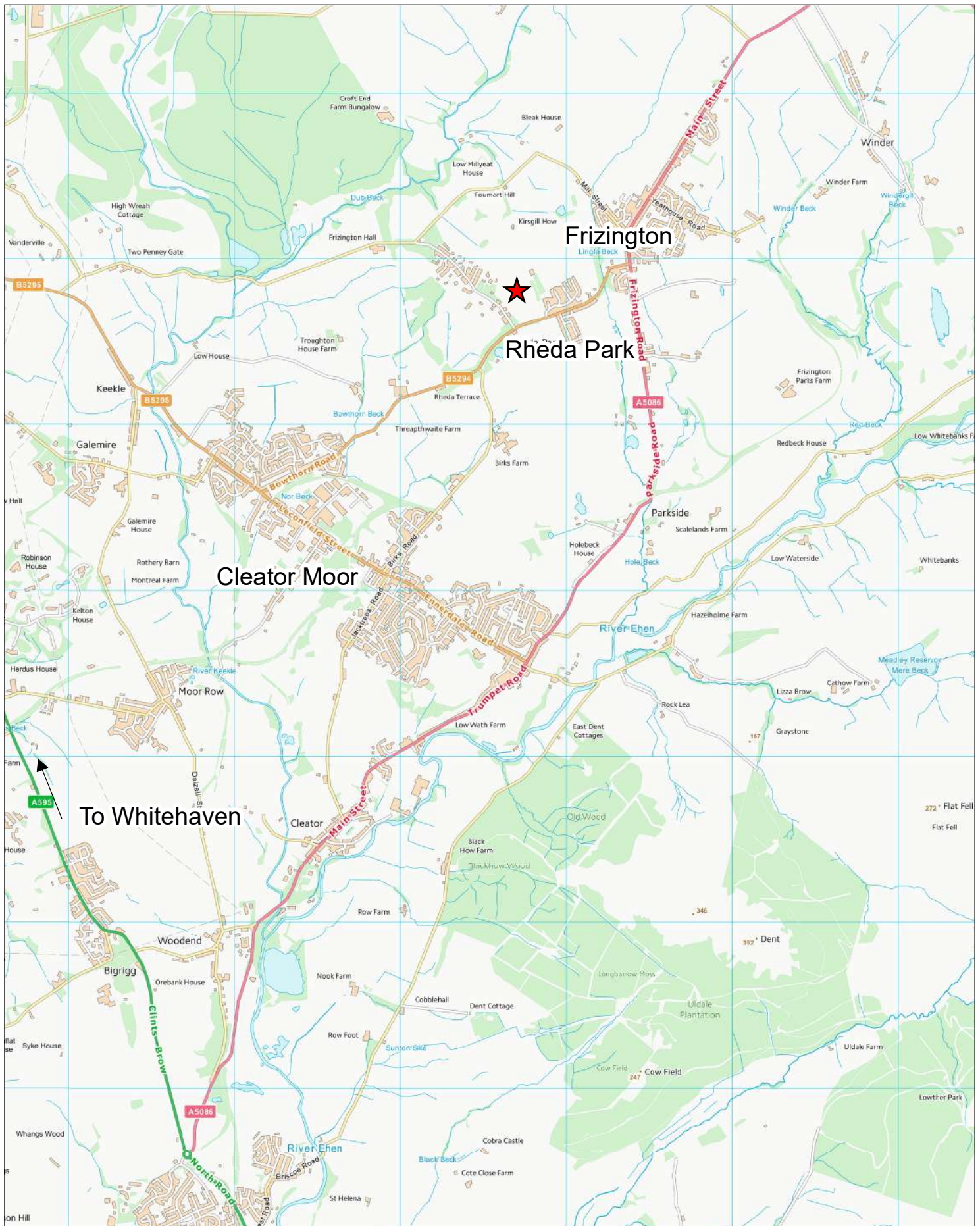




- 4.1.9 The third consideration is the inclusion of passing opportunities for vehicles. Research undertaken by the Transport and Road Research Laboratory (TRRL) shows that in a test case with 300 vehicles per hour (250 vehicles opposing 50 vehicles) passing along a single narrow lane with one passing place every 180m, a minimal delay of just 5.1 seconds would occur. The full research is presented in **Appendix G**. It can be seen from the development layout that passing opportunities are present approximately every 30m in the form of side road junctions. Moreover, the opposing flows even at the busiest section of road adjacent to the site access are likely to be considerably lower. In any case, even the level of delay in the much busier TRRL research (i.e. 5.1 seconds) is immaterial in the context of a car journey.
- 4.1.10 The extension of the main internal road to serve 22 additional dwellings would not go over the threshold to become a 'Primary Street'. It is considered that the carriageway width of 4.8m is entirely appropriate for both phases of development.
- 4.1.11 The outline application assessed off site impacts of 120 dwellings and was approved, a total of 77 dwellings at the site would amount to 64% of the assessed traffic. As the impact from 120 dwellings was accepted, it can be said that the reduced impact should also be acceptable.
- 4.1.12 In conclusion, it is likely that the reserved matters application which had the 4.8m wide road approved was not undertaken in error but was done to reflect updated guidance. The updated guidance requiring 4.8m is consistent with Manual for Streets and reinforces its own requirement for 4.8m carriageway width allowing cars to pass HGVs. Research on a more constrained scenario shows that in far busier and narrower conditions the delay to vehicles would be less than 10 seconds. It is therefore clear that delivering 22 more dwellings extending on from the approved 55 in Phase 1, all served by a 4.8m wide road, would be entirely acceptable.

5.0 SUMMARY AND CONCLUSIONS


- 5.1.1 Tetra Tech has been commissioned by KCS Agriculture Ltd to provide highways and transport advice in relation to a second phase of a previously approved residential development on land off Meadowcroft Road, Rheda, Cumbria.
- 5.1.2 Outline approval has been given for the development of the wider site. Reserved matters approval has been given for the development of Phase 1 (55 Dwellings).
- 5.1.3 22 dwellings are now proposed as a second phase of development. These would be accessed from the main internal road in Phase 1.
- 5.1.4 It is proposed that these dwellings are served via a continuation of the main internal road from Phase 1. It has been demonstrated that this could be easily achieved and would be in line with current design guidance.
- 5.1.5 The local highway network would experience a lower impact than what has already been approved for the wider site.
- 5.1.6 It is therefore concluded that there are no transport or highways reasons why the proposed development should not be granted planning permission.

PLANS



<p>© Tetra Tech Limited</p>  <p>TETRA TECH</p>	<p>Plan 1: Site Location Proposal: Proposed Residential Development Location: Land at North Park, Rheda TT Job No.: 784-B026836</p>	<p>Legend</p> <p> Site Location</p>
<p>0 370 740 1,110 Meters</p> <p>Scale: 1:30,000 @A4</p>		<p>11 November 2021</p> <p>NGR: 302,539 E / 514,839 N</p> <p>© Crown Copyright All rights reserved. Licence number:</p>

Plan 2: Proposed Site Layout

 site evolution limited

Eden Environment Ltd

SITE PLAN EXTERNAL WORKS

NORTH PARK RHEDA

PHASE 2

CONCEPT SUPPORT Ltd
PROJECT DEVELOPMENT

Edengarth
1 Meadow Field
Marker Road Ends
Carlisle
CA6 4HE
TEL UK: 01228 672032

File: IS CS EID Rheda Park Dwg No: RH SI 01
Date: 20/06/21 Scale: Block Plan 1:500@A1 or 1:1000@A3

Row:

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Stage: **PLANNING DWG**

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APPENDICES

APPENDIX A: CORRESPONDENCE WITH LHA

From: Robinson, Michael D
Sent: 12 July 2021 12:09
To: Blair, Peter
Cc: Barnard, Pieter GF
Subject: RE: Rheda park. Case for accessing Phase 2

Morning Peter

Apologies for the delay in reply, we are quite busy in the DM dept at the moment.

The Eva is a desirable aspect of the application and we would like the applicant to pursue this positively, however if it ultimately this cannot be achieved it would not be a point of objection from the Highway Authority.

The indication provided that the spine road would continue leading to the new section of the estate and the possible routing of the EVA through the adjacent lane satisfies the previous queries.

Regards

Michael

Michael Robinson

Development Management Officer | Flood & Development Management
Economy & Environment | Cumbria County Council |
Parkhouse Building | Baron Way | Carlisle | CA6 4SJ

.....
Please be aware that I work flexible hours, so whilst this is a convenient time for me to send this email to you, I do not expect a response from you outside your normal working hours.

<http://www.cumbriastrategicfloodpartnership.org/index.html>



From: Blair, Pete
Sent: 08 July 2021 17:44
To: Barnard, Pieter GF ; Robinson, Michael D
Subject: RE: Rheda park. Case for accessing Phase 2

Pieter, Michael,

I would be grateful if one of you could get back to me on my email of 18th last,

Thank you in advance.

Regards

Peter Blair BEng CEng FICE FCIHT
Head of Transport North

Tetra Tech

Quay West at MediaCityUK, Trafford Wharf Road, Trafford Park, Manchester, M17 1HH

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From: Blair, Peter
Sent: 02 July 2021 14:13
To: Barnard, Pieter GF
Subject: FW: Rheda park. Case for accessing phase 2

Hi Pieter. Here is the email trail I mentioned. Happy to wait for Michaels return on Monday.

regards

Peter Blair BEng CEng FICE FCIHT
Head of Transport North

Tetra Tech

Quay West at MediaCityUK, Trafford Wharf Road, Trafford Park, Manchester, M17 1HH

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From: Blair, Peter
Sent: 02 July 2021 11:26
To: Robinson, Michael D
Subject: FW: Rheda park. Case for accessing Phase 2

Michael, I trust that you are well. I just wanted to check that you had received my email below.....that it gave you the info you needed and to seek your position on the Emergency access.

Regards

Peter Blair BEng CEng FICE FCIHT
Head of Transport North

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From: Blair, Peter
Sent: 18 June 2021 15:02
To: Robinson, Michael T
Subject: RE: Rheda park. Case for accessing Phase 2

Michael, Thank you for updating me on your discussions with Pieter on our submitted access case and for the positive sounding.

To answer your two queries, at this stage my client hasn't got a site layout plan drawn up and I am anxious not to contravene copyright by using the plans produced for Genesis on phase 1.

What I can say is that we would seeking to continue the existing site spine road and potentially connect an emergency vehicle access through to the adjacent Lane.

I have shown those illustratively on the attached google earth based sketch, and you can tie that in with the Phase 1 plan (which is in the public domain) as presented in appendix D in our draft report.

I trust that would satisfy your requirements and I would be grateful if you could confirm that please.

Just today I have reported the position to my client and he has asked me why the emergency access is now a requirement, the location of which you describe as a crucial point.

Apparently the approval for phase 1 (supported by a TA for 120 units) was in outline but with access approved in detail and it made no mention of any requirement for an emergency access.

It would be grateful if you could confirm whether the emergency access is a "nice to have" or an absolute requirement. If it is the latter, then what is the justification.

Thank you again and I look forward to hearing from you.

Regards

Peter Blair BEng CEng FICE FCIHT
Head of Transport North

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From: Robinson, Michael D
Sent: 17 June 2021 17:12
To: Blair, Peter
Subject: RE: Rheda park draft report in progress confidential

Good Afternoon Peter,

Further to our phone call today, both myself and Pieter have looked over your draft report and your reasoning has merit and valid points, what is crucial for us is to understand where the access would be taken from which we would expect would be between plots 38 and 39 and also where the proposed emergency vehicle access would join the track, can these points be confirmed?

Regards

Michael

Michael Robinson

Development Management Officer | Flood & Development Management
Economy & Environment | Cumbria County Council |
Parkhouse Building | Baron Way | Carlisle | CA6 4SJ

michael.robinson@cumbria.gov.uk

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<http://www.cumbriastrategicfloodpartnership.org/index.html>



From: Blair, Peter
Sent: 11 June 2021 16:18
To: Robinson, Michael D
Subject: Rheda park draft report in progress confidential

Michael, thank you again for taking the time to discuss an additional 15-20 properties served off the recently built road through Rheda park.

You will recall that the original approval had a 5.5m road
The RM approval / build was at 4.8m (we cant yet get full details from the planning portal
Your design guide changed around the same time from 5.5 to 4.8m
(there are discrepancies in the Design Guide!)

I said I would draft a report setting out several reasons why 4.8 should be fine.

Here it isin draft....just first thoughts really, but I would appreciate it if you could let me know what you think.

Happy to discuss by phone next week if that suits.

Have a good weekend and thanks again.

regards

Peter Blair BEng CEng FICE FCIHT

Head of Transport North

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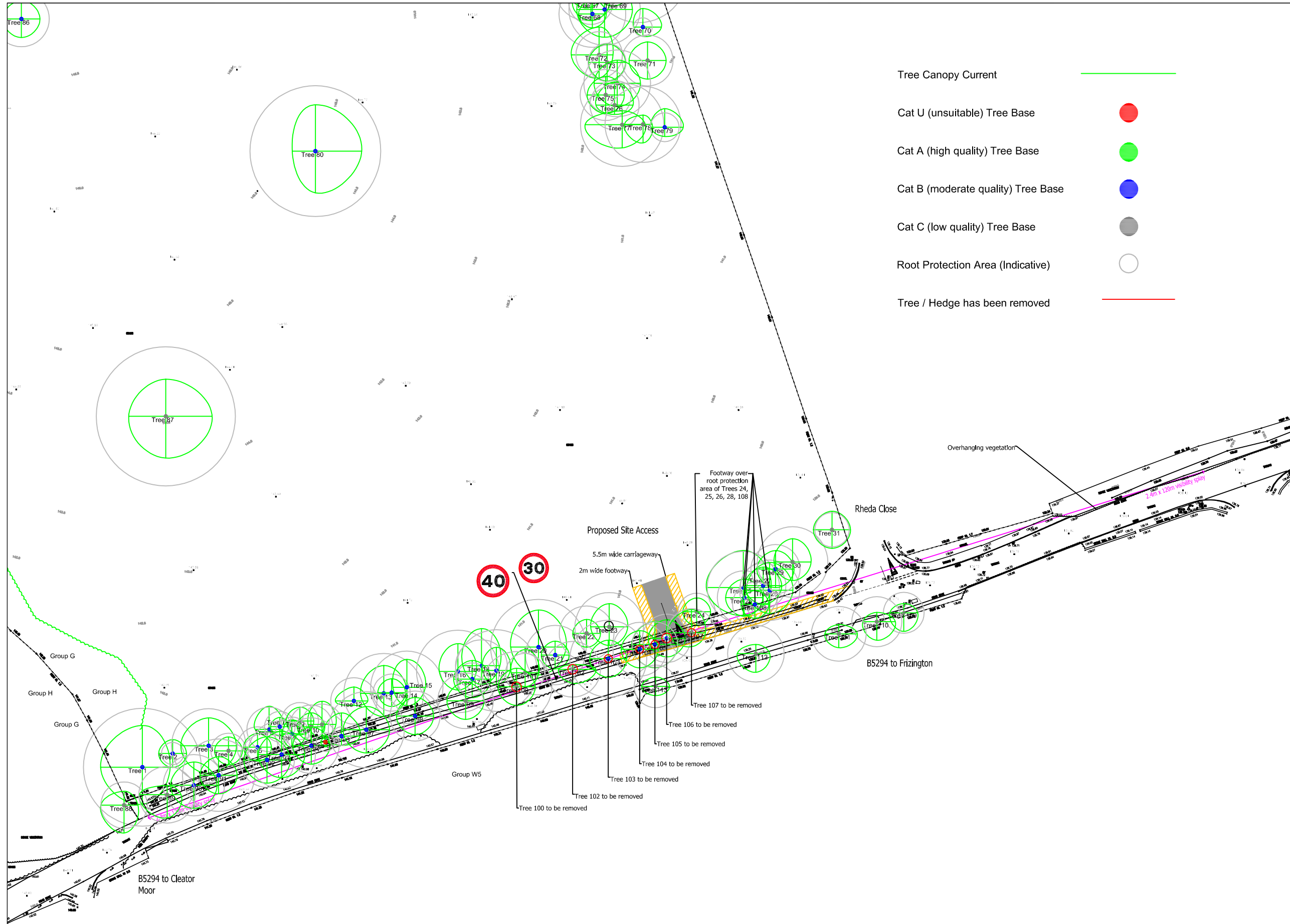
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**APPENDIX B: OUTLINE APPLICATION ACCESS DRAWING (REF:
4/18/2426/001)**



DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND
REPORT ANY OMISSIONS OR ERRORS

REV	DESCRIPTION	BY	CHK	APP	DATE
01					

Client:
TAYLOR & HARDY

LAKELAND BUSINESS PARK
LAMPLUGH ROAD
COCKERMOUTH
CA13 0QT



TEL: +44 (0)1900 898 600
FAX: +44 (0)1900 826 324
e-mail: cumbria@wyg.com

Project:
LAND ADJACENT TO RHEDA PARK

Drawing Title:
PROPOSED ACCESS ARRANGEMENT

Scale @ A3 1:500	Drawn EB	Date 03.07.17	Checked IW	Date 03.07.17	Approved NB	Date 03.07.17
Project No. A103335	Office 91	Type 18	Drawing No. C001		Revision -	

**APPENDIX C: OUTLINE APPLICATION DECISION NOTICE (REF:
4/18/2426/001)**

Town and Country Planning Act 1990 (As amended).

4/18/2426/001

NOTICE OF GRANT OF OUTLINE PLANNING PERMISSION

WYG

Unit 6 Lakeland Business Park

Lamplugh Road

COCKERMOUTH

Cumbria CA13 0QT

FAO Ms J Diamond

OUTLINE APPLICATION FOR RESIDENTIAL DEVELOPMENT WITH FULL DETAILS OF ACCESS
AND ALL OTHER MATTERS RESERVED
LAND AT NORTH PARK, RHEDA, FRIZINGTON

Genesis Homes Ltd and KCS Agriculture

The above application dated 28/09/2018 has been considered by the Council in pursuance of its powers under the above mentioned Act and OUTLINE PLANNING PERMISSION HAS BEEN GRANTED subject to the following conditions:

1. The layout, scale, appearance, means of access thereto and landscaping shall be as may be approved by the Local Planning Authority.

Reason

To comply with Section 92 of the Town and Country Planning Act 1990 as amended by the Planning and Compulsory Purchase Act 2004.

2. Detailed plans and drawings with respect to the matters reserved for subsequent approval shall be submitted to the Local Planning Authority within three years of the date of this permission and the development hereby permitted shall be commenced not later than the later of the following dates:-

- a) The expiration of THREE years from the date of this permission

Or

- b) The expiration of TWO years from the final approval of the reserved matters or, in the case of approval on different dates, the final approval of the last

such matter to be approved.

Reason

To enable the Local Planning Authority to control the development in detail and to comply with Section 92 of the Town and Country Planning Act 1990, as amended by the Planning and Compulsory Purchase Act 2004.

3. Permission shall relate to the following plans and documents as received on the respective dates and development shall be carried out in accordance with them: -
- Site Location Plan, scale 1:2500, reference Rheda 13 Rev 01, received on 28th September 2018
 - Access Plan A103335 C001, scale 1:500, reference C001, received on 28th September 2018
 - Phase 1 Desktop Study Report, compiled by Geo Environmental, reference 2017-2566, dated 31st May 2017
 - Planning Statement A109666
 - Design and Access Statement September 2018
 - Transport Assessment Report, compiled by WYG, reference A103335, dated November 2017
 - Interim Travel Plan Report, compiled by WYG, reference A103335, dated November 2017
 - Flood Risk and Drainage Statement A109666
 - Landscape and Visual Amenity issues brief report, prepared by Eden Environment Ltd, dated September 2018
 - Preliminary Ecological Appraisal, compiled by WYG, reference A103720, dated November 2017
 - Archaeological Assessment A107463
 - Bat Survey A103720
 - Tree Survey EES17-082 V2

Reason

To conform with the requirement of Section 91 of the Town and Country Planning Act 1990, as amended by the Planning and Compulsory Purchase Act 2004.

4. The carriageway, footways, footpaths and cycleways associated with the development shall be designed, constructed, drained and lit to a standard suitable for adoption and in this respect further details, including longitudinal cross sections, shall be submitted to the Local Planning Authority for approval prior to the commencement of development. No work shall be commenced until a full specification has been approved in writing by the Local Planning Authority. These details shall be in accordance with the standards laid down in the current Cumbria

Design Guide. Any works so approved shall be constructed before the development is complete.

Reason

To ensure a minimum standard of construction in the interests of highway safety, in accordance with the National Planning Policy Framework and to support Local Transport Plan policies LD5, LD7, LD8 and policies ST1, T1 and DM22 of the Copland Local Plan.

5. No dwellings shall be occupied until the approved estate roads including footways and cycleways to serve such dwellings have been constructed in all respects to base course level and street lighting where it is to form part of the estate road has been provided and brought in to full operational use.

Reason

In the interests of highway safety, in accordance with the National Planning Policy Framework and to support Local Transport Plan policies LD5, LD7, LD8 and policies T1 and DM22 of the Copland Local Plan.

6. There shall be no vehicular access to, or egress from the site other than via the approved access, unless otherwise agreed by the Local Planning Authority.

Reason

To avoid vehicles entering or leaving the site by an unsatisfactory access or route, in the interests of road safety in accordance with the National Planning Policy Framework and to support Local Transport Policies LD7, LD8 and policies T1 and DM22 of the Copeland Local Plan.

7. A detailed scheme for any road signage associated with the development shall be submitted to the Local Planning Authority for approval prior to the first occupation of the site. These details shall be in accordance with the standards laid down in the Cumbria Design Guide. Any works approved shall be constructed before the development is complete.

Reason

To ensure a minimum standard of construction in the interests of highway safety in accordance with the National Planning Policy Framework and to support Local Transport Plan Policies LD5, LD7 and LD8 and in accordance with policies T1 and DM22 of the Copeland Local Plan.

8. Prior to the commencement of development a scheme of vehicle management associated with the construction of the development including details of parking for staff and visitors to the site, turning areas and areas for loading and unloading of vehicles shall be submitted to and approved in writing. The development of the first property shall not be commenced until the scheme has been implemented in full. The site area shall be retained for the duration of the construction period.

Reason

To ensure that construction vehicles can be safely accommodated within the development site to prevent obstruction of the highway in accordance with Local Transport Plan policies LD7, LD8 and Policy DM22 of the Copeland Local Plan.

9. Ramps shall be provided on each side of every junction to enable wheelchairs and pushchairs to be safely manoeuvred at kerb lines. Details of all such ramps shall be submitted to, and approved in writing, by the local planning authority prior to the first occupation of the site. Development shall be carried out in accordance with the approved details and shall be constructed before the development is complete.

Reason

To ensure that pedestrians and people with impaired mobility can negotiate road junctions safely in accordance with policy DM22 of the Copeland Local Plan.

10. Prior to commencement of development full details of the highway surface water drainage system shall be submitted to and approved in writing by the local planning authority. The approved works shall be implemented in full and retained for the lifetime of the development.

Reason

In the interests of highway safety and surface water management and in accordance with policies DM22 and ENV1 of the Copeland Local Plan.

11. No development shall take place until full details of hard and soft landscaping works, including root protection and mitigation methods for any trees and hedgerows which are to be retained, have been submitted to and approved in writing by the local planning authority. These works shall be carried out in accordance with a programme as agreed with the local authority.

Reason

To ensure a satisfactory form of landscaping in the interests of the visual appearance and character of the area, in accordance with policy DM26 of the Copeland Local Plan.

12. Prior to the commencement of any landscaping works, a landscape management plan, including measures for the treatment and disposal of non-native invasive species, shall be submitted to and approved in writing by the local planning authority. Development shall be carried out in accordance with the approved details.

Reason

In order to protect and safeguard the amenity of the area in accordance with Policy DM26 of the Copeland Local Plan.

13. No development shall take place until a construction method statement and management plan has been submitted to and approved in writing by the local planning authority. The approved statement shall be adhered to throughout the construction period. The statement must include details relating to:-
- formation of the construction compound;
 - the means of access and egress for demolition and construction traffic;
 - the loading and unloading of plant and materials;
 - the means of keeping the public highway free from obstruction and dirt;
 - the storage of plant and materials used in construction, including measures to prevent silt and other containments entering surface water drains and a scheme for recycling/disposing of waste resulting from construction works;
 - construction traffic routing.

Reason

To protect neighbour amenity and to protect the environment from pollution in accordance with policy ST1 of the Copeland Local Plan.

14. No construction work associated with the development hereby approved shall be carried out outside of the hours of 07.30 hours-18.00 hours Monday-Saturday, nor at any time on Sundays and bank holidays, unless otherwise agreed in writing by the local planning authority.

Reason

In the interests of neighbouring residential amenity and in accordance with policy ST1 of the Copeland Local Plan.

15. No dwelling within the development shall be occupied until details of proposed refuse collection arrangements have been submitted to and approved in writing by the Local Planning Authority. Following occupation of the first dwelling on the site, refuse collection shall be commenced and maintained in accordance with the

approved management and maintenance details approved by the local planning authority.

Reason

To ensure that adequate provision is made with the development for refuse collection arrangements in the interests of residential amenity and highway safety and in accordance with the National Planning Policy Framework and policy DM22 of the Copeland Local Plan.

16. Prior to the commencement of any development, a surface water drainage scheme, based on the hierarchy of drainage options in the National Planning Practice Guidance with evidence of an assessment of the site conditions, shall be submitted to and approved in writing by the Local Planning Authority. The surface water drainage scheme must be in accordance with the Non Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards and unless otherwise agreed in writing by the Local Planning Authority, no surface water shall discharge to the public sewerage system either directly or indirectly. The development shall be completed in accordance with the approved details.

Reason

To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution in accordance with the National Planning Policy Framework and National Planning Practice Guidance and in accordance with policies ST1 and ENV1 of the Copeland Local Plan.

17. Foul and Surface water shall be drained on separate systems

Reason

To secure proper drainage and to manage the risk of flooding and pollution in accordance with the National Planning Policy Framework and in accordance with policies ST1 and ENV1 of the Copeland Local Plan.

18. Prior to the first occupation of the development a Sustainable Drainage Management and Maintenance Plan shall be submitted to the Council and approved in writing for the life time of the development. The drainage shall be managed and maintained for the lifetime of the development.

The plan shall include:

1. arrangements for adoption by an appropriate public body or statutory undertaker, or management and maintenance by a development management company; and

2. arrangements for inspection and ongoing maintenance of all elements of the sustainable drainage system to secure the operation of the surface water drainage scheme throughout its lifetime.

Reason

To manage flooding and pollution and to ensure that a managing body is in place for the sustainable drainage system and there is funding and maintenance mechanism for the lifetime of the development in accordance with the National Planning Policy Framework and policies ST1 and ENV1 of the Copeland Local Plan.

19. Prior to commencement of development a programme of further ecological survey and an accompanying Ecological Management Plan shall be submitted to and approved in writing by the Local Planning Authority in accordance with the recommendations set out in the Preliminary Ecological Appraisal prepared by WYG, reference A103720, dated June 2017. The survey shall be undertaken as agreed and the findings adhered to. The contents of the management plan shall be adhered during the construction of the scheme.

Reason

To ensure that adequate protection is given to protected species, in the interests of the environmental protection and in accordance with policy DM25 of the Copeland Local Plan.

20. Prior to commencement of development approved by this planning permission, a phase 2 ground investigation assessment shall be submitted to and approved, in writing, by the local planning authority and implemented for the development thereafter. This assessment should include the following components to deal with the risks associated with contamination of the site:
 1. A site investigation scheme, based on the desk study to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.
 2. The results of the site investigation and detailed risk assessment referred to in (1) and, based on these an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.
 3. Where required, a verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (2) are complete and identifying any requirements for longer term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Any changes to these components require express written consent of the local planning authority. The scheme shall be implemented as approved.

Reason

National Planning Policy Framework (NPPF) states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at acceptable risk from, or being adversely affected by unacceptable levels of water pollution. Government policy also states that planning policies and decisions should also ensure that adequate site investigation information, prepared by a competent person, is presented.

21. No development shall commence within the site until the applicant has secured the implementation of a programme of archaeological works in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority.
The written scheme shall include the following components:
1. An archaeological evaluation;
 2. An archaeological recording programme, the scope of which will depend on the results of the evaluation;
 3. Where significant archaeological remains are revealed by the programme of archaeological work, a post-excavation assessment and analysis, preparation of a site archive ready for deposition at a store approved by the local planning authority, completion of an archive report and submission of the results for publication in a suitable journal.

Reason

To afford reasonable opportunity for an examination to be made to determine the existence of any remains of archaeological interest within the site and for examination and recording of such remains in accordance with Policy DM27 of the Copeland Local Plan.

Informative

The proposed development lies within a coal mining area which may contain unrecorded coal mining related hazards. If any coal mining feature is encountered during development, this should be reported immediately to the Coal Authority on 0345 762 6848.

Further information is also available on the Coal Authority website at:

www.gov.uk/government/organisations/the-coal-authority

Statement

The Local Planning Authority has acted positively and proactively in determining this application by assessing the proposal against all material considerations, including planning policies and any representations that may have been received, and subsequently determining to grant planning permission in accordance with the presumption in favour of sustainable development as set out in the National Planning Policy Framework.

Approve in Outline

Please read the accompanying notice

23/01/2019

Pat Graham
Chief Executive

APPROVALS
(OUTLINE, FULL RESERVED MATTERS & HOUSEHOLDER)

DEVELOPMENT MANAGEMENT PROCEDURE (ENGLAND) ORDER 2010

PART 2

TOWN AND COUNTRY PLANNING ACT 1990

Appeals to the Secretary of State

- If you are aggrieved by the decision of your Local Planning Authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.
- If you want to appeal against your Local Planning Authority's decision then you must do so within 6 months of the date of this notice.
- Appeals must be made using a form which you can get from the Planning Inspectorate at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN or online at www.planningportal.gov.uk/pcs.
- The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.
- The Secretary of State need not consider an appeal if it seems to him that the Local Planning Authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.
- In practice, the Secretary of State does not refuse to consider appeals solely because the Local Planning Authority based their decision on a direction given by him.

Purchase Notices

- If either the Local Planning Authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.
- In these circumstances, the owner may serve a purchase notice on the Council (District Council, London Borough Council or Common Council of the City of London) in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part V1 of the Town and Country Planning Act 1990.

**APPENDIX D: RESERVED MATTERS APPLICATION DECISION NOTICE
(REF: 4/19/2261/0R1)**

Town and Country Planning Act 1990 (As amended)

4/19/2261/0R1

NOTICE OF APPROVAL OF RESERVED MATTERS

Genesis Homes
Unit 4b
Cowper Road
Gilwilly Industrial Estate
PENRITH
Cumbria CA11 9BN
FAO Mr John Blue

**RESERVED MATTERS APPLICATION SEEKING APPROVAL OF APPEARANCE, LANDSCAPING,
LAYOUT & SCALE
LAND AT NORTH PARK, RHEDA, FRIZINGTON
Genesis Homes**

The above application dated 23/07/2019 has been considered by the Council in pursuance of its powers under the above Act and **APPROVAL OF RESERVED MATTERS HAS BEEN GRANTED** subject to the following conditions:

1. The development shall be carried out in accordance with the plans submitted and in accordance with the conditions attached to the outline planning permission.

Reason

To comply with Section 92 of the Town and Country Planning Act 1990, as amended by the Planning and Compulsory Purchase Act 2004.

2. The development hereby permitted shall be carried out in accordance with the following approved plans:

Location Plan – Drawing No. 1843 005 received 23rd July 2019;
Existing Site – Drawing No. 1843 000 received 23rd July 2019;
Planning Layout - Drawing No. 1843 001 Rev. J received 12th March 2020;
Car Parking Spaces Layout - Drawing No. 1843 013 Rev. J received 13th March 2020;
Boundary Treatments Layout – Drawing No. 1843 003 Rev. J received 13th March 2020;
Elevation Treatments Layout – Drawing No. 1843 004 Rev. J received 13th March 2020;
Planting Plan – Drawing No. 01 R12 received 11th February 2020;
Plant Specification and Schedules – Drawing No. 02 Rev. 03 received 2nd January 2020;
Boundary Details – Drawing No. 1843 008 received 23rd July 2019;

The Eden – House type Specification received 23rd July 2019;
The Dee – House type Specification received 23rd July 2019;
The Tunstall – House type Specification received 23rd July 2019;
The Whillan – House type Specification received 23rd July 2019;
The Wreay – House type Specification received 23rd July 2019;
The Ellen (V1) – House type Specification received 23rd July 2019;
The Gelt (Semi V2) – House type Specification received 23rd July 2019;
The Lowther with attached garage – House type Specification received 23rd July 2019;
The Derwent – House type Specification received 23rd July 2019; and,
The Esk Bungalow – House type Specification received 23rd July 2019.

Reason

For the avoidance of doubt and in the interests of proper planning.

3. No dwelling hereby approved is to be occupied until the vehicular access and turning areas required to serve that dwelling have been constructed in accordance with the approved plans and brought into use operational use. The vehicular access/turning provisions shall be retained and capable of use at all times thereafter and shall not be removed or altered without the prior written consent of the Local Planning Authority.

Reason

To ensure a minimum standard of access provision when the development is brought into use in accordance with the requirements of Policy T1 and Policy DM22 of the Copeland Local Plan 2013 – 2028.

4. No development is to take place until finished floor levels in relation to a fixed datum have been submitted to and agreed in writing by the Local Planning Authority. The development is to be completed in accordance with the approved details.

Reason

These details are required to be approved before the commencement of development to ensure a satisfactory appearance of development and prevent landscape and visual harm in accordance with the requirements of Policy ST1, Policy ENV5, Policy DM10 and Policy DM1 of the Copeland Local Plan 2013 – 2028.

5. No dwelling hereby approved is to be occupied unless and until a scheme detailing the layout and design of a children's play space measuring 100sqm has been submitted to and approved in writing by the Local Planning Authority. The approved scheme is to be completed prior to the occupation of the 30th dwelling hereby approved. The area shall not thereafter be used for any purpose other than a children's play space.

Reason

To ensure sufficient open space and children's play space is provided within the site for use by future occupants in accordance with the requirements of Policy S55 and Policy DM12 of the Copeland Local Plan 2013 – 2028.

6.

- a) No lighting is to be installed unless and until a scheme for the provision of external lighting has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include full details of the location, design, luminance levels, light spillage and hours of use of all external lighting within the site.
- b) The approved lighting scheme is to be implemented in full prior to first occupation of the development hereby approved.

Reason

These details are required to be approved before the commencement of development to safeguard ecology in accordance with the requirements of Policy ENV3 and Policy DM25 of the Copeland Local Plan 2013 – 2028.

7. All hard and soft landscape works is to be carried out in accordance with the approved details. Any trees / shrubs which are removed, die, become severely damaged or diseased within five years of their planting shall be replaced in the next planting season with trees / shrubs of similar size and species to those originally required to be planted.

Reason

To safeguard and enhance the character of the area and secure high quality landscaping in accordance with the requirements of Policy DM26 of the Copeland Local Plan 2013 – 2028.

8.

- a) A landscape management plan, including long term design objectives, management responsibilities and maintenance schedules for all landscape areas is to be submitted to and approved in writing by the Local Planning Authority prior to first occupation of the development.
- b) The landscape management plan is to be implemented as approved before the development is occupied, or in accordance with a timetable agreed in writing with the Local Planning Authority.

Reason

To safeguard and enhance the character of the area and secure high quality landscaping in accordance with the requirements of Policy DM26 of the Copeland Local Plan 2013 – 2028.

9. Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) (England) Order 2015 (or any order revoking and re-enacting that Order with or without modification) no extension to the rear elevation or rear roof planes of Plot Nos. 16, 17, 18, 19, 29, 30, 31, 32, 33 and 34 as identified on Planning Layout - Drawing No. 1843 001 Rev. J received 12th March 2020 shall be undertaken without the express permission of the Local Planning Authority.

Reason

To safeguard the residential amenity of the residents of Rheda Park.

10. Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) (England) Order 2015 (or any order revoking and re-enacting that Order with or without modification), no development of the type described in Class E, Part 1 of Schedule 2 of that Order shall be undertaken Plot Nos. 16, 17, 18, 19, 29, 30, 31, 32, 33 and 34 as identified on Planning Layout - Drawing No. 1843 001 Rev. J received 12th March 2020 without the express permission of the Local Planning Authority.

Reason

To safeguard the residential amenity of the residents of Rheda Park in accordance with the requirements of Policy DM12 of the Copeland Local Plan 2013 – 2028 and Paragraph 127 of the National Planning Policy Framework 2019.

Informative

The proposed development lies within a coal mining area which may contain unrecorded coal mining related hazards. If any coal mining feature is encountered during development, this should be reported immediately to the Coal Authority on 0345 762 6848.

Further information is also available on the Coal Authority website at:

www.gov.uk/government/organisations/the-coal-authority

[<http://www.gov.uk/government/organisations/the-coal-authority>](http://www.gov.uk/government/organisations/the-coal-authority)

Statement

The Local Planning Authority has acted positively and proactively in determining this application by identifying matters of concern with the proposal and negotiating with the applicants acceptable amendments to address them. As a result the Local Planning Authority has been able to grant planning permission for an acceptable proposal in accordance with Copeland Local Plan policies and the presumption in favour of sustainable development as set out in the National Planning Policy Framework.

Please read the accompanying notice

19/03/2020

Pat Graham
Chief Executive

P.P

**APPROVALS
(OUTLINE, FULL RESERVED MATTERS & HOUSEHOLDER)**

DEVELOPMENT MANAGEMENT PROCEDURE (ENGLAND) ORDER 2015

PART 2

TOWN AND COUNTRY PLANNING ACT 1990

Appeals to the Secretary of State

- If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.
- If you want to appeal against your local planning authority's decision then you must do so within 6 months of the date of this notice.
- Appeals can be made online at: <https://www.gov.uk/planning-inspectorate>. If you are unable to access the online appeal form, please contact the Planning Inspectorate to obtain a paper copy of the appeal form on tel: 0303 444 5000.
- The Secretary of State can allow a longer period for giving notice of an appeal but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.
- The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.
- If you intend to submit an appeal that you would like examined by inquiry then you must notify the Local Planning Authority and Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. [Further details are on GOV.UK.](#)

Purchase Notices

- If either the Local Planning Authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.
- In these circumstances, the owner may serve a purchase notice on the Council (District Council, London Borough Council or Common Council of the City of London) in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part V1 of the Town and Country Planning Act 1990.

APPENDIX E: RESERVED MATTERS PLANNING LAYOUT REV H



NOTES AND AMENDMENTS

This drawing is copyright ©. Figured dimensions are to be followed in preference to scaled dimensions and particulars are to be taken from the actual work where possible. Any discrepancy must be reported to the architect immediately and before proceeding.

REVISIONS				Rev	Description	Drawn	Date

house type	Garages	sq m	sq ft	no of units	total sq ft				
Dee		65.46	705	10	7050				
Esk		98.62	1061	9	9549				
Gett (semi)	1.5 garage	87.36	940	4	3760				
Derwent	single garage	89.07	958	6	5748				
Tunstall	single + double garage	121.9	1312	4	5248				
Wreay	integral	113.37	1220	4	4880				
Eden	integral	124.33	1338	5	6690				
Ellen	double garage	121.75	1310	6	7860				
Lowther	1.5 garage	123.2	1326	3	3978				
Whillan	double garage	173.45	1867	4	7468				
				totals	55	62231			
site area		11295	121578						
Gross Site Area in Metres					36880				
Gross Site Area in Acres					9.11				
Strategic Public open Space in M					8455				
Strategic Public open Space in Ac					2.09				
Net Site Area in Metres					28425				
Net Site Area in Acres					7.02				
Net Site Area in Hectares					2.84				
Density (Sq Ft per Acre)					8865				
Density (Units Per Acre)					7.8				
Density (Units Per Hectare)					19.36				



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w www.ashwooddesign.co.uk

Purpose:
Planning

Client:
Genesis Homes Ltd

Project:
Housing at Rheda

Title:
Planning Layout

Scale:
1:500

sheet size:
A1

Drawn:
jc

Date:
05/19

Project No:
1843

Drawing No:
001

Revision:
H

APPENDIX F: EXTRACTS FROM 'CUMBRIA DESIGN GUIDE: LAYOUT OF NEW RESIDENTIAL DEVELOPMENTS'

MINOR ACCESS ROAD

- 4.1.20 Minor Access Roads are residential roads with footways providing direct access to individual dwellings or parking areas. They are expected to serve up to 100 dwellings. It is unlikely that public transport services would operate within these roads because of the limited number of dwellings they serve, nor is it anticipated that traffic unconnected with the properties they serve will be attracted.
- 4.1.21 Speed restraint measures at intervals along the carriageway and close to junctions will be a feature of these roads; such measures could include road narrowing on sections of non-access frontages. Direct vehicle access will not normally be restricted except where driveway access would conflict with turning movements at road junction.

Design Standards -**MINOR ACCESS ROAD To serve up to 100 dwellings**

Target Maximum Speed	20mph/30kph
Carriageway Width	For first 15m and generally 5.5m. May be reduced to 4.8m where fewer than 50 dwellings are served, and to 4.1m on non-access frontages. Local widening on bends with centreline radius less than 60m (in accordance with B3.3 of Technical Annex B)
Horizontal Alignment (except for traffic calming)	Minimum centreline radius of 15m. Provision of long straight sections of road will not be acceptable
Vertical Alignment	Maximum gradient 1 in 20 for first 15m at junctions but 1 in 10 elsewhere with all gradients joined by vertical curves
Forward Visibility	Minimum of 40m, but minimum 60m where carriageway less than 4.8m wide
Minimum Junction Spacing	40m (same side), 20m (opposite side)
Junction Visibility (if relevant TMS achieved; otherwise use Table A of PPG13)	<ul style="list-style-type: none"> • With 30mph higher category than local distributor road - 4.5m by 90m; for higher speeds use Table A of PPG13 (see Fig 3 and tables on page 18) • With local distributor - 4.5m by 70m if more than 30 dwellings or 2.4m by 70m if 30 or fewer dwellings • With major access road - 4.5m by 45m if more than 30 dwellings or 2.4m by 45m if 30 or fewer dwellings • With minor access road - 2.4m by 33m if 30 or fewer dwellings; otherwise 4.5m x 33m
Kerb Radius	10.5m to roads above major access road category; 6m to major or minor access roads
Footway Width	1.8m, normally on both sides. In certain instances, such as to avoid established trees, they may be routed away from the carriageway edge
Verge Width	Not required if footway present; otherwise 0.5m surfaced margin for vehicle overhang, or adequate width for services where required
Direct Access to Dwelling	Acceptable, subject to: <ul style="list-style-type: none"> • 7.2m of dropped kerb; drive 2.6m wide at 2.5m from carriageway edge; any gates to open inward and be a minimum 4.5m from carriageway edge; visibility 2m x 33m; • as with all accesses to dwellings, visibility splay at rear of footway to be 2.4m x 2.4m; • not within 15m of road junction
Provision for Cyclists	As these roads are designed for low vehicle speeds and to minimise vehicle flows, safe conditions will exist for cyclists to use the road
Traffic Calming	Measures to ensure low traffic speeds will be essential, with 60m maximum distance between speed restraints
Turning Space	For pantechicon if more than 60m long or connects to local distributor road or major access road; otherwise for refuse vehicle if 35-60m long or for car if less than 35m long
Road Lighting	Over 50 dwellings: BS5489 Part 3 Category 3/2; 6 Lux average; 2.5 Lux minimum Fewer than 50 dwellings: BS5489 Part 3 Category 3/3; 3.5 Lux average; 1 Lux minimum

SHARED SURFACE ROAD

- 4 | 22 A Shared Surface Residential Road, where no footways are provided and both pedestrians and vehicular traffic make use of the carriageway, may be either laid out as a loop, serving up to about 30 dwellings, or in the form of a cul-de-sac serving not more than 20 properties. The design of the Shared Surface Road is intended to give priority to the pedestrian and accordingly a low target traffic speed, attained by specific restrictions in carriageway form, width, finishes and junction details, has been set.
- 4 | 23 Junctions with Shared Surface Roads will be restricted to Major Access or Minor Access Roads as driving conditions on faster or more heavily trafficked roads in the hierarchy preclude turning movements at the vehicle speeds envisaged when entering a shared surface road.
- 4 | 24 Accesses into Shared Surface Roads serving about 10 or more dwellings will take the form of 90° turns, emphasised by both tight radii to each side and ramps at the bellmouth narrowing, such ramps being formed in a contrasting material to either of the adjacent road surfaces. The ramps will be about 1.8m (but not less than 1m) in length and rise about 75mm above carriageway level. It is expected that the footways on either side of the priority road will extend to either side of the ramp which will effectively form a road crossing for pedestrians. For fewer dwellings than 10 an access in the form of a footway crossing, splayed at 45° from 6m back from the carriageway edge to meet 1.7m of crossing kerb, may be considered.
- 4 | 25 Surface finishes to the Shared Surface Road must also reflect its pedestrian priority status which distinguishes it from most other roads in the hierarchy. Block paving with appropriately detailed carriageway edge restraints using low rise small unit kerbs (40mm upstand) are recommended for most situations, although alternative surface finishes and kerb/edge details may be required in specific locations such as sites within Conservation Areas or in the National Parks.
- 4 | 26 Intended more than all other roads in the hierarchy, apart from Shared Driveways, to foster a sense of identity and communal responsibility, the length of Shared Surface Roads should not normally exceed 100m if a cul-de-sac or 200m if a loop road.
- 4 | 27 On roads such as shared surface roads, where the distinction between service verge and adjacent gardens is not always clear on the ground, it is important to ensure that the rights of the Highway Authority, statutory undertakers and the public over the adopted area are protected even though the adjoining landowners may, in fact, be maintaining their respective strips of verge. The need to mark the highway boundary and inform house purchasers is covered in 4.6.8 and 5.1.23.

Design Standards -	
SHARED SURFACE ROAD	<i>To serve up to about 30 dwellings if loop; 20 dwellings if cul-de-sac</i>
Target Maximum Speed	15mph/25kph or less
Carriageway Width	May be variable with a nominal 4.8m reducing to a minimum of 4.1m on non-access frontages, although such reduced widths should not normally exceed 15m in length at any point. Widening above the 4.1m minimum required on bends where the centreline radius is less than 30m (in accordance with B3.3 of Technical Annex B)
Horizontal Alignment <i>(except for traffic calming)</i>	Minimum centreline radius of 12.5m
Vertical Alignment	Maximum gradient of 1 in 20 within 10m of junctions but 1 in 12.5 elsewhere. At change of gradient vertical curves will be required
Forward Visibility	Minimum of 25m
Minimum Junction Spacing	40m (same side); 20m (opposite side); cross roads will not be permitted
Junction Visibility <i>(if relevant TMS achieved, otherwise use Table A of PPG1.3)</i>	<ul style="list-style-type: none"> • With major access road - 2.4m by 45m • With minor access road - 2.4m by 33m • With shared surface road - 2.4m by 23m
Kerb Radius	6m, or 4.5m with mountable shoulders
Footway Width	No footway
Verge Width	2m service strip or 0.5m surfaced margin for vehicle overhang
Direct Access to Dwelling	Unrestricted apart from within 10m of junction with a higher category road. Where possible shared or paired drives will be encouraged. Standards similar to Minor Access Road, but visibility along road can be 23m
Provision for Cyclists	Low speed design suitable for use by cyclists
Traffic Calming	Prerequisite to successful attainment of the shared surface principle, with speed restraint measures at intervals of approximately 40m
Turning Space	For pantechnicon if more than 60m long or connects to major access road; otherwise for refuse vehicle if 35-60m long or for car if less than 35m long
Road Lighting	BS5489 Part 3 category 3/3; 3.5 Lux average; 1 Lux minimum

APPENDIX G: TRRL RESEARCH

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DB32 First Edition

APPENDIX 4: STUDIES OF DELAYS TO TRAFFIC ON SINGLE-LANE CARRIAGEWAYS WITH PASSING PLACES

Introduction

1. This Appendix contains a summary of studies undertaken at the Transport and Road Research Laboratory on behalf of the Housing Development Directorate of DOE into the use of single-lane carriageways with passing places.²⁰

2. While these results may be used as guidance in producing innovative schemes, it must be emphasised that they do not represent studies of systems in everyday use and that additional factors must be taken into consideration when determining carriageway widths, as outlined in paragraphs 8.04-8.21 of this bulletin.

3. It is hoped, however, that the results provide sufficient guidance to enable schemes with single-lane carriageways to be produced where appropriate, and to enable follow-up studies to be conducted of their use.

Results from the TRRL studies indicate that simply in of their capacity for carrying moving traffic single-lane carriageways, correctly designed, are unlikely to incur significant increases in delay compared with traffic in free-flow conditions, at flow levels of up to 300 vph (total two-way).

5. The studies were undertaken in two stages:

- (a) first, a computer program was written representing the operation of a fixed length of single-lane carriageway, with passing places. From this a series of graphs of average delay against numbers of passing places was obtained for a range of flow levels (paragraphs 6-14);
- (b) second, a small-scale controlled experiment was carried out on the laboratory's test track to check the results of the simulation (paragraphs 15-29).

Simulation

6. A program, written in Fortran, was used to simulate the operation of a length of single-lane road. This length of road was split into 60 sections, some of which could be designated as passing places. No assumptions were made about the geometric configuration of the passing places since this has no effect on the operation of the program. From 0 to 5 passing places could be provided, uniformly spaced along the length considered; an additional section at each end was assumed to act as a passing place at all times, representing widening at each end of the single-lane road. The program operated under a fixed time cycle: during each cycle, vehicles could be generated at each end of the road and move along it at a constant speed of one section per time unit, unless impeded by other vehicles. For the purposes of this simulation the sections were assumed to be 3m long (giving a total of 180m) and the time unit was taken as half a second. This gives a speed of 3m/½ sec, i.e. about 22 km/h.

7. Traffic flows up to a two-way total of 300 vph (with various directional splits) were used in the simulation, and the entry times of vehicles into the single-lane road were determined by the computer's random number generator.

8. Simple rules were used to govern the movement of vehicles along the length of single-lane road. No two vehicles (regardless of their direction of movement) were allowed to be present at the same time in any 3m section unless it had been designated as a passing place (or was an end section). Vehicles had to wait in a passing place until the length of single-lane road up to the next passing place was clear of oncoming traffic. All vehicles moved with a fixed speed or were stationary: there was no acceleration/deceleration time or intermediate speed. Any number of vehicles were allowed to occupy a passing place (or end section).

9. For each simulation run (with a nominal traffic flow and number of passing places) the average journey time was calculated from the vehicle entry and exit times for each direction separately. Since the vehicles had a constant speed, their unimpeded journey time was constant at 30 seconds, thus the average delay to vehicles in each direction was found, and the mean delay for all vehicles. Additionally, a record was produced of the use of each passing place and end section. In each case, the number of half-second periods during which nil, one, two, three or more vehicles were present was recorded. This was done for each direction separately and for the two directions combined. Finally, the maximum number of vehicles present at any passing place or end section was output.

Results

10. Eight different combinations of nominal flow were used with from nil to five passing places provided within the 180m length. For each case three separate one-hour-long operations were simulated using different random patterns of traffic arrivals. The three simulations were averaged for each case and it is these averages which are presented here.

11. Figure 1 shows the way in which average delay per vehicle (both directions of flow combined) varied with the number of passing places for eight different flow combinations. The flow values given are the nominal flow rates; the actual flows obtained by the random generation procedure are in most cases slightly different.

12. These results show that the delay per vehicle falls considerably with the provision of one or two passing places, but a law of diminishing returns rapidly sets in. It can also be seen that balanced flows produce higher overall average delays per vehicle than equivalent unbalanced ones. Figure 2 shows the average delay per vehicle plotted against total flows for the cases where the nominal flows are equal.

13. These results are discussed in paragraphs 22-29 after the controlled experiment has been described.

14. Figure 3 gives information on the use made of the passing places and end sections for the various flow combinations. In each case the end sections are considered separately and an average passing place is also considered. For each of these the number of seconds during which one vehicle is waiting (T_1) and two or more vehicles are waiting (T_{2+}) is given. For the passing places this can include vehicles travelling in either direction, but only entering vehicles could be required to wait at the end sections. The figures are again the averages of three one-hour simulations. Also shown is the maximum number of vehicles ever required to wait in any passing place or end section. This figure is the highest occurring in any of the three simulations.

The single-lane experiment

15. In order to observe the operation of a single-lane road and to provide a check on the simulation output a small controlled experiment was carried out on the Laboratory's test track (the small roads system).

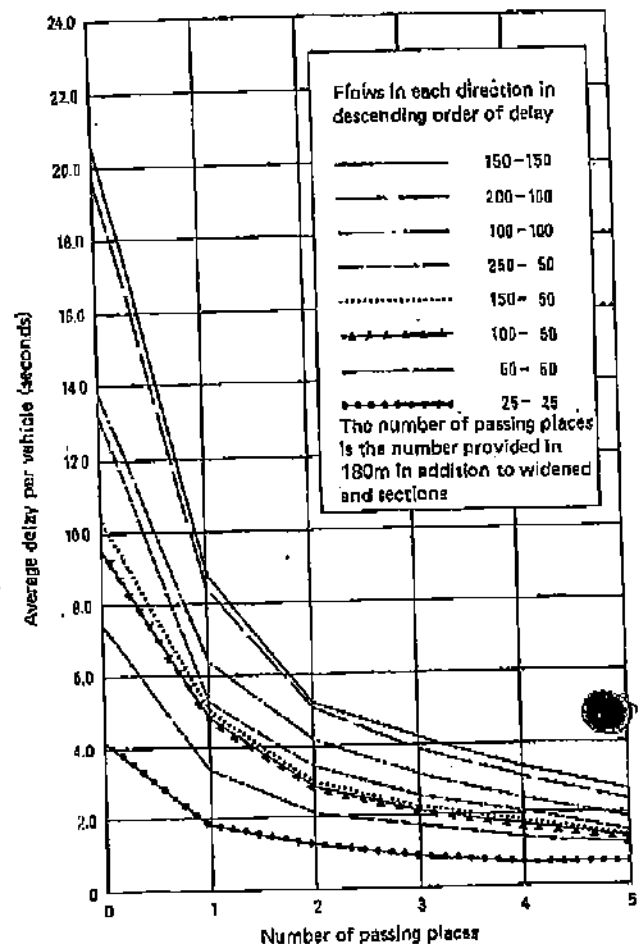
16. A straight stretch of 9m-wide road was narrowed using wooden blisters to 2.75m for 180m of its length. Three passing places marked out by cones were provided within the 180m, but two of these were blocked off in some tests. In addition to the 180m stretch of single-lane road, each end was entered through a widened section of road. Other parts of the small roads system were used to re-circulate traffic taking part in the experiment (see Figure 4). The layout of the single-lane road and the detailed design of the passing places, is shown in Figure 5 and illustrated in Figure 6.

17. The traffic used for the experiment consisted of cars driven by members of the Traffic Engineering Department. Vehicles were released onto the test road at each end according to a prepared schedule which gave specified flow rates and random intervals between vehicles. The release times were based on the vehicle generation times used by the simulation, adjusted to give a more realistic time-gap between entering vehicles. Observers positioned at the entry points noted any deviations from the scheduled entry times. The observers also recorded the use made of the passing places and widened entries by noting the number of vehicles waiting and the duration of their wait. Finally, an observer at each end recorded the times at which vehicles left the system, from which journey times could be calculated.

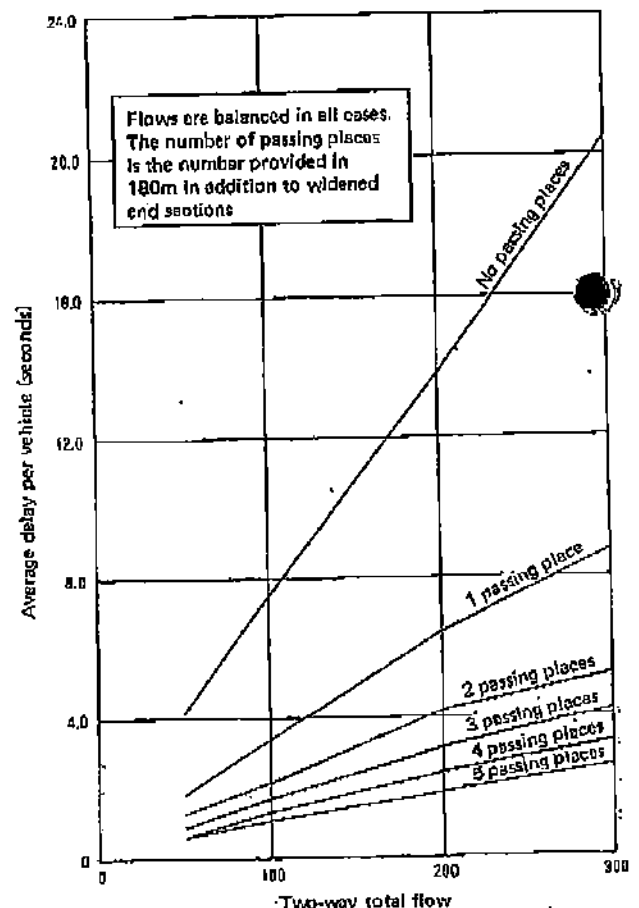
18. Seven tests were carried out, each lasting 20 minutes. Six of the tests were directly comparable with output from the simulation; the seventh used higher flows (250 vph each way) than had been used in the simulation. Since average speeds were higher during the experiment than that assumed in the simulation, average delays rather than average journey times were used as a basis of comparison. The calculation of delay was not as straightforward for the experiment as for the simulation since the unimpeded journey time was not constant for all vehicles. In order to obtain a value for the unimpeded journey time, a space-time plot was constructed for every vehicle in each of the first six tests. All vehicles which had a completely free run, in the sense that they met no oncoming traffic, were noted and their journey times recorded. The average journey time of all such vehicles was 23 seconds (giving a free-run speed of 28 km/h); this was subtracted from the overall average journey time in every test to produce a value for average delay.

19. The results of the seven tests are summarised in Figure 7. A comparison of these results with those from the simulation is made in paragraphs 22-29.

20. The space-time plots were also used to produce histograms of the journey time distribution for each test. As an example, Figure 8 shows the histogram for flows of 100/100 with three passing places, for both directions of flow combined. Also shown are the vehicles which had a completely free run (about 30% in this case; nearly 40% overall for the first six tests). In addition to these a number of vehicles were unimpeded because vehicles from the other direction let them pass. Since all these 'free-running' vehicles are included in the calculation of average delay, it follows that the delays actually incurred by some vehicles were considerably higher than the overall averages quoted: four of the 70 vehicles represented in Figure 8 suffered delays of more than 30 seconds, when the overall average delay was less than five seconds.



1 Variation of average delay with number of passing places and flow



2 Variation of average delay with flow and number of passing places.

3 Use of passing places and end sections

Flow (vph) in each direction	Number of passing places per 180m	Use of average passing place (seconds/hour)		Use of high-flow end section (seconds/hour)		Use of low-flow end section (seconds/hour)		Maximum number waiting
		T_{2+}^*	T_1^*	T_{2+}	T_1	T_{2+}	T_1	
26/25	0			29	95	0	82	3
	1	7	51	0	47	0	32	3
	2	1	43	0	25	0	25	2
	3	1	34	0	18	0	18	2
	4	0	32	0	15	0	13	2
	5	0	30	0	15	0	15	2
50/50	0			71	209	95	191	4
	1	15	153	9	173	20	85	3
	2	9	102	3	48	9	56	3
	3	4	84	1	44	3	44	2
	4	2	73	1	37	1	43	2
	5	1	66	1	36	0	38	2
100/50	0			118	333	209	423	5
	1	61	303	31	160	26	144	4
	2	18	181	4	97	10	88	4
	3	11	138	1	80	5	61	3
	4	5	118	1	69	1	53	3
	5	3	104	0	63	0	43	3
100/100	0			325	529	322	541	7
	1	125	432	49	256	45	265	6
	2	34	291	12	149	23	157	4
	3	22	211	11	116	2	117	3
	4	10	176	2	92	2	98	3
	5	6	151	0	79	0	84	3
150/50	0			170	312	347	504	5
	1	346	529	27	215	47	207	4
	2	115	391	6	128	11	128	4
	3	58	323	4	112	6	89	4
	4	31	264	1	94	2	88	3
	5	17	230	1	89	1	44	3
150/150	0			682	483	708	549	14
	1	119	330	117	379	114	425	6
	2	32	222	28	233	28	270	6
	3	14	172	30	182	11	180	5
	4	8	148	10	165	10	137	3
	5	4	135	7	136	4	127	4
200/100	0			568	369	840	617	14
	1	360	548	105	345	120	472	7
	2	98	409	42	249	28	287	5
	3	47	324	23	202	7	157	4
	4	26	264	8	175	7	141	5
	5	15	229	6	155	2	105	3
250/50	0			253	287	745	637	8
	1	223	467	48	278	73	308	4
	2	54	349	35	200	17	206	5
	3	36	252	9	191	10	129	4
	4	24	221	5	167	3	97	3
	5	12	196	4	150	0	59	3

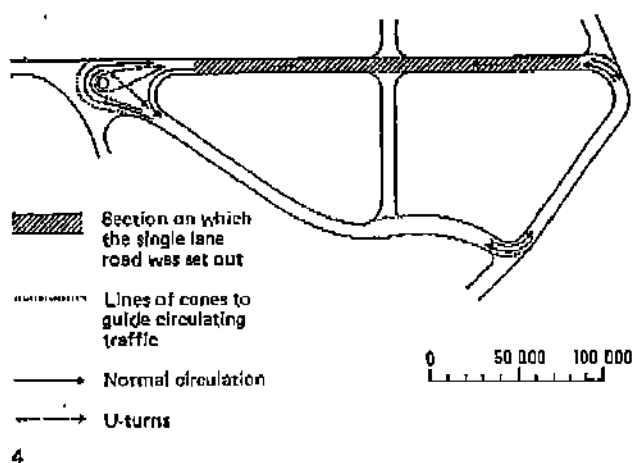
* T_1 and T_{2+} are the average number of seconds per hour during which an average passing place or end section is occupied by one vehicle or by two or more vehicles respectively.

21. The records of the numbers of vehicles using the passing places were hard to analyse due to the difficulty of defining when a vehicle was actually using a passing place. In particular, a number of vehicles used passing places to perform 'moving passes' during which neither of them actually stopped. Vehicles were also adjusting their speed well in advance of a passing place to take advantage of particular traffic circumstances. However, both the records kept and the opinions of observers suggested that the passing places employed were adequate for all but the final test when exceptionally high flows (in the single-lane road context) were used. It seems unlikely that much smaller passing places could be used due to the need to accommodate large service vehicles.

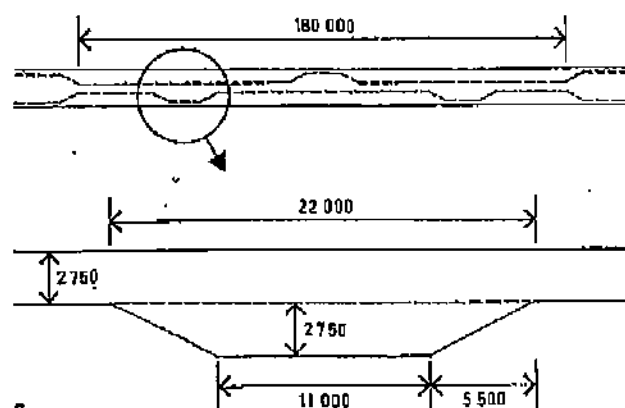
Comparison of results between simulation and controlled experiment

22. The results of the first six tests during the controlled experiment are compared with the appropriate simulation results in Figure 9. The seventh test did not correspond to any simulated case; this test had only been included as an attempt to introduce more diverse driving conditions than seemed likely to occur during tests within the simulated range.

23. Figure 9 shows a systematic difference between the simulation and the experiment in the overall average delay per vehicle for the various flow combinations; the test-to-test differences were in close agreement. The experimental values were about 1½ seconds higher in every case except that in which very unbalanced flows (250/50) were provided with only one passing place. This difference may be the result of the omission of certain factors (e.g. acceleration/deceleration delays) from the simulation.



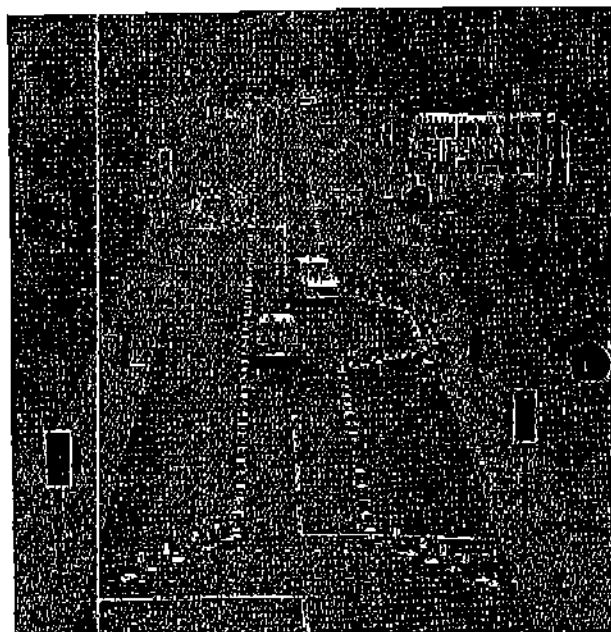
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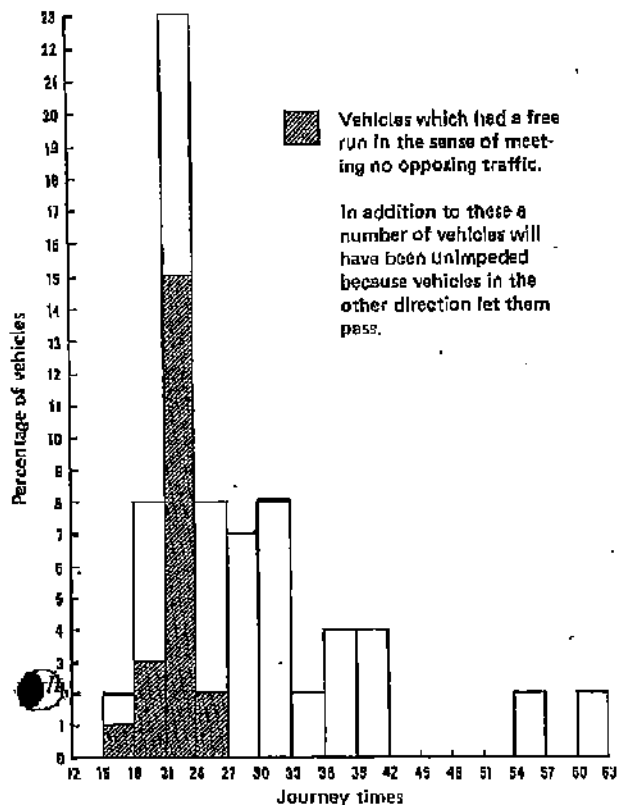
24. The discrepancies between the simulation and the experiment with respect to the difference in average delay per vehicle between the two flow directions, was even more marked. In the simulation this difference was variable; being large when the flows were unbalanced. The driver behaviour observed during the experiment was more flexible than that assumed in the simulation and this may have led to a smoothing out of differences. The observed differences between delay per vehicle for the two directions ranged from 0 to 2.6 seconds, and averaged 1.3 seconds (see first six rows of Figure 7).



6

7 Summary of results from controlled experiment

Number of passing places	Approximate flow rate (vph)		Average delay per vehicle (sec)		Combined
	High	Low	High	Low	
1	50	50	4.3	5.6	4.7
1	150	50	6.3	7.7	6.7
1	250	50	5.1	5.1	5.1
3	150	50	2.5	5.1	3.3
3	100	100	4.2	5.2	4.7
3	250	50	3.8	5.1	3.9
3	250	250	24.8	34.1	29.9



8 Journey time distribution from experiment. (Both directions of flow combined.) Three passing places. Nominal flow rate of 100 vph each way. (Total two-way count of 70 vehicles in 20 mins.)

Number of passing places	Flow rate (vph)	Average delay per vehicle both directions combined (sec)		
		Experiment	Simulation	Experiment minus simulation
1	50/ 50	4.9	3.4	+ 1.5
2	150/ 50	6.7	5.1	+ 1.6
1	250/ 50	5.1	5.3	- 0.2
3	150/ 50	3.3	2.2	+ 1.1
3	100/100	4.7	3.1	+ 1.6
3	250/ 50	3.9	2.6	+ 1.3

25. It was not possible to produce a delay/flow plot for the experiment like that for the simulation results given in Figure 2, because only seven tests were carried out. However, the seventh test with flows of 250 vph each way and three passing places showed a large increase in delay which suggests that the linear relationship between flow and delay in Figure 2 would not apply at higher flows, as the simplifying assumptions involved in the simulation (especially about driver behaviour) became increasingly unrealistic.

26. Since the simulation did not generally record individual journey times (this would have led to a large increase in program running time) no comparison is possible with the distribution of journey times recorded in the experiment (Figure 8). But a few extra simulation runs confirmed the experimental results, that a considerable proportion of vehicles were unimpeded, while a small proportion incurred delays well above the average; this must be borne in mind when assessing the acceptability of the various average delays recorded.

27. Although it was difficult to analyse the records of the use made of passing places during the experiment, they were clearly of adequate size for the flows used in the first six tests. The simulation showed that they were empty for much of the time and rarely occupied by more than two vehicles. Observers in the experiment agreed that this was an accurate representation of passing place use.

28. In making these comparisons it should be remembered that the simulation results are based on three one-hour simulated flows, whereas the tests during the controlled experiment were of only twenty minutes each.

29. It would seem, therefore, that while the results from the simulation may be suspect in detail, the values obtained for overall average delay per vehicle are of the right order. It also seems that the simulation provides reasonable guidance as to the frequency and size of passing place required. Figure 1 suggests that for two-way flows of up to 300 vph two passing places within 180m (i.e. a separation of 90m, centre-to-centre) are sufficient. For higher flows of up to a two-way total of 300 vph three passing places are probably necessary (separation of 45m, centre-to-centre).

APPENDIX 5: CONSIDERATIONS FOR THE PROVISION OF FORWARD VISIBILITY BETWEEN PASSING PLACES ON NARROWED CARRIAGEWAYS

1. To avoid opposing vehicles confronting each other on a narrowed stretch of carriageway it will always be necessary for them to be able to see each other before a passing bay is reached by the vehicle nearest to it.

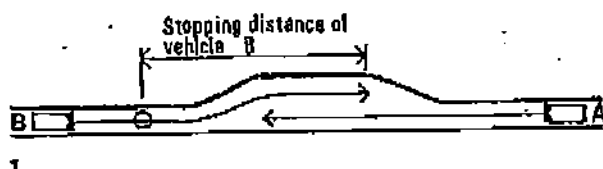
2. Thus in Figure 1 for vehicle B to pull into the bay it is necessary for the driver to see vehicle A before B has reached point O. Point O is dependent on the speed of vehicle B and is the point beyond which B cannot slow down or stop in time to enter the passing bay. Since in reality however, either vehicle A or B may be the closest to the passing bay, both vehicles must be able to see each other before either has passed the point where it cannot slow down or stop in time to use the bay.

3. The implications of this are shown in Figure 2 illustrating that with a sequence of passing bays the forward visibility

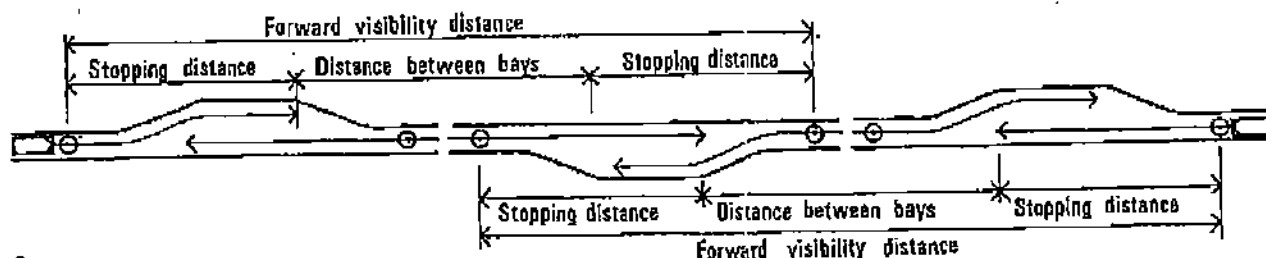
distances overlap, each being determined by the combined stopping distances of opposing vehicles plus the distances required between bays necessary to cope with the traffic volumes envisaged (see Appendix 4).

4. Where bends occur the same rules will apply as shown in Figure 3 and it will be appreciated that if passing bays were not provided on the bend the sight lines required between bays on each side of the bend could 'sterilise' a comparatively large amount of land. For similar reasons, it will also normally be necessary to provide passing places at junctions between narrowed carriageways (Figure 4) and at their entry point from carriageways of 'normal' width (Figure 5).

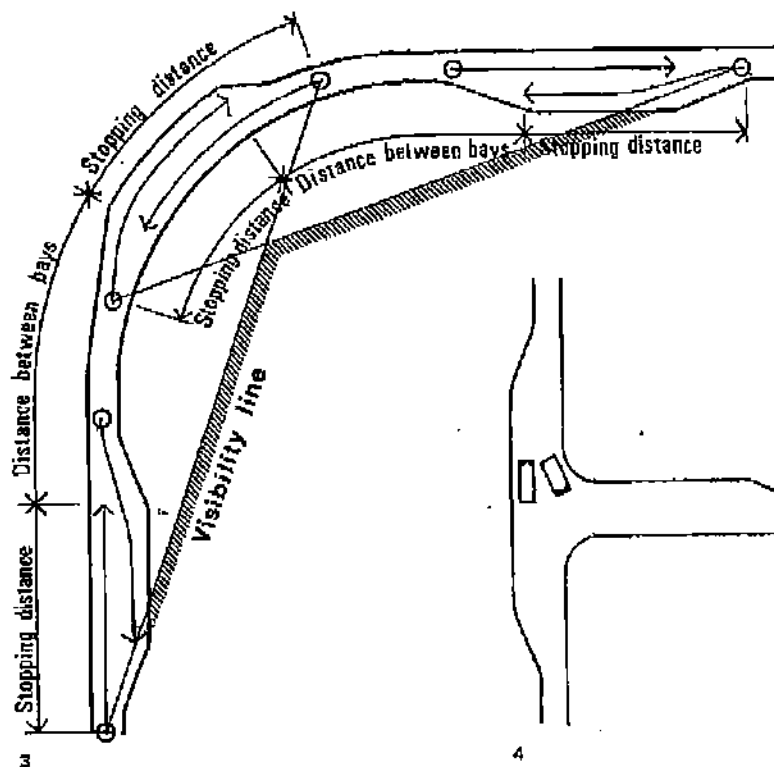
5. It should be emphasised that Figures 1-5 are purely diagrammatic. The shape and size of passing bays required will depend largely on the types and volumes of traffic to be coped with (see Appendix 4). Their location and design at junction points may also be affected by the need to allow vehicles to turn past others waiting in the passing bays. This again will be influenced by the volume of traffic but may also be influenced by the direction of turn at the junction point (see paragraph 8.37).



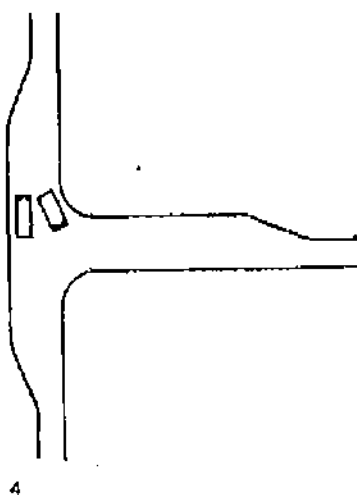
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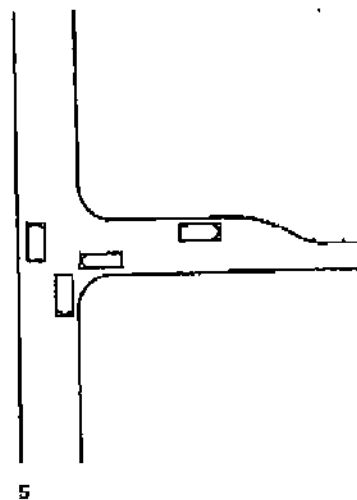
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APPENDIX 6: VERTICAL CURVES (see paragraphs 8.47-8.52)

1. To ensure reasonable standards of comfort and to provide appropriate visibility at summits, *Roads in Urban Areas*¹, section 3.5, recommends that vertical curves should not be shorter than:

- (a) Indicated by the formula $L = KA$, where L is the curve length in metres, A is the algebraic difference in gradients (expressed as a percentage) and K has a value selected from Figure 1; or
- (b) shown in the fourth column of Figure 1 if longer than (a).

2. Summit curves designed using the K -values given in the second column of Figure 1 will have sight distances just adequate for overtaking on two-way roads. The K values shown in the third column will ensure acceptable stopping sight distances at summits and a reasonable ride at both summits and valleys. These minimum standards will apply to one-way roads and those two-way single-carriageway roads where physical conditions preclude the achievement of better visibility.

1 Minimum vertical curve lengths

Design speed mph (km/h)	Minimum K value for overtaking	Minimum K value for stopping and comfort	Minimum vertical curve length (m)
30 (50)	60	6	30
20 (30)	20	1	20