HEARING STATEMENT – MATTER 14 (B) HOUSING SITE ALLOCATIONS: EDENFIELD, HELSMHORE, IRWELL VALE AND EWOOD BRIDGE

ROSSENDALE LOCAL PLAN EXAMINATION

TAYLOR WIMPEY (UK) LTD

(ALLOCATION H74 – GRANE VILLAGE)

Date: August 2019

Pegasus Reference: (KW/GL/MAN.0299/R011B)

Pegasus Group

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1. INTRODUCTION

1.1 Pegasus Group have been instructed on behalf of their client, Taylor Wimpey (UK) Ltd, to prepare Hearing Statements to the Rossendale Local Plan Examination (EiP) in support of their land interests in the Borough. This relates to the following sites, which are both allocated in the submitted plan:

- Land west of Market Street, Edenfield (within Housing Allocation H72); and
- **Grane Village, Helmshore (within Housing Allocation H74).**

1.2 This Statement deals with Matter 4 'Housing Site Allocations: Edenfield, Helmshore, Irwell Vale and Ewood Bridge' which addresses the following issue:

Issue - Are the proposed housing allocations in Edenfield, Helmshore, Irwell Vale and Ewood Bridge justified, effective, developable/deliverable and in line with national policy?

1.3 Given this Matter covers both the above allocations in detail, we have split this Statement into two separate documents for clarity. This document (hereafter referred to as **Matter 14B**) deals with Grane Village, as highlighted above, and below we provide some additional background on the site and the plans and documents submitted to date.

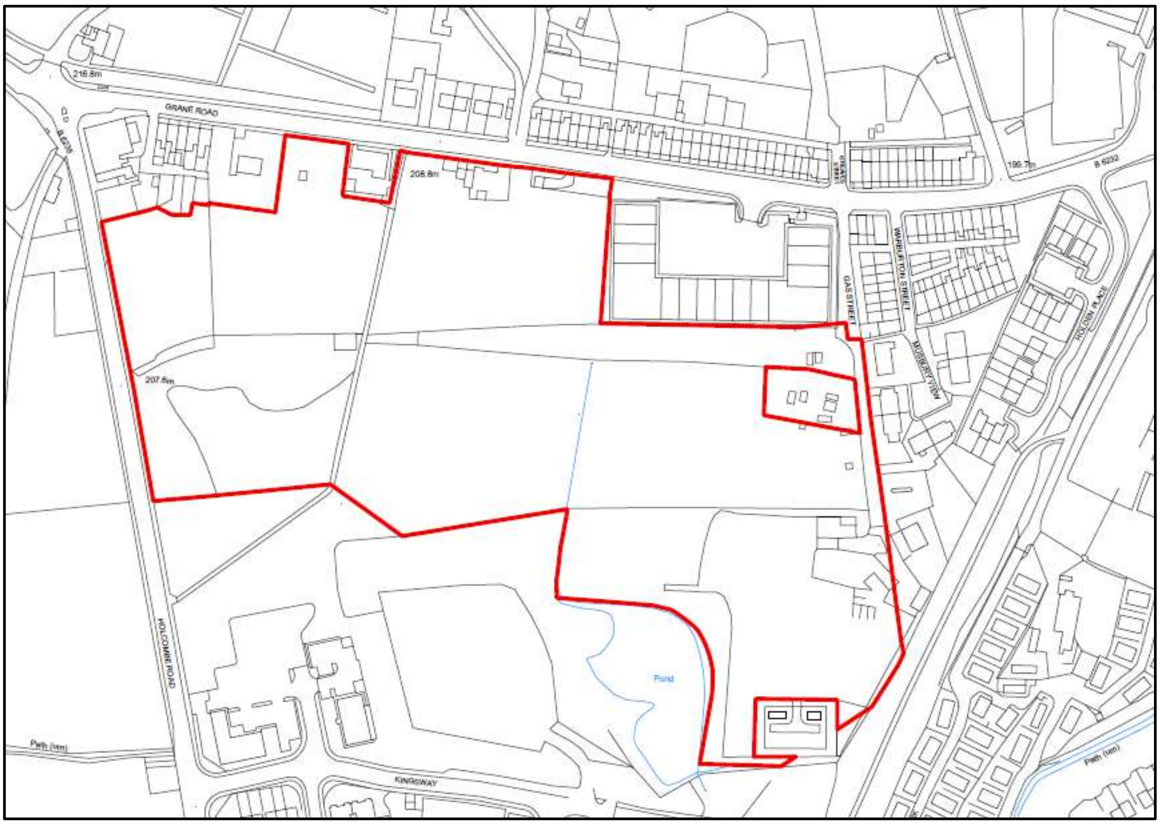
Grane Village Haslingden (within Allocation H74)

1.4 Taylor Wimpey control the majority of this allocation (6Ha – as shown on the site plan over the page) with an indicative SHLAA capacity of 160 dwellings (Ref: 16304), with a small parcel to the south west proposed for a further 14 dwellings. As such the allocation as a whole proposes 174 dwellings.

1.5 Taylor Wimpey submitted a full application for 131 units in August 2019 which is currently going through the Council's validation process, with the proposed layout plan attached at **Appendix 1,** the cover letter which lists the submitted documents at **Appendix 2**, and documents relating to drainage at **Appendices 3-5**, in response to specific questions.

1.6 The remaining documents are not before the Inspector but are with the Council and can be provided on request.

Fig 1.2 TW ownership within Grane Village allocation (H74)



2. MATTER 14: GENERAL QUESTIONS – H74 - GRANE VILLAGE

The general questions below apply to each of the above sites. Additional specific questions are set out in the following sections.

a) Is the site suitable for housing? Are there any specific constraints or requirements associated with the site, or a need to seek mitigation measures to achieve an acceptable form of development? Should these be specified in the Plan?

2.1 The H74 allocation is entirely suitable for housing. In fact, Taylor Wimpey have recently submitted a full planning application (Ref: 2019/0335) on the site for 131 dwellings, which is currently with the Council for validation. This is accompanied by a full suite of technical reports which confirms that the site is highly suitable for housing. Mitigation measures have been proposed where necessary for this application, including noise mitigation which has been designed into the final site layout for the scheme (including acoustic glazing and fencing).

2.2 We attach the cover letter from the application which lists these documents **(Appendix 2)**, which can be provided on request (by the Council or ourselves), and we do include documents relating to drainage and access later in this section, in response to specific questions.

b) Is the proposed site capacity appropriate, taking account of constraints and the provision of necessary infrastructure?

2.3 Table 1 of the submitted Local Plan indicates a site capacity of 174 no. dwellings. Taylor Wimpey are the Landowners for the vast majority of this site and have submitted a planning application for 131 dwellings which has fully accounted for all site constraints, including ground conditions and levels. It is not anticipated that the other Landowner's site is of a sufficient size to deliver the remaining 43 units (given he indicative capacity just 14), therefore it may be wise for the Council to reduce this figure and allow for a more accurate housing trajectory.

c) Is the site available and deliverable in the timescales envisaged?

2.4 Yes, the site is available as it is in control of a national housebuilder with a full application submitted.

2.5 Taylor Wimpey intend to discharge and conditions and start on site immediately upon receipt of planning permission, and therefore a start on site during 2020/21 as suggested by the Council is reasonable, although half way through the year might be more realistic. In terms of delivery rate we are predicting 38 dpa, which would lead to the TW part of the site being delivered by 2023/24, well within the Council's expected timeframes.

d) For sites currently in the Green Belt - what effect would the proposed boundary change and allocation have on the Green Belt and the purposes of including land within it? Are there exceptional circumstances that justify altering the Green Belt?

2.1 Not applicable.

3. MATTER 14: H74 - GRANE VILLAGE - FLOOD RISK & ACCESS

i) What is the nature of the surface water flooding risks on the site? Can this be mitigated?

3.1 A Flood Risk Assessment and Drainage Management Strategy (Betts Hydro) has been submitted in support of planning application 2019/0335 and is attached at **Appendix 3**. The report notes that the risk from surface water run-off varies from very low to high. The areas at risk from surface water are associated with existing low-lying areas on site, where flows cannot naturally convey away from these low-lying areas.

3.2 The report puts forward an appropriate mitigation strategy to deal with drainage on site, with detailed drawings also submitted as part of the planning application (prepared by Edge Consulting and attached at **Appendix 4**). It is proposed that underground storage tanks and pipes will provide surface water storage/attenuation and a pumping station is also to be provided on site.

ii) Can the site be safely accessed? What impact would the proposal have on the local road network, and are mitigation measures necessary? What is Lancashire County Council's latest position?

3.3 The Transport Assessment (Croft) submitted in support of planning application 2019/0335 (attached at **Appendix 5**) confirms that the site can be safely accessed by a proposed three-armed roundabout off Holcombe Road, as agreed with the highways officers at LCC during the formal pre-app process. The report also assesses traffic impact on the Local Highway Network and confirms that the proposed development can be accommodated and will not result in a severe impact.

3.4 Whilst the TA does not indicate a need to mitigate any junctions as a result of the proposals, we take note of the findings of the Council's 2019 Infrastructure Plan **(SD014).** The Plan refers to the findings of the 2018 Highway Capacity Study, which suggested that intervention may be necessary for the Grane Road/Holcombe Road junction. The plan later lists this as an infrastructure improvement (T6) which will require an estimated minimum cost of £600,000. Whilst the submitted TA indicates that the development proposals do not need to mitigate this junction, Taylor Wimpey will be liaising with the County Council during the planning application process, when it will be confirmed whether the development proposals need to provide a proportionate contribution towards mitigation at this junction.

3.5 The allocation is therefore entirely acceptable from a highways perspective and suitable in all other regards.

APPENDIX 1 – LAND EAST OF HOLCOMBE ROAD (GRANE VILLAGE) SITE LAYOUT

Legend

- Denotes affordable home (for tenure refer to AH-01)
- Existing tree to be retained (if possible)
- Existing tree to be removed
- Homes requiring acoustic glazing. Note that the majority of the plots require improved ventilation (refer to REC report ref AC106724-1 for detail)

Refer to MB-01 for details of boundary treatments and materials.

Indicative tree planting shown, refer to Randall Thorp plans for details.

For ecological mitigation refer to TEP reports.

Schedule

		number	%
Affordable (PH)			
PA25	Canford	**11**	8%
PA34	Gosford	**11**	8%
NA32	Byford	**10**	8%
PT36	Easedale	**7**	5%
	subtotals:	***39***	*30%*
Private Mews			
PT36	Easedale	**7**	5%
PA34	Gosford	**12**	9%
NA32	Byford	**14**	11%
NB31	Braxton	**16**	12%
	subtotals:	***49***	*37%*
Private Detached			
PD30	Amersham	**7**	5%
PA42	Lydford	**9**	7%
NT41	Trusdale	**12**	9%
ND40	Coltham	**8**	6%
NA44	Manford	**7**	5%
	subtotals:	***43***	*33%*
Totals		131	

DRAWING NUMBER:	SITE CODE:	DATE:	SCALE
1036-PL-01	-	JULY 19	1:500 @ A0

TITLE
PLANNING LAYOUT

Taylor Wimpey

Taylor Wimpey Manchester
1 Lumsdale Road
Stretford
Manchester M32 0UT

Holcombe Road
HASLINGDEN

REV -

APPENDIX 2 – HOLCOMBE ROAD (GRANE VILLAGE) COVER LETTER

Pegasus Group

26th July 2019

Development Control, Planning & Building Control
Rossendale Borough Council
The Business Centre
Futures Park
Bacup
Lancashire
OL13 OBB

Uploaded via the Planning Portal

Dear Sir/Madam,

Submission of Planning Application (PP-07994730) for the erection of 131 no. residential dwellings
Land to the east of Holcombe Road, Haslingden

We have been instructed on behalf of the Applicant, Taylor Wimpey (UK) Ltd, to submit a full application at the above address for:

"Full application for erection of 131 no. residential dwellings and all associated works, including demolition of existing buildings, new roundabout access, landscaping and regrading."

The application was submitted via the Planning Portal on the 26th July 2019 and was allocated the Planning Portal Reference Number: PP-07994730. The following documents have been submitted in support of the full planning application:

- Application Forms and Certificates;
- Site Location Plan (1036-LP-01);
- Proposed Site Layout (1036-PL-01);
- Proposed House Types Pack (1036-HT-01);
- Proposed Materials and Boundary Treatment (1036-MB01);
- Proposed Refuse Strategy Plan (1036-RS-01);
- Proposed Streetscenes (1036-SS-01);
- Proposed adopted Highway Plan (1036-HW-01);
- Proposed Landscaping Plans (Randall Thorp);
- Planning Statement (including Heads of Terms, Waste Management Statement, Affordable Housing & Parking Provision Statements) (Pegasus Group);
- Design and Access Statement (Pegasus Group);
- Statement of Community Involvement (Pegasus Group);
- Landscape and Visual Impact Assessment (Randall Thorp);
- Air Quality Assessment (REC Ltd);
- Noise Assessment (REC Ltd);
- Arboricultural Assessment (TEP);
- Preliminary Ecological Assessment (TEP);
- Flood Risk Assessment and Drainage Strategy (Betts Hydro);
- Utilities Assessment (WSP);
- Preliminary Risk Assessment (Betts Associates);
- Archaeology and Cultural Heritage Impact Assessment (Wardell Armstrong);
- Transport Assessment (Crofts Transport); and
- Lighting Assessment (Highway Lighting Solutions Ltd).

Notice has been served on all relevant parties, with letters sent out on the 26th July 2019.

I can confirm that Taylor Wimpey (UK) Ltd have already made direct payment to the Planning Portal to pay the requisite planning application fee, which is £34,057 (including £20 planning portal fee).

I look forward to receiving confirmation of validation of the planning application in due course, however should you have any queries in the meantime please do not hesitate to contact me on the details provided below.

Yours faithfully,

Kerry Walker
Senior Planner

APPENDIX 3 – HOLCOMBE RD (GRANE VILLAGE) FLOOD RISK AND DRAINAGE

LAND OFF HOLCOMBE ROAD
HASLINGDEN

FLOOD RISK ASSESSMENT AND DRAINAGE MANAGEMENT STRATEGY

For

Taylor Wimpey

AUGUST 2019

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BETTS HYDRO
CONSULTING ENGINEERS

LAND OFF HOLCOMBE ROAD
HASLINGDEN

FLOOD RISK ASSESSMENT AND
DRAINAGE MANAGEMENT STRATEGY

Document Tracking Sheet

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0	29/05/2019	DRAFT	MB	DK	MB

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EXECUTIVE SUMMARY

This Flood Risk Assessment and Drainage Management Strategy was commissioned by Taylor Wimpey referred to hereafter as 'the client'. This report has been prepared to support a planning application for the construction of a residential development on land to the south of Holcombe Road in Haslingden.

Flood Risk

The total site covers 6.12ha and is located wholly within Flood Zone 1 based on the Environment Agency Flood Map for Planning. The proposals are of a residential nature, which is classified as more vulnerable in Table 2: Flood Risk Vulnerability Classification within Planning Practice Guidance. This nature of development is confirmed to be appropriate within Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals.

Consultation with the Environment Agency, United Utilities, Rossendale Borough Council and Lancashire County Council has been undertaken and did not identify any historical flooding to the site. The nearest Main Rivers to the site are Ogden Brook (located 260m to the south-west) and Swinnel Brook (located 260m to the south-east). The online mapping has also identified an onsite drainage ditch; which conveys flows to the large pond adjacent to the southern boundary. This ditch and pond system are assumed to ultimately discharge into Swinnel Brook to the south-east of the site, via open channel and culverted sections. Consultation with the EA has been undertaken to ascertain the potential flood risks to the site and the top water levels of the nearest Main River networks. When the top water levels are compared with the onsite ground levels, the site is over 7m above the worst-case top water levels.

In terms of the historical watercourse located onsite and the pond network, these systems have not been hydraulically modelled. It is understood that where the watercourse used to cross the site, the topographic survey and drainage investigations have noted a natural depression with overland flows in periods of extreme rainfall. The flood risk associated onsite could be minimised by reinstating the historical watercourse through the development. Any residual flood risk would be from the upstream inlet via overland flows if levels route in a direction towards site. No historical flooding due to the historical Ordinary Watercourse crossing site has been identified and the potential risk, following it being reinstated (assuming appropriate design takes place), would be minimal.

Overall the site is considered to be at 'very low' to 'low' risk from the key flood sources reviewed. The risk to site from surface water run-off, varies from 'very low' to 'high'. The areas at risk from surface water are associated with existing low-lying areas onsite, which would be more susceptible to ponding in extreme storm events, as flow cannot naturally convey away from these low-lying areas.

It would be recommended that any natural flow routes to the historical watercourse, be retained within the proposals to assist with minimising flood risk. This includes reinstating the historical watercourse route through site and enhancing this feature to form a natural blue/green corridor. The flood risk associated with surface water will be effectively managed as part of the development, through the implementation of mitigation measures proposed within this assessment. The primary measures include adopting a sustainable approach to manage for surface water run-off generated onsite and ensuring appropriate levels design takes place as part of detailed design.

Drainage Strategy

To ensure the proposals do not increase flood risk to others, a principle focus of this assessment is on the appropriate management of surface water run-off in accordance with national and local planning policy. Surface water run-off management options have been assessed in accordance with the sustainable drainage hierarchy, which is discharge to ground, followed by a nearby waterbody or finally the public sewer system. Based on the ground conditions identified by online published datasets, infiltration would not likely provide a feasible surface water drainage solution for the site, due to the underlying cohesive strata.

Assuming infiltration is not feasible, then the next method in the hierarchical approach should be to discharge surface water to a waterbody. The site naturally drains to the natural depressions and ultimately to the Ordinary Watercourse/pond network to the south. The proposals would be to mimic this situation where practical and to reinstate the historical watercourse through site with a new formal connection into the Ordinary Watercourse to the south. As the newly reinstated watercourse will cross the development, there will likely need to be multiple outfalls from the development parcels and therefore multiple attenuation areas. Further investigation is needed to confirm the most appropriate point(s) for connection to minimise large attenuation areas within the site.

Detailed design will need to be carried out to confirm gravity connection(s) can be achieved, this needs to be informed by the detailed investigation of the reinstated watercourse and any offsite, downstream lengths where connection is proposed to be remade. Consent will be required from the Lead Local Flood Authority for proposed discharge as this system is considered to be an Ordinary Watercourse. Furthermore, consents from any third-party riparian landowners will be required where any offsite proposed connections are to be made.

In accordance with the SuDS Manual and the Non-Statutory Technical Standards for Sustainable Drainage Systems, all sites should endeavour to achieve as close to pre-development greenfield rates as viable. Even though the site is understood to be 20% impermeable at present, the development area has been considered to be 100% permeable for the purpose of calculating the existing greenfield rates. The pre-development greenfield rate (QBar) is calculated to be 75.2l/s using the FEH Statistical Method, this equates to 16.8l/s/ha. The proposals are to restrict surface water run-off to mimic the pre-development greenfield situation in accordance with policy. This discharge rate is based on the development area and the rate should be pro-rated between the multiple proposed points of connections.

This Flood Risk Assessment and Drainage Management Strategy has been prepared in consultation with the relevant interested parties and incorporates their comments where possible. The report is considered to be commensurate with the scale and nature of the development proposals and in summary, the development can be considered appropriate in accordance with the Planning Practice Guidance.

CONTENTS

Figures & Tables

Specialist Software

- MicroDrainage WinDES (v.14.1) – Calculation of Greenfield run-off rates IH124/ICP-SUDS, Greenfield run-off volumes, rates of rainfall and stormwater storage estimates.
- Flood Estimation Handbook FEH– Determination of Catchment Descriptors and depths of rainfall.

Abbreviations & Acronyms

AEP	Annual Exceedance Probability
BGL	Below Ground Level
BGS	British Geological Survey
CC	Climate Change
CSAI	Cranfield Soil and Agrifood Institute
EA	Environment Agency
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment
FZ	Flood Zone
LCC	Lancashire County Council
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
mAOD	Metres Above Ordnance Datum
NGR	National Grid Reference
NPPF	National Planning Policy Framework
OS	Ordnance Survey
PFRA	Preliminary Flood Risk Assessment
PPG	Planning Practice Guidance
QSE	Quick Storage Estimate
QBAR	Mean Annual Flood
SfA	Sewers for Adoption
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems
TWL	Top Water Level
UU	United Utilities

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1.0 INTRODUCTION

1.1 Planning Policy Context

1.1.1 All forms of flooding and their impact on the natural and built environment are material planning considerations. The revised National Planning Policy Framework (NPPF) sets out the Government's objectives for the planning system, and how planning should facilitate and promote sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change. Government policy with respect to development in flood risk areas is contained within the revised NPPF and the supporting Planning Practice Guidance (PPG) (refer to extracts in Appendix A).

1.1.2 A Flood Risk Assessment and Drainage Management Strategy (FRA&DMS) has been completed in accordance with the revised NPPF and the PPG to review all sources of flood risk both to and from the proposed development. The report also considers the most appropriate drainage management options including the implementation of Sustainable Drainage Systems (SuDS) in line with national policy.

1.1.3 The proposals are solely 'residential' in nature and as such is classified as 'More Vulnerable' in Table 2: Flood Risk Vulnerability Classification, within the Planning Practice Guidance. The PPG confirms that this type of land-use is appropriate for Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals.

1.2 Site Context

1.2.1 This FRA&DMS has been prepared to support a planning application for residential development on land off Holcombe Road in Haslingden. The proposals will be complete with access, car parking, external works and lighting, landscaping, boundary walls and fencing, external services and drainage.

1.3 Consultation

1.3.1 The preparation of this report has been undertaken in consultations with the Environment Agency (EA), United Utilities (UU), Rossendale Borough Council (RBC) and Lancashire County Council (LCC). Consultation responses can be seen in Appendix B, C and D respectively. The NPPF advises that RBC as the Local Planning Authority (LPA) should consult with the EA who will provide advice and guidance on flood issues at a strategic level and in relation to planning applications.

2.0 EXISTING SITE LOCATION

2.1 Location

2.1.1 The proposed development site is located off Holcombe Road in Haslingden. The Ordnance Survey National Grid Reference (OS NGR) for the site is E: 377685, N: 422441 and the nearest postcode is BB4 4QN. The total site covers 6.12ha and is edged in red in Figure 1 (see location plan in Appendix E).

2.1.2 The site is bounded to the north by residential and commercial development located off Holcombe Road with further residential and undeveloped land beyond. To the east of site is further residential and commercial development with a Main River, known as Swinnel Brook located further east. Swinnel Brook flows south and outfalls into the River Ogden (Main River). The River Ogden is located to the south-west of site and flows from Holden Wood Reservoir. Finally, Holcombe Road is located adjacent to the western boundary of site with undeveloped agricultural land beyond (as shown within Figure 1).

Figure 1: Aerial Photograph of site (Bing Maps, 2019)

2.2 Existing and Historical Land Use

2.2.1 Historically, the site was mainly undeveloped however, there was a railway line crossing through the site (running east/west) until 1960 when a gas works and Holden Wood Mill was erected on land adjacent to the south-eastern boundary. There was also an open reservoir located adjacent to the southern boundary of site until the 1990's. The remains of this reservoir can still be seen in the form of a small pond located adjacent to the southern boundary.

2.2.2 The development site currently comprises of low-density vegetation, with some taller shrubs along the site boundaries. There is also historical evidence of an Ordinary Watercourse located crossing the site which was understood to covey flows towards the small pond offsite to the south. Parts of the Ordinary Watercourse are still open channel however the onsite lengths have been filled in based on the observations during the site visit and drainage investigations. Holden Wood Mill is also present within the south-eastern corner of site.

2.3 Topography

2.3.1 The site falls from the north-western corner (at 211.50mAOD) towards the south-eastern corner (at 193.15mAOD) as illustrated in Figure 1. The topographic survey has also identified that the Ordinary Watercourse shown crossing the site, is not fully open in its entirety through the site. the main linear section from the northern boundary to the southern boundary has been infilled, the watercourse opened up for a short length before outfalling into the pond to the south. A full topographical survey has been carried out and is included in Appendix F.

3.0 DEVELOPMENT PROPOSALS

3.1 Nature of the development

3.1.1 This assessment is to support a planning application for a residential development on land off Holcombe Road in Haslingden. The proposals will be complete with access from Holcombe Road, car parking, external works and lighting, landscaping, boundary walls and fencing, external services and drainage as shown on the proposed planning layout in Figure 2 (full layout in Appendix G).

Figure 2: Proposed Planning Layout (Taylor Wimpey, 2019)

3.1.2 The total site covers 6.12ha however the proposed development area, excludes large landscaping/POS areas and covers 4.47ha, based on the layout provided above. At present there is a small area of existing impermeable (developed) land, post-development the impermeable areas will increase due to the residential nature of the proposals. We have assumed the impermeable areas will increase to 55% of the development area.

3.1.3 The mapping reviewed shows an Ordinary Watercourse crossing the development, the topographical survey and further drainage investigations however have identified that this system no longer exists. There is evidence during high rainfall events, surface water flows enter a natural depression where the watercourse used to exist, therefore it is recommended the Ordinary Watercourse is reinstated to reduce flood risk onsite. Early discussion with LCC will be required for any proposed reinstatement works to this feature as they are responsible as the LLFA.

3.1.4 LCC will also require an 8m easement from both sides of the watercourse (either from the top of bank or centreline of culvert). If a reduced easement is required approval must be from the LLFA. The current proposals shown that an easement has been allowed for from this watercourse crossing site.

3.1.5 National and local policy identifies that Sustainable Drainage Systems (SuDS) should be incorporated into new development where at all feasible. There is likely to be some scope to incorporate SuDS features within the proposed open space/amenity areas on the site. These may be suitable for inclusion into the proposed surface water management regime, although detailed design will be required to confirm the specific types, subject to ground investigations and detailed levels review.

4.0 SOURCES OF FLOOD RISK

4.1 Fluvial Flood Risk

4.1.1 Information relating to flood risk at the site has been obtained from the Environment Agency and from the Gov.uk website (https://flood-map-for-planning.service.gov.uk). An extract of the EA's Flood Zone Map for Planning is shown in Figure 3, which illustrates that the development site is located solely within Flood Zone 1. Flood Zone 1 is an area considered to be at little or no flood risk from rivers and/or the sea (as defined by the EA).

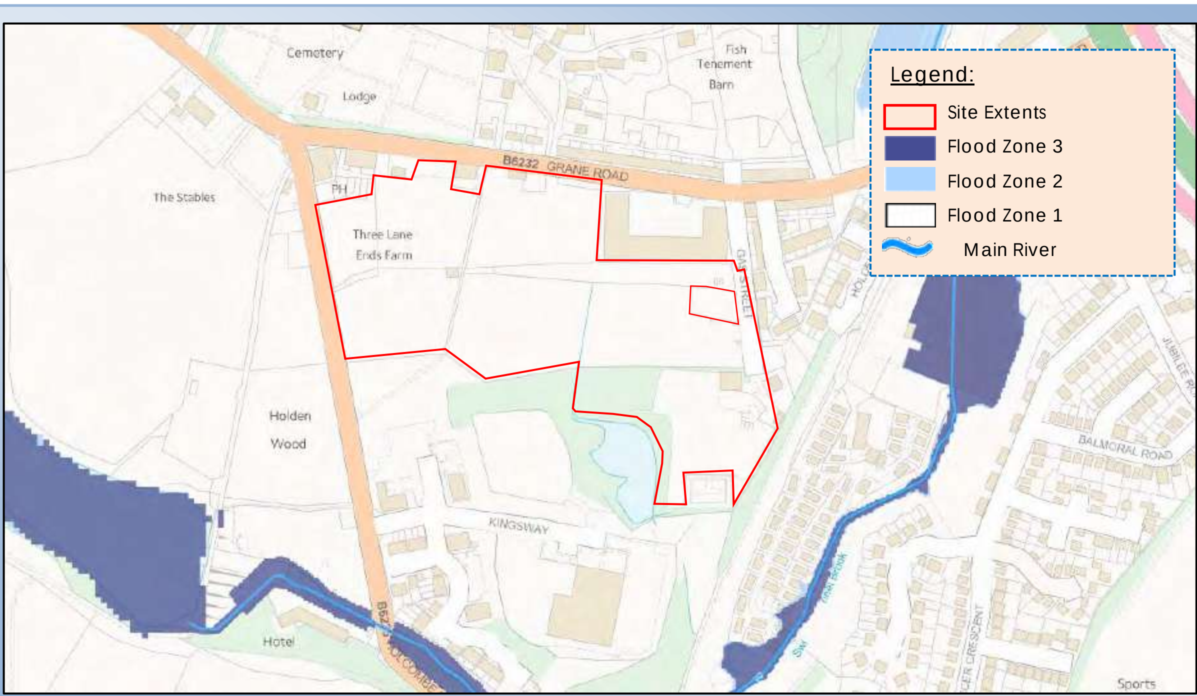

Figure 3: Fluvial/Tidal Flood Zone Map for Planning Extract (Gov.UK, 2019)

Main Rivers

4.1.2 The nearest Main Rivers to the site are Ogden Brook located 260m to the south-west and Swinnel Brook located 260m to the south-east of site. the EA have been consulted to ascertain the potential flood risk from the nearest Main Rivers and have provided flood mapping and top water levels (TWL) outputs for Swinnel Brook for consideration as part of this assessment. The nearest in-channel nodes to site are Nodes 3 and 4, which are located approximately 250m to the east of site (full details included within Appendix B).

4.1.3 The highest TWL recorded is shown to be at Node 3, during the 1 in 1000yr event which provides a TWL of 186mAOD. Based on the lowest onsite ground level identified on the topographic survey, the site is currently at least 7m above the highest recorded TWL in the nearest Main river. The development site is therefore considered to be at 'very low' risk from fluvial flooding associated with the Main River network, due to the site's proximity from the source and the topographical differences. This is also supported by the EA's Fluvial/Tidal Flood Zone Map for Planning which shows the site to be located within flood Zone 1 (Figure 3).

Ordinary Watercourse

4.1.4 The online mapping has identified an onsite Ordinary watercourse which crosses the site from the north and coveys flows to the large pond adjacent to the southern boundary.

4.1.5 Although, the mapping shows the Ordinary Watercourse to be mostly open channel where it bisects the site, the recent topographic survey and further drainage investigations undertaken by Invek Surveys in June 2019 (see Appendix H for full drainage details) have identified the onsite watercourse to no longer exist. There is evidence (taken from the drainage investigations and knowledge of the local community), that the site suffers from surface water flooding and during high rainfall events and, surface water flows have been shown to follow naturally the line of the former Ordinary Watercourse, prior to it ponding onsite and outfalling into an existing Ordinary Watercourse and pond network to the south. Invek Surveys have also evidenced there are no upstream, incoming flows, passing through the site via this Ordinary Watercourse network. It is understood that the primary purpose of the system is to cater for land drainage.

4.1.6 The risk of flooding onsite from this informal drainage route is medium, however if the historical Ordinary Watercourse were reinstated, the flood risk from this source could be reduced providing safe avenues of flow through the site and promote a more natural conveyance route for flows generated onsite.

4.1.7 There would still however be potential for residual risk, although flows will likely be conveyed through site, using the low-lying areas. Appropriate levels design can mitigate risk by managing overland flow routes are catered for within the development.

4.1.8 The LLFA have a responsibility to maintain Ordinary Watercourses and will therefore require an 8m maintenance easement from the watercourse from the top of bank into the site. The easement should also provide clear, unimpeded access and therefore needs to be free of fencing, buildings, boundary walls or private land. The illustrative layout shows an easement has been allowed for. Any proposed works for reinstating the Ordinary Watercourse will need to be discussed with LCC at an early stage. Their preference is for all Ordinary Watercourses to be reinstated to their natural channel, where practical and there may be benefit in terms of flows, conveyance and biodiversity for the culverted lengths onsite to be opened and reinstated (where practical).

4.2 Tidal Flood Risk

4.2.1 The Fylde Coastline and Ribble Estuary are located over 50km west of the site. Due to the distance from the coast, the associated tidal flood risk is considered to be very low. This is also supported by the EA’s Fluvial/Tidal Flood Zone Map for Planning also for the site being in Flood Zone 1 (mapping included with Appendix B).

4.3 Flood Risk Vulnerability Classification and Flood Zone Compatibility

4.3.1 The proposals are solely 'residential' in nature and as such is classified as 'more vulnerable' in Table 2 (Flood Risk Vulnerability Classification) within the PPG. Table 3 (Flood Risk Vulnerability and Flood Zone 'Compatibility') within the PPG confirms that this type of land-use is appropriate for Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals.

4.4 Surface Water Flood Risk

4.4.1 Surface water flooding occurs when rainwater is unable to drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. The risk associated with surface water run-off is indicated by the long-term flood mapping (extract shown in Figure 4).

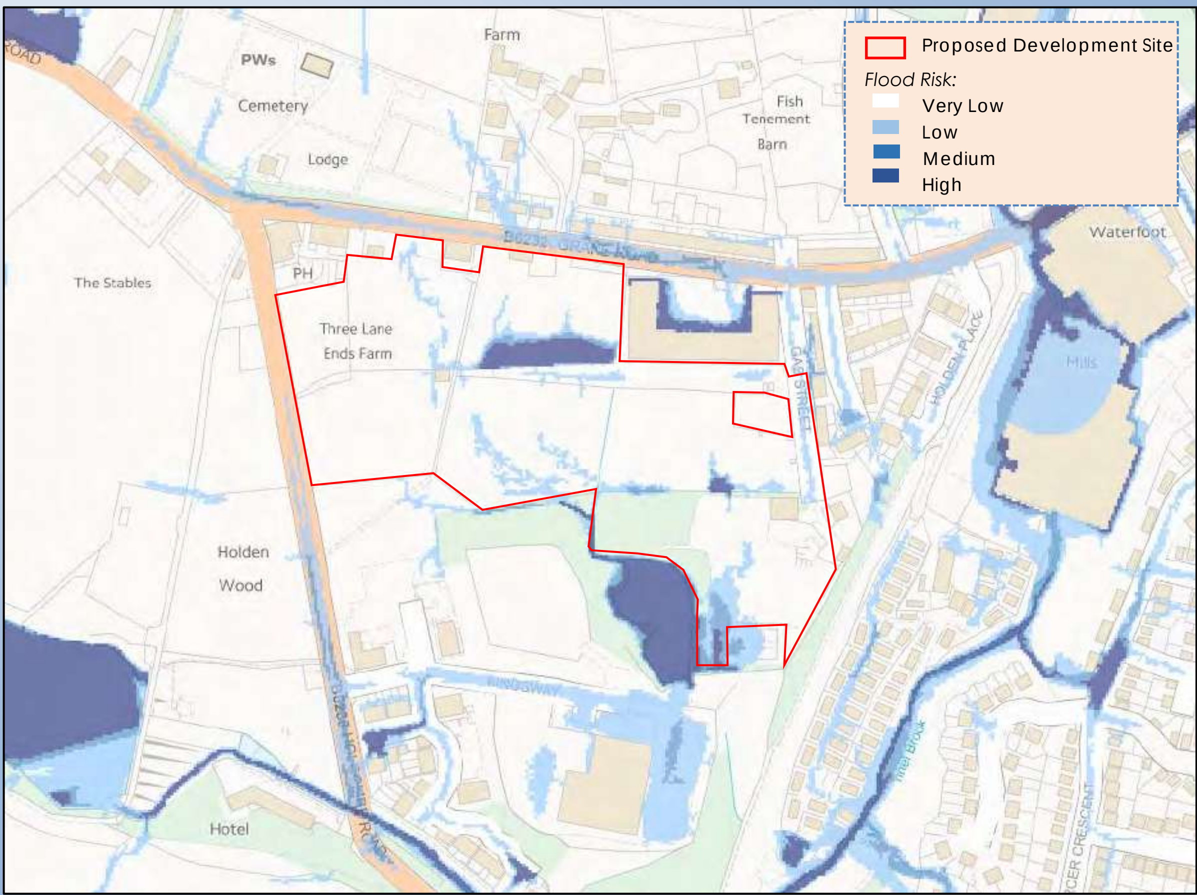

Figure 4: Surface Water Flood Map Extract (Gov.UK, 2019)

4.4.2 As indicated in Figure 4, the site is at varying risk from surface water flooding. The risk is shown to be predominantly at 'very low' to 'low' risk from surface water flooding. There are however some areas onsite shown to be at higher risk. The 'medium' and 'high' surface water flood risk areas are understood to coincide with the natural natural low-lying areas located onsite. These areas onsite at 'low' risk appear to correspond with natural flow routes through the site based on the topographic survey. The south-eastern corner of site is the lowest point onsite and therefore more susceptible to surface water ponding in extreme rainfall events when flows are not able to convey from the site.

4.4.3 The potential depths and velocities of surface water flooding can be identified on the long term national flood mapping datasets, this anticipates potential depths of flooding in those areas at low risk to be 300mm. in terms of the potential volumes, these are anticipated to be 0.25m/s in those areas at low risk.

4.4.4 There are four key areas onsite where the surface water flood risks are higher and range from 'medium' to 'high' risk. The areas at risk in the south-eastern corner is, as stated previously, due to its naturally low-lying topography next to a waterbody. Flows entering this are in high intensity rainfall events would be restricted from leaving through natural channels when the downstream catchments are at capacity and would therefore build up and pond onsite. The potential depths of surface water flooding in the 'medium' risk areas would be 300mm and 900mm in the 'highest' risk areas. volumes of surface water flooding are shown to vary from 0.25m/s and over.

4.4.5 There is another high surface water flood risk located in the northern part of site. in this area land falls from the northern boundary in a southerly direction, however at present there is a wall located halfway down the site and coincides with the maximum extent of surface water flood risk in this location. Run-off will therefore naturally fall in a southerly direction but is prevented from continuing through the site due to the current wall and raised land platform beyond. The estimated depths of surface water flooding in this high-risk area are 900mm and volumes of flow are over 0.25m/s. Post-development the wall currently blocking flows will be removed and flows allowed to convey through the site.

4.4.6 Risk to the proposals from surface water flooding will be managed and reduced, post-development through appropriate design. Natural flow routes will be maintained, and a sustainable surface water drainage regime implemented to manage existing and proposed surface water run-off. In order to further mitigate for any residual risks, it is advised that (following any re-grade of the site) finished floor levels are elevated above the external levels to provide safe overland flood routes for excess surface water run-off.

Pluvial (Overland run-off) Flood Risk

4.4.7 Intense rainfall that is unable to soak into the ground or enter drainage systems can run-off land and result in flooding. Local topography and the land-use can have a strong influence on the direction and depth of flow. The topography of the surrounding undeveloped areas means there is little potential for overland flows to impact on the site, as levels generally fall towards the naturally low-lying depressions onsite.

4.4.8 The volume and rate of overland flow from land can be exacerbated, if development increases the percentage of impermeable area. Any overland flows generated by the development must be carefully controlled; safe avenues directing overland flow away from adjacent development is advised.

Sewer Flood Risk

4.4.9 In urban areas, rainwater is frequently drained into surface water sewers or sewers containing both surface and wastewater known as 'combined sewers'. Foul water flooding often occurs in areas prone to overland flow and can result when the sewer is overwhelmed by heavy rainfall and will continue until the water drains away.

4.4.10 UU sewer records have identified there to be public combined sewer networks within the vicinity of the development site. Consultation with United Utilities identified no recorded historical sewer flooding issues on or near to the proposed development site (see Appendix C for correspondence).

4.5 Groundwater Flood Risk

4.5.1 High groundwater levels are usually the key source of groundwater flooding, which occurs when excess water emerges at the grounds surface (or within manmade underground structures such as basements). Groundwater flooding is often more insistent than surface water flooding and would typically last for weeks/months rather than days meaning the result to property is often more severe.

4.5.2 In general terms groundwater flooding can occur from three main sources:

- If groundwater levels are naturally close to the surface, then this can present a flood risk during times of intense rainfall. No groundwater flood risk has been identified during review of Lancashire County Council's Strategic Flood Risk Assessment (SFRA).
- Seepage and percolation occur where embankments above ground level hold water. In these cases, water travels through the embankment material and emerges on the opposite side of the embankment. At present there are no reported problems with groundwater flooding.
- Groundwater recovery / rebound occurs where the water table has been artificially depressed by abstraction. When the abstraction stops the water, table makes a recovery to its original level. There is the potential for groundwater flooding in low lying areas where groundwater levels have been depressed below their pre-pumping conditions, where these were at or close to ground level. As with the seepage scenario the likelihood of flooding from this source is low.

4.5.3 The EA mapping data for groundwater shows that the site is underlain by a Secondary A Bedrock Aquifer with secondary (undifferentiated) deposits. The site is located within a High Groundwater Vulnerability Zone to a Minor Aquifer. No historical flooding at or adjacent to the site due to groundwater related sources has however been identified as part of this assessment.

4.5.4 Irrespective, it is advised that the Finished Floor Levels of residential properties be raised sufficiently above the external levels where possible to safeguard dwellings. The external levels should fall away from the proposed dwellings where practical to provide safe avenues for overland flows around/away from any proposed more vulnerable development.

4.6 Artificial Sources of Flood Risk

4.6.1 National policy states that an FRA should consider the potential risks from a variety of other flood sources including artificial sources (such as risks from reservoirs and canals).

Reservoirs

4.6.2 The EA recognises reservoirs as bodies of water over 25,000cu.m and the long-term flood mapping is included in Appendix B, which shows the extents of flooding associated with reservoirs does not impact the development site.

4.6.3 The development site is located within close proximity to three reservoirs (located 350m to the west of site), the flooding during a breach event however is shown to follow Ogden Brook and does not encroach onto the development site. There is also a pond located adjacent to the southern boundary of site, which would not pose a potential flood risk due to its size and the surround topographic levels.

Canals

4.6.4 There are no canals in proximity to the site, the risk of flooding from this source is therefore is considered to be 'very low'. Irrespective, it is advised that external levels fall away from the property (where feasible) to minimise the flood risk from a variety of sources.

4.6.5 By keeping the finished floor levels elevated relative to the externals, this should help create an overland flood flow route in the event of a breach or any other source of flooding that could lead to overland flows including reservoir or canal flooding.

4.7 Historical and Anecdotal Flooding Information

4.7.1 An internet-based search for flooding events did not identify any historical flooding to the immediate development site. Review of Lancashire County Council's and Rossendale Borough Council's Preliminary Flood Risk Assessment (PFRA)/Strategic Flood Risk Assessment (SFRA) also did not highlight any historic flooding pertinent to this FRA (general mapping data is included in Appendix I). Consultation with the EA, UU, LCC and RBC also failed to highlight any historical flooding directly to the site (see correspondence in Appendix B, C and D).

4.8 Flood Risk Mitigation Measures & Residual Risks

4.8.1 The site is located within Flood Zone 1 but is considered to be at some risk from surface water. To observe a conservative approach however, mitigation measures have been proposed below to safeguard the development with regards to the potential residual sources of flood risk and to consider the uncertainties of climate change in accordance with the NPPF and PPG.

Mitigation Measures

4.8.2 For 'more vulnerable' development located within Flood Zone 1, it is typical to set the Finished Floor Levels (FFL) of residential dwellings 150mm above the ground levels. By ensuring the FFLs are raised sufficiently above the external levels (following any re-grade) should mitigate any risk of flooding from a variety of sources, including groundwater and surface water run-off risks at the proposed development.

4.8.3 Any overland flows generated by the development must be carefully controlled. Safe avenues directing overland flow way from any existing and proposed buildings are advised.

4.8.4 An Ordinary Watercourse is shown on the mapping to cross the site within the development area, however the recent topographic survey and further drainage investigations undertaken have identified this watercourse is no longer open channel in its entirety. Due to the surface water flood risks identified onsite the Ordinary

Watercourse will be reinstated as part of the proposals which conforms with the standard guidance from LCC as the LLFA. Early discussion with LCC will be required for any proposed works to the Ordinary Watercourse they will also require an 8m easement from both sides of the watercourse to be incorporated into the layout. The current proposals shown that an easement has been allowed for from this (to be reinstated) watercourse crossing site.

4.8.5 To minimise the flood risk to the neighbouring properties it is recommended that the surface water run-off generated by the proposals be managed effectively with the peak rates of run-off being restricted to the equivalent of the pre-development situation (with betterment where required).

4.8.6 The proposed onsite surface water drainage system will need to be sized to contain the 1 in 30yr return period event below ground with exceedance from storm events up to and including the 1 in 100yr return period storm event with a 40% allowance for climate change being contained onsite.

4.8.7 As with any drainage system blockages within either the foul or surface water system have the potential to cause flooding or disruption. It is important that should any drainage systems not be offered for adoption to either UU or LCC then an appropriate maintenance regime should be scheduled with a suitably qualified management company for these private drainage systems.

Residual Risks

4.8.8 If an extreme rainfall event exceeds the design criteria for the drainage system it is likely that there will be some overland flows that are unable to enter the system, it is important that these potential overland flows are catered for within the development site if the capacity of the drainage system is exceeded.

5.0 SURFACE WATER MANAGEMENT

5.1 Pre-Development Surface Water Run-off

5.1.1 At present the total site covers 6.12ha however the proposed development area will cover 4.47ha and exclude the large POS/landscaping areas. At present although there is a small area of impermeable (developed) land, we do not have a definitive outfall for surface water produced by this area it is likely that surface water run-off discharges into the watercourse/pond network near to site.

5.1.2 The majority of the site is undeveloped, and a review of the ground levels information suggests that levels fall across the site from the north-western corner down to the south-eastern corner. The run-off generated by the undeveloped areas at present falls with the topography; some would be intercepted by the naturally low-lying depressions onsite (adjacent to where the onsite Ordinary Watercourse used to exist). Ultimately, run-off drains to the southern boundary and makes its way into the Ordinary Watercourse and pond network adjacent to site.

5.1.3 Significant ponding and ground saturation is present along the southern boundary of site where flows are unable to naturally route directly to the existing Ordinary Watercourse and pond network to the south. Some drainage (perforated pipe) has been installed within the land to the south to intercept any overland flows that might direct offsite, this system is confirmed to have a formal outfall into the Ordinary Watercourse network.

5.1.4 The peak rates and volumes of run-off generated by the development area has been calculated for the peak events shown in Table 1 (full details Appendix J). The pre-development surface water run-off rates have been calculated using the FEH Statistical Method, given the greenfield nature of the site.

Site Area	Run-Off Rates				Run-Off Volumes	
	1 In 1 Year	1 In 30 Year	1 In 100 Year	QBar	1 In 1 Year	1 In 100 Year
4.47ha	65.4l/s	127.8l/s	156.4l/s	75.2l/s	243.9cu.m	825.3cu.m

Table 1: Pre-Development Surface Water Run-Off Rates (Betts Hydro, 2019)

5.2 Post Development Surface Water Run-Off

5.2.1 At present the indicative proposals show the development area to cover 4.47ha of the wider site. Based on the planning layout we have estimated that the post-development impermeable areas will increase to approximately 55% of the development area. The unrestricted post-development run-off rates generated by the proposals have been detailed in Table 2.

Site Area	Run-Off Rates		
	1 In 1 Yr	1 In 30 Yr	1 In 100 Yr +CC
2.46ha	138.4l/s	250.0l/s	435.0l/s

Table 2: Post-Development Un-Restricted Run-Off Rates (Betts Hydro, 2019)

5.2.2 In accordance with national and local planning policies it is necessary to restrict surface water run-off rates where at all practical to mimic a pre-development greenfield situation. The proposals will therefore be to discharge surface water run-off from site mimicking the pre-development greenfield situation (Table 1). Further details of proposed drainage strategy can be found in Section 5.6.

5.3 Sustainable Drainage Systems (SuDS)

5.3.1 Peak surface water discharge rates to watercourses and sewers should be appropriately managed and where possible reduced. Preference should always be given to SuDS over the traditional methods of buried sewers wherever possible and practical. Sustainable Drainage Systems (SuDS) can address the four key sustainability objectives including: water quantity, water quality, amenity and biodiversity.

5.3.2 It would be beneficial to implement wider green space/Public Open Space area(s) in one or more locations within site, where SuDS features could be implemented. Multiple benefits to using SuDS include the improvement of biodiversity, aesthetics, ecology and water quality. Opportunities should also be taken to provide soft landscaping where at all possible on site to assist in minimising surface water run-off.

5.3.3 As shown on the proposed planning layout, certain SuDS methods such as attenuation basins and ponds have been included within the development proposals and are located within the non-developed areas, to provide a degree of treatment before flows are carried offsite. It is also recommended that permeable paving and bio-filtration be considered in non-adopted areas where at all feasible; to assist locally with surface water management (subject to optimum ground conditions). If infiltration is not feasible then a connection into the main drainage systems would be needed.

Figure 5: SuDS Photographs (SusDrain, 2012)

5.3.4 Promoting SuDS to deal with surface water at the source, will limit the required attenuation and in turn reduce the volume of surface water in the nearby watercourse and sewer infrastructure. There may be the potential to utilise SuDS features for conveyance/attenuation of surface water flows within the proposed drainage strategy, opposed to the traditional below ground storage methods. Detailed design should confirm whether this site would be suitable for incorporation of SuDS following more detailed analysis of levels, ground conditions and attenuation requirements.

5.4 Methods of Surface Water Management

5.4.1 At present the total site covers 6.12ha however the proposed development area will cover 4.47ha. As the impermeable areas of site are anticipated to increase to 55% of the development area, it is important that any increase in surface water run-off managed appropriately. There are three methods that have been reviewed for the management and discharge of surface water. These may be applied individually or collectively to form a complete strategy and should be applied in the order of priority listed below:

- Discharge via infiltration
- Discharge to watercourse
- Discharge to public sewerage system

5.5 Discharge via Infiltration

5.5.1 Any impermeable areas that can drain to soakaway or an alternative method of infiltration would significantly improve the sustainability of any surface water systems.

5.5.2 The Cranfield Soil and AgriFood Institute (CSAI), Soilscapes viewer identifies slowly permeable, wet, very acid upland soils with a peaty surface. The British Geology Survey (BGS) mapping data indicates that the bedrock geology consists of Mudstone and Siltstone with Till and Devensian superficial deposits recorded.

5.5.3 Based on the ground conditions identified by the published online datasets, infiltration is not likely to be able to provide a viable drainage solution for the development site due to the nature of the underlying strata and associated engineering constraints with siting Soakaways within this strata type. Soakaway Testing to BRE365 or other ground testing may be required to evidence this is the case prior to commencement of works.

5.6 Discharge to Watercourse

5.6.1 Assuming infiltration will not be suitable for managing the surface water run-off, the next method in the drainage hierarchy is discharge to a waterbody. As previously mentioned, the nearest watercourse to site is the Ordinary Watercourse which was shown to cross the site and discharge into the pond to the south. Further investigation identified that this Ordinary Watercourse no longer exits, in its entirety through site. At present the site is understood to naturally drain to the offsite pond via low-lying depressions or formal offsite interception drainage.

5.6.2 It is proposed that the historical Ordinary Watercourse is reinstated onsite to assist with reducing existing drainage flood risk issues present. A new formal connection from the onsite watercourse to the pond network is required to ensure flows can continue to discharge to the south. The new reinstated watercourse network will, if designed appropriately, provide betterment on the existing drainage regime and reduce existing flood risk issues along the southern boundary.

5.6.3 As illustrated in Figure 6, given the existing ground levels, the proposals are to discharge the site into the reinstated Ordinary Watercourse crossing the site at a point appropriate (based on further detailed assessment of levels). Given the onsite ground levels and location of the Ordinary Watercourse crossing the site it is likely that at least 2no. outfalls will be required to accommodate the proposals.

5.6.4 Early discussion with LCC will be required for any proposed works to this reinstated feature as they are responsible as the LLFA. LCC will also require an 8m easement from both sides of the reinstated watercourse (either from the top of bank). If a reduced easement is required approval must be sort from the LLFA. The current proposals shown that an easement has been allowed for from this reinstated watercourse crossing site.

Figure 6: Preliminary Proposed Drainage Plan (Betts Hydro, 2019)

5.6.5 The specific invert levels at the proposed points of connection will be needed before confirmation of a gravity solution can be made. It is also recommended that any other incoming connections are traced and any upstream flows utilising the onsite culverted lengths determined, so that these can be accounted for in any further detailed design works.

5.6.6 Formal consents for works to the reinstated Ordinary Watercourse network will be required from the LLFA (LCC). Riparian Landowners whose land the reinstated watercourse is located within, where routing or points of connections are to be made will also need to be consulted. Consents and relevant agreements will also be required for any proposed offsite works from the third-party riparian landowners. Detailed design will be required to confirm the proposed strategy and whether a full site-wide gravity connection can be achieved following further investigations.

5.6.7 In accordance with the SuDS Manual and the Non-Statutory Technical Standards for Sustainable Drainage Systems, all sites should endeavour to achieve as close to pre-development greenfield rates as viable. Even though the site is currently 20% impermeable, the development area has been considered to be 100% permeable to conform with policy. The pre-development greenfield rates (QBar) have therefore been calculated and QBar is 75.2l/s using the FEH Statistical Method (see summary in Appendix J). This discharge rate is based on the development area as a whole and as multiple outfalls are proposed then the rate should be pro-rated between the discharge locations. The rate of discharge per hectare based on the QBar figure calculated is 16.8l/s/ha.

5.6.8 The restricted discharge rate will generate a storage requirement onsite during the extreme storm events. The stormwater storage figures quoted in Table 3 are estimates only for the overall site and the detailed drainage design will determine with accuracy the stormwater storage requirements.

Impermeable Area (2.46ha)	1 In 1 Year	1 In 30 Year	1 In 100 Year + 40% CC
Restricted Run-Off Rate	75.2l/s	75.2l/s	75.2l/s
Estimated Stormwater Storage Volume	96cu.m-268cu.m	441cu.m-716cu.m	1007cu.m-1549cu.m

Table 3: Estimated Stormwater Storage Requirements (Betts Hydro, 2019)

5.6.9 It would be beneficial to implement SuDS features where at all feasible subject to ground investigation and a detailed levels review. If designed and located appropriately the SuDS features (such as pond/basin) could potentially aid in the attenuation requirements for the proposals and provide added benefits in terms of water quality. Detailed design will be required to confirm whether SuDS can be incorporated.

5.7 Discharge to Public Sewer Network

5.7.1 UU sewer records have identified public combined sewers within the vicinity of site, suitable for surface water run-off connections. Due to the location of the Ordinary Watercourse network however, there are no proposals to connect into the public sewer network at this moment in time.

5.8 Climate Change

5.8.1 There are indications that the climate in the UK is changing significantly and it is widely believed that the nature of climate change will vary greatly by region. Current expert opinion indicates the likelihood that future climate change would produce more frequent short duration and high intensity rainfall events with the addition of more frequent periods of long duration rainfall. It is believed that the impact of climate change means there is likely to be a long-term increase in the average sea levels, with an expectation that sea levels will rise gradually. An increase in flood water levels means that future flooding events will occur more frequently and will have a greater impact.

5.8.2 In light of the future uncertainties Climate Change should be accounted for within the design of all new developments. The recently published Environment Agency document '*Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities*' supersedes Defra's policy statement on Flood Risk and Coastal Erosion Risk Management (2009) and should be used for future proposals. Climate change factors have been considered and any increase in the level of flood risk (to the site) from climate change is likely to be related to the increase in rainfall intensity and duration and its impact upon the surface water drainage system.

5.8.3 In accordance with the updated Climate Change projections provides estimated changes to rainfall intensity (Table 4) and based on the design life of the development (100yrs) the "total potential change figures for the 2080's" have been utilised.

PROJECTIONS	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE 2080'S
Upper End Estimate	40%
Central Change Factor	20%

Table 4: Change to Extreme Rainfall Intensity Compared to 1961-1990 Baseline (Environment Agency, 2016)

6.0 FOUL WATER MANAGEMENT

6.1 UU sewer records identify there to be a foul water compatible sewer in close proximity to the development site including a public combined sewer in Holcombe Road and a public combined sewer within Holcombe Road (refer to sewer records within Appendix C). The site is mainly undeveloped at present, and there are no known formal foul water flows currently discharging offsite.

6.2 As identified on the planning layout, due to the onsite levels a pumped foul water solution will be required to deal with flows generated onsite. A pumping station is shown on the layout in the south-eastern corner. The proposals are therefore to discharge foul water generated onsite via a rising main to either to the public combined system to the south (MH.5101) or if this is not feasible following discussion with UU then to the public foul water system to the north (MH.4502).

6.3 Detailed design is required to confirm that a single foul water connection will be achievable as there are multiple services and below ground systems which already cross the site including the culverted watercourse and gas main which would need to be crossed to serve the site.

6.4 Based on the proposals for the construction of approximately 131no. residential units the approximate peak foul water flows generated by the development are 6.1l/s. This is based on 4000 litres per dwelling per 24 hours; the guidance contained within Sewers for Adoption (SfA).

6.5 Early discussions with UU are recommended to ensure there will be enough capacity within the proposed connection to the sewer network. UU must consent to any proposed works to the public sewer network and early discussion is advised. A pre-development enquiry has been carried out with UU who have agreed in principle to allow the development to drain to the public combined sewer either MH.5101 or MH.4502 at an unrestricted rate.

7.0 SUMMARY AND CONCLUSIONS

7.1 This Flood Risk Assessment and Drainage Management Strategy was commissioned by Taylor Wimpey referred to hereafter as 'the client'. This report has been prepared to support a planning application for the construction of a residential development on land to the south of Holcombe Road in Haslingden.

Flood Risk

7.2 The total site covers 6.12ha and is located wholly within Flood Zone 1 based on the Environment Agency Flood Map for Planning. The proposals are of a residential nature, which is classified as more vulnerable in Table 2: Flood Risk Vulnerability Classification within Planning Practice Guidance. This nature of development is confirmed to be appropriate within Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals.

7.3 Consultation with the Environment Agency, United Utilities, Rossendale Borough Council and Lancashire County Council have been undertaken and did not identify any historical flooding to the site. The nearest Main Rivers to the site are Ogden Brook (located 260m to the south-west) and Swinnel Brook (located 260m to the south-east). The online mapping has also identified an onsite drainage ditch; which coveys flows to the large pond adjacent to the southern boundary. This ditch and pond system are assumed to ultimately discharge into Swinnel Brook to the south-east of the site, via open channel and culverted sections. Consultation with the EA has been undertaken to ascertain the potential flood risks to the site and the top water levels of the nearest Main River networks. When the top water levels are compared with the onsite ground levels, the site is over 7m above the worst-case top water levels.

7.4 In terms of the historical watercourse located onsite and the pond network, these systems have not been hydraulically modelled. It is understood that where the historical watercourse crossed the site, the topographic survey and drainage investigations have noted a natural depression where overland flows collect in periods of extreme rainfall. The flood risk associated onsite would be minimised by reinstating the historical watercourse through the development. Any residual flood risk would be from the upstream inlet via overland flows if levels route in a direction towards site. No historical flooding due to the historical Ordinary Watercourse crossing site has been identified and the potential risk, following it being reinstated (assuming appropriate design takes place), could be mitigated.

7.5 Overall the site is considered to be at 'very low' to 'low' risk from the key flood sources reviewed. The risk to site from surface water run-off, varies from 'very low' to 'high'. The areas at risk from surface water are associated with existing low-lying areas onsite, which would be more susceptible to ponding in extreme storm events, as flow cannot naturally convey away from these low-lying areas.

7.6 It would be recommended that any natural flow routes to the historical watercourse, be retained within the proposals to assist with minimising flood risk. This includes reinstating the historical watercourse route through site and enhancing this feature to form a natural blue/green corridor. The flood risk associated with surface water will be effectively managed as part of the development, through the implementation of mitigation measures proposed within this assessment. The primary measures include adopting a sustainable approach to manage for surface water run-off generated onsite and ensuring appropriate levels design takes place as part of detailed design.

Drainage Strategy

7.7 To ensure the proposals do not increase flood risk to others, a principle focus of this assessment is on the appropriate management of surface water run-off in accordance with national and local planning policy. Surface water run-off management options have been assessed in accordance with the sustainable drainage hierarchy, which is discharge to ground, followed by a nearby waterbody or finally the public sewer system. Based on the ground conditions identified by online published datasets, infiltration would not likely provide a feasible surface water drainage solution for the site, due to the underlying cohesive strata.

7.8 Assuming infiltration will not be suitable for managing the surface water run-off, the next method in the drainage hierarchy is discharge to a waterbody. As previously mentioned, the nearest watercourse to site is the Ordinary Watercourse which was shown to cross the site and discharge into the pond to the south. Further investigation identified that this Ordinary Watercourse no longer exists, in its entirety through site. At present the site is understood to naturally drain to the offsite pond via low-lying depressions or formal offsite interception drainage.

7.9 It is proposed that the historical Ordinary Watercourse is reinstated onsite to assist with reducing existing drainage flood risk issues present. A new formal connection from the onsite watercourse to the pond network is required to ensure flows can continue to discharge to the south. The new reinstated watercourse network could, if designed appropriately, provide betterment on the existing drainage regime and reduce existing flood risk issues along the southern boundary. Given the onsite ground levels and location of the Ordinary Watercourse crossing the site it is likely that at least 2no. outfalls will be required to accommodate the proposals.

7.10 In accordance with the SuDS Manual and the Non-Statutory Technical Standards for Sustainable Drainage Systems, all sites should endeavour to achieve as close to pre-development greenfield rates as viable. Even though the site is currently 20% impermeable, the development area has been considered to be 100% permeable to conform with policy. The pre-development greenfield rates (QBar) have therefore been calculated and QBar is 75.2l/s using the FEH Statistical Method. This discharge rate is based on the development area as a whole and as multiple outfalls are proposed then the rate should be pro-rated between the discharge locations. The rate of discharge per hectare based on the QBar figure calculated is 16.8l/s/ha.

7.11 This Flood Risk Assessment and Drainage Management Strategy has been prepared in consultation with the relevant interested parties and incorporates their comments where possible. The report is considered to be commensurate with the scale and nature of the development proposals and in summary, the development can be considered appropriate in accordance with the Planning Practice Guidance.

8.0 RECOMMENDATIONS

8.1 For 'more vulnerable' development located within Flood Zone 1, it is typical to set the Finished Floor Levels (FFL) of residential dwellings 150mm above the ground levels. By ensuring the FFLs are raised sufficiently above the external levels (following any re-grade) should mitigate any risk of flooding from a variety of sources, including groundwater and surface water run-off risks at the proposed development.

8.2 Any overland flows generated by the development must be carefully controlled. Safe avenues directing overland flow way from any existing and proposed buildings are advised.

8.3 An Ordinary Watercourse is shown on the mapping to cross the site within the development area, however the recent topographic survey and further drainage investigations undertaken have identified this watercourse is no longer open channel in its entirety. Due to the surface water flood risks identified onsite the Ordinary Watercourse will be reinstated as part of the proposals which conforms with the standard guidance from LCC as the LLFA. Early discussion with LCC will be required for any proposed works to the Ordinary Watercourse they will also require an 8m easement from both sides of the watercourse to be incorporated into the layout. The current proposals shown that an easement has been allowed for from this (to be reinstated) watercourse crossing site.

8.4 To minimise the flood risk to the neighbouring properties it is recommended that the surface water run-off generated by the proposals be managed effectively with the peak rates of run-off being restricted to the equivalent of the pre-development situation (with betterment where required).

8.5 The proposed onsite surface water drainage system will need to be sized to contain the 1 in 30yr return period event below ground with exceedance from storm events up to and including the 1 in 100yr return period storm event with a 40% allowance for climate change being contained onsite.

8.6 As with any drainage system blockages within either the foul or surface water system have the potential to cause flooding or disruption. It is important that should any drainage systems not be offered for adoption to either UU or LCC then an appropriate maintenance regime should be scheduled with a suitably qualified management company for these private drainage systems.

BIBLIOGRAPHY & REFERENCES

Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities – Environment Agency/DEFRA 2016

CIRIA 522: Sustainable urban drainage systems – design manual for England and Wales (2000).

CIRIA 523: Sustainable urban drainage systems – best practice manual (2001).

CIRIA 609: Sustainable drainage systems. Hydraulic, structural and water quality advice (2004).

CIRIA 624: Development and flood risk – guidance for the construction industry (2004).

CIRIA 635: Designing for Exceedance in urban drainage: Good practice (2006).

CIRIA 644: Building Greener (2007).

CIRIA 753: The SUDS manual (2015).

Flood Risk to People – Phase 2 (FD2321/TR2), DEFRA and the Environment Agency (2006).

Flood estimation for small catchments: Institute of Hydrology Report No.124, NERC (1994).

Flood Estimation Handbook, Centre for Ecology and Hydrology (1999).

Planning Policy Statement 25: Development and Flood Risk (2006).

Sewers for Adoption 7th Edition, WRc (2012).

National Planning Policy Framework, Ministry of Housing, Communities and Local Government (2018).

Web-based References

Bingmaps – http://www.bing.com/Maps/

British Geological Survey – http://www.bgs.ac.uk/opengeoscience/home.html

Chronology of British Hydrological Events – www.dundee.ac.uk/

CIRIA – http://www.ciria.org/

Cranfield University – http://www.landis.org.uk/soilscapes/

Environment Agency – www.environment-agency.gov.uk/

FloodProBE – http://www.floodprobe.eu/

Flood Forum – http://www.floodforum.org.uk/

Google Maps – http://maps.google.co.uk/

Streetmap – http://www.streetmap.co.uk/

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APPENDIX A: NPPF & PPG EXTRACTS

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14. Meeting the challenge of climate change, flooding and coastal change

148. The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Planning for climate change

149. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures[48]. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

150. New development should be planned for in ways that:

a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

151. To help increase the use and supply of renewable and low carbon energy and heat, plans should:

a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

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[48] In line with the objectives and provisions of the Climate Change Act 2008.

152. Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

153. In determining planning applications, local planning authorities should expect new development to:

a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

154. When determining planning applications for renewable and low carbon development, local planning authorities should:

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable[49]. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Planning and flood risk

155. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

156. Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.

157. All plans should apply a sequential, risk-based approach to the location of development – taking into account the current and future impacts of climate change

[49] Except for applications for the repowering of existing wind turbines, a proposed wind energy development involving one or more turbines should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan; and, following consultation, it can be demonstrated that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing.

– so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:

a) applying the sequential test and then, if necessary, the exception test as set out below;

b) safeguarding land from development that is required, or likely to be required, for current or future flood management;

c) using opportunities provided by new development to reduce the causes and impacts of flooding (where appropriate through the use of natural flood management techniques); and

d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.

160. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

161. Both elements of the exception test should be satisfied for development to be allocated or permitted.

162. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.

163. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment[50]. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient;

c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

164. Applications for some minor development and changes of use[51] should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 50.

165. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:

a) take account of advice from the lead local flood authority;

b) have appropriate proposed minimum operational standards;

c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and

d) where possible, provide multifunctional benefits.

Coastal change

166. In coastal areas, planning policies and decisions should take account of the UK Marine Policy Statement and marine plans. Integrated Coastal Zone Management should be pursued across local authority and land/sea boundaries, to ensure effective alignment of the terrestrial and marine planning regimes.

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[50] A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

[51] This includes householder development, small non-residential extensions (with a footprint of less than $250m^2$) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park home site, where the sequential and exception tests should be applied as appropriate.

167. Plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas and not exacerbating the impacts of physical changes to the coast. They should identify as a Coastal Change Management Area any area likely to be affected by physical changes to the coast, and:

a) be clear as to what development will be appropriate in such areas and in what circumstances; and

b) make provision for development and infrastructure that needs to be relocated away from Coastal Change Management Areas.

168. Development in a Coastal Change Management Area will be appropriate only where it is demonstrated that:

a) it will be safe over its planned lifetime and not have an unacceptable impact on coastal change;

b) the character of the coast including designations is not compromised;

c) the development provides wider sustainability benefits; and

d) the development does not hinder the creation and maintenance of a continuous signed and managed route around the coast[52].

169. Local planning authorities should limit the planned lifetime of development in a Coastal Change Management Area through temporary permission and restoration conditions, where this is necessary to reduce a potentially unacceptable level of future risk to people and the development.

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[52] As required by the Marine and Coastal Access Act 2009.

Revision date: 06 03 2014

What should be considered if bringing forward a Neighbourhood Development Order/Community Right to Build Order in an area at risk of flooding?

The general approach and requirements for site-specific flood risk assessments should be applied to developments in areas at risk of flooding to be permitted by Neighbourhood Development/ Community Right to Build Orders. This means that for any development proposals:

- in Flood Zone 2 or 3;
- or of at least 1 hectare;
- or in an area that has critical drainage problems (as notified to the local planning authority by the Environment Agency);
- or that may be subject to other sources of flood risk;

a site-specific flood risk assessment should support the draft Order. The flood risk assessment checklist may be helpful in this respect.

Where the neighbourhood planning area is in Flood Zone 2 or 3, or is in an area with critical drainage problems, advice on the scope of the flood risk assessment required should be sought from the Environment Agency. Where the area may be subject to other sources of flooding, it may be helpful to consult other bodies involved in flood risk management, as appropriate.

Where a Neighbourhood Development/Community Right to Build Order is under consideration for a site/area in Flood Zone 2 or 3, which has not been allocated in the development plan through the Sequential Test, and if necessary the Exception Test, it will be necessary for those proposing the development, in having regard to the National Planning Policy Framework's policies on flood risk, to demonstrate why the development cannot reasonably be located in areas of lower flood risk.

In all cases where new development is proposed, the sequential approach to locating development in areas of lower flood risk should still be applied within a neighbourhood planning area.

Neighbourhood Development/Community Right to Build Orders that propose new development that would be;

- contrary to the flood risk vulnerability and flood zone compatibility table (Table 3), or;
- within areas at risk of flooding where sequential testing shows there to be places at lower flood risk which are suitable and reasonably available for the development proposed,

should not be considered appropriate, having regard to the national policies on development and flood risk.

Paragraph: 064 Reference ID: 7-064-20140306

Revision date: 06 03 2014

Flood Zone and flood risk tables

- Table 1: Flood Zones
- Table 2: Flood risk vulnerability classification
- Table 3: Flood risk vulnerability and flood zone 'compatibility'

Table 1: Flood Zones

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea (https://flood-map-for-planning.service.gov.uk/)), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as ‘clear’ on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.(Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Note: The Flood Zones shown on the Environment Agency’s Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the Strategic Flood Risk Assessment when considering location and potential future flood risks to developments and land uses.

Paragraph: 065 Reference ID: 7-065-20140306

Revision date: 06 03 2014

Table 2: Flood risk vulnerability classification

Essential infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as ‘Essential Infrastructure’).

More vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non–residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

" * " Landfill is as defined in Schedule 10 of the Environmental Permitting (England and Wales) Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/675/schedule/10/made).

Paragraph: 066 Reference ID: 7-066-20140306

Revision date: 06 03 2014

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Table 3: flood risk vulnerability and flood zone 'compatibility' (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/575184/Table_3_-_Flood_risk_vulnerability_and_flood_zone__compatibility_.pdf) (PDF, 58.1KB, 1 page)

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

" * " In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Paragraph: 067 Reference ID: 7-067-20140306

Revision date: 06 03 2014

Site-specific flood risk assessment: Checklist

1 - Development site and location

You can use this section to describe the site you are proposing to develop. It would be helpful to include, or make reference to, a location map which clearly indicates the development site.

a. Where is the development site located? (eg postal address or national grid reference)

b. What is the current use of the site? (eg undeveloped land, housing, shops, offices)

c. Which Flood Zone (for river or sea flooding) is the site within? (ie Flood Zone 1, Flood Zone 2, Flood Zone 3). As a first step, you should check the Flood Map for Planning (http://apps.environment-agency.gov.uk/wiyby/37837.aspx) (Rivers and Sea). It is also a good idea to check the Strategic Flood Risk Assessment for the area available from the local planning authority.

2 - Development proposals

APPENDIX B: EA INFORMATION & CORRESPONDENCE

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Megan Berry

From: GMMC Info Requests <InfoRequests.GMMC@environment-agency.gov.uk>
Sent: 07 May 2019 11:18
To: Megan Berry
Subject: GMMC125824AB Response attached from the Environment Agency
Attachments: GMMC125824AB_DFM.PDF; GMMC125824AB_P4.pdf; GMMC125824AB_Res.pdf; Reservoir Flood Map Attachment.pdf; CCA - Area External Guidance v5.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Megan,

Thank you for your enquiry which was received on 2/5/19.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

I enclose the data requested.

We have no record of flooding affecting this site. However, this does not mean flooding has not occurred in the past or that it will not flood in future. We recommend that you also contact United Utilities and Lancashire County Council Authority who may hold additional information (the former especially in relation to sewer flooding).

There are no flood defences within the vicinity of the site.

Please be aware you can check your risk of flooding on our external website https://flood-warning-information.service.gov.uk/long-term-flood-risk/

Please also note that all current EA flood risk strategy documents can be found on our external website https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities and https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Please refer to the Open Government Licence which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

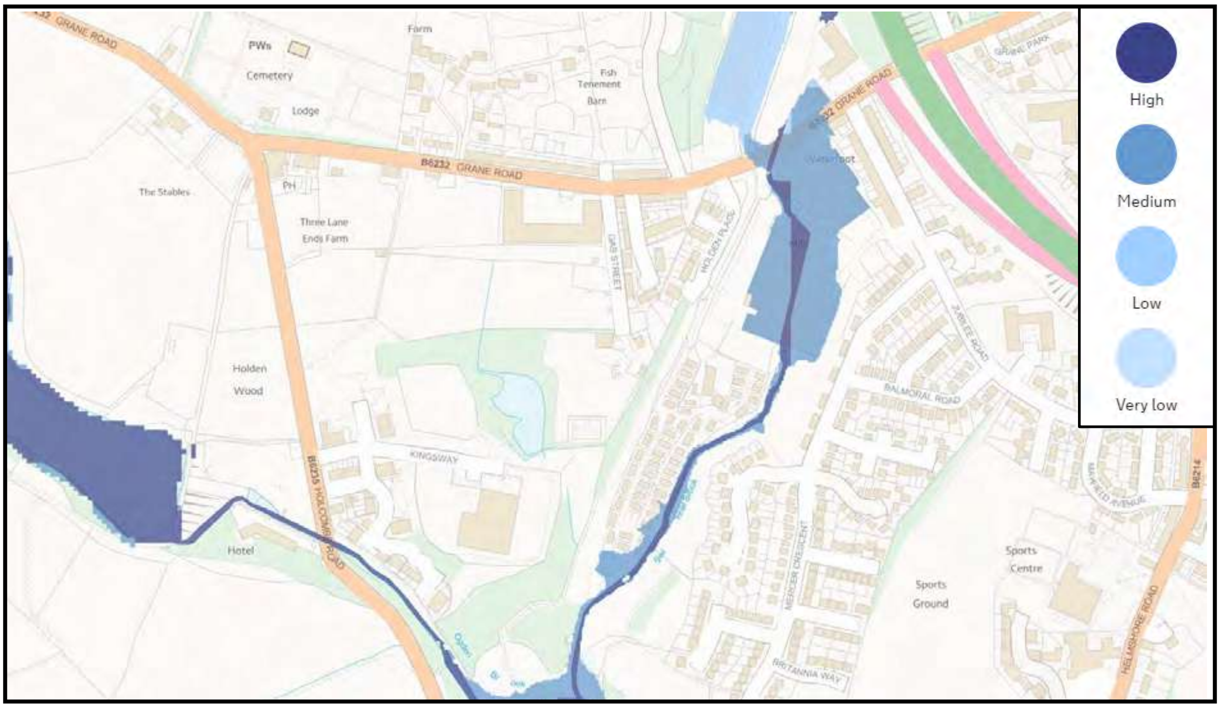
Kind regards,

Anne Ball
Customer and Engagement Officer
Greater Manchester, Merseyside and Cheshire
External:
Mobile:
Email: Inforequests.gmmc@environment-agency.gov.uk

BETTS HYDRO
CONSULTING ENGINEERS

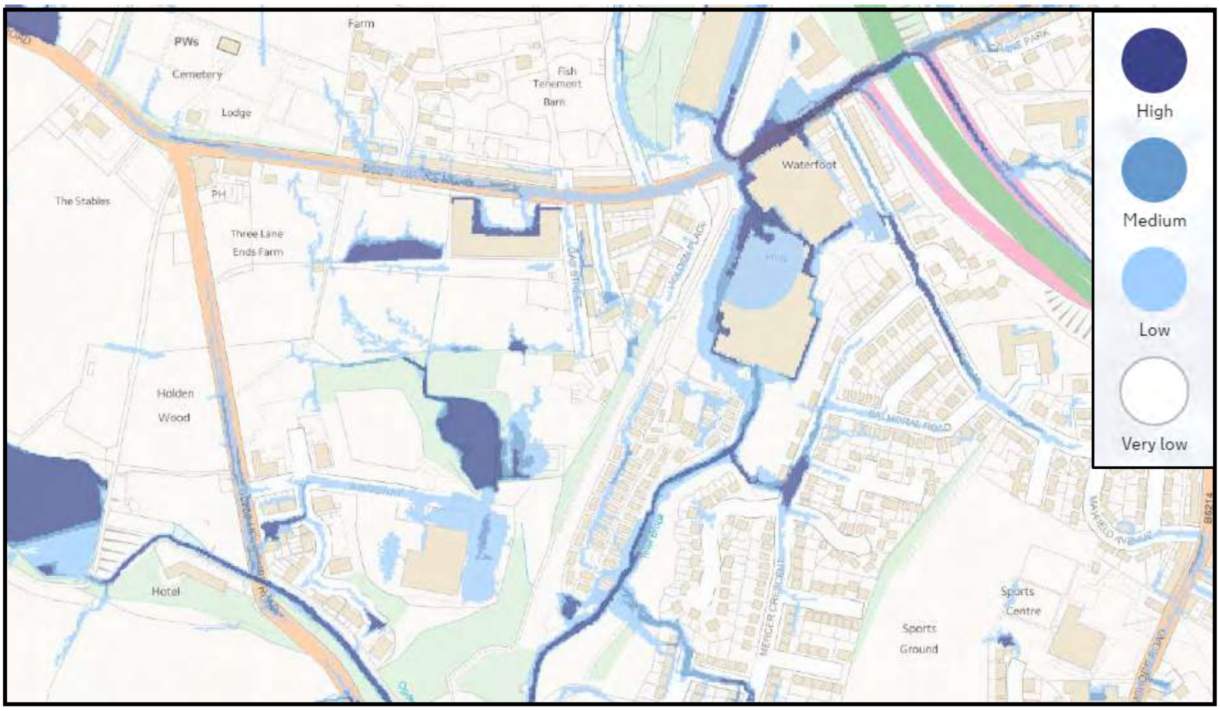
Flood Map for Planning

Long Term Flood Risk – Rivers or Sea

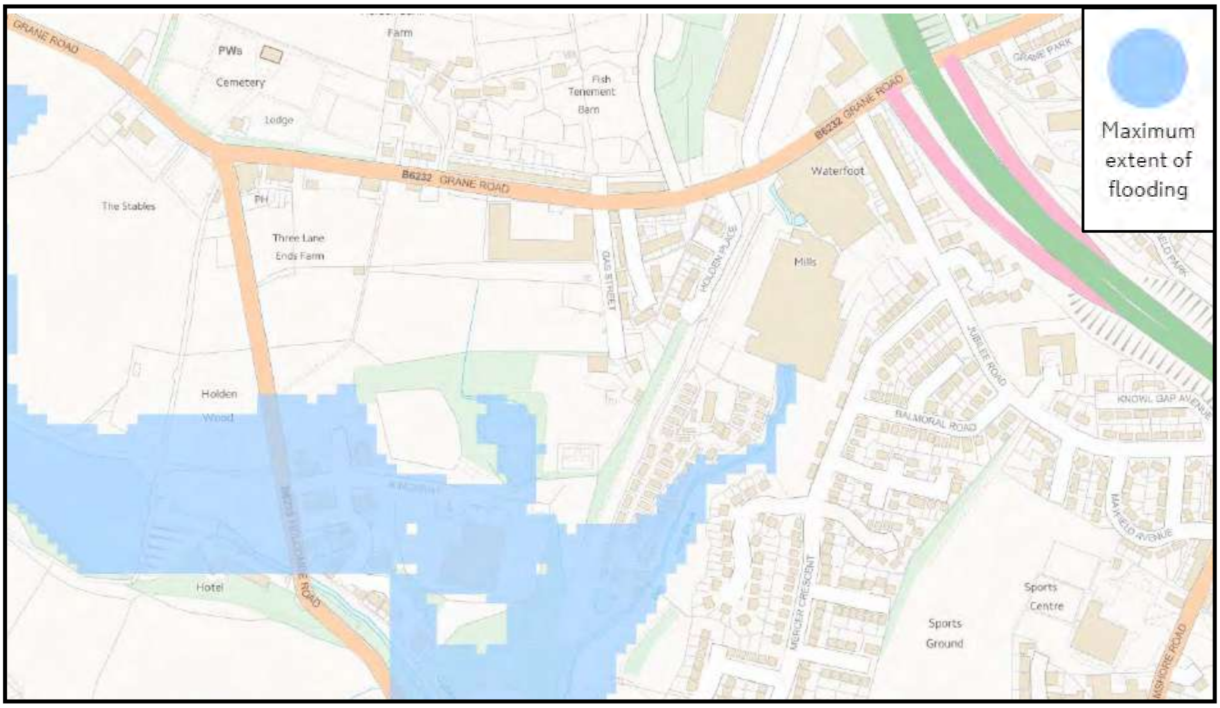


NATIONAL FLOOD MAPPING

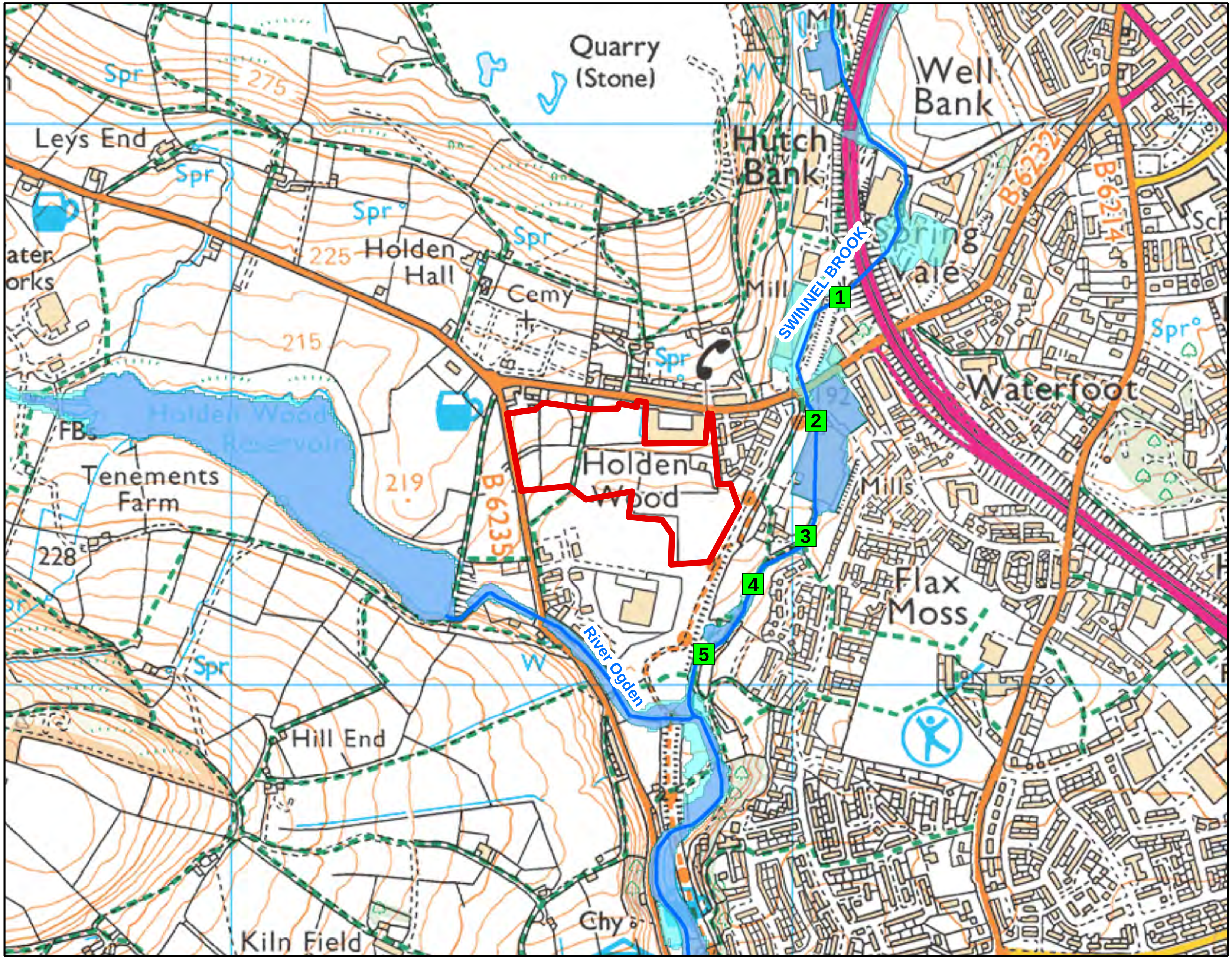
Long Term Flood Risk – Surface Water



Long Term Flood Risk - Reservoirs



Detailed Flood Map centred on Grane Road, Haslingden, BB4 4QN. Created on 07/05/2019 [GMMC125824AB]



Environment Agency

1:10,001

N

Legend

- Site Location
- Model Measurements
- Main River
- Flood Zone 3
- Flood Zone 2

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

					Undefended			
Map Reference	Model Node Reference	Easting	Northing	Data	5 % AEP (1 in 20 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + Climate Change*	0.1 % AEP (1 in 1000 year)
1	ea01313_SWLN01_0889b	378087	422692	Modelled Water Level (m aodN)	192.41	193.43	194.01	194.88
				Modelled Flow (cumecs)	7.58	10.47	11.10	10.83
2	ea01313_SWLN01_0626	378044	422472	Modelled Water Level (m aodN)	190.81	191.04	191.10	191.41
				Modelled Flow (cumecs)	6.31	8.14	8.57	11.22
3	ea01313_SWLN01_0410	378025	422266	Modelled Water Level (m aodN)	185.57	185.81	185.82	186.00
				Modelled Flow (cumecs)	7.14	9.26	9.71	14.32
4	ea01313_SWLN01_0275	377932	422180	Modelled Water Level (m aodN)	184.15	184.30	184.29	184.54
				Modelled Flow (cumecs)	7.50	10.21	10.56	13.97
5	ea01313_SWLN01_0122	377844	422055	Modelled Water Level (m aodN)	180.57	180.87	180.93	181.48
				Modelled Flow (cumecs)	7.98	10.62	10.71	16.33

Model data taken from Swinnel Brook 2009

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes:

*Climate Change Scenario - We only hold climate change measurements based on the previous climate change guidance (20% increase in flow).

The new climate change guidance is available at https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Reservoir Flood Map

The area within the red circle could be at risk of flooding from the following reservoirs:

Reservoir Name	Reservoir Owner	Location	Local Authority	Environment Agency Office
Holden Wood	United Utilities Water plc	377414, 422186	Lancashire	Environment Agency - Greater Manchester, Merseysid
Ogden Haslingden	United Utilities Water plc	376600, 422500	Lancashire	Environment Agency - Greater Manchester, Merseysid
Calf Hey	United Utilities Water plc	375510, 422490	Lancashire	Environment Agency - Greater Manchester, Merseysid

Note - this map provides a general indication of the largest area that might be flooded if a reservoir were to fail and release the water it holds. It is taken from a national assessment and displays a worst case scenario. The map is only intended as a guide and is not a prediction of what will happen.

Important

- This map has been produced for emergency planning purposes and displays a worst case scenario.
- It is not suitable for use at an individual property scale due to the method used.
- This map does not give any information on the likelihood of reservoir flooding or on the depth or speed of floodwaters. It also does not include any smaller reservoirs (which hold less than 25,000 cubic metres of water) or reservoirs commissioned or registered after Spring 2009.
- The information should not be interpreted as stating that the location you are interested in will or won't actually flood, but simply that it is in or not in an area that could be affected by reservoir flooding as shown on the maps.

Maximum extent of flood

1:10,000

Reservoir Flood Map

This text must be read with the extract from the Reservoir Flood Map which we have sent to you

How to use the maps

Reservoir flood maps are available to help you find out if you could be affected by reservoir flooding. Even though reservoir flooding is very unlikely it may be helpful to you to find out if you live or work in an area that could be affected. If you do, you might want to think about what you would do if an emergency did happen.

For more information on what to do if you live or work near a reservoir, including some frequently asked questions, visit our website at http://www.environment-agency.gov.uk/flood.

The maps have been prepared for emergency planning purposes and for this reason they reflect a credible worst case scenario – this means that if a reservoir failure did occur it would most likely be far less severe than the scenario shown in the maps. We've mapped a credible worst case scenario so that emergency planners have all the information they might need to increase public safety.

Reservoir safety

Reservoirs in the UK have an extremely good safety record with no failures resulting in the loss of life since 1925. Reservoirs are more carefully maintained now. This means reservoir flooding is very unlikely to happen.

The Environment Agency is the enforcement authority for the Reservoirs Act 1975 in England. All large reservoirs that we think could endanger human life must be inspected and supervised by reservoir engineers. We ensure that reservoirs are regularly inspected and essential safety work is carried out.

For more information on reservoir safety visit our website at:

https://www.gov.uk/guidance/reservoirs-owner-and-operator-requirements.

Emergency planning

Lead Local flood authorities are responsible for coordinating emergency plans for reservoir flooding and ensuring communities are well prepared. Lead Local flood authorities work with other members of the Local Resilience Forum (LRF) to develop generic and site-specific emergency plans, depending on local circumstances and priorities.

If you want to find out about local emergency plans you should contact the responsible lead local flood authority as identified on the map.

Flood risk assessments: Climate change allowances

Application of the allowances and local considerations

Greater Manchester, Merseyside & Cheshire

1) The climate change allowances

The National Planning Practice Guidance refers planners, developers and advisors to the Environment Agency guidance on considering climate change in Flood Risk Assessments (FRAs). This guidance was updated in February 2016 and is available on Gov.uk and should be read in conjunction with this document. The guidance can be used for planning applications, local plans, neighbourhood plans and other projects. It provides climate change allowances for peak river flow, peak rainfall, sea level rise, wind speed and wave height. The guidance provides a range of allowances to assess fluvial flooding, rather than a single national allowance. It advises on what allowances to use for assessment based on vulnerability classification, flood zone and development lifetime.

2) Assessment of climate change impacts on fluvial flooding

Table A below indicates the level of technical assessment of climate change impacts on fluvial flooding appropriate for new developments depending on their scale and location. This should be used as **a guide only**. Ultimately, the agreed approach should be based on expert local knowledge of flood risk conditions, local sensitivities and other influences. **For these reasons we recommend that applicants and / or their consultants should contact the Environment Agency at the pre-planning application stage to confirm the assessment approach, on a case by case basis**. **Table A** defines three possible approaches to account for flood risk impacts due to climate change, in new development proposals:

- **Basic:** Developer can add an allowance to the 'design flood' (i.e. 1% annual probability) peak levels to account for potential climate change impacts. The allowance should be derived and agreed locally by Environment Agency teams.
- **Intermediate:** Developer can use existing modelled flood and flow data to construct a stage-discharge rating curve, which can be used to interpolate a flood level based on the required peak flow allowance to apply to the 'design flood' flow.
- **Detailed:** Perform detailed hydraulic modelling, through either re-running Environment Agency hydraulic models (if available) or construction of a new model by the developer.

Table A – Indicative guide to assessment approach

VULNERABILITY CLASSIFICATION	FLOOD ZONE	DEVELOPMENT TYPE		
		MINOR	SMALL-MAJOR	LARGE-MAJOR
ESSENTIAL INFRASTRUCTURE	Zone 2	Detailed		
	Zone 3a	Detailed		
	Zone 3b	Detailed		
HIGHLY VULNERABLE	Zone 2	Intermediate/ Basic	Intermediate/ Basic	Detailed
	Zone 3a	Not appropriate development		
	Zone 3b	Not appropriate development		
MORE VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Detailed	Detailed
	Zone 3b	Not appropriate development		
LESS VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Basic	Detailed
	Zone 3b	Not appropriate development		
WATER COMPATIBLE	Zone 2	None		
	Zone 3a	Intermediate/ Basic		
	Zone 3b	Detailed		

NOTES:

- Minor: 1-9 dwellings/ less than 0.5 ha | Office / light industrial under 1ha | General industrial under 1 ha | Retail under 1 ha | Gypsy/traveller site between 0 and 9 pitches
- Small-Major: 10 to 30 dwellings | Office / light industrial 1ha to 5ha | General industrial 1ha to 5ha | Retail over 1ha to 5ha | Gypsy/traveller site over 10 to 30 pitches
- Large-Major: 30+ dwellings | Office / light industrial 5ha+ | General industrial 5ha+ | Retail 5ha+ | Gypsy/traveller site over 30+ pitches | any other development that creates a non residential building or development over 1000 sq m.

The assessment approach should be agreed with the Environment Agency as part of pre-planning application discussions to avoid abortive work.

3) Specific local considerations

Where the Environment Agency and the applicant and / or their consultant has agreed that a '**basic**´ level of assessment is appropriate the figures in Table B below can be used as a precautionary allowance for potential climate change impacts on peak 'design' (i.e. 1% annual probability) fluvial flood level rather than undertaking detailed modelling.

Table B – Local precautionary allowances for potential climate change impacts

Watercourse	Central	Higher Central	Upper
All	0.15m	0.24m	0.48m

Use of these allowances will only be accepted after discussion with the Environment Agency.

4) Fluvial food risk mitigation

Read the guidance on Gov.uk to find out which allowances to use to **assess** the impact of climate change on flood risk.

For planning consultations where we are a statutory consultee and our Flood risk standing advice **does not** apply we use the following benchmarks to inform flood risk **mitigation** for different vulnerability classifications. **These are a guide only**. **We strongly recommend you contact us at the pre-planning application stage to confirm this on a case by case basis. Please note you may be charged for this advice.** For planning consultations where we are not a statutory consultee or our Flood risk Standing advice applies we recommend local planning authorities and developers use these benchmarks but we do not expect to be consulted.

- For development classed as '**Essential Infrastructure**' our benchmark for flood risk mitigation is for it to be designed to the '**upper end**' climate change allowance for the epoch that most closely represents the lifetime of the development, including decommissioning.

- For **highly vulnerable** in flood zone 2, the '**higher central'** climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **upper end** allowance.

- For **more vulnerable developments** in flood zone 2, the '**central**' climate change allowance is our minimum benchmark for flood risk mitigation, and in flood zone 3 the '**higher central**' climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (in flood zone 2) and the **upper end** allowance (in flood zone 3).

- For **water compatible** or **less vulnerable** development (e.g. commercial), the '**central**' climate change allowance for the epoch that most closely represents the lifetime of the development is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (particularly in flood zone 3) to inform built in resilience.

There may be circumstances where local evidence supports the use of other data or allowances. Where you think this is the case we may want to check this data and how you propose to use it.

END.

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APPENDIX C: UU CORRESPONDENCE

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Megan Berry

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 02 May 2019 09:49
To: Megan Berry
Subject: RE: Historical Sewer Flooding

Hi

'I can confirm that we have no current record of sewer flooding on our DG5 register within the vicinity of the proposed development. The DG5 register is a register of properties that have flooded as a result of hydraulic inadequacy of the public sewer network.

Please note that United Utilities Water Limited (UUW) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the register.

Our response does not include:

- *any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which UUW has no control and not a facet of sewer capacity; or*

- *any historical sewer flooding events that have been removed from the register as a result of investment in our infrastructure.*

As with all development sites, we recommend you liaise with our water and wastewater engineers by contacting our Developer Services team so the details of your development proposal can be considered further. Details can be found at the following link.

https://www.unitedutilities.com/services/builders-developers/

Should you require any further information please do not hesitate to contact me.'

Regards,

Thanks sue

Sue King
Developer Services Assistant
Developer Services
Network Delivery
T:

unitedutilities.com

From: Megan Berry
Sent: 02 May 2019 08:53
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Historical Sewer Flooding

F.A.O Flood Risk, Drainage and/or Planning department

To whom it may concern,

Grane Road, Haslingden

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the above site (location plan attached), including details of historical flooding and any predicted flood water levels as this would be greatly appreciated for us to undertake our assessment of the development site. If there are any specific requirements that you require in a scope of works for this site please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards

Megan Berry BSc(Hons) GradCIWEM
Graduate Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

www.betts-associates.co.uk

CIVIL | STRUCTURAL | GEO-ENVIRONMENTAL | HYDROLOGY | FLOOD RISK MANAGEMENT
SUDS | STRUCTURAL SURVEYS | PARTY WALL DUTIES | INFILTRATION | GEOTECHNICAL

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone:

E-mail: propertysearches@uuplc.co.uk

Betts-Associates

Old Marsh Farm Barns
Welsh Road,
Sealand,, Flintshire
CH5 2LY

FAO:

Your Ref: HYD421 GRANE ROAD
Our Ref: UUPS-ORD-99780
Date: 02/05/2019

Dear Sirs

Location: FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD, HASLINGDEN, ROSSENDALE, BB4 4QN

I acknowledge with thanks your request dated 02/05/2019 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. http://www.unitedutilities.com/work-near-asset.aspx .

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
6102	190.85	FO	189.1	150			PVC	7.753175	1 in 23
0504	192.84	CO	181.64	1500			CO	199.7771	1 in 908
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
6006	186.27	SW	184.16	300			PVC	21.15362	1 in 41
9302		CO	0	150			CO	16.7918	
9105		SW	0	225			VC	23.39669	
9105		SW	0	225			VC	23.39669	
0111		FO	0	225			VC	28.61294	
0111		FO	0	225			VC	28.61294	
0901	199.65	SW	197.46	375			CO	31.30495	1 in 130
0901	199.65	SW	197.46	375			CO	31.30495	1 in 130
5106		FO		100			VC	6.194507	
7102	193.86	SW	191.51	300			PVC	74.46354	1 in 122
4503	217.9	CO	0	225			VC	25.54991	
4503	217.9	CO	0	225			VC	25.54991	
7101	193.81	FO	192.37	150			PVC	50.3477	1 in 105
9102		CO	0	225			VC	14.4222	
0207		CO	0	600			VC	52.69725	
9903	195.48	FO	194.09	150			VC	60.16644	1 in 63
8404	201.97	CO	200.55	225			VC	48.0559	1 in 16
8404	201.97	CO	200.55	225			VC	48.0559	1 in 16
8401	203.57	CO	200.68	300			VC	77.93814	1 in 17
8401	203.57	CO	200.68	300			VC	77.93814	1 in 17
9402	199.51	CO	197.61	225			VC	48.0032	
9402	199.51	CO	197.61	225			VC	48.0032	
6901	182.98	CO	180.54	300			VC	67.44627	1 in 70
0115		FO	0	225			VC	21.14297	
0115		FO	0	225			VC	21.14297	
5102	191.1	FO	189.61	150			PVC	17.24524	1 in 91
9110		FO		100			VC	7.80584	
9110		FO		100			VC	7.80584	
6113	187.87	SW	186.13	300			PVC	22.97496	1 in 26
9008	192.53	SW	187.54	450			CO	51.61395	1 in 12
6004		CO	0	300			VC	85.9435	
0108	194.21	SW	189.63	375			VC	85.17245	1 in 16
9104		SW	0	225			VC	32.59078	
9104		SW	0	225			VC	32.59078	
0902	199.21	SW	196.99	375			VC	23.76973	1 in 113
0902	199.21	SW	196.99	375			VC	23.76973	1 in 113
5202	192.34	SW	190.64	300			PVC	35.25793	1 in 28
6502	209.68	CO	204.91	300			VC	51.92401	1 in 45
6502	209.68	CO	204.91	300			VC	51.92401	1 in 45
8008	182.8	OV	179.77	750			CO	10.53422	1 in 117
6008	185.76	SW	0	300			CC	7.628635	
8104	188.61	SW	184.95	750			CO	41.40048	
6110	190.23	SW	188.48	300			PVC	15.15445	1 in 13
0006	199.18	SW	196.75	375			VC	74.73286	1 in 23
9904	195.42	SW	194.05	300			VC	61.03278	1 in 127
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9108		SW	0	225			VC	30.16409	
9108		SW	0	225			VC	30.16409	
8001		CO	180.25	1200			CO	72.27232	
6501	210.24	CO	205.23	300			VC	16.88251	1 in 54
6501	210.24	CO	205.23	300			VC	16.88251	1 in 54
5107		FO		100			VC	12.79019	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9202	192.7	CO	180.8	1500			CO	174.0402	
6106	187.92	FO	186.22	150			PVC	23.51732	1 in 32
6504	211.78	CO	205.98	225			VC	12.20243	1 in 18
6504	211.78	CO	205.98	225			VC	12.20243	1 in 18
9002	195.84	FO	193.04	225			VC	38.11824	1 in 60
9002	195.84	FO	193.04	225			VC	38.11824	1 in 60
6112	188.03	SW	186.37	300			PVC	13.67726	1 in 57
6503	207.85	CO	203.75	300			VC	45.47886	1 in 58
6503	207.85	CO	203.75	300			VC	45.47886	1 in 58
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
6109	190.78	SW	188.64	300			PVC	6.817384	1 in 43
0905	199.65	FO	197.16	150			VC	59.9333	1 in 86
0905	199.65	FO	197.16	150			VC	59.9333	1 in 86
0012		FO		100			VC	18.46144	
0012		FO		100			VC	18.46144	
7901	181.8	CO	179.41	450			CO	110.7655	1 in 158
9404	198.46	CO	196.34	225			VC	22.54897	
9404	198.46	CO	196.34	225			VC	22.54897	
6001	186.38	FO	184.68	150			PVC	15.56545	1 in 65
0910		FO		100			VC	6.568853	
0910		FO		100			VC	6.568853	
9301	194.48	CO	181.39	1500			CO	115.5509	1 in 206
9301	194.48	CO	181.39	1500			CO	115.5509	1 in 206
6111	189.01	SW	187.31	300			PVC	16.19186	1 in 17
9902	197.28	FO	194.37	150			VC	30.46309	1 in 122
9902	197.28	FO	194.37	150			VC	30.46309	1 in 122
8403	199.42	CO	197.34	225			VC	59.93505	1 in 61
8403	199.42	CO	197.34	225			VC	59.93505	1 in 61
9407		CO	0	225			VC	29.7519	
9407		CO	0	225			VC	29.7519	
4501	218.45	CO	214.06	225			BR	75.50783	
5502		CO	0	300			VC	83.48112	
5502		CO	0	300			VC	83.48112	
9111		FO		100			VC	10.17581	
9111		FO		100			VC	10.17581	
6010		SW	0	939			PVC	12.33096	
7001	185.54	CO	180.04	450			CO	21.18962	1 in 73
6101	191.03	FO	189.42	150			PVC	17.04285	1 in 53
9004	193.99	FO	0	225			VC	39.09903	
5101	189.41	CO	186.6	225			VC	100.8651	
9003	195.17	FO	192.3	225			VC	23.76973	1 in 12
9003	195.17	FO	192.3	225			VC	23.76973	1 in 12
6505		CO		225			VC	53.55672	
9101		FO	0	225			VC	27.89204	
9106		FO	0	225			VC	22.3004	
9106		FO	0	225			VC	22.3004	
6108	190.95	SW	189.09	300			PVC	17.09963	1 in 38
8101		CO	0	600			CO	25.70992	
6003		FO	0	150			VC	9.560888	
8103	183.76	CO	180.28	1050			CO	31.59812	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
6114	187.14	SW	185.25	300			PVC	25.97295	1 in 24
9011		SW		100			VC	0.9050161	
9011		SW		100			VC	0.9050161	
0003	199.14	FO	195.76	225			VC	67.46851	1 in 25
0116		SW	0	300			VC	22.68389	
0116		SW	0	300			VC	22.68389	
0112		SW	0	300			VC	24.5001	
0112		SW	0	300			VC	24.5001	
7501	206.54	CO	202.95	300			VC	56.98807	1 in 52
7501	206.54	CO	202.95	300			VC	56.98807	1 in 52
7002	185.48	CO	179.7	450			CO	32.28003	1 in 129
0205	185.72	CO	182.91	600			CO	77.87811	
0205	185.72	CO	182.91	600			CO	77.87811	
6007	185.83	SW	183.65	300			PVC	4.687922	1 in 29
5501		CO	0	225			VC	73.43537	
5501		CO	0	225			VC	73.43537	
8102	184.84	CO	180.83	900			CO	24.30791	1 in 59
5103	191.02	SW	189.38	300			PVC	17.55025	1 in 61
9103		FO	0	225			VC	53.40063	
6104	188.9	FO	187.02	150			PVC	12.34304	1 in 22
9007	195.31	SW	191.07	450			CO	31.40064	1 in 9
9007	195.31	SW	191.07	450			CO	31.40064	1 in 9
8007	183.28	OV	180.06	750			CO	16.09686	1 in 56
0906	199.2	FO	196.44	150			VC	26.92582	1 in 48
0906	199.2	FO	196.44	150			VC	26.92582	1 in 48
9107		FO	0	225			VC	29.4908	
9107		FO	0	225			VC	29.4908	
9113		SW		100			VC	10.23812	
9113		SW		100			VC	10.23812	
6107	187.18	FO	185.48	150			PVC	22.38748	1 in 28
7003	191.93	SW		0				53.03772	
6202	193.26	SW	190.9	300			PVC	59.04823	1 in 227
9406		CO	0	225			CO	18.15	
8405		CO		100			VC	4.571568	
8405		CO		100			VC	4.571568	
5201	192.4	FO	191.14	150			PVC	38.3271	1 in 25
8516		FO		100			VC	3.324288	
8516		FO		100			VC	3.324288	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
6201	193.55	FO	191.89	150			PVC	79.51849	1 in 106
0912		FO		100			VC	12.0212	
6103	190.41	FO	188.77	150			PVC	17.62637	1 in 10
8501	206.73	CO	204.67	225			VC	12.02303	1 in 30
8501	206.73	CO	204.67	225			VC	12.02303	1 in 30
6105	188.07	FO	186.45	150			PVC	12.25586	1 in 53
6002	185.89	FO	184.44	150			PVC	22.19421	
9201		CO	0	600			CO	94.82616	
9901	197.44	SW	195.06	225			VC	30.46309	1 in 33
9901	197.44	SW	195.06	225			VC	30.46309	1 in 33
9006	195.82	SW	193.45	450			CO	37.33631	1 in 61
9006	195.82	SW	193.45	450			CO	37.33631	1 in 61

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined | blue - surface water
brown - foul | purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- TR Trapezoidal
- EG Egg
- AR Arch
- OV Oval
- BA Barrel
- FT Flat Top
- HO HorseShoe
- RE Rectangular
- UN Unspecified
- SQ Square

SEWER MATERIAL

- AC Asbestos Cement
- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culverted
- PSC Plastic / Steel Composite
- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry, Coursed
- MAR Masonry, Random
- U Unspecified

Address or Site Reference:

FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD,
HASLINGDEN,
ROSSENDALE,
BB4 4QN

OS sheet Number: SD7722SE
Scale: 1:1250 | Date: 02/05/2019
Nodes: 176
Sheet: 1 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4304	218.31	CO	215.85	225			VC	46.8615	1 in 162
2902	210.82	SW	209.26	225			VC	29.15476	1 in 46
0504	192.84	CO	181.64	1500			CO	199.7771	1 in 908
0203	193.84	FO	191.65	225			VC	42.15448	1 in 156
2203	203.4	FO	202.11	225			VC	24.5153	1 in 8
1310		FO		100			VC	9.568751	
2304	203.96	SW	202.72	225			VC	36.12478	1 in 10
0111		FO	0	225			VC	28.61294	
0111		FO	0	225			VC	28.61294	
2206	210.65	SW	208.32	225			VC	53.00943	1 in 46
1104		SW	0	225			VC	16.24311	
0101	197.78	FO	195.54	150			VC	61.20457	1 in 22
0001	200.09	FO	197.87	150			VC	13.15295	1 in 15
4001	212.33	CO	209.46	450			VC	86.97701	1 in 35
3905	210.88	FO	209.06	150			VC	26.24881	1 in 35
2201	205.76	SW	203.06	225			VC	39.45884	1 in 15
3902	210.29	SW	208.62	225			VC	51.24451	1 in 33
2901	211.04	SW	209.71	150			VC	13.41641	1 in 30
2403	202.94	SW	201.65	150			VC	2	
9110		FO		100			VC	7.80584	
9110		FO		100			VC	7.80584	
0118		SW	0	225			VC	20.87744	
4101	213.65	CO	212.38	150			VC	59.06524	1 in 88
0102	194.99	FO	192.62	225			VC	26.54296	
4502		CO	0	300			VC	43.39665	
1204	199.6	SW	198.19	225			VC	15.29706	1 in 8
0201	193.45	SW	191.98	375			VC	33.61547	1 in 61
0006	199.18	SW	196.75	375			VC	74.73286	1 in 23
4102	213.49	CO	211.2	225			VC	4.000321	1 in 200
9904	195.42	SW	194.05	300			VC	61.03278	1 in 127
0103	197.72	SW	195.39	300			VC	32.14032	1 in 27
1207	195	SW	192.87	300			VC	25.63201	1 in 49
3101	213.79	CO	211.65	150			VC	75.46098	1 in 103
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
1002	205.41	FO	202.78	150			VC	48.76474	1 in 10
2209		SW		0			VC	9.20697	
4203	216.01	CO	213.33	225			VC	14.31782	1 in 22
0004	199.39	SW	197.24	225			VC	60.01666	1 in 35
0206		CO	0	600			VC	18.35756	
0905	199.65	FO	197.16	150			VC	59.9333	1 in 86
0905	199.65	FO	197.16	150			VC	59.9333	1 in 86
0012		FO		100			VC	18.46144	
0012		FO		100			VC	18.46144	
1306		SW		150			VC	39.03356	
0910		FO		100			VC	6.568853	
0910		FO		100			VC	6.568853	
1004	204.39	FO	202.05	150			VC	37.48333	1 in 8
1003	204.64	SW	202.98	150			VC	52.61179	1 in 8
4301	217.07	CO	215.04	225			VC	16.03122	1 in 84
9902	197.28	FO	194.37	150			VC	30.46309	1 in 122
9902	197.28	FO	194.37	150			VC	30.46309	1 in 122
1302	196.79	SW	194.86	225			VC	71.5891	1 in 36
9111		FO		100			VC	10.17581	
9111		FO		100			VC	10.17581	
2402	203.3	CO	201.01	225			VC	12.16553	1 in 30
9106		FO	0	225			VC	22.3004	
9106		FO	0	225			VC	22.3004	
2301	209.67	CO	206.76	225			VC	119.98	1 in 15
0602	194.1	CO	189.06	450			CO	72.27724	1 in 65
0106	194.14	FO	189.15	225			VC	24.08319	
9011		SW		100			VC	0.9050161	
9011		SW		100			VC	0.9050161	
1105		FO	0	150			VC	23.24962	
0107	194.06	SW	191.15	375			VC	5	1 in 4
1205	197.63	SW	196.34	225			VC	29.61419	1 in 17
0003	199.14	FO	195.76	225			VC	67.46851	1 in 25
0116		SW	0	300			VC	22.68389	
0116		SW	0	300			VC	22.68389	
0112		SW	0	300			VC	24.5001	
0112		SW	0	300			VC	24.5001	
0113		SW	0	300			VC	12.5	
0104	195.02	SW	192.93	300			CO	20.80865	
0005	198.65	SW	196.45	225			VC	16.76305	1 in 18
1304	196.73	FO	194.43	225			VC	55.03635	1 in 47
1303	201.25	SW	200.15	225			VC	55.86591	1 in 12
0117		FO	0	150			VC	23.64663	
9007	195.31	SW	191.07	450			CO	31.40064	1 in 9
9007	195.31	SW	191.07	450			CO	31.40064	1 in 9
2302	208.6	SW	207.14	225			VC	82.38548	1 in 14
1208	201.09	FO	199.18	225			VC	38.07887	1 in 12
0906	199.2	FO	196.44	150			VC	26.92582	1 in 48
0906	199.2	FO	196.44	150			VC	26.92582	1 in 48
9107		FO	0	225			VC	29.4908	
9107		FO	0	225			VC	29.4908	
9113		SW		100			VC	10.23812	
9113		SW		100			VC	10.23812	
2001	211.33	SW	210.07	150			VC	14.03567	1 in 39
9406		CO	0	225			CO	18.15	
4207		CO		150			VC	30.58792	
0105	193.86	FO	191.36	225			VC	9.848858	1 in 82
4103	213.5	CO	211.06	300			VC	21.2132	
2202	206.22	FO	203.62	225			VC	23.02173	1 in 15
1305		SW		150			VC	28.07483	
1210	196.28	FO	194.49	225			VC	17.46425	1 in 15
4121		CO		150			VC	12.22223	
1404	199.14	SW	196.67	225			VC	149.4122	1 in 44
1404	199.14	SW	196.67	225			VC	149.4122	1 in 44
4302	217.31	CO	215.31	225			VC	18.43909	1 in 77
0007	199.58	FO	197.37	150			VC	24.73863	1 in 14
1213		SW		150			VC	8.731131	
9105		SW	0	225			VC	23.39669	
9105		SW	0	225			VC	23.39669	
0901	199.65	SW	197.46	375			CO	31.30495	1 in 130
0901	199.65	SW	197.46	375			CO	31.30495	1 in 130
0202	193.76	SW	191.98	300			CO	6.324555	
1402	199.58	CO	196.27	225			VC	55.54278	1 in 46
1402	199.58	CO	196.27	225			VC	55.54278	1 in 46
0207		CO	0	600			VC	52.69725	
1209	197.81	FO	196.1	225			VC	20.39608	1 in 13
9903	195.48	FO	194.09	150			VC	60.16644	1 in 63
1504	198.83	CO	196.07	225			VC	50.36563	1 in 68
1504	198.83	CO	196.07	225			VC	50.36563	1 in 68
4104	213.14	CO	210.21	450			VC	37.58989	1 in 125
1318		FO		100			VC	8.732216	
0115		FO	0	225			VC	21.14297	
0115		FO	0	225			VC	21.14297	
0120		SW	0	225			VC	10.26624	
1106		SW	0	225			VC	26.20843	
1202	203.71	FO	201.74	150			VC	52.88667	1 in 10
1103		FO	0	150			VC	17.20384	
0108	194.21	SW	189.63	375			VC	85.17245	1 in 16
0903	200.02	SW	198.36	150			VC	3.162278	
9104		SW	0	225			VC	32.59078	
9104		SW	0	225			VC	32.59078	
2903	211	FO	209.35	150			VC	7.81025	1 in 27
0902	199.21	SW	196.99	375			VC	23.76973	1 in 113
0902	199.21	SW	196.99	375			VC	23.76973	1 in 113
1401	202.25	CO	198.65	225			VC	30.88689	1 in 13
4905		CO		100			VC	15.95067	
4304	218.31	CO	215.85	225			VC	48.76858	1 in 168
2404	202.78	SW	201.3	225			VC	40.49691	1 in 9
1201	203.82	SW	202.02	150			VC	105.513	1 in 11
1308		FO		150			VC	9.845582	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
4406		CO	0	225			VC	61.86609	
0505	192.44	CO	188.01	750			CO	13.0384	1 in 29
0505	192.44	CO	188.01	750			CO	13.0384	1 in 29
1319		FO		100			VC	1.541295	
9108		SW	0	225			VC	30.16409	
9108		SW	0	225			VC	30.16409	
1101		FO	0	150			VC	19.10189	
0114		FO	0	225			VC	15.33782	
9002	195.84	FO	193.04	225			VC	38.11824	1 in 60
9002	195.84	FO	193.04	225			VC	38.11824	1 in 60
3203	213.33	SW	209.84	225			VC	68.8186	1 in 47
3401	209.79	CO	205.2	225			VC	83.21658	1 in 112
3401	209.79	CO	205.2	225			VC	83.21658	1 in 112
3201	214.33	CO	210.89	225			VC	36.68787	
1403	197.11	CO	195.02	225			VC	53.66563	1 in 49
1403	197.11	CO	195.02	225			VC	53.66563	1 in 49
9301	194.48	CO	181.39	1500			CO	115.5509	1 in 206
9301	194.48	CO	181.39	1500			CO	115.5509	1 in 206
4401	217.02	CO	212.96	225			VC	22.73296	
4101	213.65	CO	211.87	150			VC	23.08679	1 in 42
9407		CO	0	225			VC	29.7519	
9407		CO	0	225			VC	29.7519	
3202	213.77	CO	211.35	225			VC	67.64982	1 in 26
4206	216.69	CO	214.83	225			VC	33.73426	1 in 39
0503	192.55	CO	187.5	750			CO	21.63331	
0503	192.55	CO	187.5	750			CO	21.63331	
4409		CO		150			VC	22.30199	
4409		CO		150			VC	22.30199	
4202	215.67	CO	212.49	450			VC	104.2659	1 in 46
9003	195.17	FO	192.3	225			VC	23.76973	1 in 12
9003	195.17	FO	192.3	225			VC	23.76973	1 in 12
1102		SW	0	225			VC	18.29577	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
4902		CO		100			VC	22.46091	
4105	212.82	CO	209.89	450			VC	51	1 in 124
4205	217.15	CO	213.95	225			VC	31.95309	1 in 52
0002	199.38	FO	196.96	150			VC	29.54657	1 in 28
4903		CO		100			VC	12.22595	
2401	206.42	CO	204.44	225			VC	76.29548	1 in 22
0205	185.72	CO	182.91	600			CO	77.87811	
0205	185.72	CO	182.91	600			CO	77.87811	
5503		CO	0	300			VC	67.37576	
5503		CO	0	300			VC	67.37576	
1301	200.6	SW	198.98	225			VC	26.40076	1 in 43
0502	193.49	CO	189.25	450			VC	20.22375	1 in 63
0119		FO	0	150			VC	12.23315	
3206		CO		100			VC	43.11038	
0904	201.2	SW	199.66	150			VC	7.071068	
4204	216.28	SW	212.86	450			VC	12	1 in 34
1203	201.65	SW	199.53	225			VC	23.76973	1 in 18
2207		FO		0			VC	8.988325	
0911		FO		100			VC	6.194769	
2213		FO		0			VC	2.142111	
2208		FO		0			VC	6.496096	
2205	211.39	CO	208.74	225			VC	34.65545	1 in 18
1001	199.39	SW	198.04	150			VC	33.24154	1 in 69
4303	219.61	CO	215.95	225			VC	13.15295	1 in 188
0912		FO		100			VC	12.0212	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
1211	195.46	FO	193.24	225			VC	65.55151	1 in 42
9901	197.44	SW	195.06	225			VC	30.46309	1 in 33
9901	197.44	SW	195.06	225			VC	30.46309	1 in 33
3906	210.31	FO	208.31	150			VC	52.20153	1 in 37
1206	196.14	SW	194.54	225			VC	17.46425	1 in 11
9006	195.82	SW	193.45	450			CO	37.33631	1 in 61
9006	195.82	SW	193.45	450			CO	37.33631	1 in 61
3403		SW	0	225			VC	34.34529	
3403		SW	0	225			VC	34.34529	
3501		FO	0	150			VC	21.58881	
3501		FO	0	150			VC	21.58881	
4403		FO	0	150			VC	20.0561	
4403		FO	0	150			VC	20.0561	
4402		FO	0	150			VC	23.46422	
4402		FO	0	150			VC	23.46422	
4501		SW	0	225			VC	39.76703	
4501		SW	0	225			VC	39.76703	
3402		FO	0	150			VC	37.38787	
3402		FO	0	150			VC	37.38787	
4305		SW	0	800			CO	60.53682	
3502		FO	0	150			VC	26.39908	
3502		FO	0	150			VC	26.39908	
3504		SW	0	225			VC	9.557177	
3504		SW	0	225			VC	9.557177	
4404		FO	0	150			VC	8.593029	
4404		FO	0	150			VC	8.593029	
4405		CO	0	225			VC	12.67444	
4408		SW	0	225			VC	16.5988	
4408		SW	0	225			VC	16.5988	
3505		SW	0	225			VC	29.09902	
3505		SW	0	225			VC	29.09902	
4407		SW	0	225			VC	33.48756	
4407		SW	0	225			VC	33.48756	
3503		SW	0	225			VC	26.49349	
3503		SW	0	225			VC	26.49349	
2215		FO		100			VC	7.109398	
2214		FO		100			VC	14.70394	
2216		FO		100			VC	1.20137	
0501	192.82	CO	188.92	600			VC	59.8185	1 in 20
0501	192.82	CO	188.92	600			VC	59.8185	1 in 20
1508	192.01	CO	185.83	600			VC	139.3018	
1508	192.01	CO	185.83	600			VC	139.3018	
0301		CO	0	600			VC	96.04166	

LEGEND

Abandoned	Foul	Surface Water	Combined	
				Public Sewer
				Private Sewer
				Section 104
				Rising Main
				Sludge Main
				Overflow
				Water Course
				Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

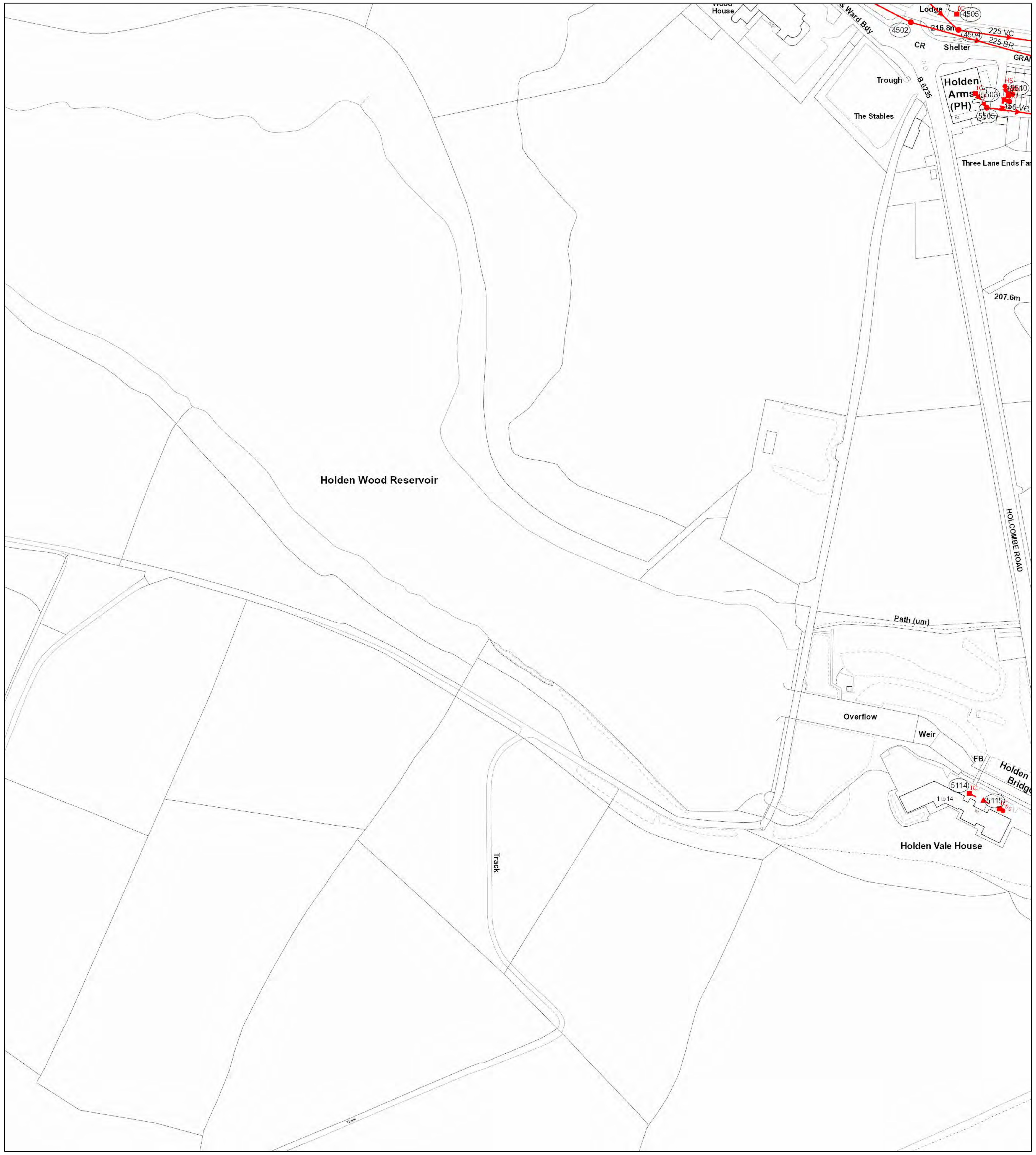
FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD, HASLINGDEN, ROSSENDALE, BB4 4QN

OS sheet Number: SD7822SW
Scale: 1:1250 **Date:** 02/05/2019
Nodes: 244
Sheet: 2 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly



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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4503	217.9	CO	0	225			VC	25.54991	
4503	217.9	CO	0	225			VC	25.54991	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
4501	218.45	CO	214.06	225			BR	75.50783	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

Public Sewer
Private Sewer
Section 104
Rising Main
Sludge Main
Overflow
Water Course
Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

Manhole
Head of System
Extent of Survey
Rodding Eye
Inlet
Discharge Point
Vortex
Penstock
Washout Chamber
Valve
Air Valve
Non Return Valve
Soakaway
Gully
Cascade
Flow Meter
Hatch Box
Oil Interceptor
Summit
Drop Shaft
Orifice Plate

Side Entry Manhole
Outfall
Screen Chamber
Inspection Chamber
Bifurcation Chamber
Lamp Hole
T Junction / Saddle
Catchpit
Valve Chamber
Vent Column
Vortex Chamber
Penstock Chamber
Network Storage Tank
Sewer Overflow
Ww Treatment Works
Ww Pumping Station
Septic Tank
Control Kiosk

Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular | TR Trapezoidal
EG Egg | AR Arch
OV Oval | BA Barrel
FT Flat Top | HO HorseShoe
RE Rectangular | UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

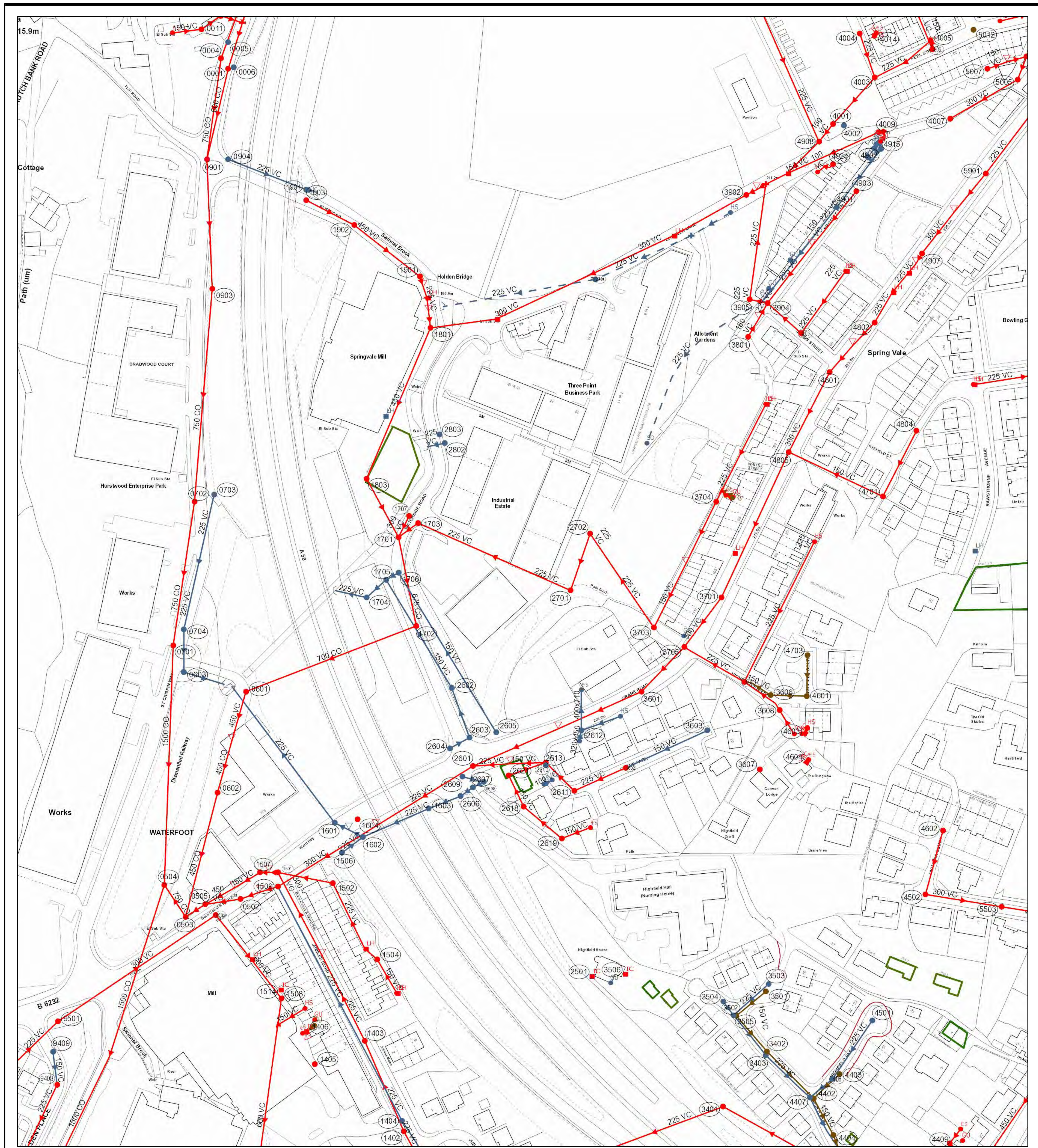
FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD,
HASLINGDEN,
ROSSENDALE,
BB4 4QN

OS sheet Number: SD7722SW
Scale: 1:1250 **Date:** 02/05/2019
Nodes: 15
Sheet: 3 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly



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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
0504	192.84	CO	181.64	1500			CO	199.7771	1 in 908
1601	197.47	SW	194.51	225			VC	96.40021	
1707		CO	0	300			VC	13.41641	
5005	229.94	CO	228.33	300			VC	43.909	1 in 8
2603	202.42	SW	200.33	150			VC	29.73214	1 in 13
4602		CO	0	300			VC	37.21621	
1801	195.68	CO	193.13	450			VC	92.30927	1 in 66
1501	195.07	CO	193.01	300			VC	5	
3601	208.66	CO	205.67	300			VC	51.47815	1 in 14
4801	222.7	CO	220.34	300			VC	50.53711	1 in 17
4903	218.78	CO	217.37	150			VC	39.82462	1 in 19
0603	193.46	SW	192.13	225			VC	24.04163	
3705	210.82	CO	208.05	300			VC	34.65545	1 in 15
1402	199.58	CO	196.27	225			VC	55.54278	1 in 46
1402	199.58	CO	196.27	225			VC	55.54278	1 in 46
0011		CO		150			VC	13.40758	
4009		CO		150			VC	56.47344	
4005	235.89	CO	233.57	225			VC	38.09998	
1509	194.89	CO	193.13	300			VC	10.44031	1 in 5
0701	193.69	CO	183.62	1500			CO	135.0926	1 in 68
4001	219.03	CO	217.69	150			VC	12.80625	1 in 4
3904	215.31	CO	213.07	225			VC	10.19804	
1504	198.83	CO	196.07	225			VC	50.36563	1 in 68
1504	198.83	CO	196.07	225			VC	50.36563	1 in 68
0702		CO	0	750			CO	81.88406	
2611	204.82	CO	203.13	225			VC	22.62742	1 in 58
3902	209.89	CO	207.83	300			VC	194.8413	1 in 13
3801	215.13	CO	213.54	150			VC	11.6619	1 in 78
1401	202.25	CO	198.65	225			VC	30.88689	1 in 13
4803	219.41	CO	216.55	225			VC	25.4951	1 in 8
1803	194.69	CO	191.71	675			CO	37.58989	1 in 94
2901	201.14	SW	199.82	225			VC	87.35004	
4502		CO	0	300			VC	43.39665	
4907	228.4	CO	225.42	300			VC	6.818562	1 in 12
2404	202.78	SW	201.3	225			VC	40.49691	1 in 9
0703		SW	0	225			VC	77.87811	
3701	213.24	CO	210.27	300			VC	35	1 in 16
0004	201.04	CO	195.32	750			CO	57.55867	1 in 192
2602	200.28	SW	198.05	150			VC	71.34424	1 in 14
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
4406		CO	0	225			VC	61.86609	
0904	199.58	SW	197.6	225			VC	47.16991	1 in 22
0505	192.44	CO	188.01	750			CO	13.0384	1 in 29
0505	192.44	CO	188.01	750			CO	13.0384	1 in 29
3602	206.24	CO	204.66	225			VC	31.7805	1 in 21
4802	225.29	CO	0	225			VC	17.88864	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
3606	215.52	FO	215.97	150			VC	16.91583	1 in 8
5004	231.82	CO	229.74	300			VC	13.92839	1 in 11
2802	194.37	SW	193.35	225			VC	10.19804	
0901	200.22	CO	195.01	750			CO	73.06161	1 in 79
1904	197.3	SW	195.41	225			VC	5.09902	1 in 28
4902	220.38	SW	217.86	225			VC	41.40048	1 in 23
5901	232.16	CO	229.43	225			VC	28.42534	1 in 14
3401	209.79	CO	205.2	225			VC	83.21658	1 in 112
3401	209.79	CO	205.2	225			VC	83.21658	1 in 112
1403	197.11	CO	195.02	225			VC	53.66563	1 in 49
1403	197.11	CO	195.02	225			VC	53.66563	1 in 49
1704	195.34	SW	192.68	225			VC	18.43909	
4006	235.79	CO	232.66	150			VC	3	
3703	207.03	CO	204.8	225			VC	64.07027	1 in 6
4908	215.85	CO	214.56	225			VC	38.87225	
3603	211.2	SW	210.15	150			VC	50.56679	1 in 10
0704	193.76	SW	192.47	225			VC	24	1 in 73
1902	196.49	CO	194.45	450			VC	47.01064	1 in 152
4703	218.7	FO	216.76	150			VC	22.98298	1 in 29
1702	198.15	CO	191.03	700			CO	102.8834	1 in 278
0503	192.55	CO	187.5	750			CO	21.63331	
0503	192.55	CO	187.5	750			CO	21.63331	
4409		CO		150			VC	22.30199	
4409		CO		150			VC	22.30199	
1502	198.98	CO	195.14	225			VC	31.57531	1 in 16
2701	199.27	CO	197.02	225			VC	94.02127	1 in 20
4601	218.03	FO	215.97	150			VC	20.48128	1 in 10
2609	202.47	SW	200.77	225			VC	12.36932	1 in 206
0602	194.1	CO	189.06	450			CO	72.27724	1 in 65
3905		CO	0	225			VC	65.62012	
2601	202.12	CO	198.54	225			VC	64.66065	1 in 24
2606	201.43	SW	199.08	225			VC	19.31321	1 in 102
5007	233.17	CO	231.49	150			VC	11.7047	1 in 15
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
2607	202.96	SW	200.61	225			VC	8.602325	1 in 6
2702	196.57	CO	193.69	225			VC	33.83785	
2612	206.08	SW	200.8	400			MAC	23	
4701	231.35	CO	228.75	150			VC	58.60034	1 in 5
5503		CO	0	300			VC	67.37576	
5503		CO	0	300			VC	67.37576	
1706	194.83	SW	193	150			VC	8.062258	1 in 403
0502	193.49	CO	189.25	450			VC	20.22375	1 in 63
1701	194.96	CO	191.29	675			CO	50.9902	1 in 212
1903	197.3	CO	194.81	450			VC	30.41381	1 in 87
2604	202.15	SW	200.52	150			VC	12.52996	1 in 78
2605	202.73	SW	201.55	150			VC	105.4751	1 in 13
3605		CO	0	225			VC	39.16828	
0601	193.6	CO	190.42	450			VC	29.12044	1 in 41
4804	232.26	CO	230.24	150			VC	41.59327	1 in 30
1901	196.45	CO	194.11	450			VC	6.324555	1 in 21
4004	233.89	CO		225			VC	26.26247	
2610	204.28	CO	202.73	150			VC	20.0474	1 in 13
1603	200.97	SW	198.76	225			VC	40.31129	1 in 11
1507	194.73	CO	193.84	150			VC	17.49286	1 in 6
1705	194.99	SW	192.84	150			VC	14.86607	1 in 106
3704	214.03	CO	212.1	225			VC	38.91015	1 in 11
1703	194.23	CO	0	225			VC	13.60147	
4805	219.42	CO	217.22	300			VC	90.37699	1 in 13
0001	201.07	CO	195.36	600			CO	52.39275	1 in 291
4003		CO		225			VC	35.12926	
0903	200.16	CO	194.04	750			CO	120.4159	
2608	203.01	SW	200.69	225			VC	6.708204	1 in 112
1602	197.71	SW	195.14	150			VC	8.944272	1 in 22
1404	199.14	SW	196.67	225			VC	149.4122	1 in 44
1404	199.14	SW	196.67	225			VC	149.4122	1 in 44
1506	197.32	SW	195.27	225			VC	15	1 in 214
3403		SW	0	225			VC	34.34529	
3403		SW	0	225			VC	34.34529	
3501		FO	0	150			VC	21.58881	
3501		FO	0	150			VC	21.58881	
4403		FO	0	150			VC	20.0561	
4403		FO	0	150			VC	20.0561	
4402		FO	0	150			VC	23.46422	
4402		FO	0	150			VC	23.46422	
4501		SW	0	225			VC	39.76703	
4501		SW	0	225			VC	39.76703	
3402		FO	0	150			VC	37.38787	
3402		FO	0	150			VC	37.38787	
3502		FO	0	150			VC	26.39908	
3502		FO	0	150			VC	26.39908	
3504		SW	0	225			VC	9.557177	
3504		SW	0	225			VC	9.557177	
4404		FO	0	150			VC	8.593029	
4404		FO	0	150			VC	8.593029	
4408		SW	0	225			VC	16.5988	
4408		SW	0	225			VC	16.5988	
3505		SW	0	225			VC	29.09902	
3505		SW	0	225			VC	29.09902	
4407		SW	0	225			VC	33.48756	
4407		SW	0	225			VC	33.48756	
3503		SW	0	225			VC	26.49349	
3503		SW	0	225			VC	26.49349	
2621		CO		150			VC	22.11072	
2618		CO		150			VC	19.56059	
2619		CO		150			VC	27.92062	
4901	218.38	SW	216.05	225			VC	66.21933	
4924		CO		100			VC	10.51822	
0501	192.82	CO	188.92	600			VC	59.8185	1 in 20
0501	192.82	CO	188.92	600			VC	59.8185	1 in 20
1508	192.01	CO	185.83	600			VC	139.3018	
1508	192.01	CO	185.83	600			VC	139.3018	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined | blue - surface water
brown - foul | purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular | TR Trapezoidal
EG Egg | AR Arch
OV Oval | BA Barrel
FT Flat Top | HO HorseShoe
RE Rectangular | UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD,
HASLINGDEN,
ROSSENDALE,
BB4 4QN

OS sheet Number: SD7822NW
Scale: 1:1250 **Date:** 02/05/2019
Nodes: 157
Sheet: 4 of 6

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SEWER RECORDS

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The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4501	218.45	CO	214.06	225			BR	75.50783	
5501		CO	0	225			VC	73.43537	
5501		CO	0	225			VC	73.43537	
5502		CO	0	300			VC	83.48112	
5502		CO	0	300			VC	83.48112	
0504	192.84	CO	181.64	1500			CO	199.7771	1 in 908
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
9409		SW	0	150			VC	18.80635	
6501	210.24	CO	205.23	300			VC	16.88251	1 in 54
6501	210.24	CO	205.23	300			VC	16.88251	1 in 54
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
9501	194.42	CO	0	300			VC	107.3359	
6505		CO		225			VC	53.55672	
4503	217.9	CO	0	225			VC	25.54991	
4503	217.9	CO	0	225			VC	25.54991	
6504	211.78	CO	205.98	225			VC	12.20243	1 in 18
6504	211.78	CO	205.98	225			VC	12.20243	1 in 18
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
9408		CO	0	225			VC	42.32397	
8405		CO		100			VC	4.571568	
8405		CO		100			VC	4.571568	
8404	201.97	CO	200.55	225			VC	48.0559	1 in 16
8404	201.97	CO	200.55	225			VC	48.0559	1 in 16
8516		FO		100			VC	3.324288	
8516		FO		100			VC	3.324288	
8401	203.57	CO	200.68	300			VC	77.93814	1 in 17
8401	203.57	CO	200.68	300			VC	77.93814	1 in 17
6503	207.85	CO	203.75	300			VC	45.47886	1 in 58
6503	207.85	CO	203.75	300			VC	45.47886	1 in 58
9402	199.51	CO	197.61	225			VC	48.0032	
9402	199.51	CO	197.61	225			VC	48.0032	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
9404	198.46	CO	196.34	225			VC	22.54897	
9404	198.46	CO	196.34	225			VC	22.54897	
8501	206.73	CO	204.67	225			VC	12.02303	1 in 30
8501	206.73	CO	204.67	225			VC	12.02303	1 in 30
7501	206.54	CO	202.95	300			VC	56.98807	1 in 52
7501	206.54	CO	202.95	300			VC	56.98807	1 in 52
6502	209.68	CO	204.91	300			VC	51.92401	1 in 45
6502	209.68	CO	204.91	300			VC	51.92401	1 in 45
8403	199.42	CO	197.34	225			VC	59.93505	1 in 61
8403	199.42	CO	197.34	225			VC	59.93505	1 in 61

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular | TR Trapezoidal
EG Egg | AR Arch
OV Oval | BA Barrel
FT Flat Top | HO HorseShoe
RE Rectangular | UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD,
HASLINGDEN,
ROSSENDALE,
BB4 4QN

OS sheet Number: SD7722NE
Scale: 1:1250 Date: 02/05/2019
Nodes: 59
Sheet: 5 of 6

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SEWER RECORDS

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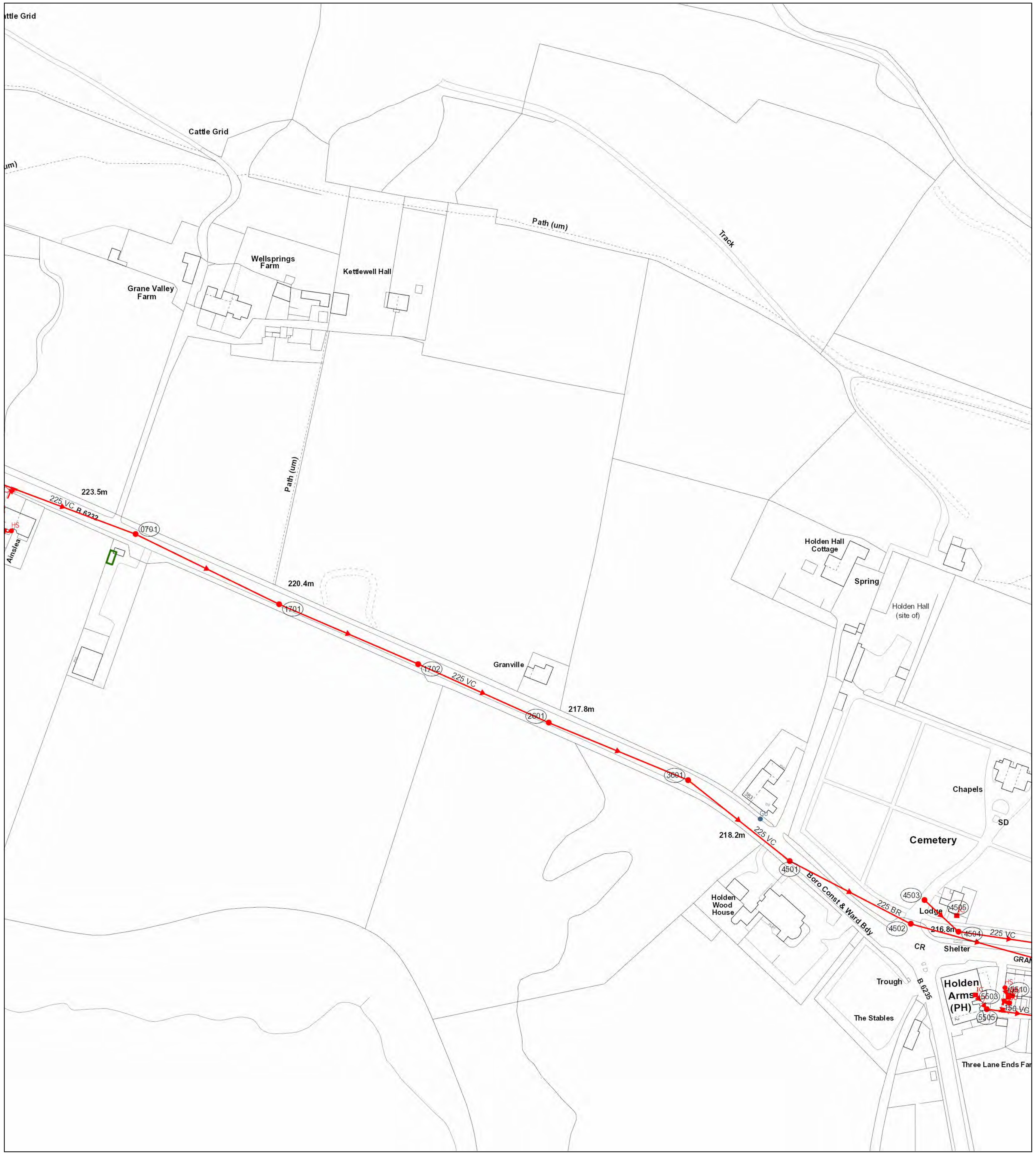

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
1701	220.75	CO	218.52	225			VC	83.91014	
3601	218.14	CO	214.98	225			VC	71.95094	1 in 79
1702		CO	0	225			VC	79.2323	
4501	218.45	CO	214.06	225			BR	75.50783	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
4504		CO	0	225			VC	57.35257	
2601	217.92	CO	216.18	225			VC	83.68827	1 in 79
4503	217.9	CO	0	225			VC	25.54991	
4503	217.9	CO	0	225			VC	25.54991	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
4502	217.21	CO	215.85	225			BR	77.55035	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
5505		CO		150			VC	34.93373	
0701		CO	0	225			VC	88.56553	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

Public Sewer
Private Sewer
Section 104
Rising Main
Sludge Main
Overflow
Water Course
Highway Drain

All point assets follow the standard colour convention:
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- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
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- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
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- Vent Column
- Vortex Chamber
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- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
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- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
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OV Overflow

SEWER SHAPE

CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square

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RP Reinforced Plastic Matrix
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CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

FIERCE PC LTD UNIT 2 THE COURTYARD GRANE ROAD,
HASLINGDEN,
ROSSENDALE,
BB4 4QN

OS sheet Number: SD7722NW
Scale: 1:1250 **Date:** 02/05/2019
Nodes: 20
Sheet: 6 of 6

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SEWER RECORDS

United Utilities
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Megan Berry

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 11 June 2019 15:31
To: Megan Berry; Wastewater Developer Services
Subject: RE: Grane Road, Haslingden - UU PREDEVELOPMENT ENQUIRY - 4200026285

Follow Up Flag: Follow up
Flag Status: Completed

Dear Customer

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate. The connection(s) to the public sewer can be at a point(s) convenient to yourself

Surface water from this site should drain to either soak away or directly to watercourse. Discharge rates and consents must be discussed and agreed with all interested parties.

If you require any further guidance please follow http://www.unitedutilities.com/builders-developers.aspx

If you need a make further enquiry relating to this matter please send your enquiry to WastewaterDeveloperServices@uuplc.co.uk Please quote your DEXXXX/42XXXXXXX/GEXXXX reference number

Please Note:- enquiries sent to any other United Utilities e-mail address will be deleted.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimatley inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

http://www.unitedutilities.com/connecting-public-sewer.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, Planning Conditions and local flood authority guidelines, we would recommend that you laise and make suitable agreements with the relevant statutory bodies.

Regards

Developer Services and Planning

From: Megan Berry
Sent: 28 May 2019 10:17

To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Grane Road, Haslingden - UU PREDEVELOPMENT ENQUIRY. Pro-forma attached.

UU PREDEVELOPMENT ENQUIRY. Pro-forma attached.

To Whom It May Concern,

We are currently preparing a Flood Risk Management Assessment and Drainage Management Strategy to support a residential planning application on land off Grane Road in Haslingden. As part of the preparation, a drainage management strategy has been devised and at this stage we are seeking to begin discussions with UU with regards to the proposed foul water: attached is the pre-application advice form with supporting information as required.

Surface Water:
Surface water discharge options have been assessed in accordance with the sustainable drainage hierarchy. Based on the cohesive ground conditions identified as part of this assessment it can be considered that infiltration is not likely to offer a viable drainage solution for the proposals. Soakaway Testing to BRE365 may be undertaken to evidence that discharge to ground will not be a viable solution in accordance with the Local Planning Authority's and United Utilities requirements.

The next method in the hierarchical approach should be to discharge to watercourse, the nearest watercourse to site is the Ordinary Watercourse which bisects the site and discharges into the pond to the south. this watercourse/pond network is understood to discharge into the Main River network (Odgen/Swinnel Brook). At present the site is understood to naturally drain to the onsite watercourse network/offsite pond directly or via the onsite watercourse. The proposals would therefore be to mimic this situation and form a new formal connection(s) to the watercourse/pond network to serve the proposals. Given the onsite ground levels and location of the Ordinary Watercourse crossing the site it is likely that at least 2no. outfalls will be required to accommodate the proposals. There are currently no proposals to connect surface water run-off from the development site into the neighbouring sewer network.

Foul Water:
Review of UU sewer records identify there to be a foul water compatible sewer in close proximity to the development site including a public combined sewer in Grane Road and a public combined sewer within Holcombe Road. The site is mainly undeveloped at present, and there are no known formal foul water flows currently discharging offsite. Due to the exiting onsite levels a pumped foul water solution will be required to deal with flows generated onsite. A pumping station is shown on the layout in the south-eastern corner. The proposals are therefore to discharge foul water generated onsite via a rising main to either to the public combined system to the south (MH.5101) or if this is not feasible following discussion with UU then to the public foul water system to the north (MH.4502).

Detailed design is required to confirm that a single foul water connection will be achievable as there are multiple services and below ground systems which already cross the site including the culverted watercourse and gas main which would need to be crossed to serve the site. Based on the proposals for the construction of approximately 150no. residential units the approximate peak foul water flows generated by the development are 6.9l/s. This is based on 4000 litres per dwelling per 24 hours; the guidance contained within Sewers for Adoption (SfA).

We are therefore seeking to identify United Utilities preferred point of connection and to confirm any constraints, hopefully the summary above and the attached are of assistance and allow agreement in principle to be given, do not hesitate to contact me on the details below should you require any further assistance.

Kind Regards

Megan Berry BSc(Hons) GradCIWEM
Graduate Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY
Chester +44 (0)1244 289041

www.betts-associates.co.uk

CIVIL | STRUCTURAL | GEO-ENVIRONMENTAL | HYDROLOGY | FLOOD RISK MANAGEMENT
SUDS | STRUCTURAL SURVEYS | PARTY WALL DUTIES | INFILTRATION | GEOTECHNICAL

APPENDIX D: LPA/LLFA CORRESPONDENCE

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Megan Berry

From: Suds <suds@lancashire.gov.uk>
Sent: 02 May 2019 11:57
To: Megan Berry
Subject: 2.5.19 172025 FW: Historical Flood Risk Information
Attachments: LLFA Pre application Guidance & ToCs.pdf; Pre-application form.dotx; WARNING-9d5e236b442c4ef0b7e289d703da6cf5.txt

Follow Up Flag: Follow up
Flag Status: Completed

Good morning Megan

Thank you for your enquiry which has been logged as CRNo 172025

Unfortunately without a pre-application query we will be unable to provide site specific information and will have to make our comments to the Local Planning Authority when a consultation is requested.

Our Pre planning application can be found on the following link:
http://www.lancashire.gov.uk/business/business-services/pre-planning-application-advice-service/pre-planning-application-flood-risk-and-land-drainage-advice-service/

If you would like us to discuss your proposed development please complete and return the attached application form, together with the supplementary information as specific on the form. Once received, we will then review the application and issue an invoice for the amount required.

I have attached the application form some guidance notes to help you with your application which also include our charging structure.

Kind Regards

Emma Catterall
Flood Risk Technical Support Officer
Community Services
Lancashire County Council
T:
W: www.lancashire.gov.uk

Megan Berry

From: Ian Lunn
Sent: 02 May 2019 14:31
To: Megan Berry
Subject: Flood Risk/Drainage information, Grane Road, Haslingden

Dear Ms Berry,

Thank you for your recent e-mail concerning the above. Unfortunately, the Planning Service does not have any significant information of the type you have requested. However, I have checked the Environment Agency's Flood Map and this indicates that the site is located wholly within Flood Zone 1 which suggests that there is a relatively low risk of it flooding. I think that you may have more success obtaining the information that you require by contacting the Environment Agency, United Utilities and/or Lancashire County Council directly as they primarily deal with flood risk and drainage matters. They can be contacted respectively on 03708 506 506 enquiries@environment-agency.gov.uk 0901 545 0175 (United Utilities) and 0300 123 6780 enquiries@lancashire.gov.uk

I am sorry that I cannot be more helpful,

Yours Sincerely
Ian Lunn

From: Megan Berry
Sent: 02 May 2019 08:52
To: Ian Lunn
Subject: Historical Flood risk Information

F.A.O Flood Risk, Drainage and/or Planning department

To whom it may concern,

Grane Road, Haslingden

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the above site (location plan attached), including details of historical flooding and any predicted flood water levels as this would be greatly appreciated for us to undertake our assessment of the development site. If there are any specific requirements that you require in a scope of works for this site please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards

Megan Berry BSc(Hons) GradCIWEM
Graduate Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY
Chester +44 (0)1244 289041

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Rossendale Borough Council, Futures Park, Bacup, Rossendale, OL13 0BB
Website Address: www.rossendale.gov.uk
Twitter: @RossendaleBC
Facebook: Rossendale Borough Council
Telephone 01706 217777

APPENDIX E: LOCATION PLAN

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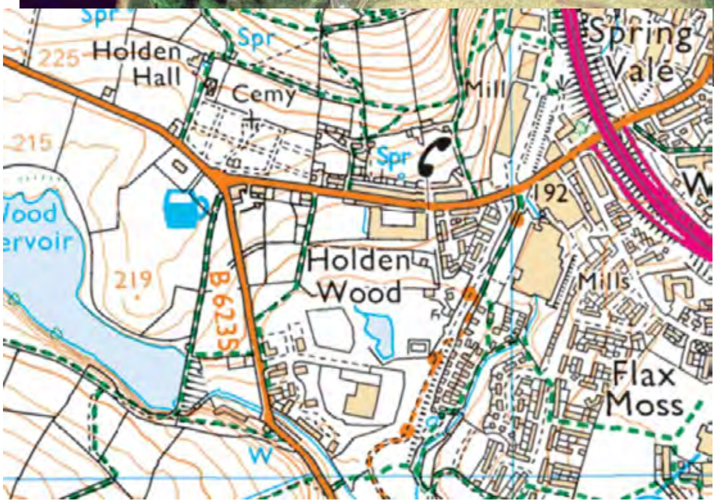
LOCATION PLAN

Holcombe Road, Haslingden



OS X (Eastings)	377685
OS Y (Northings)	422441
Nearest Post Code	BB4 4QN
Lat (WGS84)	N53:41:53 (53.697926)
Long (WGS84)	W2:20:22 (-2.339455)
Lat,Long	53.697926,-2.339455
Nat Grid	SD776224 / SD7768522441
mX	-260426
mY	7078692

APPENDIX F: TOPOGRAPHIC SURVEY

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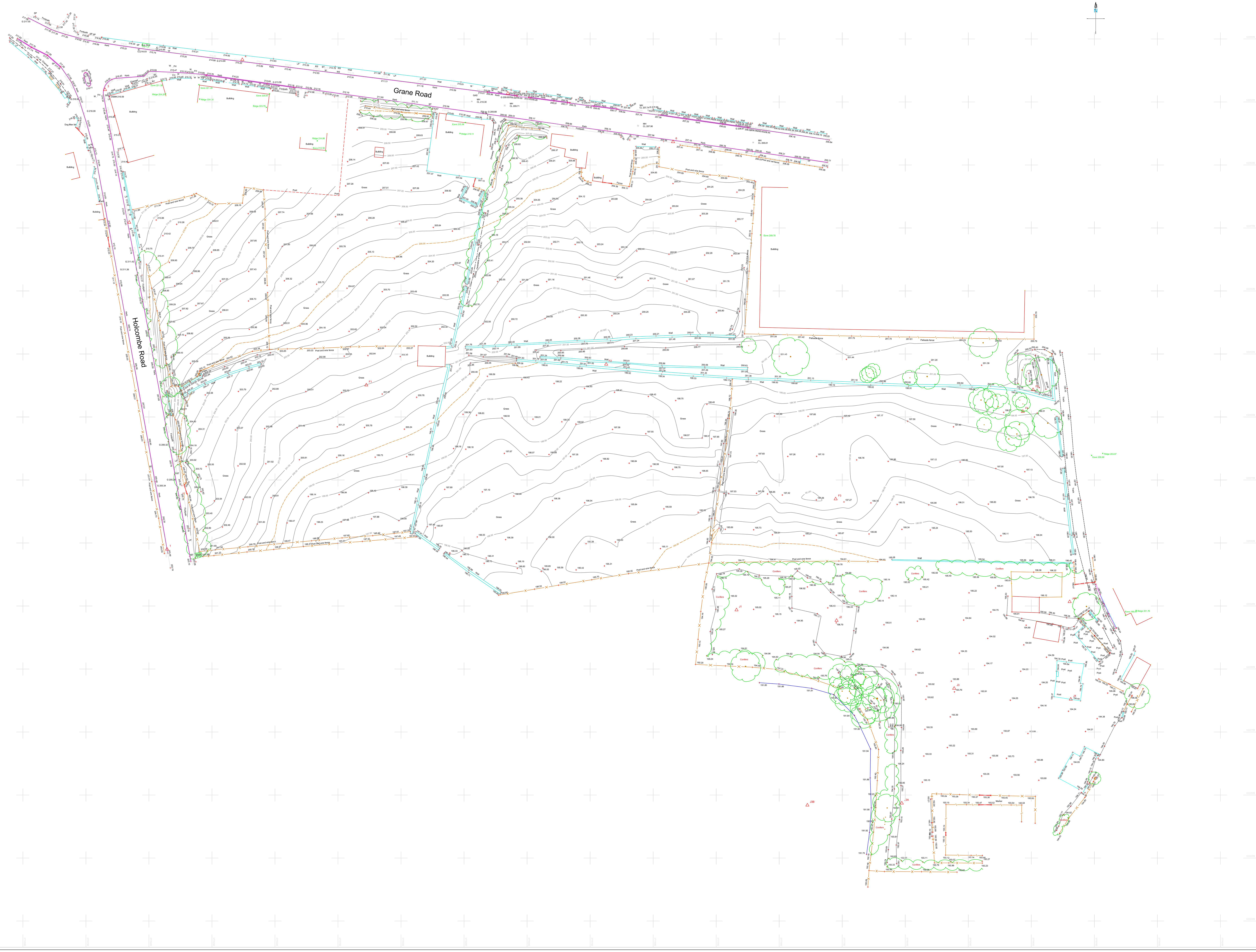

Members of

Legend

AV	Air valve
BH	Borehole
BOL	Bollard
BT	British Telecom cover
CATV	Cable television cover
CL	Cover level
DPC	Damp proof coarsing level
Earth/ER	Earthing rod
ELEC	Electric cover
EP	Electricity pole
Fence I/R	Iron railing fence
Fence C/B	Closeboard fence
Fence C/P&P	Concrete post & panel fence
Fence Pa	Palisade fence
Fence P/W	Post and wire fence
Fence P/R	Post and rail fence
Fence P/P	Post and panel fence
FFL	Finished floor level
F/B	Flower bed
FH	Fire Hydrant
G	Gulley
GAS	Gas cover
IC	Inspection chamber
IL	Invert level
INV	Invert level
LP	Lamp post
LT	Light
MH	Manhole
Nynex	Telecommunications cover
OSBM	Ordnance Survey Bench Mark
PTM	Parking ticket machine
RE	Rodding eye
RS	Road sign
R/t wall	Retaining wall
SBX	Switch box
SP	Sign post
SPS	Safety playing surface
ST	Stop tap
SV	Service valve
TBM	Temporary Bench Mark
TP	Telegraph pole
TRP	Trial pit
TRL	Traffic light
W	Water cover
WL	Water level
WO	Wash out

SURVEY STATIONS

Name	Easting	Northing	Height
1	377507.174	422347.512	203.618
2	377492.211	422477.199	212.716
3	377482.593	422529.877	216.486
4	377537.052	422541.766	214.333
5	377642.371	422528.404	209.633
6	377707.882	422509.194	207.475
F1	377586.229	422412.657	202.219
F2	377681.361	422420.902	201.582
F3	377772.381	422367.457	197.543
F4	377846.614	422402.187	198.436
F5	377850.665	422410.802	202.058

KEY DIMENSIONS SHOULD BE CHECKED ON SITE
BEFORE COMMENCEMENT OF ANY WORKS

NOTE

Grid and level related to OS
using GPS data

Amendments

	Date	Surveyor	Description of work
A	16/01/13	RH	Extra survey added

Powers & Tiltman Ltd
Land Surveyors

Meridian House
58/60 Hillside Road, Frodsham, Cheshire WA6 6AG
Tel: 01928 734473 Fax: 01928 735573
Email: mail@powerstiltman.co.uk
www.powerstiltman.co.uk

Land Off Grane Road

Haslingden

Topographical Survey

Client : Taylor Wimpey NW

Surveyed By : DG	Date : 07/01/13	Scale
Drawn By : DG	Drawing No : 6580/01	1:500
Checked By : NS	Amendment : A	

APPENDIX G: PROPOSED PLANNING LAYOUT

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Legend

- Denotes affordable home (for tenure refer to AH-01)
- Existing tree to be retained (if possible)
- Existing tree to be removed
- Homes requiring acoustic glazing. Note that the majority of the plots require improved ventilation (refer to REC report ref AC106724-1 for detail)

Refer to MB-01 for details of boundary treatments and materials.

Indicative tree planting shown, refer to Randall Thorp plans for details.

For ecological mitigation refer to TEP reports.

Schedule

		number	%
Affordable (PH)			
PA25	Canford	**11**	8%
PA34	Gosford	**11**	8%
NA32	Byford	**10**	8%
PT36	Easedale	**7**	5%
	subtotals:	***39***	*30%*
Private Mews			
PT36	Easedale	**7**	5%
PA34	Gosford	**12**	9%
NA32	Byford	**14**	11%
NB31	Braxton	**16**	12%
	subtotals:	***49***	*37%*
Private Detached			
PD30	Amersham	**7**	5%
PA42	Lydford	**9**	7%
NT41	Trusdale	**12**	9%
ND40	Coltham	**8**	6%
NA44	Manford	**7**	5%
	subtotals:	***43***	*33%*
Totals		131	

DRAWING NUMBER: 1036-PL-01

SITE CODE: -

DATE: JULY 19

SCALE 1:500 @ A0

TITLE PLANNING LAYOUT

Taylor Wimpey

Taylor Wimpey Manchester
1 Lumsdale Road
Stretford
Manchester M32 0UT

Holcombe Road
HASLINGDEN

REV -

APPENDIX H: DRAINAGE INVESTIGATION PLANS

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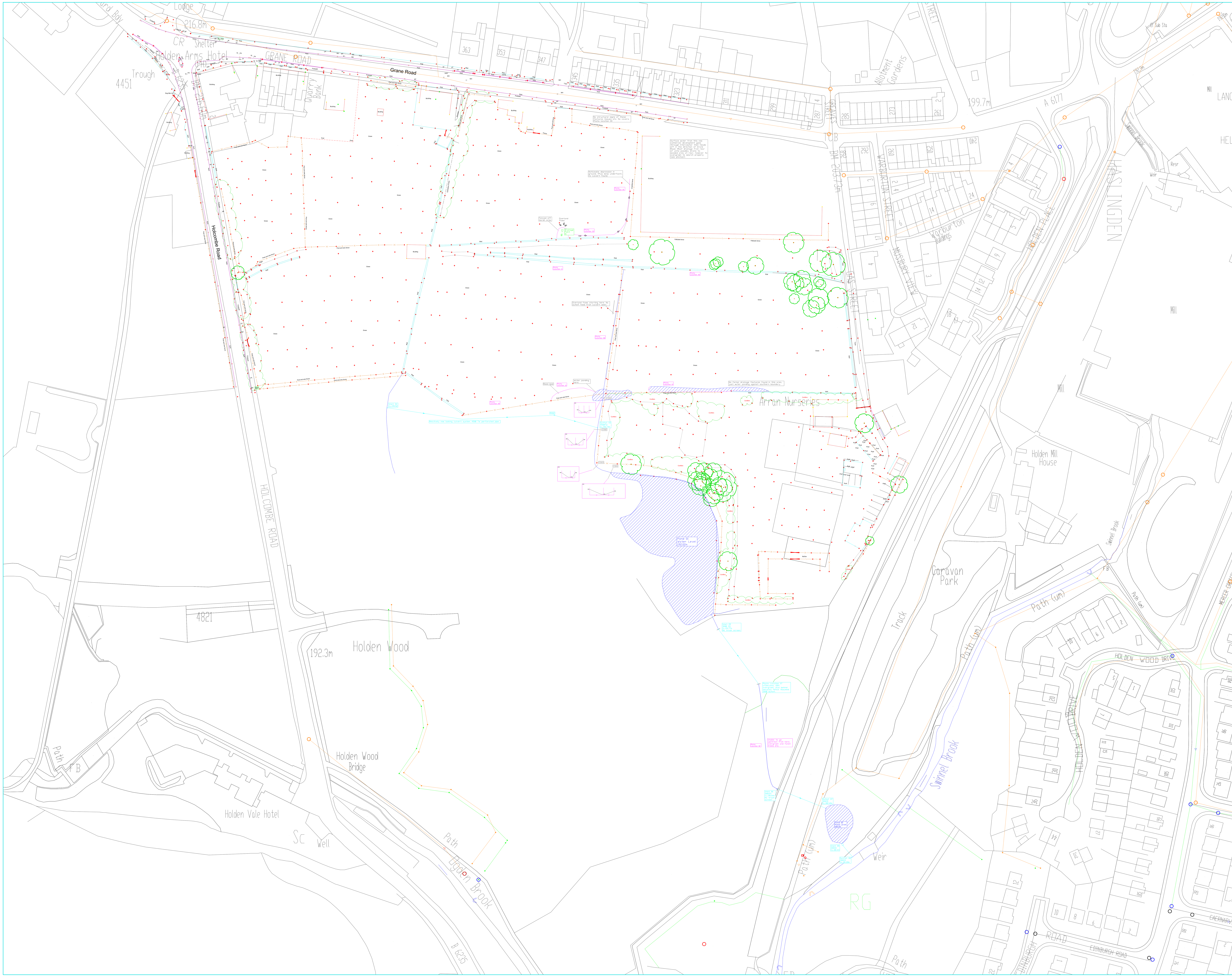


Legend/Notes:

- Combined Sewer
- Foul Sewer
- SW Sewer
- Assumed Sewer (Not Proven)
- Rising Main
- Highway Drainage
- Culvert Sewer
- Open Water Course
- RWD Rain Water Down Pipe
- FDP Foul Down Pipe
- CDP Combined Down Pipe
- GDP Grey Water Down Pipe
- Highway Gully
- Septic Tanks

smas CHAS BUILDER'S PROFILE

INVEK SURVEYS LTD

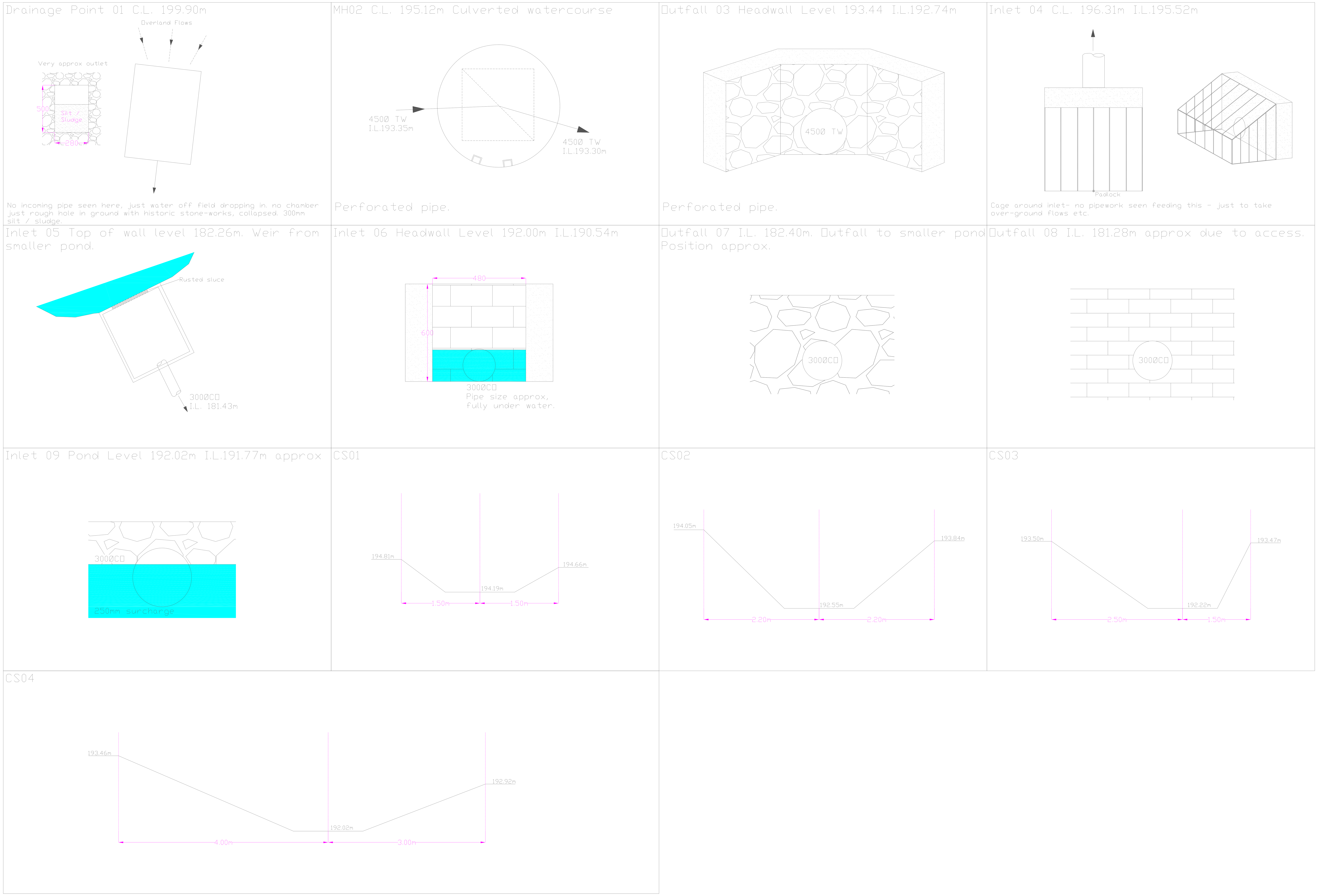
Warrington Business Park, Long Lane, Warrington, Cheshire, WA2 8TX
Tel: 01925 244376 Fax: 01925 241517
Email: kevin@invek.com – www.invek.com

Client
Betts Hydro

Drawing Title
Grane Road, Haslingden
Drainage Layout

Scale(s)	N.T.S	Drawn	PW
Date	19.06.19	Checked	RD
Job Number	1494	Approved	KN

Sheet Size, Drawing Number & Revision
A1_1494/01_Rev_01



Legend/Notes:

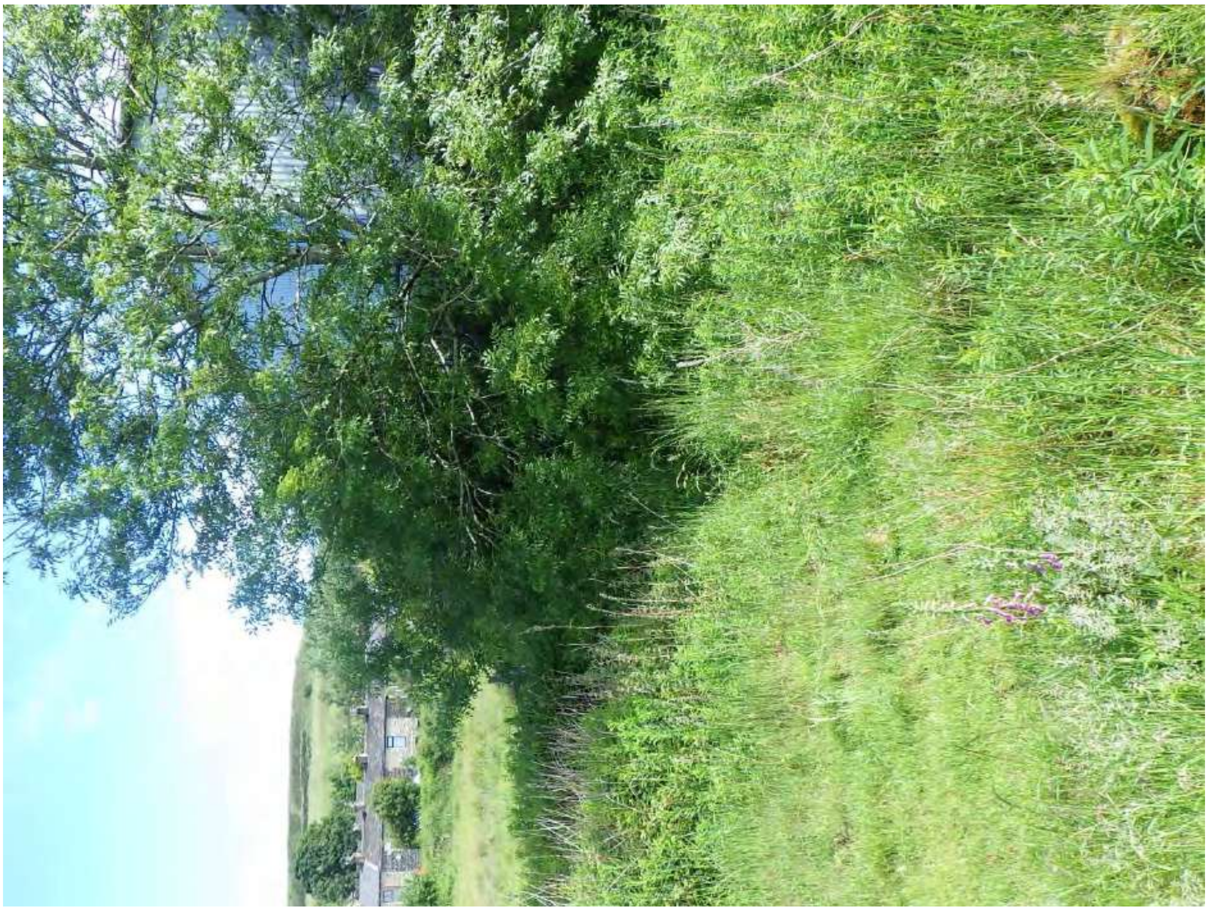
N

smas CHAS BUILDER'S PROFILE

INVEK SURVEYS LTD.

Warrington Business Park, Long Lane, Warrington, Cheshire, WA2 8TX
Tel: 01925 244376 Fax: 01925 241517
Email: kevin@invek.com – www.invek.com

Client	Betts Hydro
Drawing Title	Grane Road, Haslingden Structures & Cross Sections Layout
Scale(s) N.T.S	Drawn PW
Date 19.06.19	Checked RD
Job Number 1494	Approved KN
Sheet Size, Drawing Number & Revision	A1_1494/02_Rev_01



APPENDIX I: SPFRA/SFRA PLANNING EXTRACTS

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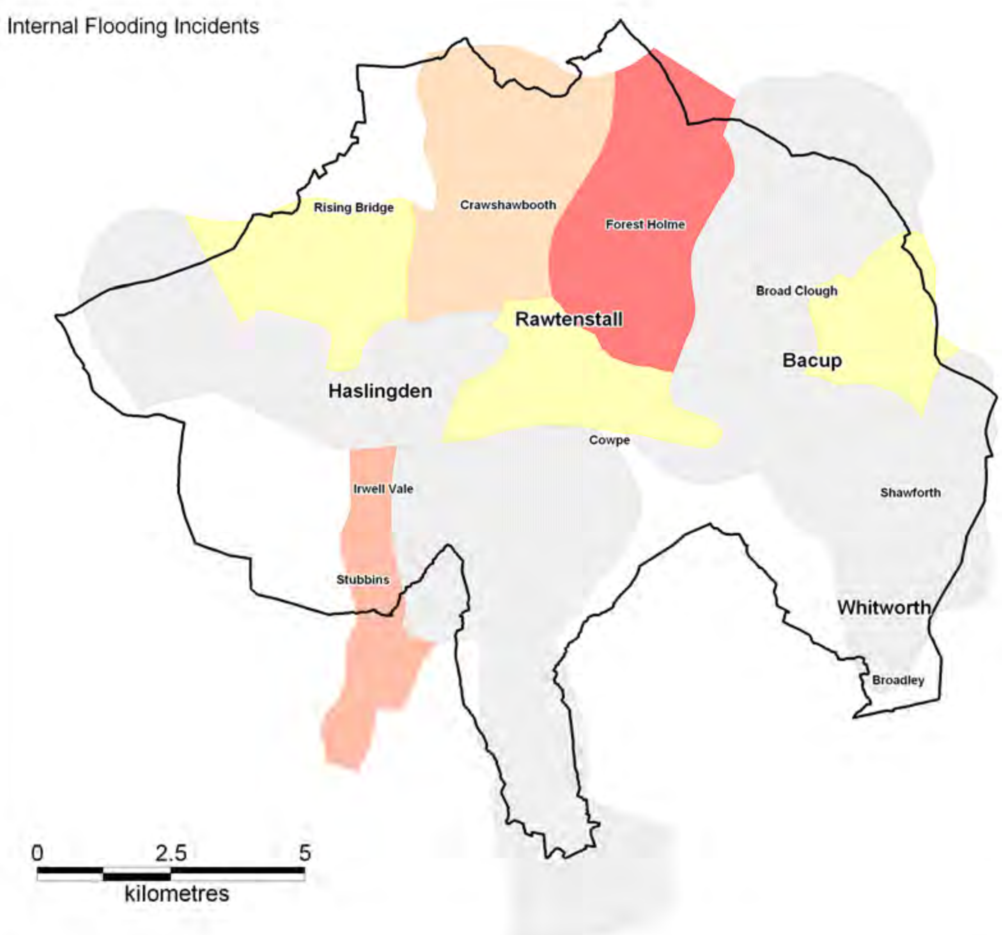
Rossendale Borough Council
Level 1 SFRA

United Utilities
DG5 - Sewer Flooding Data



DG5 Data
Number of Occurrences

- 0
- 1
- 2
- 3
- 4
- 5

The maps show United Utilities DG5 data at a four digit postcode scale.

The DG5 register does NOT indicate areas or properties at risk of flooding, it is a register of the areas / properties that have flooded during a six month period (February - July 2008) as a result of hydraulic inadequacy of the sewer network and reported to UU.

It is important to note that maintenance work may have been undertaken by UU since the flood incident(s) occurred.

More detailed information should be requested from UU at Level 2 SFRA stage, or for site-specific FRA's.

FT		AW	
D121645	FINAL	NTS	Nov 2008
D121645/UU DG5			

Rossendalealive
BOROUGH COUNCIL

Scott Wilson
Mansfield i-Centre
Oakham Business Park
Hamilton Way
Mansfield
NG18 5BR

3 Local Flood Risk within Lancashire

In this section of the strategy we describe the level of flood risk across Lancashire from local sources and how it varies across the area.

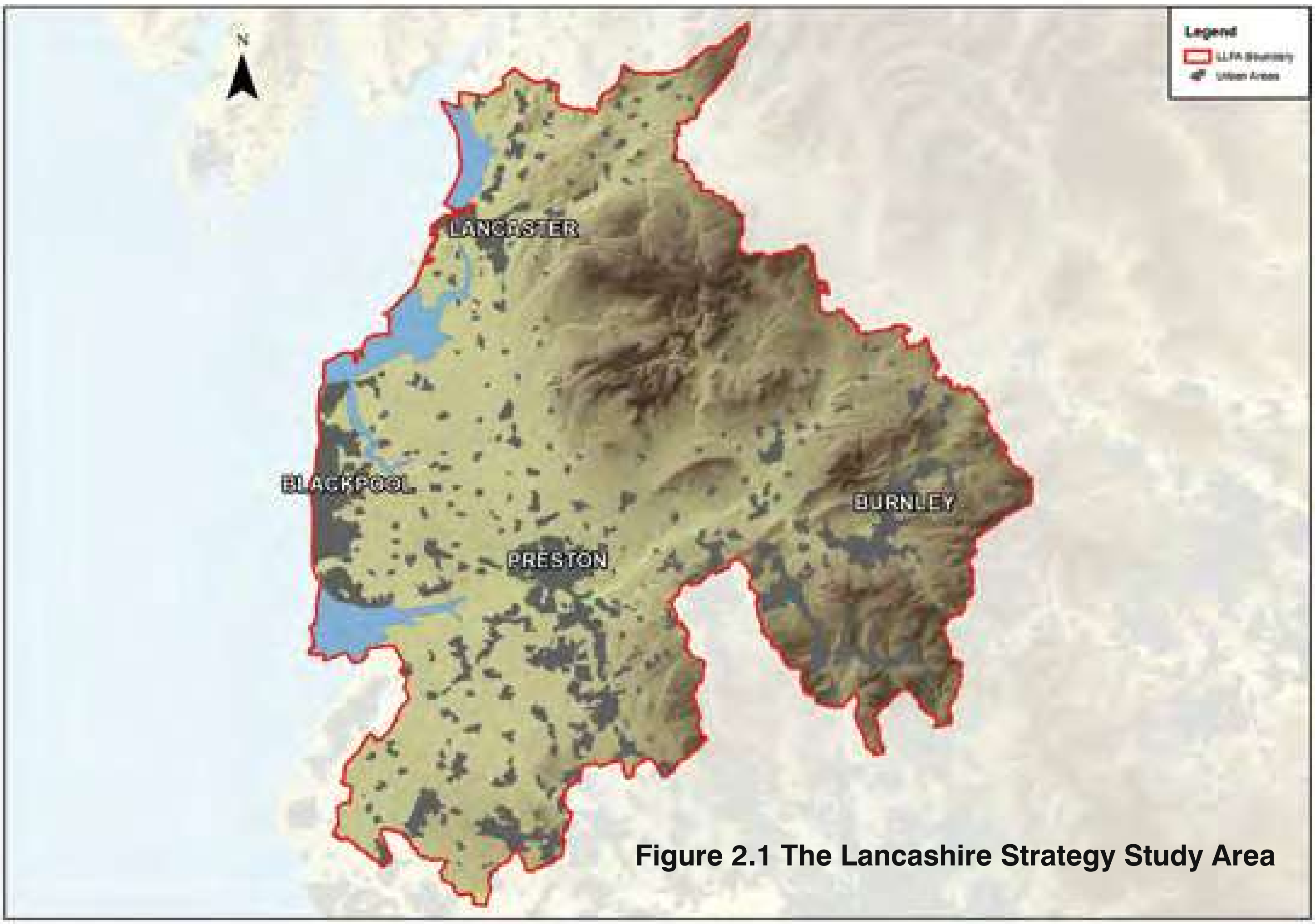
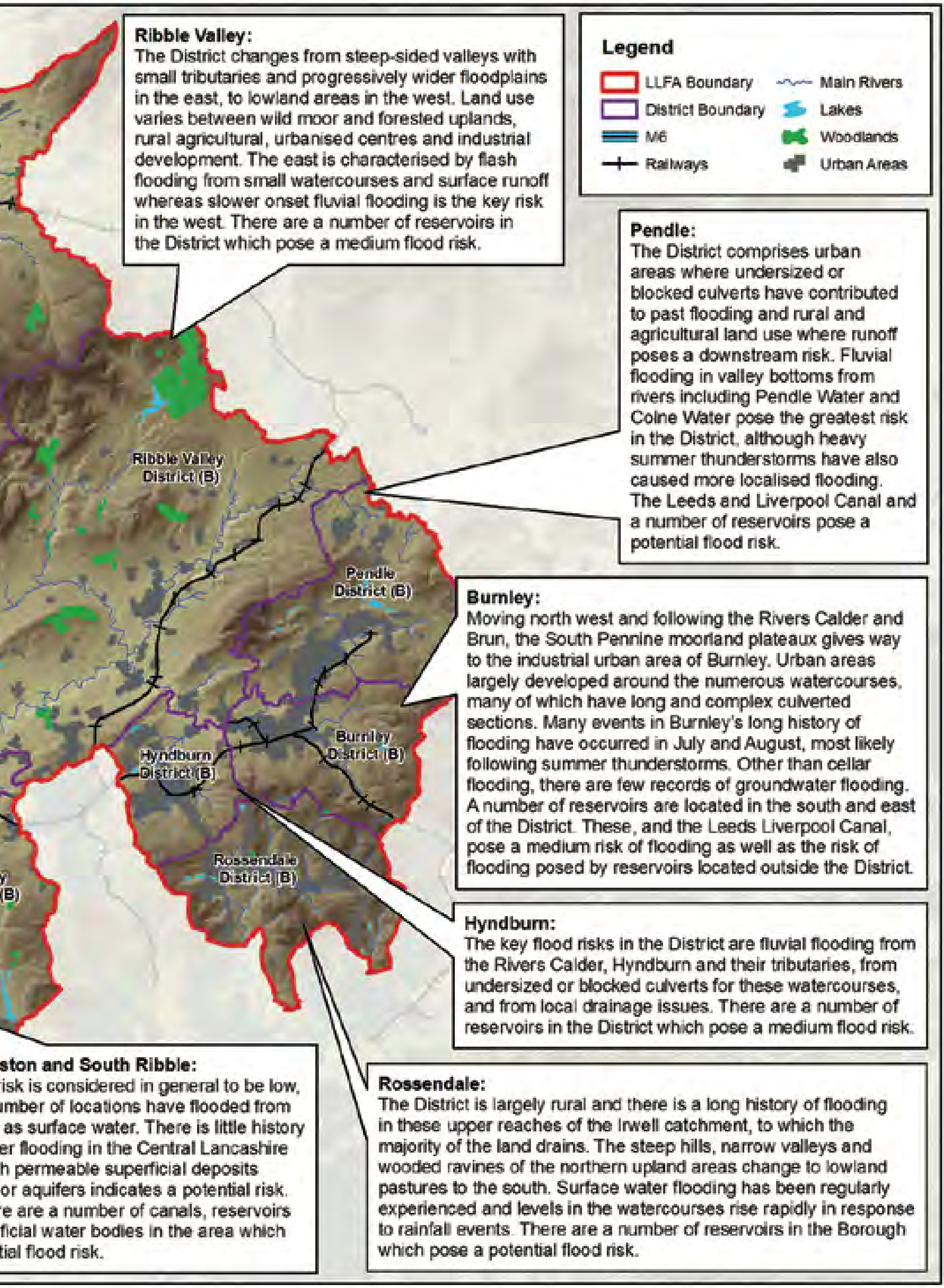


Figure 2.1 The Lancashire Strategy Study Area

3.1 Introduction

Lancashire has experienced historical incidents of flooding in the past and has also suffered the consequences of flooding several times in recent years. Some recent notable events are listed in Box 3.1. These events have resulted in flooding of homes, businesses, agricultural land as well as roads, railways and public services.

Figure 3.2 Local Flood Risk across Lancashire



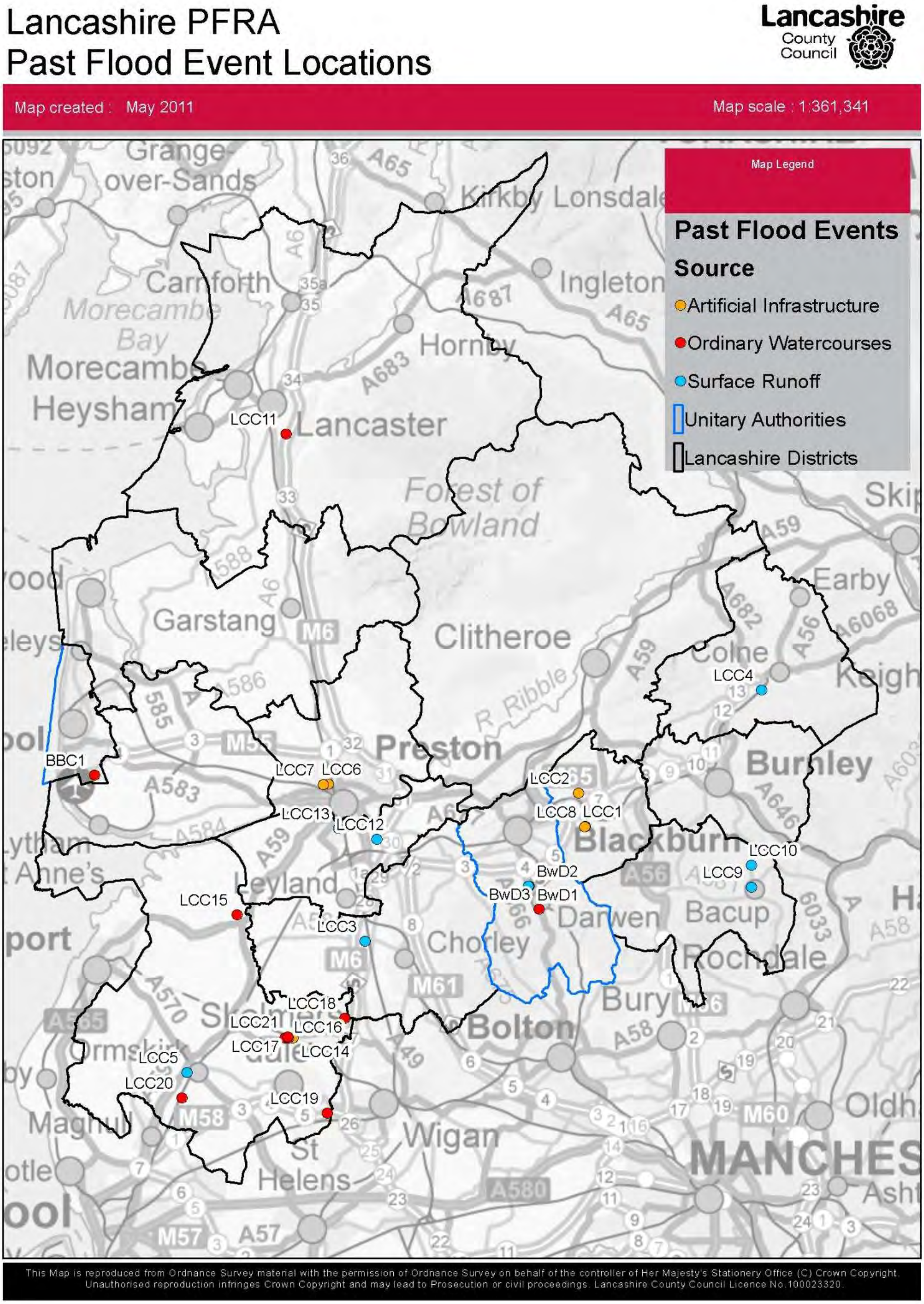


Figure 4.1 – Summary Map of Past Floods

ID	Date	Location	Authority	Source	Watercourse
BwD1	13 August 2004	A666, Darwen, Blackburn with Darwen	Blackburn	Surface Runoff	
BwD2	13 August 2004	Blackburn Road, Earcroft, Blackburn with Darwen	Blackburn	Surface Runoff	
BwD3	12 September 2004	Area north of Epworth Street to Junction Street, Darwen	Blackburn	Ordinary Watercourses	Buryfold Brook
BBC1	16 January 2006	St Nicholas C of E Primary School, School Road, Blackpool	Blackpool	Ordinary Watercourses	Un-named
LCC1	2002	Thwaites Road, Oswaldtwistle	Hyndburn	Drainage	
LCC2	2002	Spring Street, Rishton	Hyndburn	Drainage	
LCC3	10 August 2003	Wigan Road, Euxton, Chorley	Chorley	Surface Water	
LCC4	20 August 2004	Gibfield Road, Colne, Pendle	Pendle	Surface Runoff	
LCC5	05 July 2006	St Annes Road, Ormskirk, West Lancashire	West Lancashire	Surface Runoff	
LCC6	October 2009	Seymour Road, Fulwood	Preston	Artificial Infrastructure	
LCC7	December 2009	Savick Brook, Cadley Bridge, Woodplumpton Road	Preston	Artificial Infrastructure	
LCC8	September 2002	Thwaites Road, Oswaldtwistle Rishton, Hyndburn	Hyndburn	Artificial Infrastructure	
LCC9	August 2004	Market Street, Bacup, Rossendale	Rossendale	Surface Runoff	
LCC10	August 2004	Plantation View, Bacup, Rossendale	Rossendale	Surface Runoff	
LCC11		Newlands Road, Lancaster	Lancaster	Ordinary Watercourses	Trib of Burrow Beck
LCC12		School Lane/Chorley Road, Bamber Bridge	South Ribble	Surface Runoff	
LCC13		Penwortham - Marshalls Brow/ Leyland Road	South Ribble	Surface Runoff	
LCC14		Alder Lane, Parbold	West Lancashire	Artificial Infrastructure	
LCC15		Carr Lane / Gorse Lane, Tarleton	West Lancashire	Ordinary Watercourses	Un-named
LCC16		Burnside, Parbold	West Lancashire	Ordinary Watercourses	Dock Brook
LCC17		Mill Leat, Parbold	West Lancashire	Ordinary Watercourses	Dock Brook
LCC18		Mossy Lea Road, Wrightington	West Lancashire	Ordinary Watercourses	Stars Brook
LCC19		Tontine Road, Upholland	West Lancashire	Ordinary Watercourses	Un-named Drain
LCC20		Town Green Lane, Aughton	West Lancashire	Ordinary Watercourses	Un-named
LCC21		Station Road, Parbold	West Lancashire	Ordinary Watercourses	Dock Brook

Table 4.1 – Summary of Locally Significant Historic Floods in Lancashire – split by LLFA

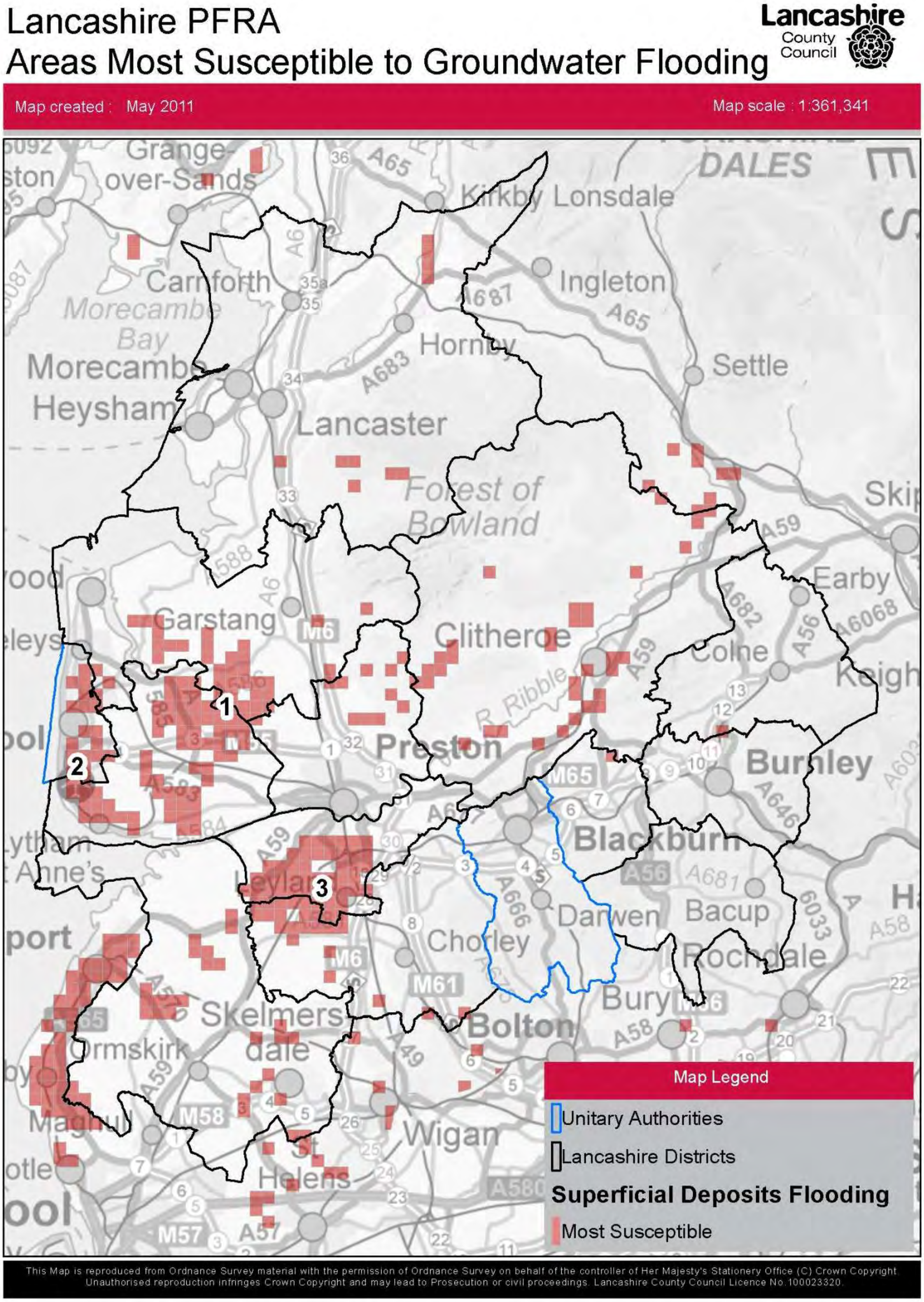


Figure 5.1 – Areas Susceptible to Groundwater Flooding

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APPENDIX J: SURFACE WATER RUN-OFF CALCULATIONS

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HR Wallingford
Working with water

Greenfield runoff estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	
Site name:	GRANE ROAD
Site location:	HASLINGDEN

This is an estimation of the greenfield runoff rate limits that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments", W5-074/A/TR1/1 rev. E (2012) and the SuDS Manual, C753 (Ciria, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site coordinates

Latitude:	53.69781° N
Longitude:	2.33924° W
Reference:	
Date:	2019-05-22 09:25

Methodology	FEH Statistical

Site characteristics

Total site area (ha)	4.47

Methodology

Qmed estimation method	Calculate from BFI and SAAR
BFI and SPR estimation method	Specify BFI manually
HOST class	15
BFI / BFIHOST	0.374
Qmed (l/s)	68.97
Qbar / Qmed Conversion Factor	1.08

Hydrological characteristics

	Default	Edited
SAAR (mm)	1396	1396
Hydrological region	10	10
Growth curve factor: 1 year	0.87	0.87
Growth curve factor: 30 year	1.7	1.7
Growth curve factor: 100 year	2.08	2.08

Notes:

(1) Is Q_{BAR} < 2.0 l/s/ha?

(2) Are flow rates < 5.0 l/s?

(3) Is SPR/SPRHOST ≤ 0.3?

Greenfield runoff rates

	Default	Edited
Qbar (l/s)	74.14	75.18
1 in 1 year (l/s)	64.5	65.41
1 in 30 years (l/s)	126.04	127.81
1 in 100 years (l/s)	154.21	156.38

SURFACE WATER RUN-OFF CALCULATION SHEET

BETTS HYDRO
CONSULTING ENGINEERS

Development	HOLCOMBE ROAD, HASLINGDEN
Project No.	HYD421

Revision	0	Completed by	MB
Date	08.05.19	Checked by	DK

Areas

Total Site	6.120	ha	
Development Area[1]	4.470	ha	
Existing Impermeable	0.000	ha	
Existing Impermeable[2]	0.000	ha	
Existing Pervious	6.120	ha	
Existing Pervious[2]	0.000	ha	
Proposed total impermeable	2.460	ha	55%

Catchment Characteristics

SAAR	1402	mm
SPR	0.53	
BFI	0.374	

i_1	20.3	mm/hr	d_1	25.2	mm
i_{30}	36.6	mm/hr	d_{30}	56.0	mm
i_{100}	45.5	mm/hr	d_{100}	69.6	mm

Run-off Rates

Pre-development

Impermeable	1yr	0.0	l/s
	30yr	0.0	l/s
	100yr	0.0	l/s
	40mm/hr[3]	0.0	l/s
Pervious[4]	1yr	65.4	l/s
	30yr	127.8	l/s
	100yr	156.4	l/s
	QBar[5]	75.2	l/s
Total	1yr	65.4	l/s
	30yr	127.8	l/s
	100yr	156.4	l/s

Post-development (without control)

Impermeable[6]	1yr	138.4	l/s
	30yr	250.0	l/s
	100yr+40%CC	435.0	l/s

Volumes

Pre-development

Impermeable	1yr	0.0	cu.m
	30yr	0.0	cu.m
	100yr	0.0	cu.m
Pervious[4]	1yr	243.9	cu.m
	30yr	593.8	cu.m
	100yr	825.3	cu.m
Total	1yr	243.9	cu.m
	30yr	593.8	cu.m
	100yr	825.3	cu.m

Post-development

Impermeable[6]	1yr	62.0	cu.m
	30yr	137.7	cu.m
	100yr+40%CC	171.2	cu.m

Stormwater Storage Estimates

Based on Greenfield run-off QBar

Microdrainage Quick Storage Estimates (using FEH catchment data)

Return Period	Rate		lower	upper	mean	
1yr	75.2	l/s	96	268	182	cu.m
30yr	75.2	l/s	441	716	578.5	cu.m
100yr+40%CC	75.2	l/s	1007	1549	1278	cu.m

1/ The 'development area' removes areas of POS and/or landscaped areas of the wider site that are to remain as existing.
2/ On occasion the existing impermeable area cannot be evidenced to connect and a reduction is applied.
3/ 50mm/hr is used for BRegs calculations and often used by Water Companies when considering allowable post-development rates of discharge. (Rational Method)
4/ The Greenfield rates and of run-off have been calculated using the UK SUDS Calculator
5/ QBar is the estimated flood flow for the 2.33yr return period event and is often used as a post-development rate restriction.

6/ Post-development run-off is only considered from the impermeable area when the proposed post-development impermeable area >50% in accordance with the EA Guidance Preliminary rainfall runoff management for developments (W5-074/A/TR1/1 rev E (2012).

NB. The catchment characteristics are from the FEH catchment, the UK SUDS Calculator and Microdrainage.
NB. The rainfall intensities and depths are calculated for the 6hr duration rainfall event (peak summer intensity)

Greenfield Runoff Volume

FSR Data

Return Period (years)	100
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.267
Areal Reduction Factor	1.00
Area (ha)	4.210
SAAR (mm)	1402
CWI	124.265
Urban	0.000
SPR	53.000

Results

Percentage Runoff (%)	57.68
Greenfield Runoff Volume (m³)	1700.121

Greenfield Runoff Volume

FSR Data

Return Period (years)	30
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.267
Areal Reduction Factor	1.00
Area (ha)	4.210
SAAR (mm)	1402
CWI	124.265
Urban	0.000
SPR	53.000

Results

Percentage Runoff (%)	55.73
Greenfield Runoff Volume (m^3)	1276.533

Greenfield Runoff Volume

FSR Data

Return Period (years)	1
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.267
Areal Reduction Factor	1.00
Area (ha)	4.210
SAAR (mm)	1402
CWI	124.265
Urban	0.000
SPR	53.000

Results

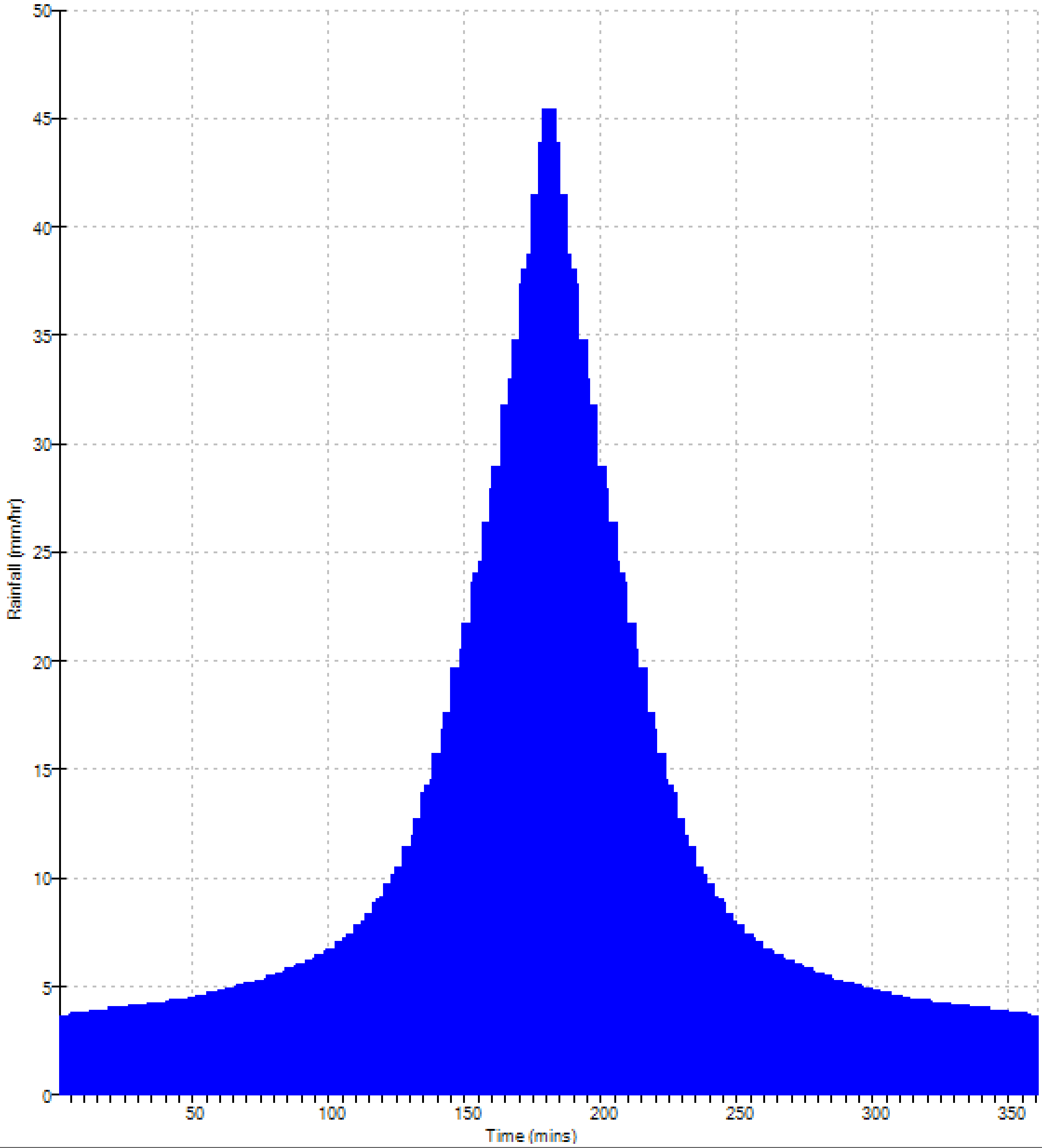
Percentage Runoff (%)	52.82
Greenfield Runoff Volume (m^3)	563.162

Rainfall profile

Storm duration (mins) 360

FEH Data

FEH Rainfall Version	2013
Site Location	GB 377705 422385
Data Type	Point
Peak Intensity (mm/hr)	45.471
Ave. Intensity (mm/hr)	11.600
Return Period (years)	100.0

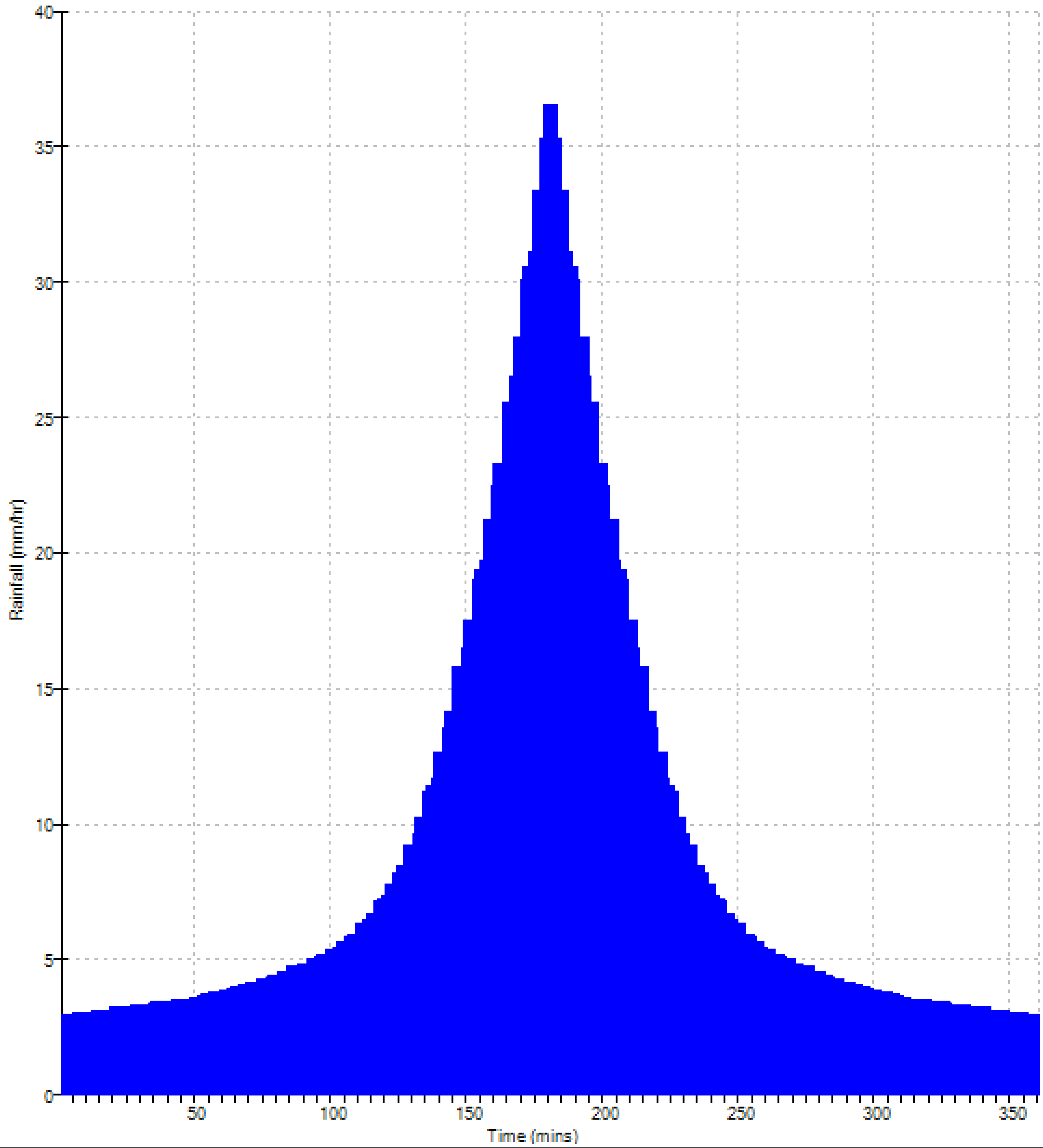


Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY	GRANE ROAD HASLINGDEN	
Date 08/05/2019 File	Designed by MB Checked by DK	
Micro Drainage	Network 2018.1	

Rainfall profile

Storm duration (mins) 360

FEH Data	
FEH Rainfall Version	2013
Site Location	GB 377705 422385
Data Type	Point
Peak Intensity (mm/hr)	36.581
Ave. Intensity (mm/hr)	9.332
Return Period (years)	30.0

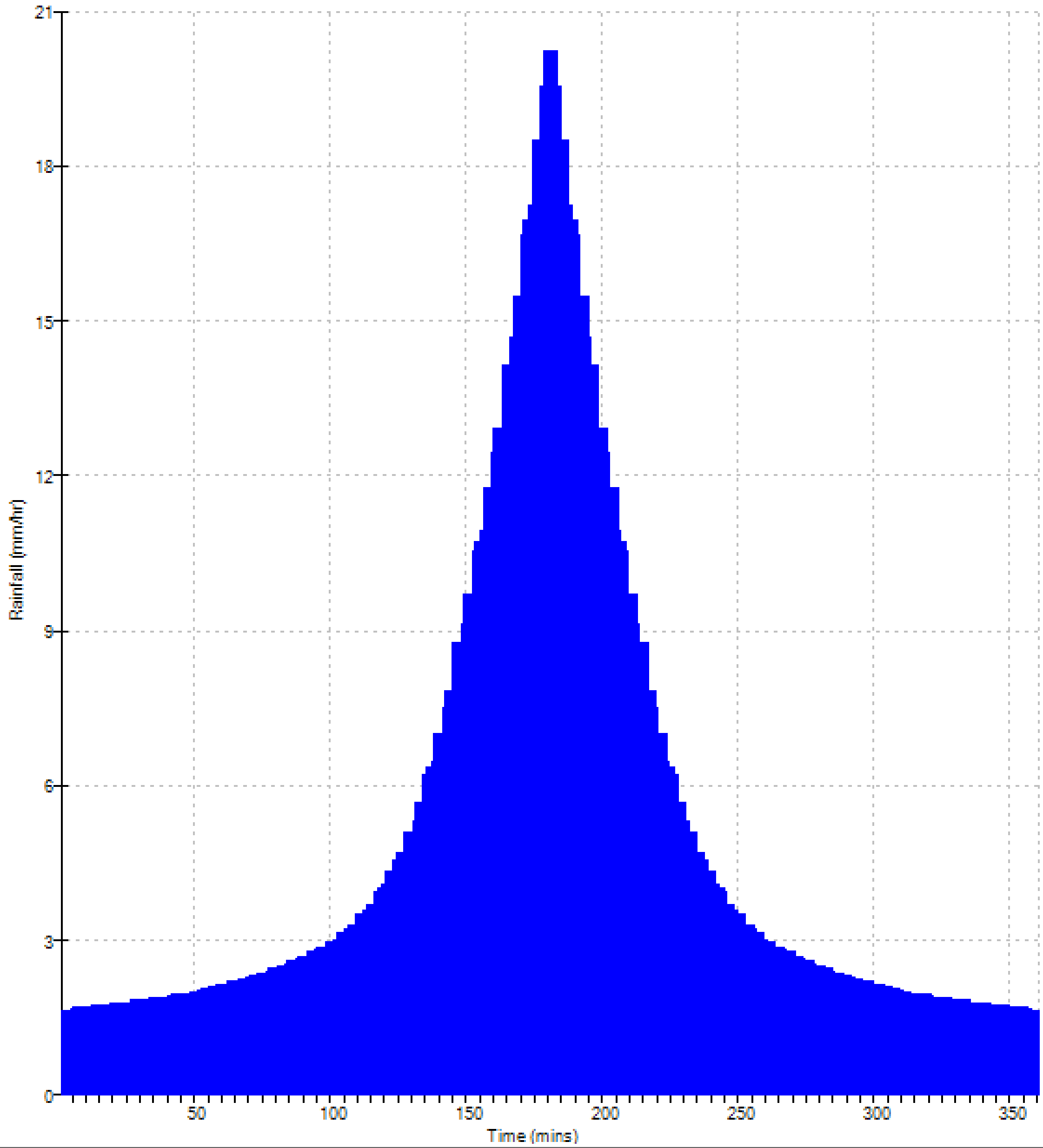


Rainfall profile

Storm duration (mins) 360

FEH Data

FEH Rainfall Version	2013
Site Location	GB 377705 422385
Data Type	Point
Peak Intensity (mm/hr)	20.253
Ave. Intensity (mm/hr)	5.167
Return Period (years)	2.0



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APPENDIX K: PRELIMINARY PROPOSED DRAINAGE PLANS

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SITE: HOLCOMBE ROAD, HASLINGDEN
REF: HYD421
REV: 0
DATE: 29/04/2019

BETTS HYDRO
CONSULTING ENGINEERS

EXISTING DRAINAGE PLAN

LEGEND

Site Extent

Existing Drainage Features

Topography

Main River

Ordinary Watercourse

Pond/Reservoir

Existing Sewer Network

Public Combined Sewer

Public Surface Water Sewer

Public Foul Water Sewer

FURTHER NOTES:

This drawing is not a drainage 'design' it is a preliminary drainage strategy showing existing sewer locations.

No hydraulic simulation or assessment of these proposals has been undertaken.

Proposed points of connection to the existing watercourse and sewer require invert levels to be accurately established. Refer to proposed drainage plan.

It should be noted the drainage plan only shows key UU sewers within proximity to the site. Please see UU sewer records in Appendix C for full details

SITE: HOLCOMBE ROAD, HASLINGDEN
REF: HYD421
REV: 1.0
DATE: 02/08/2019

BETTS HYDRO CONSULTING ENGINEERS

PRELIMINARY DRAINAGE PLAN

LEGEND

Site Extent

Existing Drainage Features

Topography

Main River

Ordinary Watercourse

Pond/Reservoir

Existing Sewer Network

Public Combined Sewer

Public Surface Water Sewer

Public Foul Water Sewer

Proposed Drainage Connections

Attenuation Tank/Crates

Surface Water Connection(s)

Foul Water Connection(s)

FURTHER NOTES:

This drawing is not a drainage 'design' it is a preliminary drainage strategy showing existing sewer locations.

No hydraulic simulation or assessment of these proposals has been undertaken.

Proposed points of connection to the existing watercourse and sewer require invert levels to be accurately established. Refer to proposed drainage plan.

It should be noted the drainage plan only shows key UU sewers within proximity to the site. Please see UU sewer records in Appendix C for full details

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APPENDIX L: STORMWATER STORAGE ESTIMATES

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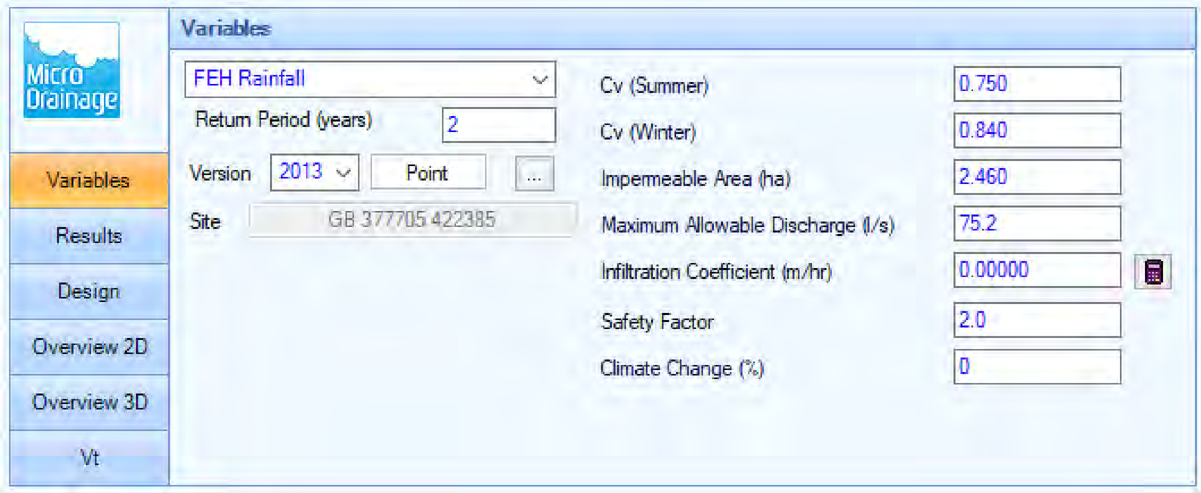
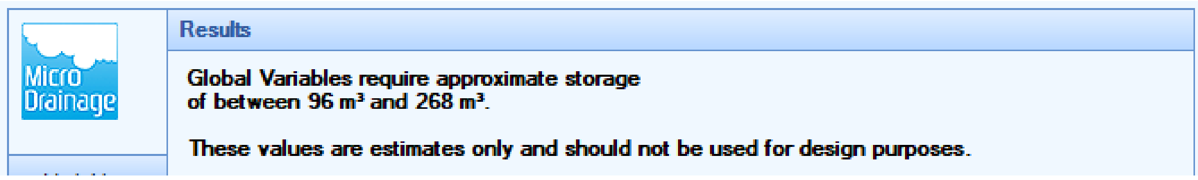
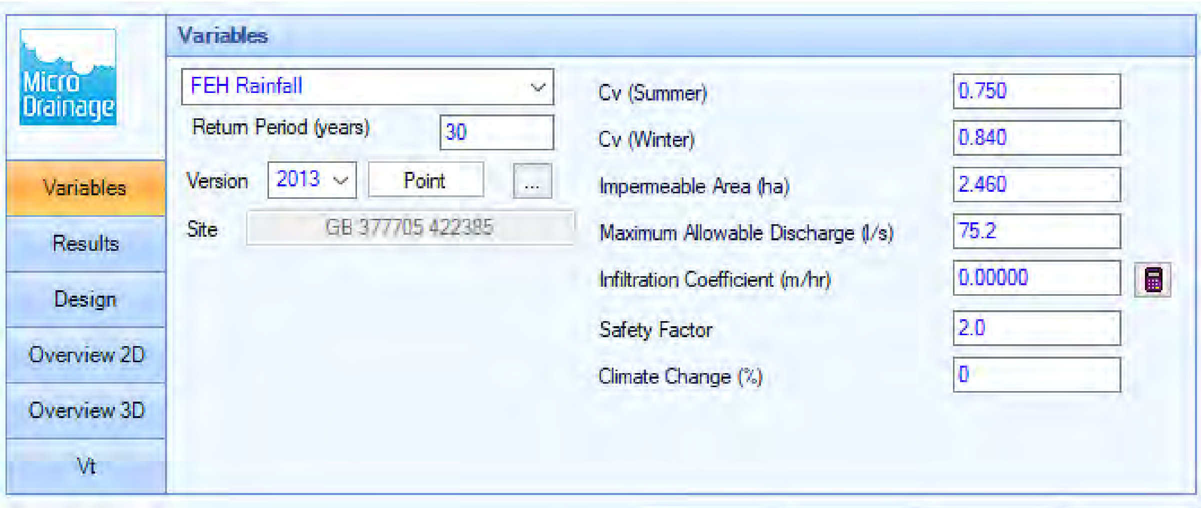
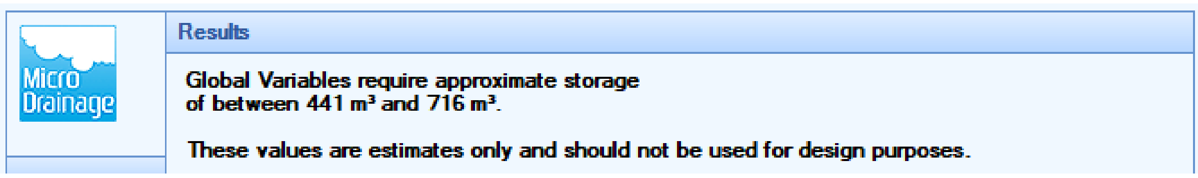
1 YEAR RETURN PERIOD STORM EVENT





30 YEAR RETURN PERIOD STORM EVENT





100 YEAR RETURN PERIOD STORM EVENT + 20% CLIMATE CHANGE

Variables

FEH Rainfall	
Return Period (years)	100
Version	2013
Site	GB 377705 422385
Cv (Summer)	0.750
Cv (Winter)	0.840
Impermeable Area (ha)	2.460
Maximum Allowable Discharge (l/s)	75.2
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	20

Results

Global Variables require approximate storage of between 827 m³ and 1252 m³.

These values are estimates only and should not be used for design purposes.

100 YEAR RETURN PERIOD STORM EVENT + 40% CLIMATE CHANGE

Variables

FEH Rainfall	
Return Period (years)	100
Version	2013
Site	GB 377705 422385
Cv (Summer)	0.750
Cv (Winter)	0.840
Impermeable Area (ha)	2.460
Maximum Allowable Discharge (l/s)	75.2
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	40

Results

Global Variables require approximate storage of between 1007 m³ and 1549 m³.

These values are estimates only and should not be used for design purposes.

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APPENDIX M: TYPICAL SUDS DETAILS

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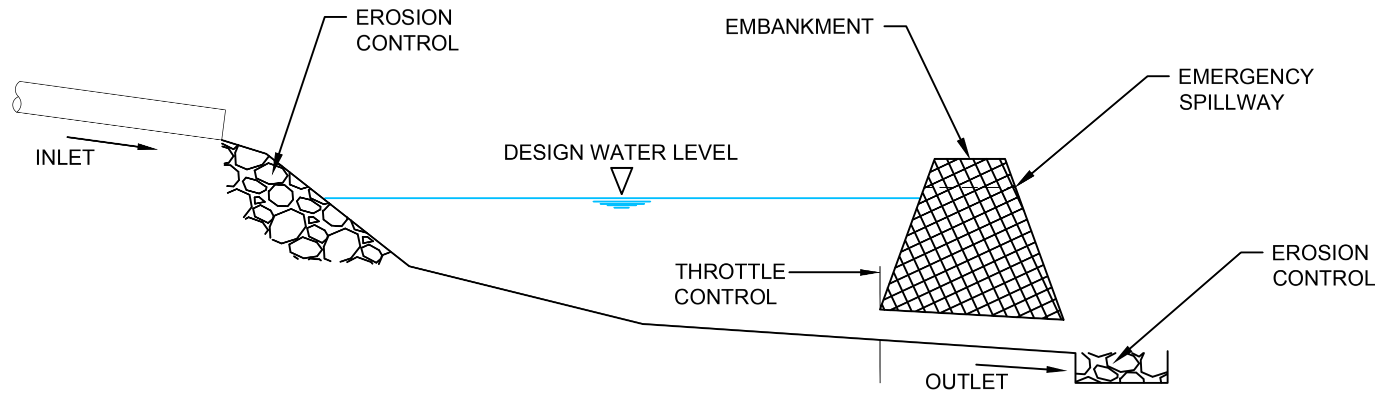
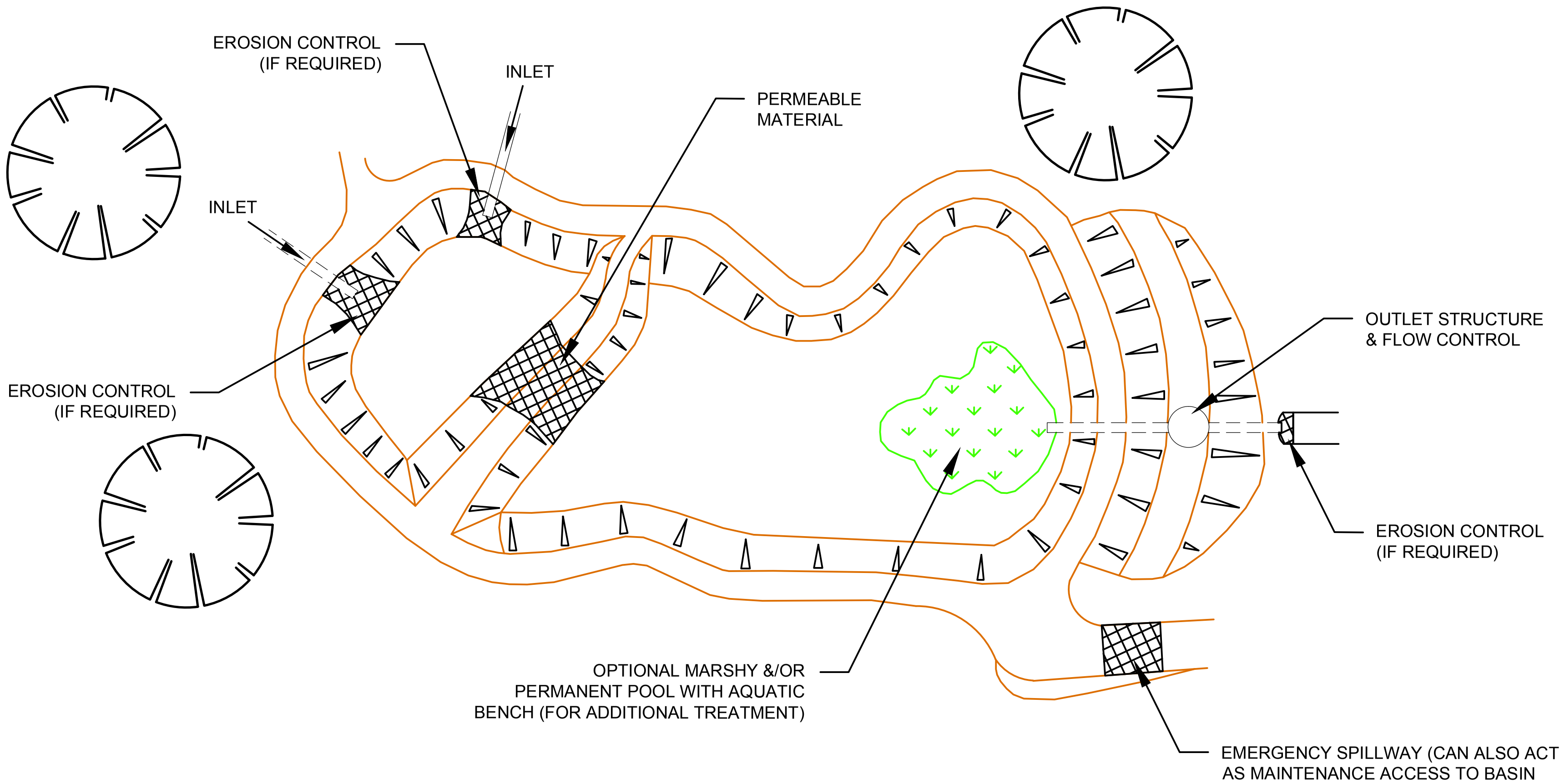
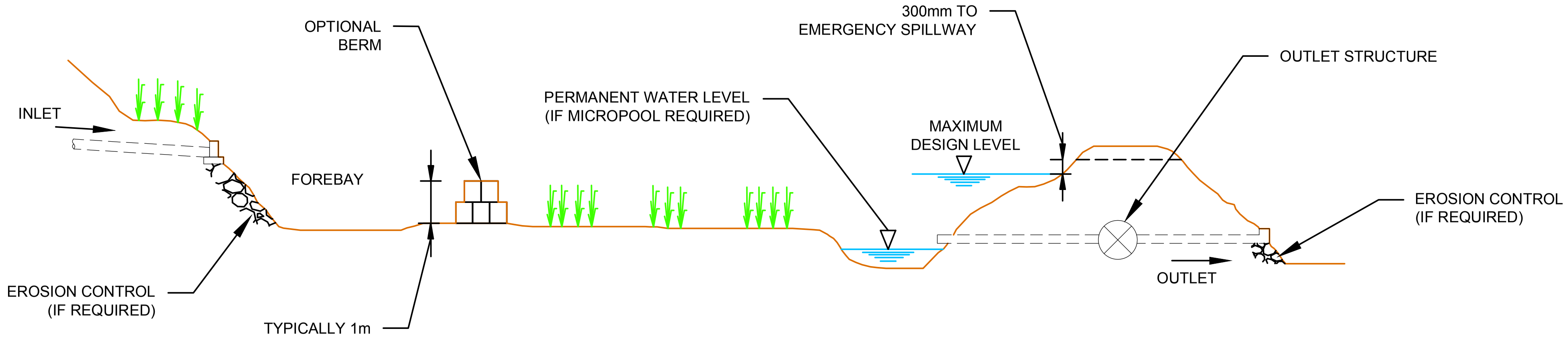


SCHEMATIC OF DETENTION BASIN PROFILE



PLAN VIEW



ELEVATION

DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: DETENTION BASINS

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
BETTS	110	A

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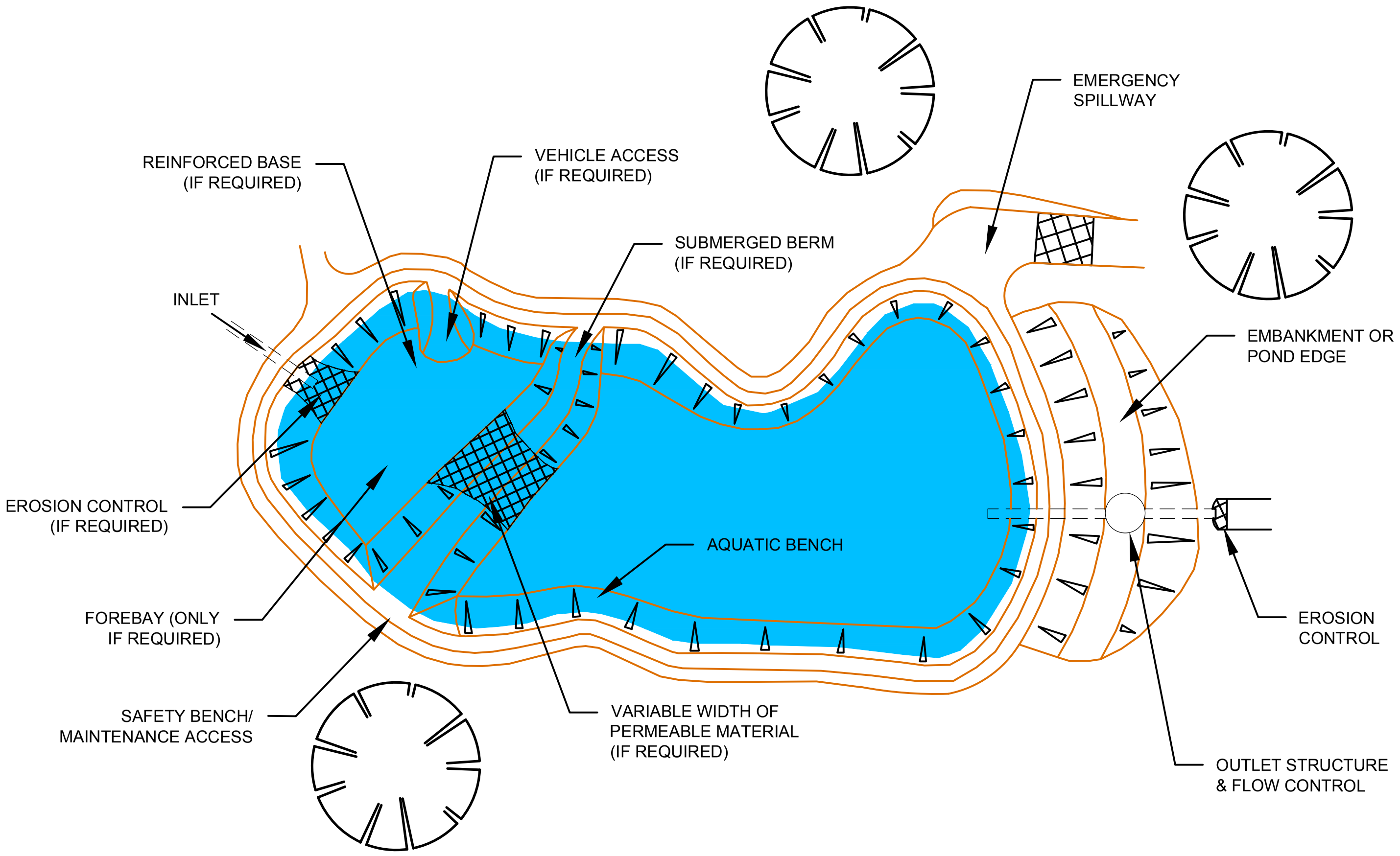
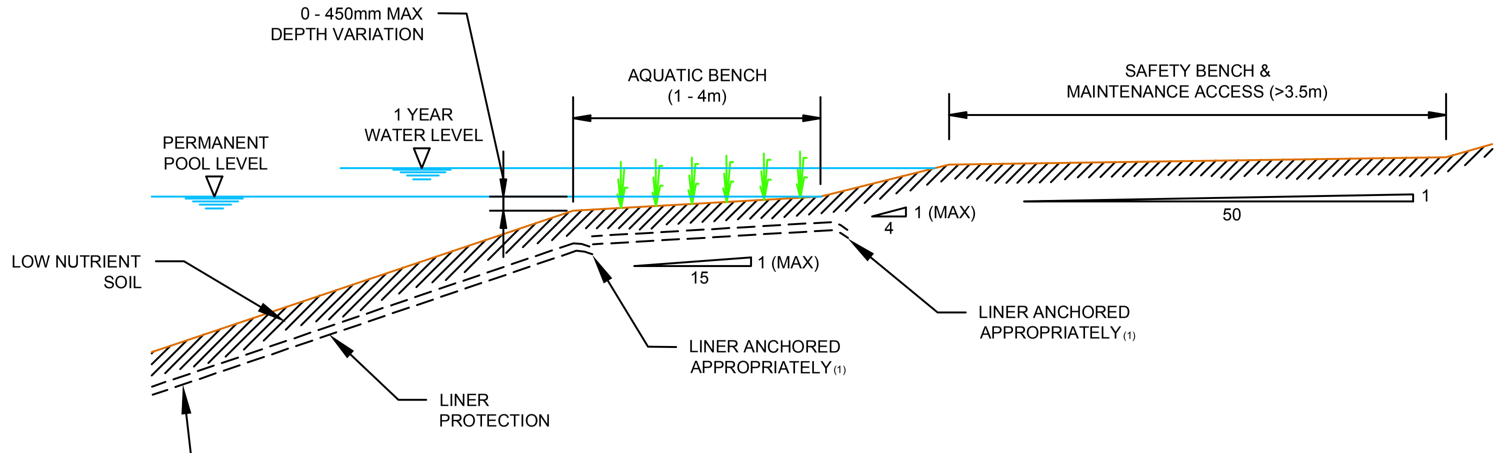
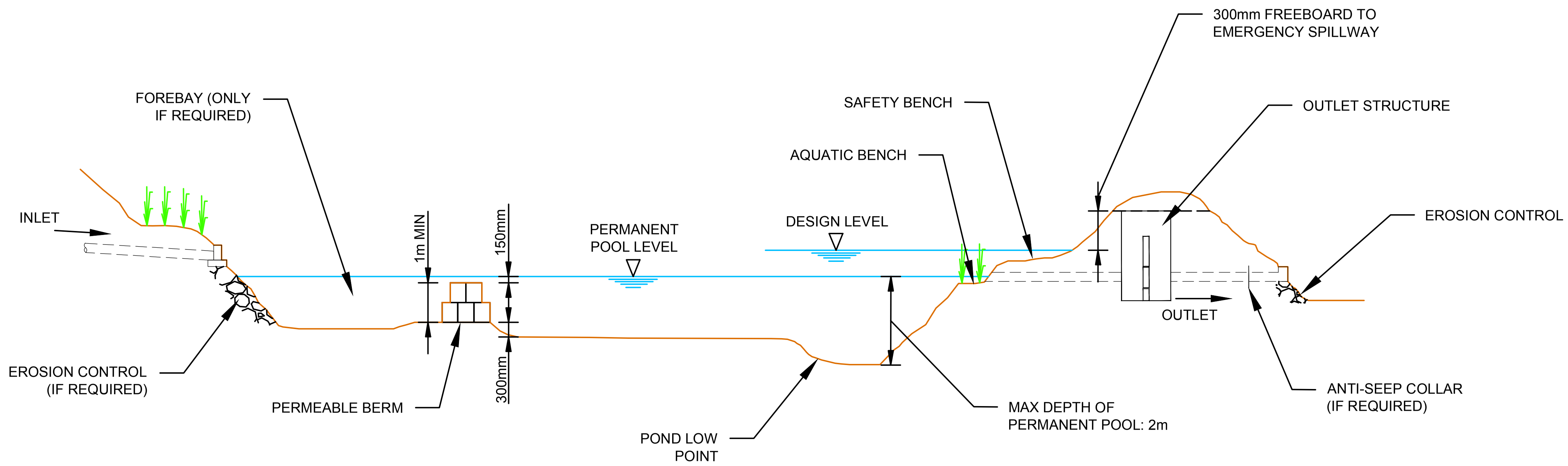


PLAN VIEW



1. WHERE THE GROUND IS VERY PERMEABLE OR GROUNDWATER IS VULNERABLE, THE LINER SHOULD EXTEND TO THE TOP OF THE PERMANENT POND LEVEL. WHERE SLOW INFILTRATION IS ACCEPTABLE, THE TOP LINER LEVEL CAN BE LOWERED A LITTLE.

TYPICAL POND EDGE GEOMETRY



PROFILE

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: WET PONDS

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
BETTS	111	A

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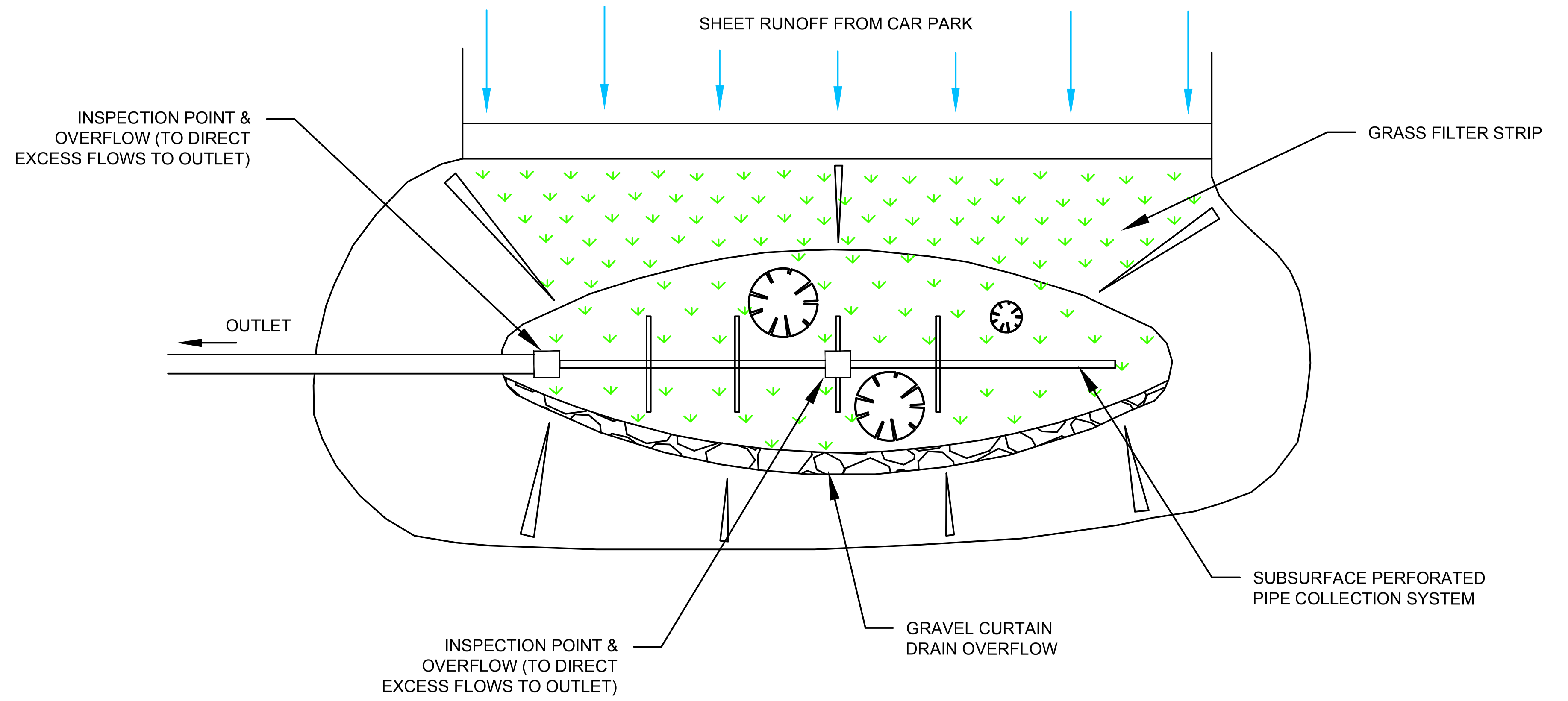
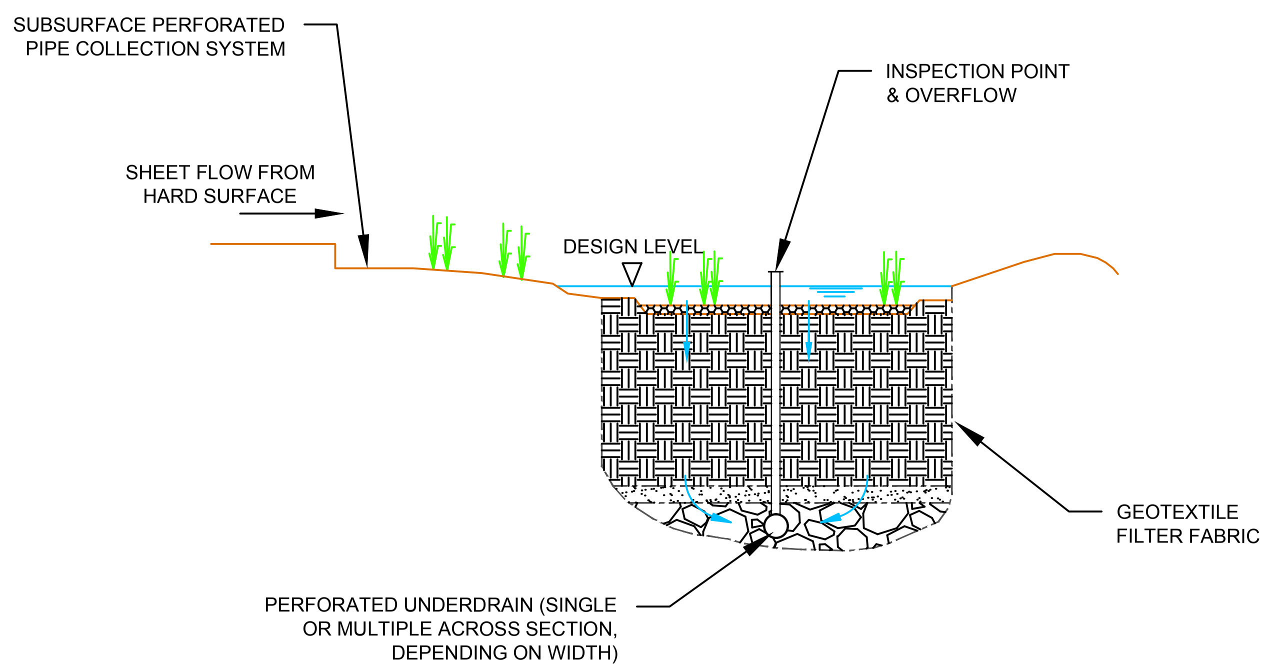
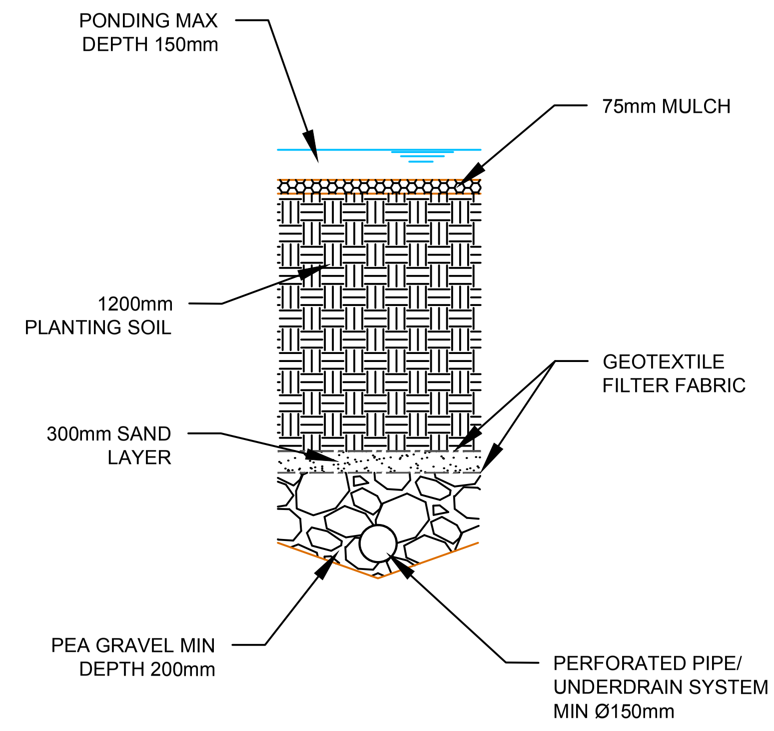


PLAN VIEW



PROFILE



TYPICAL SECTION

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: BIORETENTION APPLICATIONS

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
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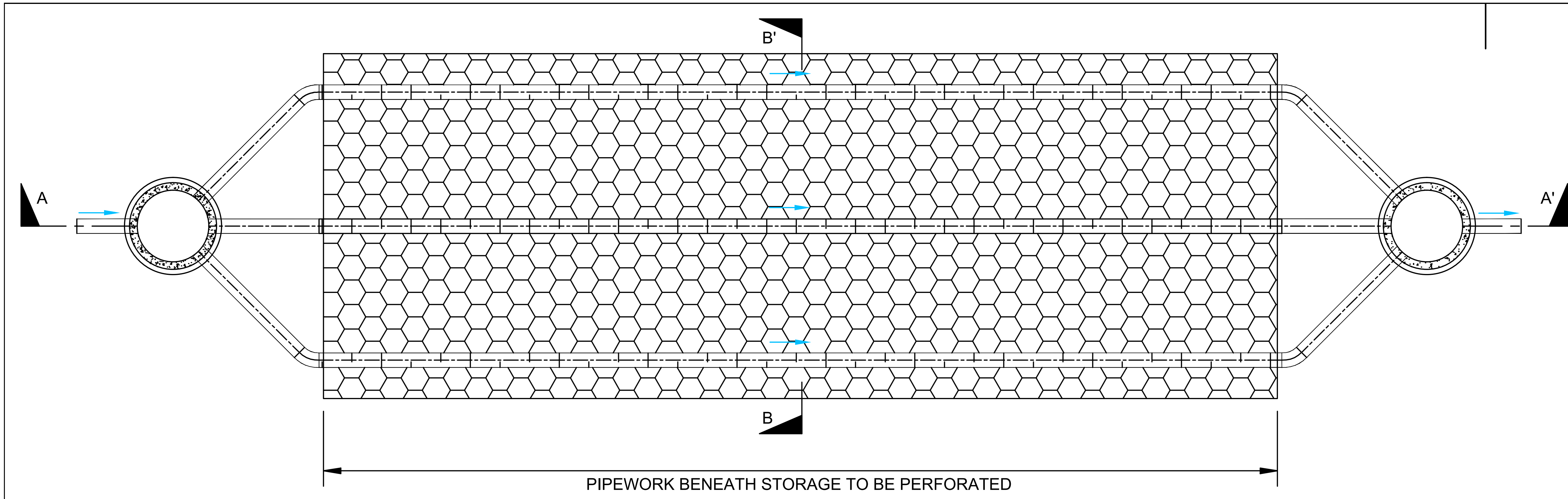
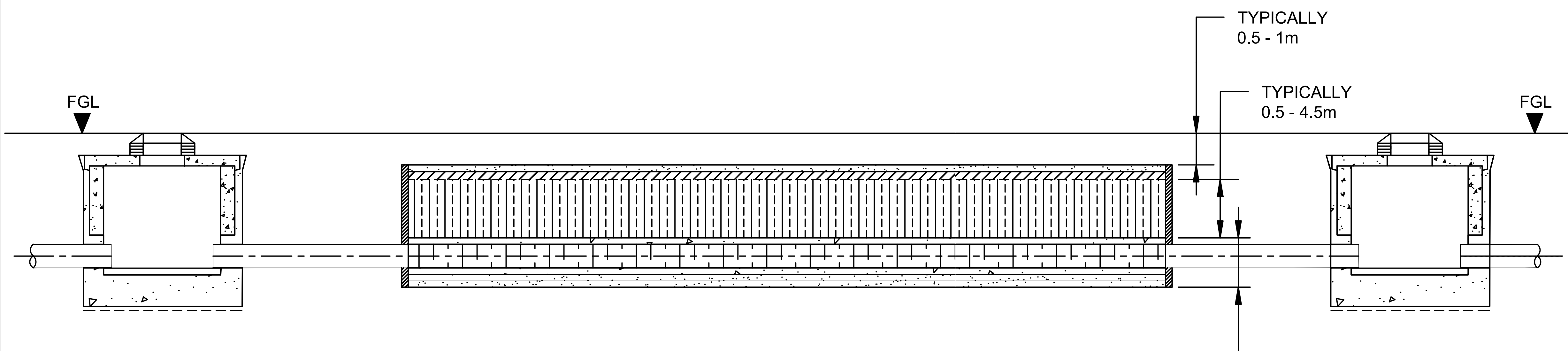
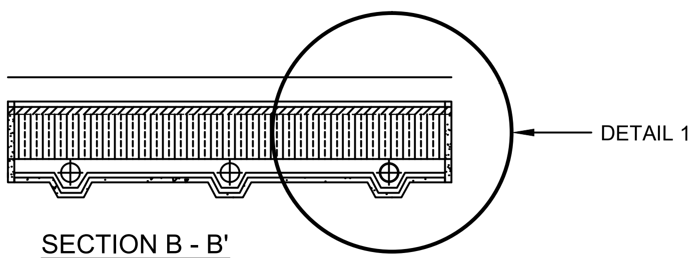


PLAN



SECTION A - A'

ALL DIMENSIONS AND DEPTHS DEPENDENT ON REQUIRED VOLUME AND LOCAL GROUND CONDITIONS



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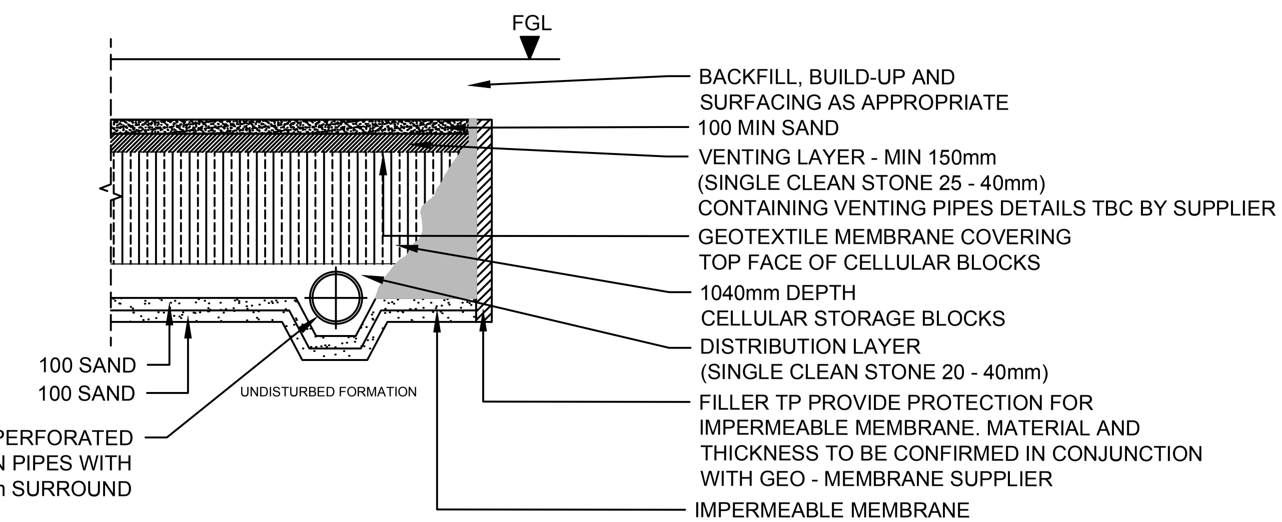

DETAIL 1

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
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Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: CELLULAR STORAGE

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
BETTS	113	A

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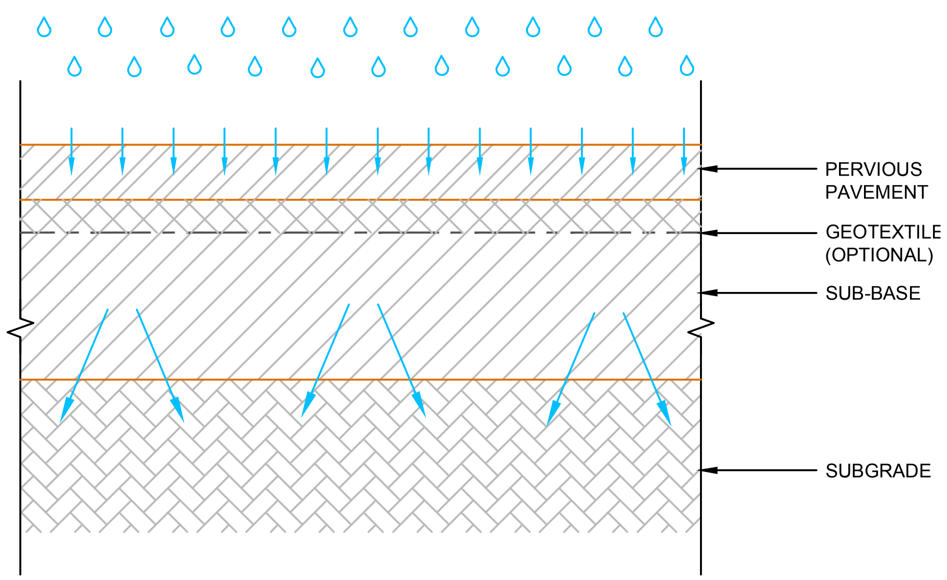
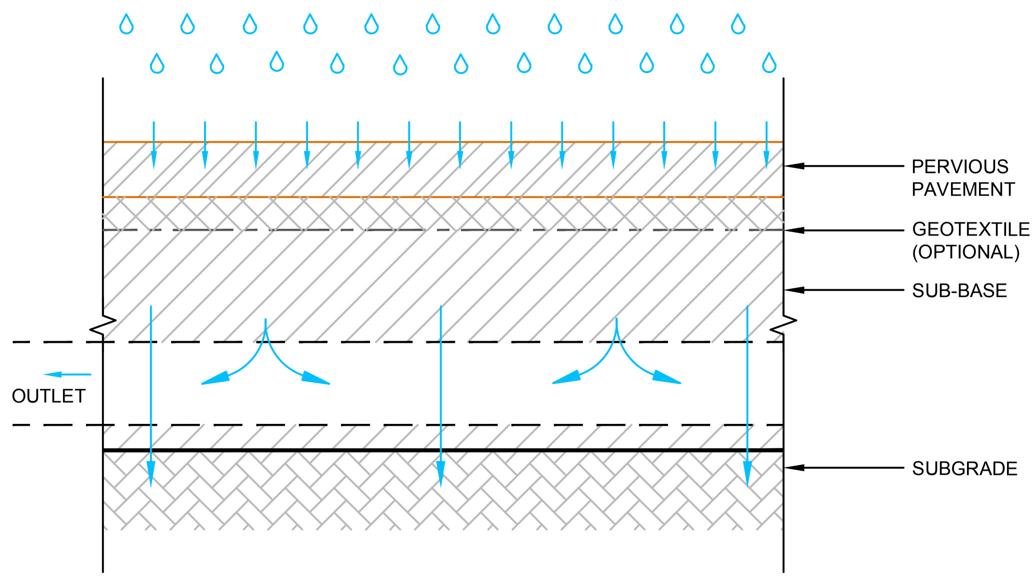
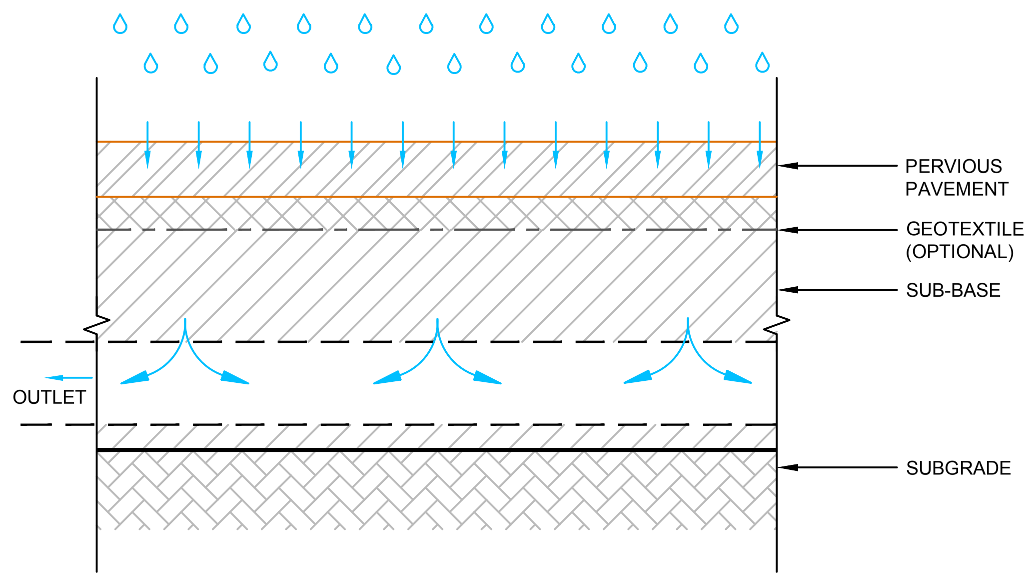


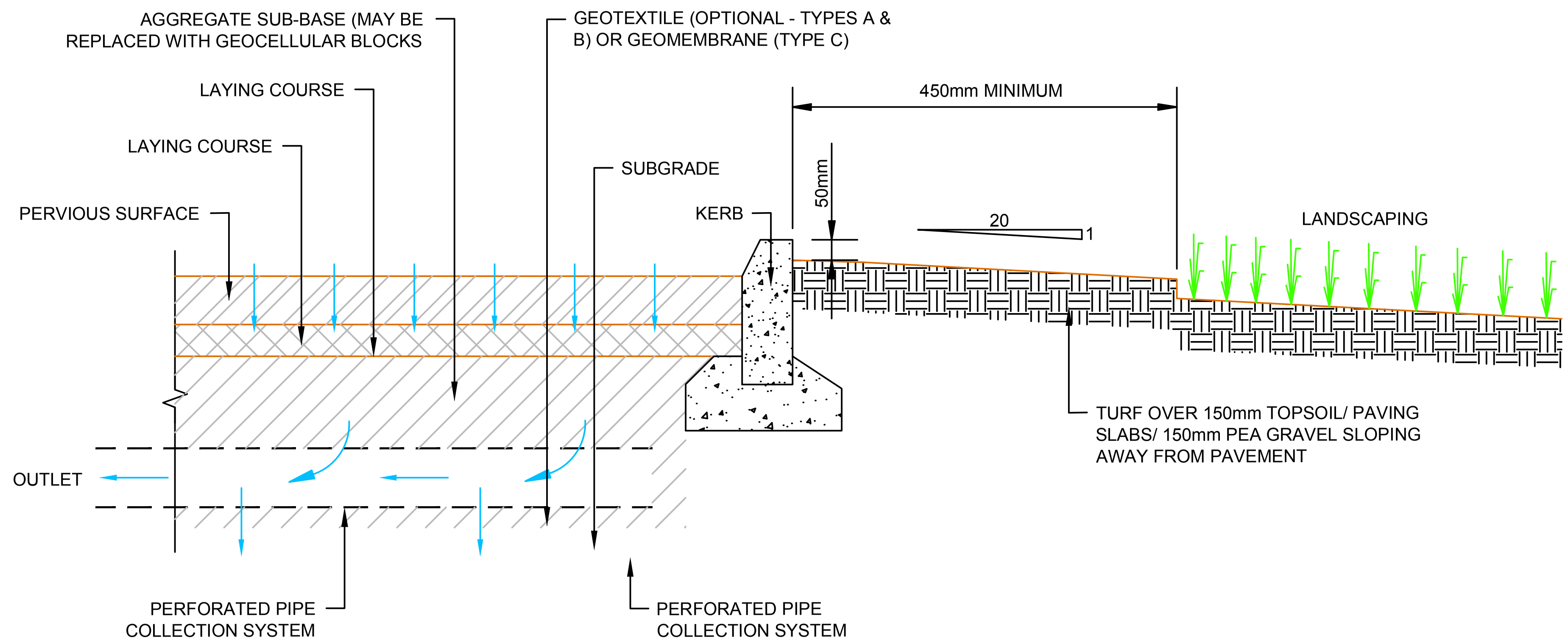
TYPE A: TOTAL INFILTRATIPN



TYPE B: PARTIAL INFILTRATION



TYPE C: NO INFILTRATION



LANDSCAPING DETAIL

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: PERVIOUS PAVEMENTS

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
BETTS	105	A

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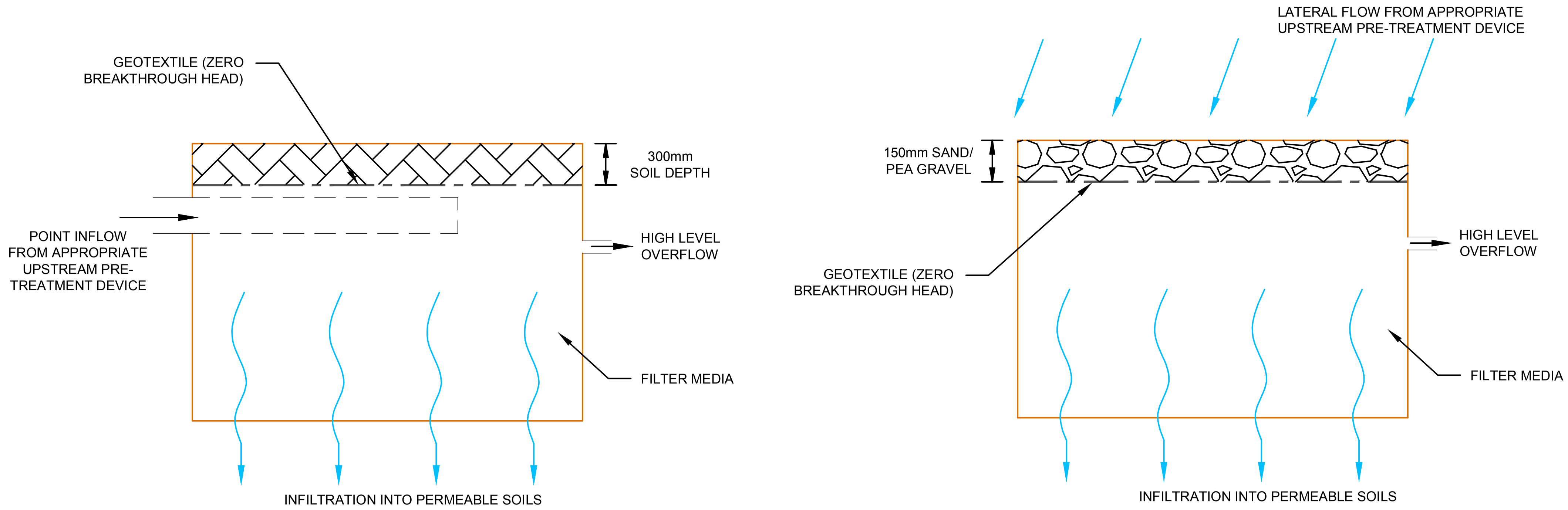
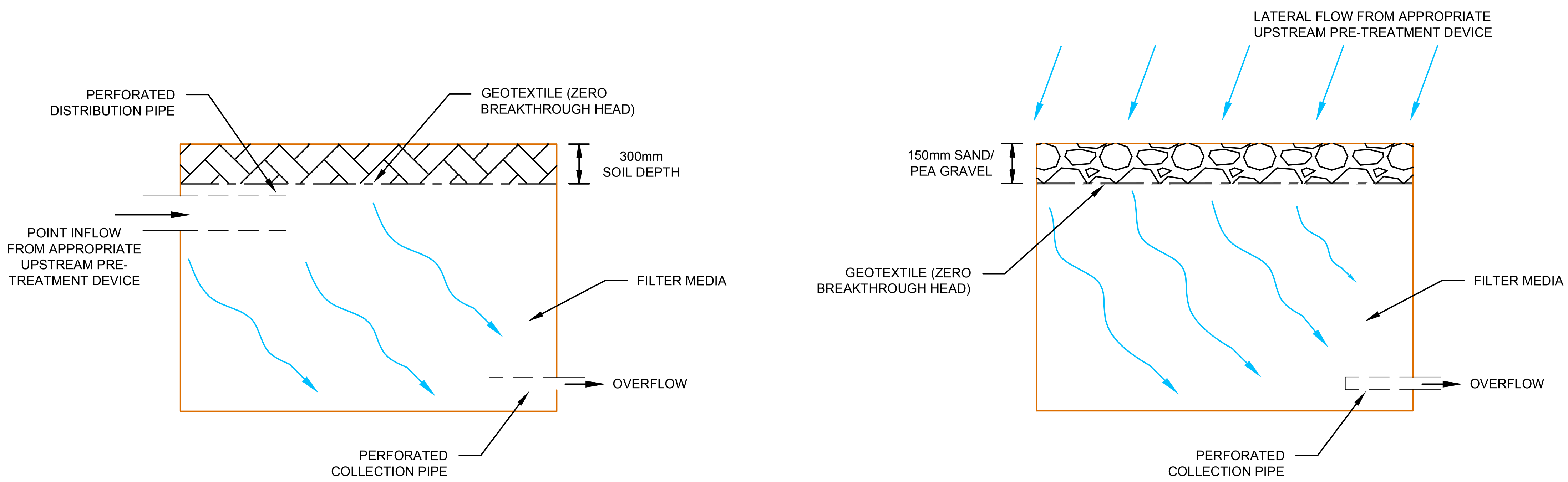


INFILTRATION TRENCH SCHEMATICS



FILTER TRENCH SCHEMATICS

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: TRENCHES

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
BETTS	105	A

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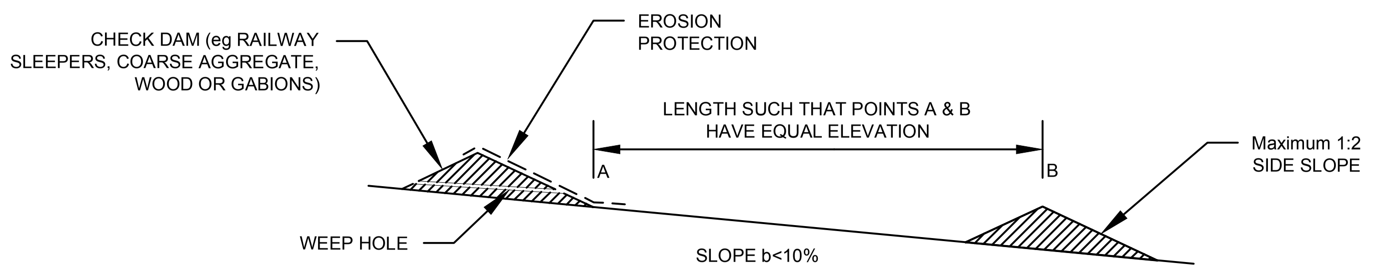

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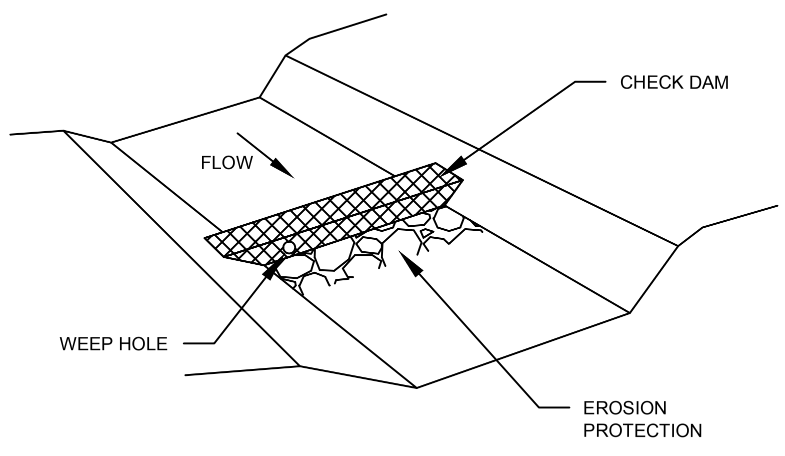
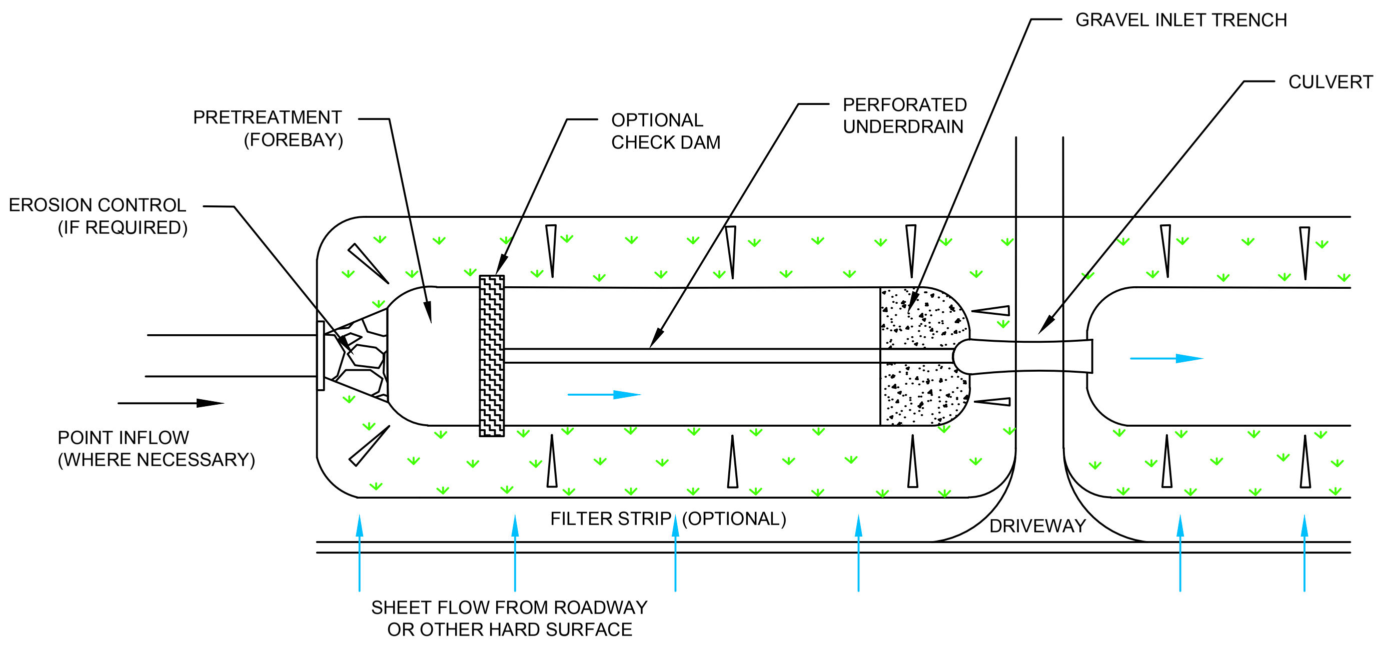


SCHEMATIC

CHECK DAM



ENHANCED DRY SWALE

REV	DATE	BY	DESCRIPTION	CHK

DRAWING STATUS: PRELIMINARY

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 Fax: 01244 288516 enquiries@betts-associates.co.uk

PROJECT: TYPICAL SUDS DETAIL

TITLE: SWALES (2 of 2)

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
SEP 2014	@ A3	CP	RDN

PROJECT No:	DRAWING No:	REV:
BETTS	104	A

APPENDIX N: NOTES OF LIMITATIONS

The data essentially comprised a study of available documented information from various sources together with discussions with relevant authorities and other interested parties. There may also be circumstances at the site that are not documented. The information reviewed is not exhaustive and has been accepted in good faith as providing representative and true data pertaining to site conditions. If additional information becomes available which might impact our conclusions, we request the opportunity to review the information, reassess the potential concerns and modify our opinion if warranted.

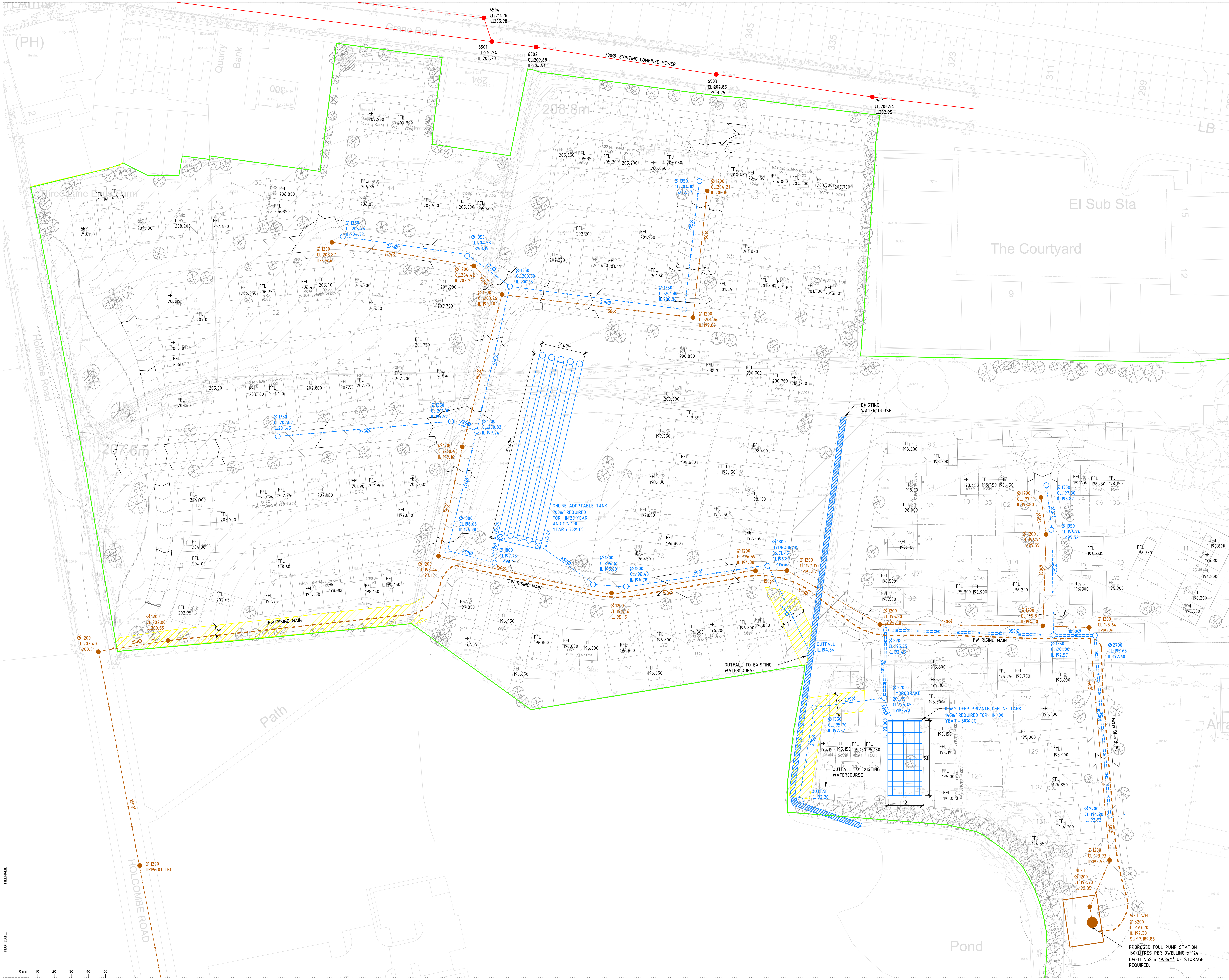
It should be noted that any risks identified in this report are perceived risks based on the available information.

This report was prepared by Betts Hydro Ltd for the sole and exclusive use of the titled client in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

This document has been prepared for the titled project only and should any third party wish to use or rely upon the contents of the report, written approval from Betts Hydro Ltd must be sought.

Betts Hydro Ltd accepts no responsibility or liability for the consequences of this document being used for the purpose other than that for which it was commissioned and for this document to any other party other than the person by whom it was commissioned.

APPENDIX 4 – HOLCOMBE RD (GRANE VILLAGE) DRAINAGE PLANS



N
W E
S

KEY:

PROPOSED SW SEWER

PROPOSED FW SEWER

EXISTING FOUL SEWER

EXISTING COMBINED SEWER

HIGHWAY CONTOURS

NOTES:

1 THIS DRAWING IS NOT FOR CONSTRUCTION AND THE INFORMATION PROVIDED IS FOR FEASIBILITY PURPOSES.

2 THE LINE, LOCATION AND DEPTH OF ALL EXISTING SERVICES SHOWN SHOULD BE CONFIRMED PRIOR TO ANY WORKS COMMENCING.

3 PROPOSED SEWERS SHOWN ARE INDICATIVE. ALL LENGTHS, SIZES AND PROPOSED LEVELS SHOWN ALONG WITH STORAGE VOLUMES QUOTED SHOULD BE CONFIRMED AT DETAILED DESIGN STAGE.

4 CONNECTION TO THE EXISTING PUBLIC COMBINED SEWER TO BE IN STRICT ACCORDANCE WITH THE WATER AUTHORITIES CONSENT.

5 CONNECTION TO THE EXISTING WATERCOURSE TO BE IN STRICT ACCORDANCE WITH THE LLFA AND EA CONSENT WITH ALL RELEVANT PERMITS TO BE OBTAINED PRIOR TO WORKS COMMENCING.

6 ALL HIGHWAY WORKS TO BE IN STRICT ACCORDANCE WITH THE HIGHWAYS AUTHORITY APPROVAL.

6 DISCHARGE RATE TO THE EXISTING WATERCOURSE IS 76.7 LITRES PER SECOND IN ACCORDANCE WITH THE QBAR GREENFIELD RUN OFF CALCULATIONS SHOWN IN THE FLOOD RISK ASSESSMENT UNDERTAKEN BY WSP UK LIMITED 21/03/2013 PROJECT NUMBER 50600449

Rev	Date	Description	By	Chk
P04	01.08.19	Pump compound updated	M.A.	R.A
P03	01.08.19	Updated to adoptable tank	M.A.	R.A
P02	02.07.19	Updated to Architects comments	M.A.	R.A
P01	28.06.19	PRELIMINARY - Issued for Information	J.C	R.A

EDGE CONSULTING ENGINEERS
www.edgece.com

Manchester . UK
3rd Floor, Conavon Court,
12 Blackfriars Street,
Manchester, M3 5BQ,
United Kingdom

T: +44 (0) 161 834 1938
E: manchester@edgece.com

DO NOT SCALE DRAWINGS. IF IN DOUBT, ASK!

Project Name
GRANE ROAD HASLINGDEN

Client
TAYLOR WHIMPEY

Designed	Drawn	Checked	Scale @ A1
M.A.	M.A.	R.A	1:500

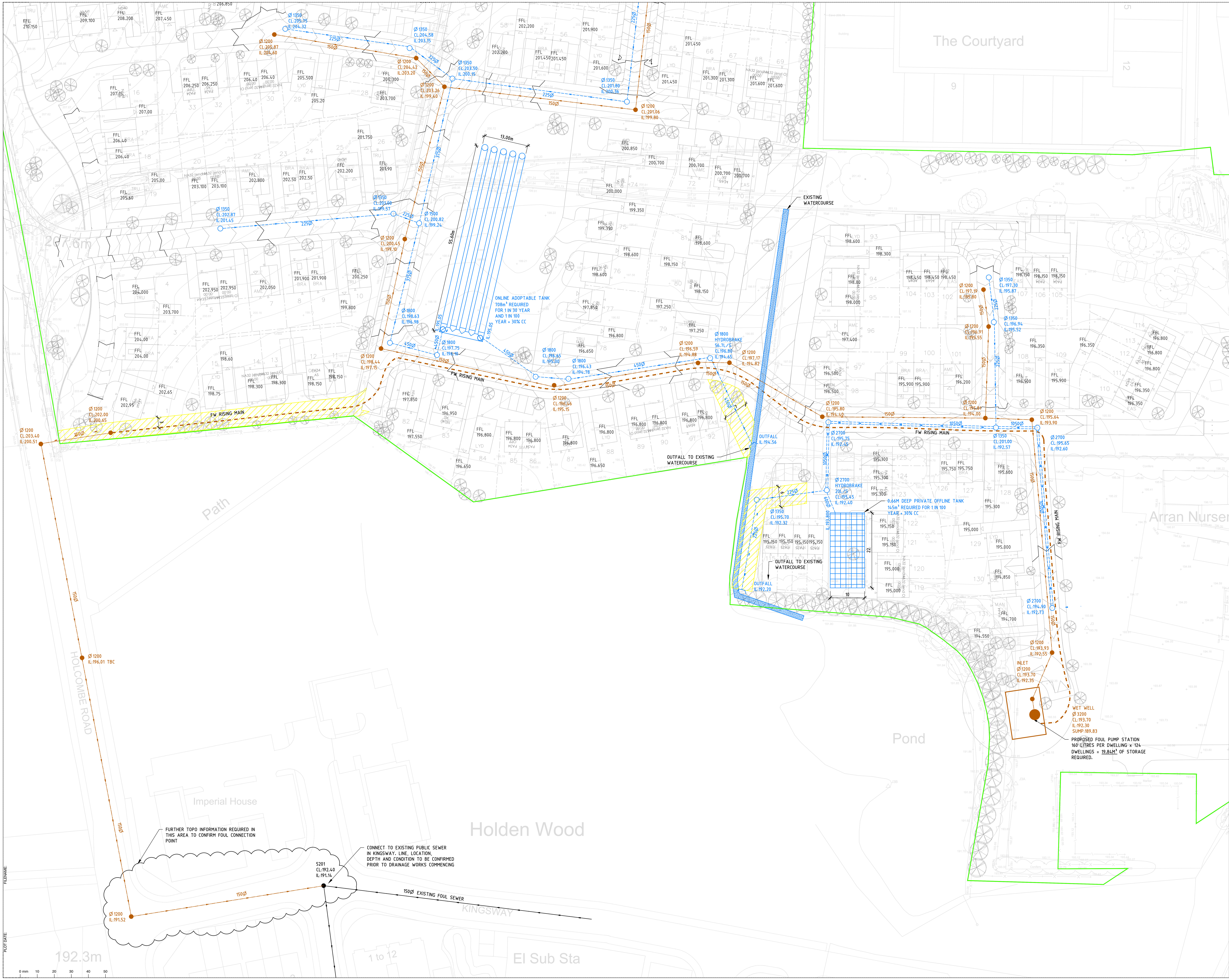
Drawing Title
SCHEMATIC DRAINAGE LAYOUT SHEET 1

Project No.
19432

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing No.
C2001

Revision
P04



KEY:

- PROPOSED SW SEWER
- PROPOSED FW SEWER
- EXISTING FOUL SEWER
- EXISTING COMBINED SEWER
- HIGHWAY CONTOURS

NOTES:

1 THIS DRAWING IS NOT FOR CONSTRUCTION AND THE INFORMATION PROVIDED IS FOR FEASIBILITY PURPOSES.

2 THE LINE, LOCATION AND DEPTH OF ALL EXISTING SERVICES SHOWN SHOULD BE CONFIRMED PRIOR TO ANY WORKS COMMENCING.

3 PROPOSED SEWERS SHOWN ARE INDICATIVE. ALL LENGTHS, SIZES AND PROPOSED LEVELS SHOWN ALONG WITH STORAGE VOLUMES QUOTED SHOULD BE CONFIRMED AT DETAILED DESIGN STAGE.

4 CONNECTION TO THE EXISTING PUBLIC COMBINED SEWER TO BE IN STRICT ACCORDANCE WITH THE WATER AUTHORITIES CONSENT.

5 CONNECTION TO THE EXISTING WATERCOURSE TO BE IN STRICT ACCORDANCE WITH THE LLFA AND EA CONSENT WITH ALL RELEVANT PERMITS TO BE OBTAINED PRIOR TO WORKS COMMENCING.

6 ALL HIGHWAY WORKS TO BE IN STRICT ACCORDANCE WITH THE HIGHWAYS AUTHORITY APPROVAL.

6 DISCHARGE RATE TO THE EXISTING WATERCOURSE IS 76.7 LITRES PER SECOND IN ACCORDANCE WITH THE QBAR GREENFIELD RUN OFF CALCULATIONS SHOWN IN THE FLOOD RISK ASSESSMENT UNDERTAKEN BY WSP UK LIMITED 21/03/2013 PROJECT NUMBER 50600449

Rev	Date	Description	By	Chk
P04	01.08.19	Pump compound updated	M.A.	R.A
P03	01.08.19	Updated to adoptable tank	M.A.	R.A
P02	02.07.19	Updated to Architects comments	M.A.	R.A
P01	28.06.19	PRELIMINARY - Issued for Information	J.C	R.A

EDGE CONSULTING ENGINEERS
www.edgece.com

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3rd Floor, Conavon Court,
12 Blackfriars Street,
Manchester, M3 5BQ,
United Kingdom

T: +44 (0) 161 834 1938
E: manchester@edgece.com

DO NOT SCALE DRAWINGS. IF IN DOUBT, ASK!

Project Name
GRANE ROAD HASLINGDEN

Client
TAYLOR WHIMPEY

Designed	Drawn	Checked	Scale @ A1
M.A.	M.A.	R.A	1:500

Drawing Title
SCHEMATIC DRAINAGE LAYOUT SHEET 2

Project No.
19432

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing No.
C2002

Revision
P04

APPENDIX 5 –HOLCOMBE RD (GRANE VILLAGE) TRANSPORT ASSESSMENT

Proposed Residential Development

Holcombe Road, Haslingden

TAYLOR WIMPEY UK LTD

Transport Assessment

July 2019

CROFT

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FIGURES

PLANS

APPENDICES

1 INTRODUCTION

1.1.1 Croft Transport Planning and Design have been instructed by Taylor Wimpey UK Ltd to produce a Transport Assessment to assist the Local Planning Authority's determination of a full planning application for a residential development on land off Holcombe Road in Haslingden.

1.1.2 This report provides information on the traffic and transport planning aspects of the development proposals.

1.1.3 The application site is located to the south-west of Haslingden. Its location is shown within **Plan 1**.

1.1.4 Following this introduction, Section 2 provides a description of the existing site. Section 3 provides details of the development proposals.

1.1.5 Section 4 considers relevant planning policy, whilst Section 5 provides an assessment of the existing accessibility of the site by non-car travel, before Section 6 discusses the Travel Plan Framework.

1.1.6 The traffic impact of the proposed development on the local highway network is considered at Section 7, whilst Section 8 presents an analysis of road safety in the vicinity of the site. Section 9 draws together the conclusions to this report.

1.1.7 The scope of the Transport Assessment has been discussed and agreed with the highways officers at Lancashire County Council (LCC).

2 EXISTING CONDITIONS

2.1 Introduction

2.1.1 This section of the report describes the existing site and details the surrounding highway network in the vicinity of the site.

2.2 Site Location

2.2.1 The application site is located to the south-west of Haslingden, on land to the south of the B6232 Grane Road and to the east of the B6235 Holcombe Road.

2.2.2 The site is bounded by the B6232 Grane Road to the north, along with sporadic housing, an employment development and the Holden Arms public house. Gas Street lies to the east, with residential properties beyond that. To the south the site is bound by large pond and variety of modern residential and employment uses. To the west the site is bound by the B6235 Holcombe Road.

2.2.3 The location of the application site is shown within **Plan 1**.

2.2.4 The application site is currently used for agricultural purposes and vehicular access into the site is provided for via an access point off the B6235 Holcombe Road.

2.3 Local Highway Network

2.3.1 The B6235 Holcombe Road which is to the west of the site runs in an approximate north-south alignment and has a carriageway width of approximately 7.9 metres, but this narrows to a width of 7.5 metres on certain sections. To the north it provides the minor arm of the B6232 Grane Road/B6235 Holcombe Road priority junction, whilst to the south it provides access to various residential areas.

2.3.2 The B6232 Grane Road runs in an approximate east-west alignment along the northern frontage of the site. To the east Grane Road provides access to Haslingden town centre and the A56 and the wider highway network.

2.3.3 The B6232 Grane Road has a carriageway width of 8.5 metres in the vicinity of the site and pedestrian footways with approximate widths of 2 metres are provided on either side of the carriageway.

2.4 Baseline Traffic Data

2.4.1 As previously stated, the application site is used for grazing and therefore does not generate any significant traffic movements during the peak periods.

3 DEVELOPMENT PROPOSALS

3.1 Introduction

3.1.1 The following paragraphs will describe the development proposals and report on proposed access arrangements.

3.2 Development Proposals

3.2.1 This document has been produced in support of a full planning application for residential development of up to 131 dwellings and associated public open space. The proposed site masterplan is displayed in **Plan 2.**

3.3 Vehicular Access

3.3.1 Vehicular access into the site off the B6235 Holcombe Road will be provided for in the form of a mini-roundabout junction located approximately 140 metres south of the B6232 Grane Road/ B6235 Holcombe Road priority controlled junction.

3.3.2 The proposed mini-roundabout is displayed in **Plan 3**.

3.3.3 The provision of a mini-roundabout site access junction off the B6235 Holcombe Road was requested by the highway's officers at LCC during pre-application discussions.

3.4 Pedestrian and Cycle Access

3.4.1 It is proposed that access for pedestrians and cyclists will be provided for at the site access junction off the B6235 Holcombe Road in the form of pedestrian footways and dropped kerbs. In addition, pedestrian/cycle access is to be provided on to the B6232 Grane Road in the form of an access point to the east of No.294 B6232 Grane Road (along the existing PROW).

3.4.2 An extensive pedestrian and cycle network are proposed within the development site which will link with the wider footway network. Pedestrian and cycle access into the site will be provided at the proposed site access junction in the form of 2 metre wide footways, dropped kerbs and tactile paving. The footways will link with existing infrastructure located in the vicinity of the development site and provide direct access to the surrounding areas.

3.4.3 To assist pedestrian movement across the B6232 Grane Road, a pedestrian refuge with associated dropped kerbs and tactile paving is to be provided. **Plan 4** displays the proposed pedestrian refuge.

3.4.4 The pedestrian and cycle facilities detailed above will ensure that pedestrians and cyclists can travel safely and efficiently within the site as well as linking to the extensive pedestrian and cycle infrastructure located within this area of Haslingden.

3.5 Internal Layout

3.5.1 The site layout has been designed with Manual for Streets (MfS) documents in mind to ensure maximum permeability as well as reduced vehicular speeds providing opportunities for walking and cycling within the site, with connections to the wider network.

3.5.2 Car parking for the proposed development has been provided in accordance with the relevant Rossendale Borough Council and Lancashire County Council car parking standards (see Parking Provision Statement within Planning Statement for more detail).

3.5.3 As part of the proposed development 1 Electric Vehicle (EV) charging point per dwelling with an integral or detached garage will be provided.

3.6 Highway Adoption Statement

3.6.1 It is proposed that the internal road layout will be offered for adoption to the local highway authority (LCC). The details of this will be discussed and agreed between Taylor Wimpey and LCC at a more advanced stage of the planning process.

3.6.2 Notwithstanding this, **Plan 5** shows the internal site layout and the areas of highways to be adopted by LCC.

4 TRANSPORT PLANNING POLICY

4.1 Introduction

4.1.1 This section will provide a preliminary consideration of various national, local and regional planning and policy documents relevant to the development.

4.1.2 Local transport planning policy for Haslingden is taken from the Third Lancashire County Council Transport Plan and the Rossendale Borough Council Core Strategy.

4.2 National Policy

4.2.1 The references to current pertinent national planning policy will be taken from the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance (NPPG).

National Planning Policy Framework (NPPF)

4.2.2 The Department for Communities and Local Government (now the Ministry of Housing, Communities and Local Government) updated its National Planning Policy Framework (NPPF) in February 2019.The NPPF replaces previous Planning Policy Guidance (PPG) Notes and Planning Policy Statements (PPS) with a single document.

4.2.3 The updated version of the NPPF continues to provide guidance on the same key themes for Local Authorities when preparing Development Plans and associated Policies, with a presumption in favour of approval unless the proposals entail impacts that outweigh the benefits of the development. However, key changes in the updated NPPF include:

- A more detailed approach to the planning, policy and decision-making processes towards achieving sustainable, high-quality development;

- An emphasis on ensuring the vitality of existing town centres;
- Building a strong and competitive economy; and
- Making more effective use of land.

4.2.4 The 2019 revised NPPF provides more guidance on how Local Authorities should form Development Plans, policies and the decision-making process compared to the original NPPF published in 2012. Greater emphasis is placed on early consultation and the addressing of location, provision and design issues during the planning stages in order to ensure high-quality sustainable developments are brought forward, rather than applying numerous planning conditions to planning decisions.

4.2.5 The same principles are also emphasised in order to ensure new developments are brought forward with minimal delay through the planning process.

4.2.6 Local authorities are expected to grant permission, using the NPPF where the Local Plan is absent, silent, indeterminate or where relevant policies are out of date, unless the adverse effects of granting planning permission significantly and demonstrably outweigh the benefits of the scheme.

4.2.7 At the heart of NPPF is 'a presumption in favour of sustainable development' (Paragraph 11).

4.2.8 With regard to sustainable transport the NPPF states in paragraph 103 that:

'Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health.'

4.2.9 The NPPF goes on to consider parking provision, stating in paragraph 106 *'Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport.'*

4.2.10 In determining planning proposals, paragraph 108 of the NPPF states:

- *In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*
- *appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- *safe and suitable access to the site can be achieved for all users; and*
- *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree or development.*

4.2.11 Developments are required to provide and promote pedestrian and cyclist movements as a priority, facilitate access to public transport services and maximise the catchment areas for bus and other public transport services.

4.2.12 It is demonstrated in the subsequent sections of this TA that the site is located close to good pedestrian links (once improved) and public transport networks and is therefore ideally situated to encourage trips by sustainable modes of travel.

4.2.13 Furthermore, the report also demonstrates that the proposals will not have a material impact on the adjoining highway network.

4.2.14 It is therefore clear from the NPPF that development:

- Should be assessed with a presumption in favour of approval.
- Should be capable of being accessed satisfactorily with safe and suitable access provided for all.
- Should be sustainable, with preference given to accessibility by sustainable modes of transport.
- Therefore, developments should be located and designed where practical to;
- give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- allow for the efficient delivery of goods, and access by service and emergency vehicles; and
- be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

4.2.15 The location of the proposed development close to a number of local amenities (as described in Section 5.2 of this TA), in accordance with the guidance contained within paragraph 20, which states that:

'Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

- *housing (including affordable housing), employment, retail, leisure and other commercial development;*
- *infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);*
- *community facilities (such as health, education and cultural infrastructure); and*
- *conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation'.*

4.2.16 It is therefore concluded that as the development is located a short distance from a range of local amenities, is accessible by public transport and has been designed in accordance with the guidance contained within Manual for Streets, it is considered that the proposed development accords with the aims and objectives of the Framework.

4.2.17 Paragraph 111 of the NPPF states:

'All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed'.

4.2.18 In order to satisfy this policy requirement, this TA is accompanied by a Travel Plan Framework which provides commitment to produce a full Travel Plan upon completion of the development.

National Planning Practice Guidance (NPPG)

4.2.19 The National Planning Practice Guidance (NPPG) web-based resource was published on 6 March 2014 by the Department for Communities and Local Government, now MHCLG.

4.2.20 This resource collates relevant planning practice guidance and provides links between the NPPF and relevant legislation and guidance.

4.2.21 In terms of transportation, the guidance on 'Travel Plans, Transport Assessments and Statements in Decision-Taking' is relevant to the proposals.

4.2.22 It essentially replaces the DFT's 'Guidance on Transport Assessment' (2007) and states in Paragraph 005 that:

'*Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development.'*

'Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be "severe", which may be grounds for refusal, in accordance with the National Planning Policy Framework'.

4.2.23 Paragraph 014 provides guidance on establishing the need and scope of a Transport Assessment or Statements.

4.2.24 It states that '*The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management* *process as possible as this may positively influence the overall nature or the detailed design of the development.'*

4.2.25 Paragraph 014 goes on to state that the key issues to consider at the start of preparing a Transport Assessment are as follows:

- The planning context of the development proposal;
- Appropriate study parameters (i.e. area, scope and duration of study);
- Assessment of public transport capacity, walking / cycling capacity and road network capacity;
- Road trip generation and trip distribution methodologies and/or assumptions about the development proposal;
- Measures to promote sustainable travel;
- Safety implications of development; and
- Mitigation measures (where applicable) – including scope and implementation strategy.

4.2.26 Regarding treatment of cumulative impact of development, the NPPG also states in Paragraph 014 that *'It is important to give appropriate consideration to the cumulative impacts arising from other committed development (i.e. development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next three years).'*

4.2.27 At the decision-taking stage this may require the developer to carry out an assessment of the impact of those adopted Local Plan allocations which have the potential to impact on the same sections of transport network as well as other relevant local sites benefitting from as yet unimplemented planning approval.'

4.2.28 The scope for preparing this TA is in line with current guidance and conforms to the principles outlined in the NPPG.

4.2.29 The Framework Travel Plan (FTP) accompanying this application (as a separate document) was prepared within the context of the relevant guidance contained in the NPPG and accords with the following principles:

'Travel Plans are long-term management strategies for integrating proposals for sustainable travel into the planning process. They are based on evidence of the anticipated transport impacts of development and set measures to promote and encourage sustainable travel (such as promoting walking and cycling)'. (Paragraph 003)

Travel Plans should where possible, be considered in parallel to development proposals and readily integrated into the design and occupation of the new site rather than retrofitted after occupation'. (Paragraph 003)

The primary purpose of a Travel Plan is to identify opportunities for the effective promotion and delivery of sustainable transport initiatives e.g. walking, cycling, public transport and telecommuting, in connection with both proposed and existing developments and through this to thereby reduce the demand for travel by less sustainable modes.' (paragraph 005).

4.2.30 On the basis of the above, the proposed Framework Travel Plan has been prepared in tandem with this TA and addresses the potential for modal shift from private car use to sustainable transport modes.

4.2.31 It contains measures to encourage walking, cycling and public transport, thereby meeting the principals set out above.

4.3 Local Policy

Lancashire County Council Local Transport Plan (LTP3)

4.3.1 Under the Transport Act of 2000 (amended by the Local Transport Act 2008), every local transport authority in the country has to publish a Local Transport Plan (LTP).

4.3.2 The LTP should set out the authority's transport policies and its proposals for the implementation of those policies.

4.3.3 The Lancashire County Council's third Local Transport Plan (LTP3) came into force in May 2011 and covers the period 2011 to 2021. The plan sets out the following transport goals within LTP3 to increase prosperity and well-being for all communities in Lancashire:

- *'To help to secure a strong economic future by making transport and travel into and between our major economic centres more effective and efficient and by improving links to neighbouring major economic areas and beyond'*
- *'To provide all sections of the community with safe and convenient access to the services, jobs, health, leisure and educational opportunities that they need'.*
- *'To improve the accessibility, availability and affordability of transport as a contribution to the development of strong and cohesive communities.*
- *'To create more attractive neighbourhoods by reducing the impact of transport on our quality of life and by improving our public realm'.*
- *'To reduce the carbon impact of Lancashire's transport requirements, whilst delivering sustainable value for money transport options to those who need them'.*

- *'To make walking and cycling more safe, convenient and attractive, particularly in the more disadvantaged areas of Lancashire, bringing improvements in the health of Lancashire's residents.*

- *'In all that we do, to provide value for money by prioritising the maintenance and improvement of Lancashire's existing transport infrastructure where it can help to deliver our transport goals'.*

- *Although the LTP does not list specific aims and objectives, the following transport priorities are listed:*

- *Improving access into areas of economic growth and regeneration.*

- *Providing better access to education and employment*

- *Improving people's quality of life and wellbeing*

- *Improving safety of our streets for our most vulnerable residents*

- *Providing safe, reliable, convenient and affordable transport alternatives to the car*

4.3.4 The layout demonstrates that the development proposals would be integrated with existing networks to ensure safe, convenient and attractive access for pedestrians, cyclists and public transport users.

4.3.5 As will be detailed in the following section, these networks ensure the development is within walking and/or cycling distance of key services or amenities.

4.3.6 It is considered that the design of the layout and the proposed transport arrangements for the proposed residential use development are in accordance with achieving the outcomes of the Third Local Plan.

Rossendale Borough Council Core Strategy

4.3.7 The Rossendale Borough Council Core Strategy was adopted on the 8th November 2011. The Local Plan sets out the vision and planning strategy for development in the borough between 2011 and 2026.

4.3.8 As stated in Policy 9: Accessibility, it is proposed that the following principles be applied to all new development within Rossendale:

- *The Transport User Hierarchy will form the basis for consideration of all applications.*
- *New development within the urban boundary should be concentrated close to main public transport corridors such as Rising Bridge-Whitworth or within 400 metres of a bus stop with regular services. Enhanced links to key services and employment opportunities, including in adjacent Boroughs, such as Kingsway in Rochdale, will be pursued. Supporting innovative schemes for "demand responsive" transport will be pursued for hard to access locations. Accessibility planning will be used as a tool to identify the most appropriate form of response.*
- *The design and improvement of streets and the wider urban environment as attractive places for all users will be given high priority.*
- *The footpath, cycleway and bridleway network including the Rossendale way, Irwell Sculpture Trail and National Cycle Network will be developed and enhanced in an integrated manner as part of Rossendale's "Green Infrastructure" and Tourism Strategy. Measures to encourage use by the mobility impaired and those experiencing health issues will be promoted.*

- *The Council will promote the delivery of its services as well as those of key stakeholders in the Borough, through means that where possible avoid the need to travel. (e.g. web-based services and local provision) and that can be implemented in a cost-efficient and effective manner.*

4.3.9 Appendix 1 of the Core Strategy contains the Parking Standards for the Borough. This states that for C3 (residential), the following parking levels are required:

- 1 bedroom: 1 space;
- 2-3 bedrooms: 2 spaces;
- 4+ bedrooms: 3 spaces

Emerging Policy - Rossendale Local Plan – Submission Version (2019 to 2034)

4.3.10 The emerging Local Plan for Rossendale (2019-2034) was formally submitted for Examination in March 2019. Once adopted, it will supersede the 2011 Core Strategy as the Development Plan for Rossendale.

4.3.11 Policy TR2 supports the development and enhancement of a strategic Public Rights of Way network, including National Cycle Route 6 which is in close proximity of the site.

4.3.12 Policy TR4 retains the parking standards from the adopted plan.

4.4 Planning Policy Summary

4.4.1 The proposed development is in accordance with national and local policy for the following reasons:

- The proposed development will reduce the need to travel due to it being located in close proximity to a range of services and facilities, such as, schools, retail opportunities, health facilities and pedestrian and cycle routes. Further details on the accessibility of the proposed development by non-car modes are provided in Section 5 of this Transport Assessment.

- The site is located in close proximity of a range of public transport opportunities and will provide high quality infrastructure which will focus on the needs of pedestrians and cyclists facilitating non-car travel to and from the proposed development.

- The site promotes sustainable transport in accordance with the NPPF as it facilitates sustainable development and contributes to wider sustainability and health objectives.

- The proposed development accords with required parking standards contained within the Core Strategy.

- Additionally, Section 7 of this Transport Assessment considers the traffic impact of the proposed development on the local highway network to establish the extent of any significant highway impacts and evaluate compliance with the NPPF which states that development should only be refused on transport grounds where the residual cumulative impacts of development are severe.

5 ACCESSIBILITY BY NON-CAR MODES

5.1 Introduction

5.1.1 In order to accord with the aspirations of the NPPF, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

5.1.2 New proposals should attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

5.1.3 The accessibility of the proposed site has been considered by the following modes of transport:

- Accessibility on foot.
- Accessibility by cycle.
- Accessibility by bus.
- Accessibility by rail.

5.2 Accessibility on Foot

5.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life.

5.2.2 This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

5.2.3 The nearest footways to the site are located to the north of the site on the B6232 Grane Road and to the west of the site on the B6235Holcombe Road. These footways provide pedestrian links throughout Haslingden and provides direct linkages to the nearby day to day amenities within the town.

5.2.4 The CIHT document 'Planning for Walking' from 2015 states, in paragraph 2.1, that in 2012 that 79% of all journeys made in the UK of less than a mile (1.6 kilometres) are carried out on foot.

5.2.5 Within the Institution of Highways and Transportation (IHT) document, entitled "Guidelines for Providing for Journeys on Foot", Table 2.2 suggests distances for desirable, acceptable and preferred maximum walks to 'town centres', 'commuting/schools' and 'elsewhere'. The 'preferred maximum' distances are shown below in Table 5.1.

Suggested Preferred Maximum Walk		
Town Centre	**Commuting/School**	**Elsewhere**
800m	2,000m	1,200m

Table 5.1 – IHT 'Providing for Journeys on Foot' Walk Distances

5.2.6 Reference to the 2,000 metre walking distance is also made in the now superseded Planning Policy Guidance (PPG) Note 13 which advised that 'walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2km'.

5.2.7 Manual for Streets (MfS) continues the theme of the acceptability of the 2,000 metre distance in paragraph 4.4.1. This states that '*walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km*'.

5.2.8 Table 5.2 below summarises this guidance in tabular form.

'Comfortable' Walk	'Preferred Maximum' Walk
800m	2,000m

Table 5.2 – Manual for Streets Walk Distances

5.2.9 More specific guidance on the distances that children will walk to school is found in the July 2014 document published by the Department for Education (DfE) entitled 'Home to School Travel and Transport' statutory guidance document. This suggests that the maximum walking distance to schools is 2 miles (3.2 kilometres) for children under 8 and 3 miles (4.8 kilometres) for children over the age of 8. This is summarised below in Table 5.3.

Children under 8 Walk Distance	Children over 8 Walk Distance
3,200m	4,800m

Table 5.3 – DfE Walk Distances to Schools

5.2.10 Further evidence that people will walk further than the suggested 'preferred maximum' distances in the IHT 'Providing for Journeys on Foot' is contained in a WYG Report entitled 'Accessibility – How Far do People Walk and Cycle'. This report refers to National Travel Survey (NTS) data for the UK as a whole, excluding London, that the 85th percentile walking distance for:

- All journey purposes – 1,930 metres.
- Commuting – 2, 400 metres.
- Shopping – 1,600 metres.
- Education – 3,200 or 4,800 metres.
- Personal business – 1,600 metres.

5.2.11 Overall, in Table 5.1, the document states that 1,950 metres is the 85th percentile distance for walking as the main mode of travel. Table 5.4 below summarises the various 85th percentile walking distances suggested as guidelines in the WYG Study.

85th Percentile Walk Distances					Overall Recommended Preferred
All Journeys	Commuting	Shopping	Education	Personal	
1,950m	2,100m	1,600m	3,200/4,800m	1,600m	1,950m

Table 5.4 – WYG Report/NTS Data Walk Distances

5.2.12 In summary, it is considered that the distance of 1,950 metres, or around 2 kilometres, represents an acceptable maximum walking distance for the majority of land uses although clearly the DfE guidance for walking to school is up to 3.2 kilometres.

5.2.13 Section 3.1 of the CIHT guidance 'Planning for Walking' mentioned earlier in this report provides a useful reminder of the health benefits of walking. This states that:

'A brisk 20 minute walk each day could be enough to reduce an individual's risk of an early death'.

5.2.14 A 20 minute walk equates to a walking distance of around 1,600 metres.

5.2.15 In light of the above review, a pedestrian catchment of 2 kilometres from the centre of the site, using all usable pedestrian routes, has been provided in **Plan 5** and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.

5.2.16 In addition, to the pedestrian catchment plan, a review of the proximity of local facilities such as pharmacies/doctor's surgeries, schools (both primary and secondary) local shops/retail outlets and leisure facilities has been undertaken and the location of these is also shown in **Plan 6**.

5.2.17 The 2,000 metre pedestrian catchment illustrates that large areas of Haslingden can be accessed along with various amenities such as The Holden Arms public house, Nisa convenience store, Co-op food store, Haslingden Health Centre, Cohens Pharmacy, Haslingden Primary School, Haslingden St James Church of England Primary School and Adrenaline Centre.

5.2.18 Table 5.5 below, shows the walking distance from the centre of the site to the local amenities in the vicinity of the site. The table also confirms whether or not the particular amenity is within the 'preferred maximum' walking distances using the above guideline criteria:

Local Amenity	Distance	Guidance Criteria	Meets with Guidance?
Holden Arms	110m	1,600m	**YES**
Holden Wood Tea Rooms	190m	1,600	**YES**
Nisa Convenience Store	1,350m	1,600m	**YES**
Haslingden Health Centre	1,360m	1,600m	**YES**
Cohens Pharmacy	1,360m	1,600m	**YES**
Haslingden Sports Centre	1,400m	1,600m	**YES**
Haslingden primary school	1,480m	3,200m	**YES**
Co-op Convenience Store	1,600m	1,600m	**YES**
Haslingden St James Church of England Primary School	1,700m	3,200m	**YES**

Table 5.5 - Distance from Site to Local Facilities

5.2.19 As can be seen in the above table, the site is located within close proximity to a number of local amenities including primary services as well as leisure facilities.

5.2.20 All of the day to day amenities are well within the 'preferred maximum' walk distances described earlier in this section and indeed many, including the nearest convenience store, pharmacy and nearest primary school.

5.2.21 It is therefore considered that the existing pedestrian infrastructure together with the proposed improvements will facilitate safe and direct pedestrian linkages between the site and local destinations.

5.3 Accessibility by Cycle

5.3.1 An alternative mode of travel to the site could be achieved by bicycle.

5.3.2 A distance of 5 kilometres is generally accepted as a distance where cycling has the potential to replace short car journeys. This distance equates to a journey of around 25 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass Haslingden, Edenfield, Rawtenstall and Rossendale.

5.3.3 Regional Route 91 is located to the immediate north of the site on Grane Road, this route is also known as the Lancashire cycleway which travels along the outskirts of Blackburn, Burnley, Bolton, Wigan and Preston.

5.3.4 National Cycle Route 6 is located approximately 290 metres east from the centre of the site. This route passes through Watford, Luton, Milton Keynes, Northampton, Market Harborough, Leicester, Derby, Nottingham, Worksop, Sheffield, Manchester, Blackburn, Preston, Lancaster, Kendal and Windermere. This development will provide a potential link to this route (subject to agreement of third party landowners).

5.3.5 The site can therefore be considered as being accessible by cycle.

5.4 Accessibility by Bus

5.4.1 The nearest bus stops to the site are located to the north of the site on Grane Road, approximately 200 metres from the centre of the site, consisting of bus shelter with a bus service timetable. All the nearest bus stops to the site are shown on **Plan 6**.

5.4.2 A summary of the services available from the nearest bus stops from the development site is provided in Table 5.6 below.

Service No	Route	Monday – Friday Frequency per hour				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
11	Rawtenstall – Oakley – Haslingden – Helmshore circular	1	1	1	0	1	0
481	Bury - Blackburn	1	1	1	0	1	0

Table 5.6 - Existing Bus Services Operating Past the Site

5.4.3 As can be seen from Table 5.6, the Number 11 is a circular service providing an hourly service Monday to Saturday to local destinations such as Rawtenstall and Haslingden, Helmshore. Whilst the 481-bus service provides an hourly service between Bury and Blackburn.

5.4.4 The first bus service to Rawtenstall on a weekday leaves at 08:22 and arrives at 0844 whilst the last service from Rawtenstall to the bus stops in the vicinity of the site is at 1735.

5.4.5 The first bus to Blackburn from the site between Monday and Friday is at 06:43 whilst the last bus to Blackburn leaves the site at 17:43. Additionally, the last bus from Blackburn towards the site leaves at 18:25. On a Saturday, the first bus to Blackburn is at 08:08 and the last bus to leave the site is at 17:08, it is also worth noting that last bus to leave Blackburn towards the site on a Saturday is at 17:53.

5.4.6 In the opposite direction, the first bus towards Bury between Monday and Friday sets off at 07:42 and the last bus leaves the site at 18:54. On a Saturday, the first bus leaves at 09:22 whilst the last bus towards Bury leaves at 18:22.

5.4.7 Based on this, in can be concluded that the local bus service provides an appropriate option for commute trips to and from destination such as Rawtenstall, Haslingden, Bury and Blackburn, which are likely to be main areas of employment for potential residents of the development.

5.4.1 It is therefore concluded that the proposed development site is accessible by bus.

5.5 Accessibility by Rail

5.5.1 The most accessible train station to the site is Blackburn train station. Although this falls outside the recommended 2 kilometre pedestrian walking catchment, it is accessible via a 32 minute bus journey on service bus No. 481.

5.5.2 This train station is managed by Northern and has 4 platforms, offering 8 services per hour to destinations such as York, Rochdale, Southport, Preston (Lancs), Colne and Clitheroe.

5.5.3 These services increase the opportunity for residents to travel further afield by public transport, with access to Preston, which in turn provides frequent services to destinations throughout the UK.

5.5.4 This provides opportunities for commuting/leisure opportunities from the site via rail.

5.6 Accessibility Summary

5.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed residential development.

5.6.2 The following conclusions can be drawn from this section of the Report:

- The site is accessible on foot and these provisions will be improved as part of the works on the development site.

- It has been demonstrated that the site is accessible by cycle, with Regional Route 91 is located to the immediate north of the site and National Cycle Route 6 situated approximately 290 metres east from the centre of the site.

- The site is accessible to bus stops located north of the site on Grane Road, providing access to and from Haslingden, Bury and Blackburn.

- The site is accessible via rail with Blackburn train station located around 32 minutes away on bus service 481.

5.6.3 In light of the above, it is considered the site is accessible by non-car modes and will cater for needs of the development's residents and assist in promoting a choice of travel modes other than the private car.

6 PROMOTING SMARTER CHOICES VIA TRAVEL PLANS

6.1 Introduction

6.1.1 In order to manage the travel by residents on the new development, the applicant wishes to offer a Travel Plan to encourage travel to the site by non-car modes.

6.2 Travel Planning Guidance

6.2.1 The objective of the Travel Plan is the delivery of the objectives of National Planning Policy, i.e. to encourage residents to travel by non-car modes of travel. The Travel Plan outlines physical and management measures that are designed to achieve this objective.

6.2.2 The effectiveness of Travel Plans in assisting the use of non-car modes for journeys is intrinsically linked to the accessibility of a given site by means other than the private car.

6.2.3 The proposed development has been demonstrated to benefit from good non-car accessibility and it should, therefore, be expected that the adoption of a Travel Plan would be effective.

6.2.4 A draft Framework Travel Plan is contained within **Appendix 1**.

7 TRAFFIC IMPACT ANALYSIS

7.1 Introduction

7.1.1 Having established that the proposed development site is highly accessible by modes of transport other than the private car and would be in general accordance with land use and transport policies and the NPPF which seeks to deliver sustainable development, the following section of the report considers the traffic impact of the development proposals on the local highway network.

7.2 Study Area

7.2.1 In order to assess the impact of the proposed development on the local highway network traffic surveys were undertaken at the following junctions on Wednesday 28th September 2016 as agreed with the highway's officers at LCC;

- B6232 Grane Road/ B6235 Holcombe Road/Graveyard crossroads junction;
- B6232 Grane Road /Jubilee Road priority controlled junction;
- B6232 Grane Road /A56 Off-Slip junction;
- B6232 Grane Road /A56 On-Slip junction.

7.2.2 The full traffic survey is contained within **Appendix 2**. The AM and PM peak hours were identified as 0745 to 0845 hours and 1630 to 1730 hours. The AM and PM peak hours are shown within **Figures 1** and **2** in terms of PCU's.

7.2.3 Although the traffic counts were undertaken within the last 3 years and therefore in accordance with best practice. As agreed with the highways officers at LCC, an Automatic Traffic Count (ATC) was undertaken on B6232 Grane Road on Thursday 13th December 2018 as a check count. Table 7.1 below summarises the 2016 + 2018 flows on B632 whilst the full output is contained in **Appendix 2**.

Movement	2016	2018
B6232 Grane Road – Eastbound - AM	914	831
B6232 Grane Road – Westbound - AM	997	836
B6232 Grane Road – Eastbound - PM	1045	766
B6232 Grane Road – Westbound - PM	1087	851

Table 7.1 – Comparison of Observed Traffic Flows on B6232 (PCUS)

7.2.4 As can be seen in table 7.1, the 2016 traffic flows are higher than those counted in 2018. Therefore, the 2016 traffic flows are representative of traffic flow conclusions, in fact these provide a robust assessment of traffic conditions.

7.3 Growthed Flows

7.3.1 In order to factor the surveyed traffic flows to the assumed year of opening, 2024, and the future assessment year of 2024 a National Trip End Model (NTEM) adjusted National Road Traffic Model (NTM) growth factor was applied for Rossendale (MSOA Rossendale 007) as agreed with the local highway's officers.

7.3.2 The assessment years have been used following discussions with the applicant regarding likely completion timescales for the proposals.

7.3.3 The resultant NTM adjusted growth factors are shown below;

- 2016 to 2024 AM Peak = 1.0884
- 2016 to 2024 PM Peak = 1.0823

7.3.4 The resultant growthed traffic flows are shown in **Figures 3** and **4** for the 2024 growthed traffic flows AM and PM peak periods.

7.4 Committed Development

7.4.1 It is our understanding that there are no major committed developments within the vicinity of the site that need to be included within this traffic impact analysis. As such, the growthed flows represent the base traffic flows.

7.5 Trip Distribution

7.5.1 The directional distribution of the traffic associated with the proposals has been assigned to the local highway network in line with the observed vehicle movements. This trip distribution has been agreed with the highway's officers at LCC.

7.5.2 The resulting traffic assignment for the AM peak period is shown in **Figure 5** whilst the assigned PM peak traffic is shown in **Figure 6**.

7.6 Proposed Development

7.6.1 For the purposes of this traffic impact analysis as agreed with the local highway officers the trip generation for the proposed development has been based on the approved vehicle trip rates that for a number of other residential development sites in Lancashire.

7.6.2 The peak hour trip rates and forecast trip generation based on a total of 150 residential units are shown within Table 7.2 below.

Peak Period	Trip Rate (per unit)		Number of Trips	
	Arr	Dep	Arr	Dep
AM Peak Hour	0.140	0.445	18	58
PM Peak Hour	0.438	0.227	57	30

Table 7.2 - Summary of Total Development Flows (131 Units)

7.6.3 As can be seen from Table 7.2, the provision of 131 residential units is predicted to generate 76 two-way trips during the weekday AM peak hour and 87 two-way trips during the weekday PM peak hour.

7.6.4 In order to assign the traffic forecast to be generated by the proposed development, the trip distribution shown in the **Figures 5** and **6** has been utilised.

7.6.5 The resultant proposed residential development flows for the am peak are shown in **Figure 7** whilst the proposed residential development flows for the pm peak are shown in **Figure 8**.

7.7 With Development Flows

7.7.1 In order to calculate the 2024 'With Development' flows, the 2024 Growthed Flows contained within Figures 3 and 4, were added to the development flows contained within Figures 7 and 8. The resultant 2024 'With Development' flows are contained within **Figures 9** and **10** for the two peak hour periods respectively.

7.8 Changes in Traffic

7.8.1 Having established the levels of traffic that occur as a result of the existing use on the site and the levels of traffic that would occur as a result of the proposed development, the likely changes in traffic that would be experienced on the local highway network can be derived.

7.8.2 Table 7.3, below, summarises the changes in traffic that are predicted to occur at the junctions on the local highway network during the weekday peak periods as a result of the proposed development.

	2024 Growthed Flows	2024 'With Dev' Flows	Change in Traffic	Percentage Change
B6235 Holcombe Road/Site Access Mini-roundabout				
Weekday AM Peak	279	355	+76	+27.2%
Weekday PM Peak	463	549	+86	+18.6%
B6232 Grane Road/B6235 Holcombe Road				
Weekday AM Peak	2056	2128	+72	+3.5%
Weekday PM Peak	2409	2492	+83	+3.4%
B6232 Grane Road/Jubilee Way				
Weekday AM Peak	2166	2203	+37	+1.7%
Weekday PM Peak	2438	2480	+42	+1.7%
B6232 Grane Road/A56 On-Slip				
Weekday AM Peak	1245	1273	+28	+2.2%
Weekday PM Peak	1486	1505	+19	+1.3%
B6232 Grane Road/A56 Off-Slip				
Weekday AM Peak	2040	2075	+35	+1.7%
Weekday PM Peak	2198	2237	+39	+1.8%

Table 7.3 - Predicted Changes in Traffic Flow Resulting from Proposed Development

7.8.3 As can be seen in Table 7.3, the proposed development is forecast to result in increases of less than 4% other than at the proposed site access junction. Notwithstanding this, as agreed with the highway's officers at LCC, assessments have been undertaken at the following junctions to assess the impact of the proposed development;

- B6235 Holcombe Road/Site Access mini-roundabout junction;
- B6232 Grane Road/ B6235 Holcombe Road/Graveyard crossroads junction;
- B6232 Grane Road /Jubilee Road priority controlled junction;
- B6232 Grane Road /A56 Off-Slip junction;
- B6232 Grane Road /A56 On-Slip junction.

7.9 Capacity Assessments

B6235 Holcombe Road/Site Access Mini-roundabout Junction

7.9.1 To assess the operation of the proposed the B6235 Holcombe Road/Site Access mini-roundabout junction the computer program ARCADY has been utilised using the junction layout displayed in **Plan 2** and 2024 'With Development' Flows.

7.9.2 Table 7.4 below summarises the results of the ARCADY analysis whilst the full output is contained within **Appendix 3**.

Arm	2024 With Development			
	Weekday AM		Weekday PM	
	RFC	Max Q	RFC	Max Q
B6235 Holcombe Road (N)	0.16	0	0.38	1
Site Access	0.10	0	0.06	0
B6235 Holcombe Road (S)	0.21	0	0.25	0

Table 7.4 - Summary of ARCADY Results for the B6235 Holcombe Road/Site Access Mini-roundabout Junction 2024 'With Development' Flows

7.9.3 As can be seen from Table 7.4 the proposed B6235 Holcombe Road/Site Access junction is forecast to operate well within its theoretical capacity in the assessment scenarios and can therefore adequately accommodate the traffic forecast to be generated by the proposed development.

B6232 Grane Road/B6235 Holcombe Road/Graveyard Crossroads Junction

7.9.4 To assess the operation of the B6232 Grane Road/B6235 Holcombe Road/Graveyard crossroads junction the PICADY 9 computer program has been utilised.

7.9.5 Assessments were undertaken using the 2016 surveyed flows the results of which are summarised within Table 7.5 with the full results contained within Appendix 4.

7.9.6 It should be noted that the traffic flows have been inputted into the model using the DIRECT mode. This allows direct entry of demand for each time segments and enables the traffic flow at the junction to be modelled accurately.

Arm	2016 Surveyed Flows			
	Weekday AM		Weekday PM	
	RFC	Q	RFC	Q
B6235 Holcombe Road (Left turn)	0.03	0	0.04	0
B6235 Holcombe Road (Right turn)	0.05	0	0.06	0
B6232 Grane Road (E) Right-turn	0.00	0	0.00	0
Graveyard	0.00	0	0.00	0
B6232 Grane Road (W) Right-turn	0.00	0	0.06	0

Table 7.5 - Summary of PICADY Results for the B6232 Grane Road/B6235 Holcombe Road/Graveyard Junction – 2016 Surveyed Flows

7.9.7 As can be seen in Table 7.5, the existing B6232 Grane Road/B6235 Holcombe Road/Graveyard Junction operates with minimal levels of delay and queuing. This concurs with on-site observations when the traffic surveys were undertaken in 2016. In addition, review of the Google Live Traffic data shows that this junction benefits from low levels of delay.

7.9.8 To ascertain the impacts of the proposed development, assessments have been undertaken using the 2024 Base Flows and the 2024 'With Development' Flows.

7.9.9 The results of this analysis are summarised below in Table 7.6 whilst the full output is contained within **Appendix 4**.

Arm	2024 Base Flows				2024 With Development Flows			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B6235 Holcombe Road (Left turn)	0.04	0	0.05	0	0.05	0	0.05	0
B6235 Holcombe Road (Right turn)	0.05	0	0.06	0	0.07	0	0.07	0
B6232 Grane Road (E) Right-turn	0.00	0	0.00	0	0.00	0	0.00	0
Graveyard	0.00	0	0.00	0	0.00	0	0.00	0
B6232 Grane Road (W) Right-turn	0.00	0	0.07	0	0.01	0	0.08	0

Table 7.6 - Summary of PICADY Results for the B6232 Grane Road/B6235 Holcombe Road/Graveyard Junction – 2024 Base and With Development Flows

7.9.10 As can be seen in Table 7.6, the B6232 Grane Road/B6235 Holcombe Road/Graveyard junction is forecast to operate well within its theoretical capacity in the 2024 scenarios. With the addition of the proposed development there is forecast to be minimal increases in the RFC.

7.9.11 Based on the above it is concluded that the proposed development will have a minimal impact on the operation of the B6232 Grane Road/B6235 Holcombe Road/Graveyard crossroads junction.

B6232 Grane Road/Jubilee Road Priority Controlled Junction

7.9.12 To assess the operation of the B6232 Grane Road/Jubilee Road priority controlled junction the PICADY 9 computer program has been utilised. The 2016 surveyed flows assessments were undertaken and the results are summarised within Table 7.7 with the full results contained within **Appendix 5**.

7.9.13 It should be noted that the traffic flows have been inputted into the model using the DIRECT mode tool in PICADY.

Arm	2016 Surveyed Flows			
	Weekday AM		Weekday PM	
	RFC	Q	RFC	Q
Jubilee Road	0.07	0	0.05	0
B6232 Grane Road (W)	0.03	0	0.05	0

Table 7.7 - Summary of PICADY Results for the B6232 Grane Road/Jubilee Road – 2016 Surveyed Flows

7.9.14 As can be seen in Table 7.7, the existing B6232 Grane Road/Jubilee Road Junction operates with minimal levels of delay and queuing. This concurs with on-site observations when the traffic surveys were undertaken in 2016.

7.9.15 The assessments have been undertaken using the 2024 Base and 'With Development' Flows.

7.9.16 The results of this analysis are summarised below in Table 7.8 whilst the full output is contained within **Appendix 5**.

Arm	2024 Base Flows				2024 With Development Flows			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Jubilee Road	0.08	0	0.06	0	0.08	0	0.06	0
B6232 Grane Road (W)	0.03	0	0.05	0	0.03	0	0.05	0

Table 7.8 - Summary of PICADY Results for the B6232 Grane Road/Jubilee Road Priority Controlled Junction – 2024 Base and With Development Flows

7.9.17 As can be seen in Table 7.8, the B6232 Grane Road/Jubilee Road junction is forecast to operate within its theoretical capacity in the 2024 scenarios. With the addition of the proposed development there is forecast to be minimal increases in the RFC and queuing at the junction.

7.9.18 It is therefore concluded that the proposed development will have a minimal impact on the operation of the B6232 Grane Road/Jubilee Road priority controlled junction.

B6232 Grane Road/A56 Off-slip Junction

7.9.19 To assess the operation of the B6232 Grane Road/A56 Off-slip junction the PICADY 9 computer program has been utilised. This junction has been modelled using the DIRECT tool.

7.9.20 Assessments were undertaken using the 2016 surveyed flows the results of which are summarised within Table 7.9 with the full results contained within Appendix 6.

Arm	2016 Surveyed Flows			
	Weekday AM		Weekday PM	
	RFC	Q	RFC	Q
A56 Off-slip (Left Turn)	0.30	0	0.30	0
A56 Off-slip (Right Turn)	0.03	0	0.03	0
B6232 Grane Road (W)	0.00	0	0.00	0

Table 7.9 - Summary of PICADY Results for the B6232 Grane Road/A56 Off-slip – 2016 Surveyed Flows

7.9.21 As can be seen in Table 7.9, the existing B6232 Grane Road/A56 Off-slip Junction operates with minimal levels of delay and queuing. This concurs with on-site observations when the traffic surveys were undertaken in 2016. In addition, review of the Google Live Traffic data shows that this junction benefits from low levels of delay.

7.9.22 The assessments have been undertaken using the 2024 Base Flows and the 2024 'With Development' Flows.

7.9.23 The results of this analysis are summarised below in Table 7.10 whilst the full output is contained within **Appendix 6**.

Arm	2024 Base Flows				2024 With Development Flows			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
A56 Off-slip (Left Turn)	0.33	1	0.33	1	0.33	1	0.34	1
A56 Off-slip (Right Turn)	0.04	0	0.03	0	0.04	0	0.03	0
B6232 Grane Road (W)	0.00	0	0.0	0	0.00	0	0.00	0

Table 7.10 - Summary of PICADY Results for the B6232 Grane Road/A56 Off-slip Junction – 2024 Base and With Development Flows

7.9.24 As can be seen in Table 7.10, the B6232 Grane Road/A56 Off-slip junction is forecast to operate well within its theoretical capacity in the 2024 scenarios. With the addition of the proposed development there is forecast to be minimal increases in the RFC.

7.9.25 Based on the above it is concluded that the proposed development will have a minimal impact on the operation of the B6232 Grane Road/A56 Off-slip junction.

B6232 Grane Road/A56 On-slip Junction

7.9.26 To assess the operation of the B6232 Grane Road/A56 On-slip junction the PICADY 9 computer program has been utilised.

7.9.27 Assessments were undertaken using the 2016 surveyed flows the results of which are summarised within Table 7.11 with the full results contained within **Appendix 7**.

Arm	2016 Surveyed Flows			
	Weekday AM		Weekday PM	
	RFC	Q	RFC	Q
B6232 Grane Road (W)	0.32	1	0.37	1

Table 7.11 - Summary of PICADY Results for the B6232 Grane Road/A56 On-slip – 2016 Surveyed Flows

7.9.28 As can be seen in Table 7.11, the existing B6232 Grane Road/A56 On-slip Junction operates with minimal levels of delay and queuing. This concurs with on-site observations when the traffic surveys were undertaken in 2016 and the review of Google Live Traffic data.

7.9.29 The assessments have been undertaken using the 2024 Base Flows and the 2024 'With Development' Flows. The results of this analysis are summarised below in Table 7.12 whilst the full output is contained within **Appendix 7**.

Arm	2024 Base Flows				2024 With Development Flows			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B6232 Grane Road (W)	0.35	1	0.40	1	0.36	1	0.41	1

Table 7.12 - Summary of PICADY Results for the B6232 Grane Road/A56 Off-slip Junction – 2024 Base and With Development Flows

7.9.30 As can be seen in Table 7.12, the B6232 Grane Road/A56 Off-slip junction is forecast to operate well within its theoretical capacity in the 2024 scenarios. With the addition of the proposed development there is forecast to be minimal increases in the RFC. This

7.9.31 Based on the above it is concluded that the proposed development will have a minimal impact on the operation of the B6232 Grane Road/A56 On-slip junction.

7.10 Capacity Assessment Summary

7.10.1 In summary, the capacity assessment undertaken as part of this traffic impact analysis has demonstrated the following:

- The B6235 Holcombe Road/Site Access Mini-roundabout junction has been designed to accord with highway design standards and will have sufficient capacity to accommodate the proposed development traffic.

- The B6232 Grane Road/B6235 Holcombe Road/Graveyard crossroads junction will be able to accommodate the traffic likely to be generated by the proposed development.

- The B6232 Grane Road/Jubilee Road priority controlled junction will be able to accommodate the traffic likely to be generated by the proposed development.

- The B6232 Grane Road/A56 Off-slip junction will be able to accommodate the traffic likely to be generated by the proposed development.

- The proposed development will have a negligible impact at the B6232 Grane Road/A56 On-slip junction.

7.10.2 It is therefore concluded that the development proposals will result in a minimal impact and can be accommodated on the local highway network.

8 ACCIDENT DATA

8.1 Introduction

8.1.1 In order to consider the potential impact of the development on road safety, a review of the Crashmap website (www.crashmap.co.uk) has been undertaken. The information provided on the website covered the five-year period 2013 to 2017, the latest data available in the vicinity of the development site.

8.1.2 CrashMap uses data collected by the police in relation to road traffic crashes occurring on British roads where someone is injured. This data is approved by the National Statistics Authority and reported on by the Department for Transport each year. This site uses data obtained directly from official sources but compiled in an easy to use format showing each incident on a map. Incidents are plotted to within 10 metres of their location, and as such, can sometimes appear to be off the carriageway.

8.2 Accident Review

8.2.1 According to the data provided, no accidents were recorded in the immediate vicinity of the site, or the location of the proposed site access.

8.2.2 The data shows however that there were 11 reported accidents in the last 5 years on the local road network within the study area. For ease, the accidents have been reviewed based on the following stretches of roads or junctions, where appropriate;

- B6232 Grane Road/B6235 Holcombe Road/Graveyard – 4 Accidents
- Stretch along B6232 Grane Road between Holcombe Road and Holden Place – 2 Accidents
- B6232 Grane Road/Jubilee Road Junction – 2 Accidents

- B6232 Grane Road/A56 On-slip Junction – 3 Accidents.

8.2.3 The accident data obtained from the Crashmap website is contained within **Appendix 8.**

8.2.4 The eleven reportable-injury incidents occurred within the study area all resulted in slight injuries, as listed below in Table 8.1.

Date	Severity	Light Conditions	Weather	Road Conditions	Manoeuvre
21/03/2016	Slight	Daylight	Fine	Dry	Car struck pedestrian in road
05/10/2015	Slight	Daylight	Raining	Wet or Damp	Car collided with another car on a bend
28/11/2016	Slight	Daylight	Fine	Dry	Rider lost control of Motorcycle on a bend, driver error
23/07/2017	Slight	Daylight	Fine	Wet or Damp	Two vehicles collided, shunt accident
16/08/2016	Slight	Daylight	Fine	Dry	Two vehicles collided, shunt accident
24/04/2014	Slight	Daylight	Fine	Dry	Goods vehicle collided with Cyclist
27/09/2017	Slight	Darkness – Street lights lit	Raining	Wet or Damp	Vehicle in the act of turning left hit by another vehicle
08/05/2018	Slight	Daylight	Fine	Dry	Vehicle in the act of turning left hit by another vehicle
21/05/2017	Slight	Daylight	Fine	Dry	Vehicle in the act of turning right hit by another vehicle
22/06/2016	Slight	Daylight	Fine	Dry	Vehicle in the act of turning right hit by another vehicle
24/03/2016	Slight	Daylight	Raining	Wet or Damp	Vehicle in the act of moving off hit by another vehicle

Table 8.1 - Accident Summary

8.2.5 Of the eleven reported accidents, one involved a pedestrian, one involved a cyclist and the remaining 9 incidents which resulted in slight injuries involved a driver or rider, the data suggests these accidents occurred due to driver error.

8.2.6 It is reasonable to conclude that the accidents recorded accidents in the study area can be attributed to drivers not observing other road users. The accident analysis has not identified any common causal factors relating to infrastructure or road conditions, consequently.

8.3 Accident Summary

8.3.1 The data reviewed has not identified any untypical accidents.

8.3.2 The data reviewed has therefore demonstrated that there are no particular road safety issues in the vicinity of the site.

8.3.3 It is considered that the proposals for a residential development will not unduly change the characteristics or nature of the surrounding highway network and as such will not have a detrimental impact on overall road safety.

8.3.4 As such, there is no evidence to suggest that the proposed residential development will have an adverse effect on road safety or the number of accidents in the vicinity of the application site.

9 CONCLUSIONS

9.1.1 This Report has considered proposals for a residential development off Holcombe Road in the Haslingden area of Rossendale.

9.1.2 Paragraph 32 of the NPPF states that plans and decisions should take into account whether;

- *The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- *safe and suitable access to the site can be achieved for all people; and*
- *Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.*

9.1.3 This document has demonstrated that the proposed development is in accordance with the above criteria for the following reasons;

- The proposed development will be accessed by a safe and efficient vehicular access arrangement.
- The proposed development complies with local and national planning policy.
- The proposed development benefits from being accessible on foot and cycle with the existing and proposed pedestrian footways/cycleways providing access to the surrounding areas of Haslingden.
- The site is accessible by bus with bus services providing access to local destinations such as Haslingden, Bury and Blackburn.

- A Framework Travel Plan will be implemented to encourage the use of non-car modes.
- The traffic impact assessment indicated that the proposed development can be accommodated on the local highway network.
- The traffic impact of the proposed development is considered to have a minimal impact on the junctions in the area.

9.1.4 In conclusion, the proposals will provide a sustainable development in Transport terms and not result in a severe impact, therefore planning permission should be granted in accordance with the Framework.

FIGURES

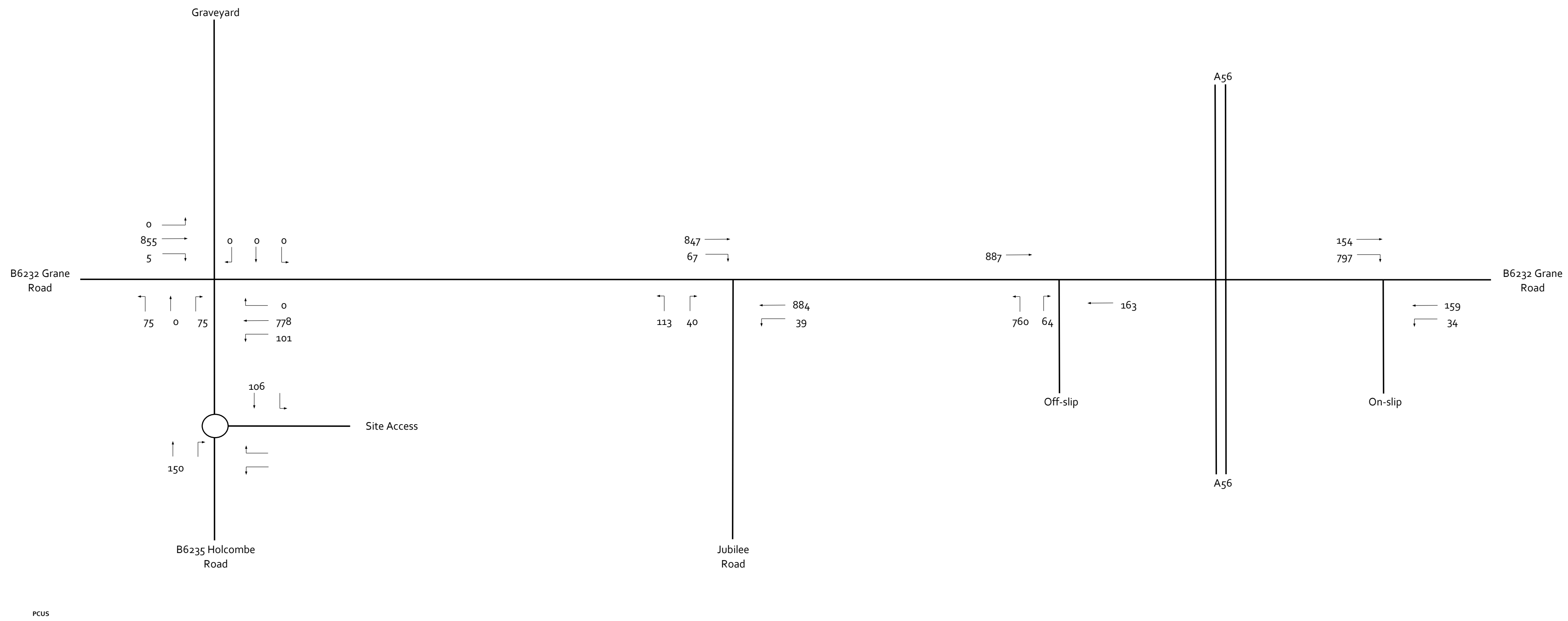


Figure 1 2016 Surveyed Flows - AM Peak (0745-0845)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

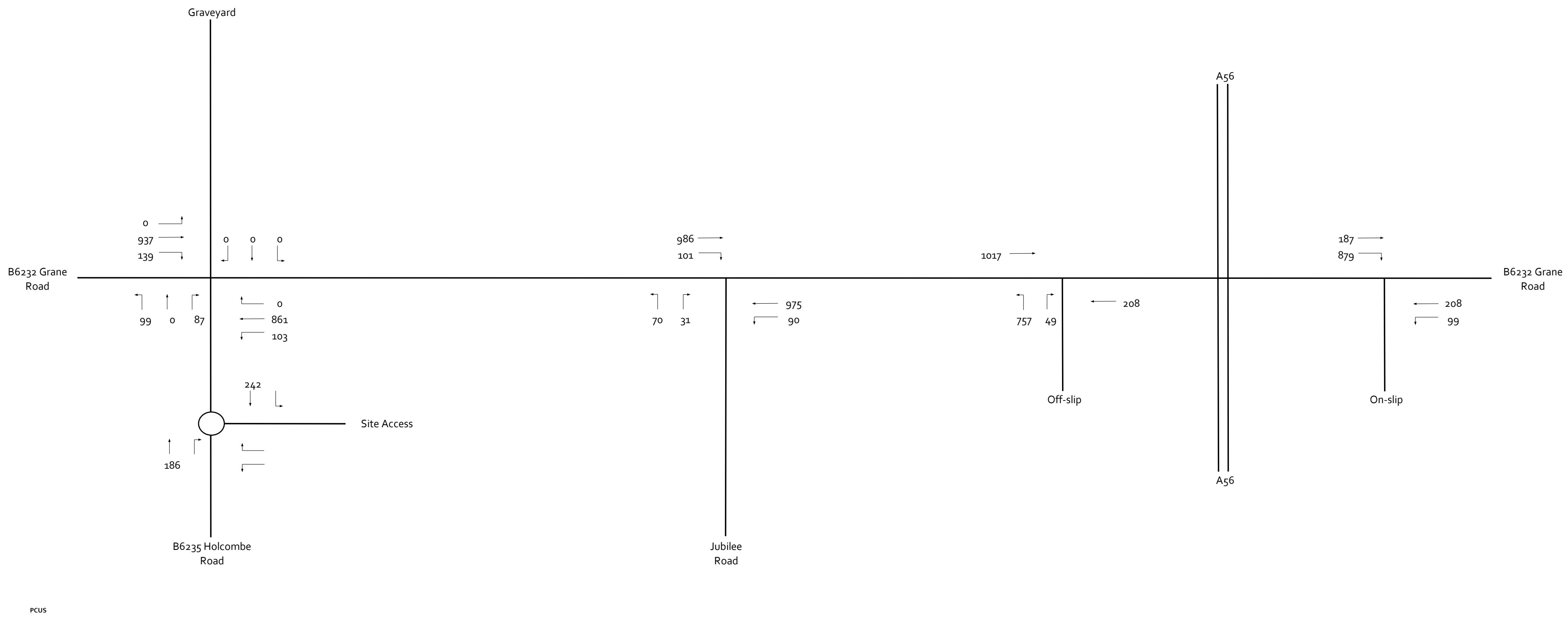


Figure 2 2016 Surveyed Flows - PM Peak (1630-1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

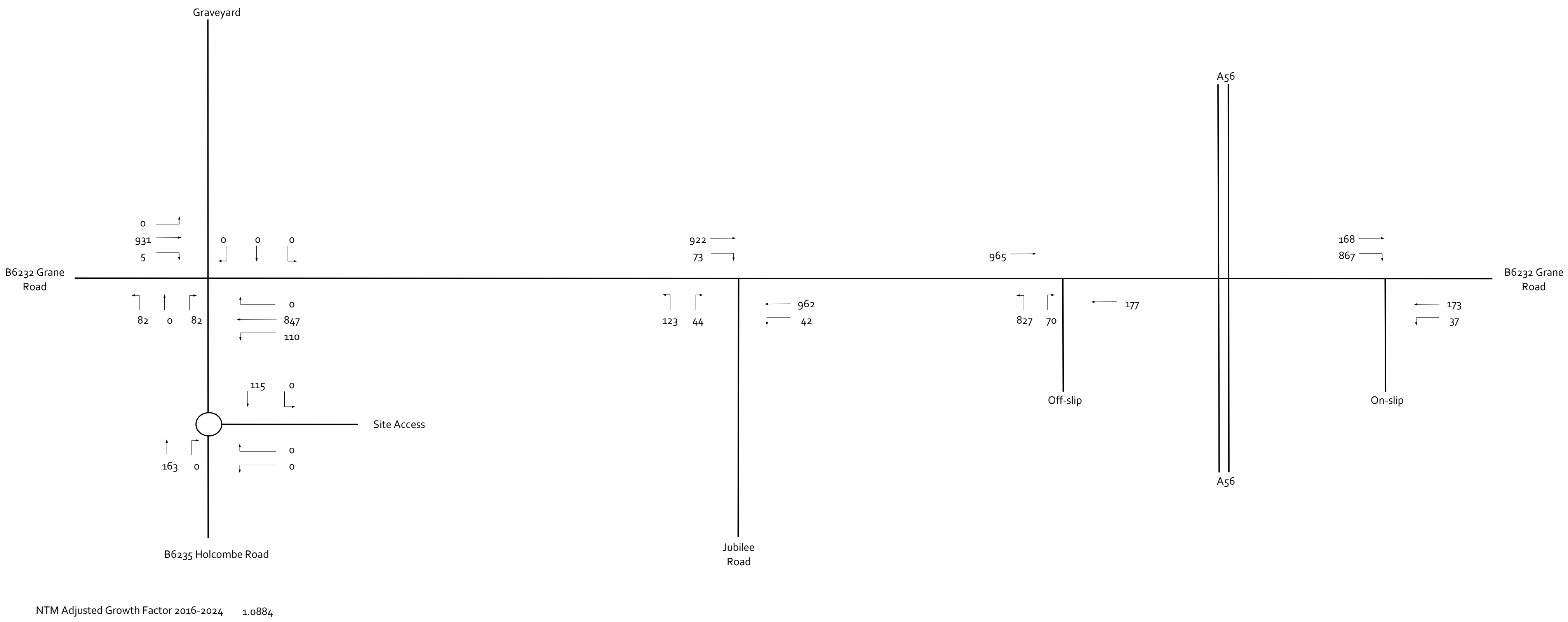
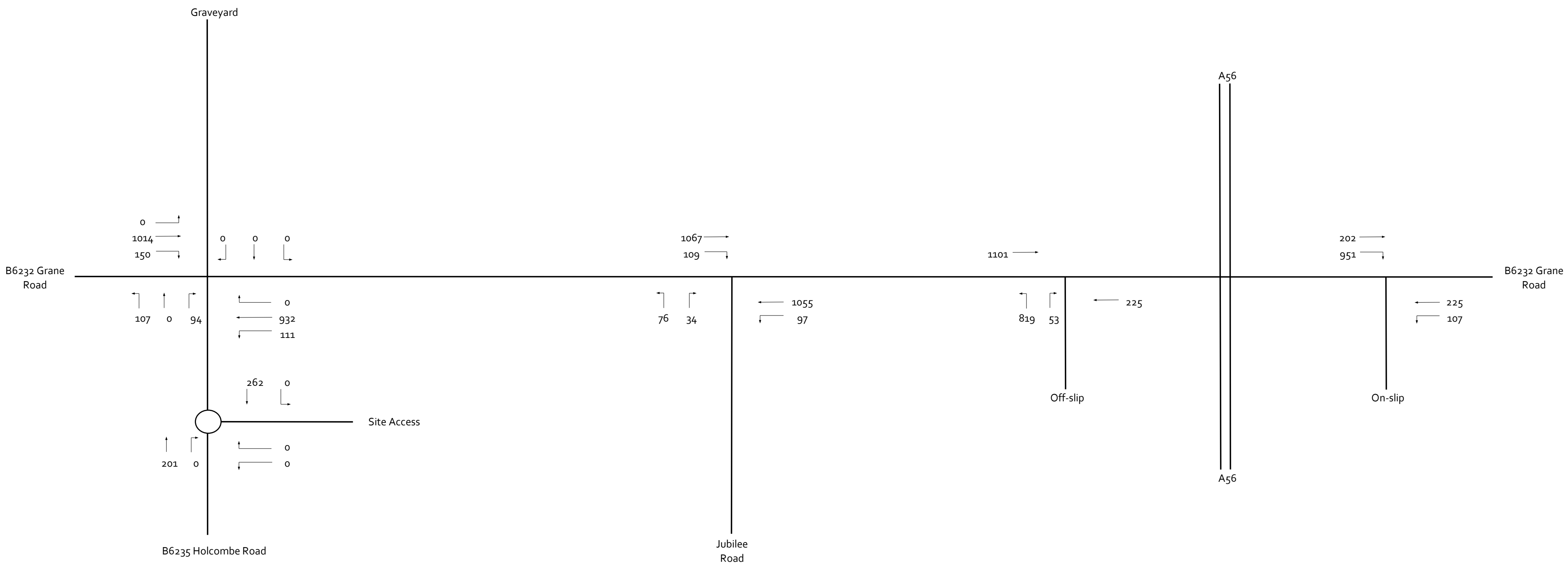


Figure 3 2024 Growthed Flows - AM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY



NTM Adjusted Growth Factor 2016-2024 1.0823

Figure 4 2024 Growthed Flows - PM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

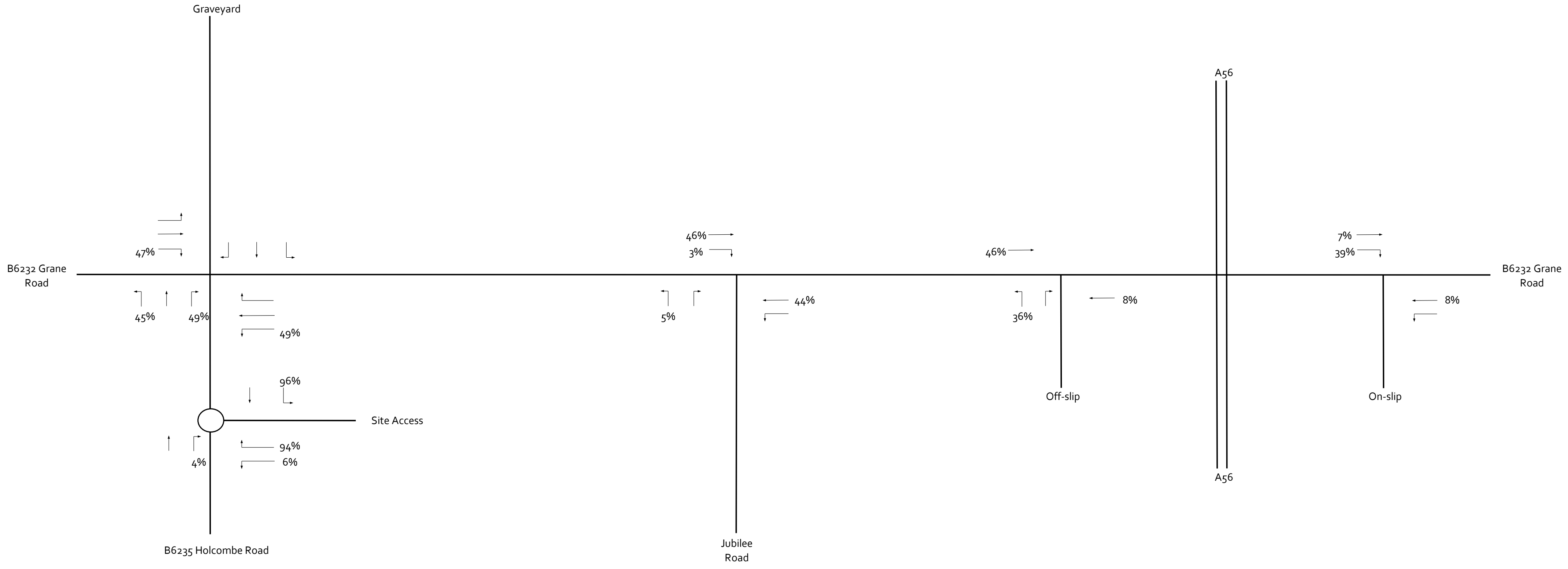


Figure 5 Proposed Trip Distribution - AM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

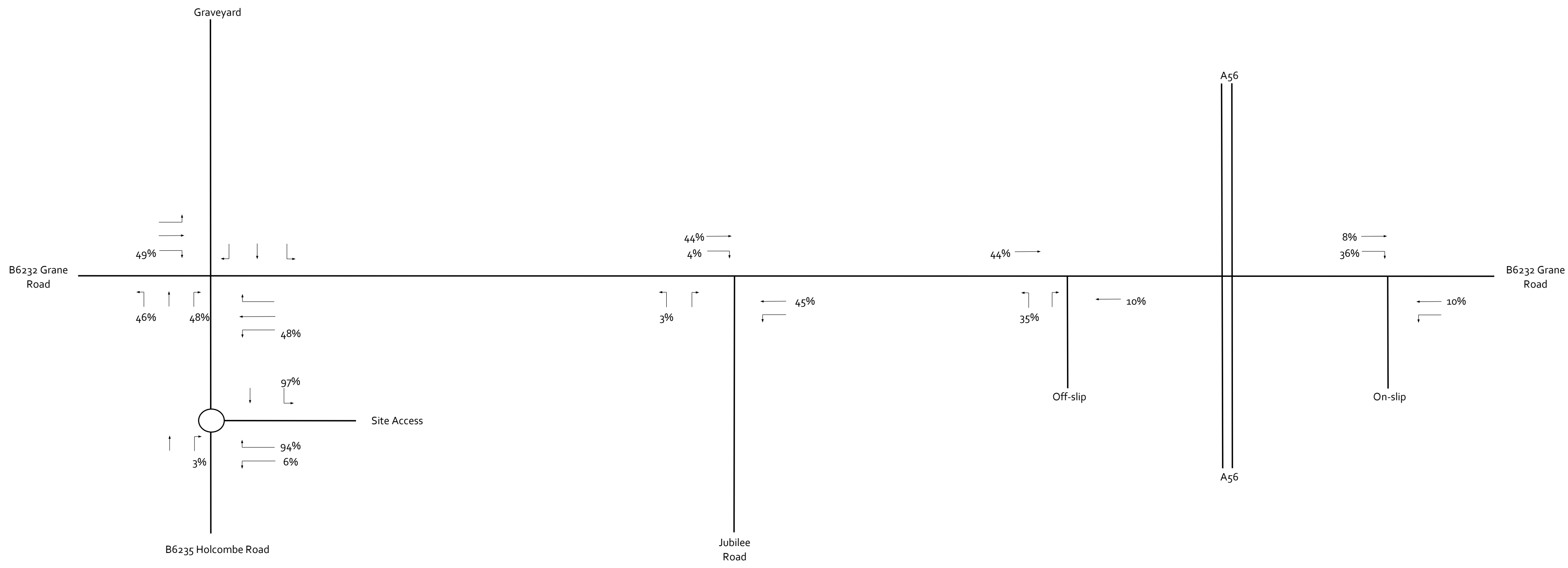


Figure 6 Proposed Trip Distribution - PM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

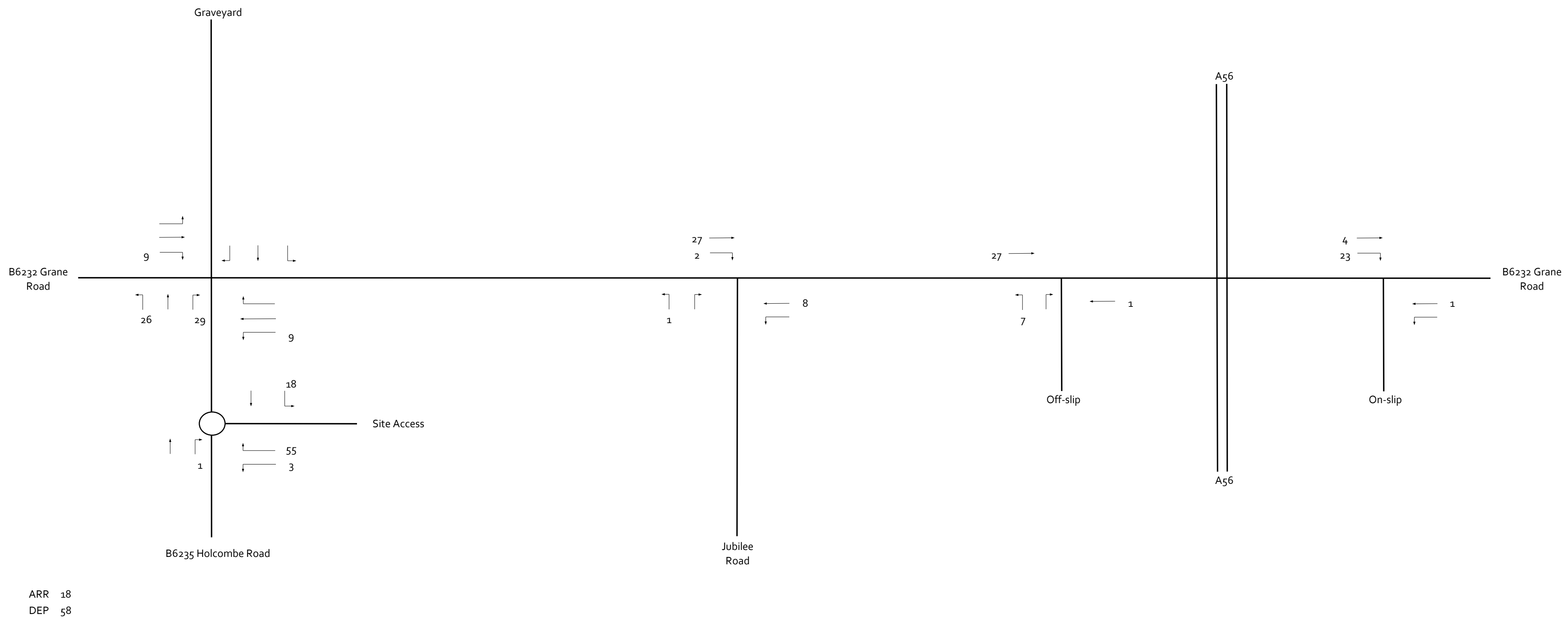


Figure 7 Proposed Residential Development Flows - AM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

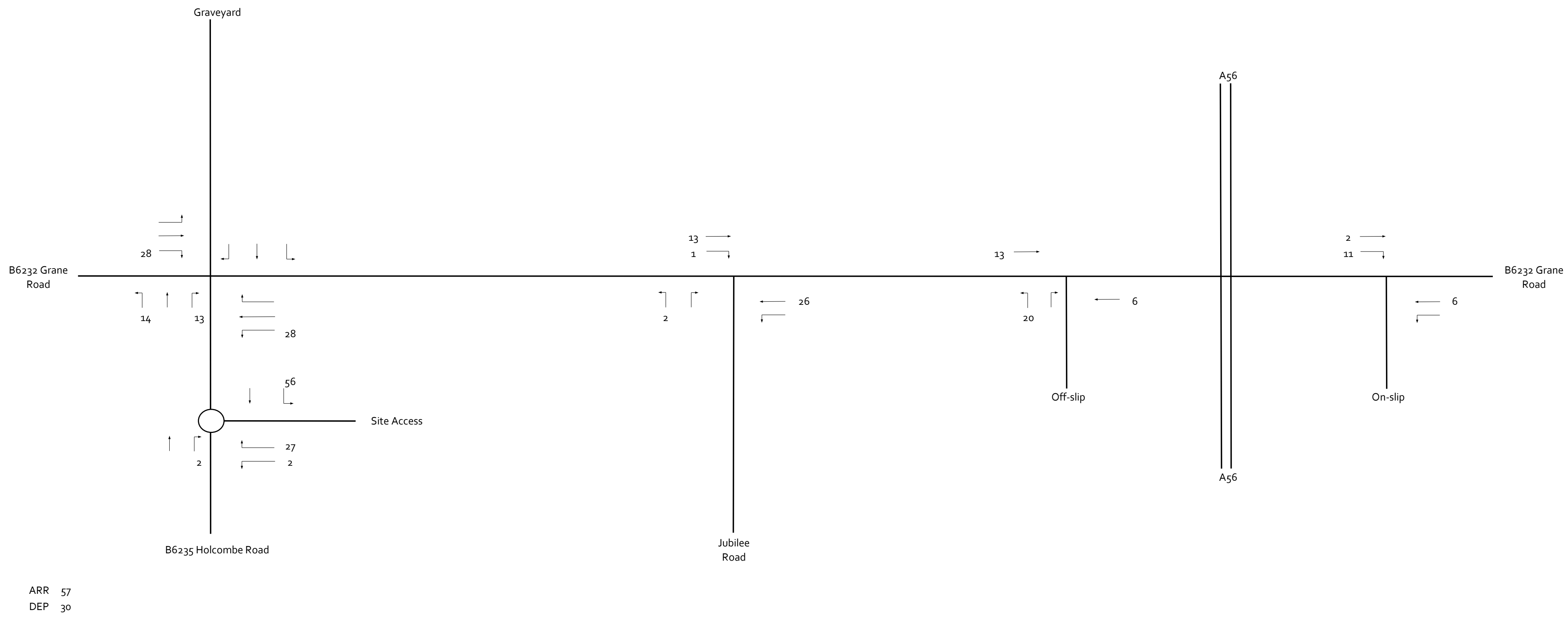


Figure 8 Proposed Residential Development Flows - PM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

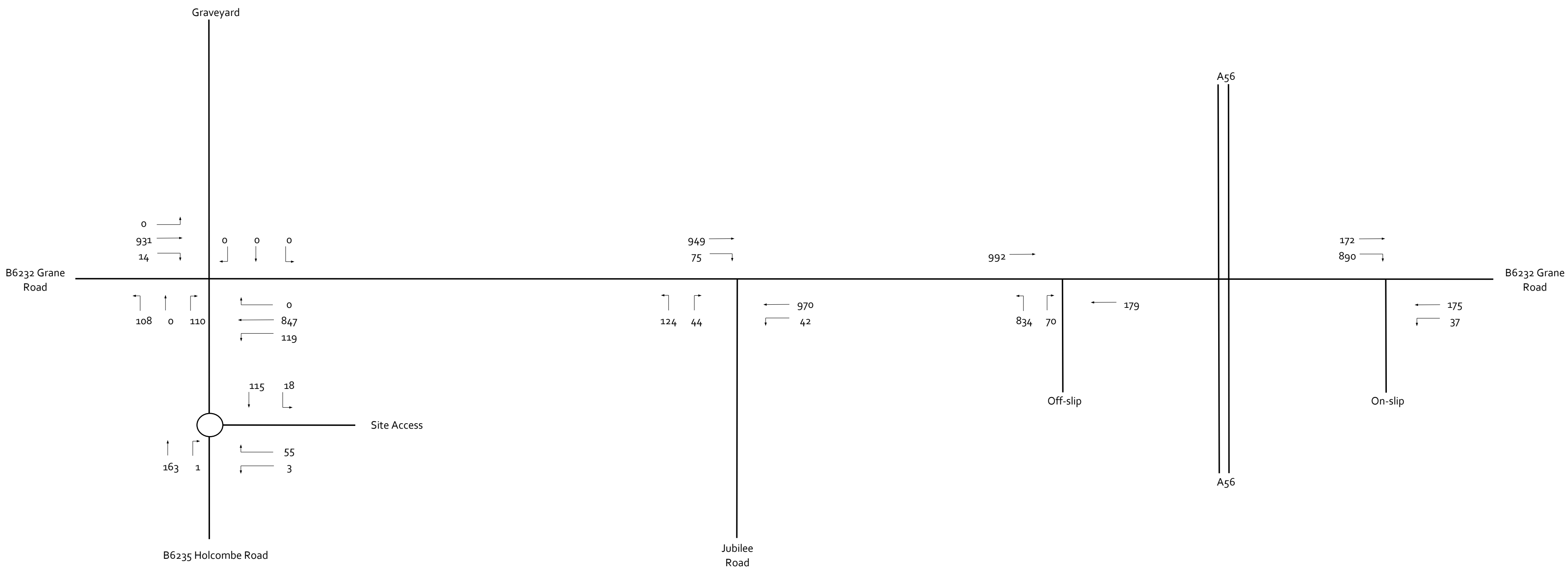


Figure 9 2024 With Development Flows - AM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

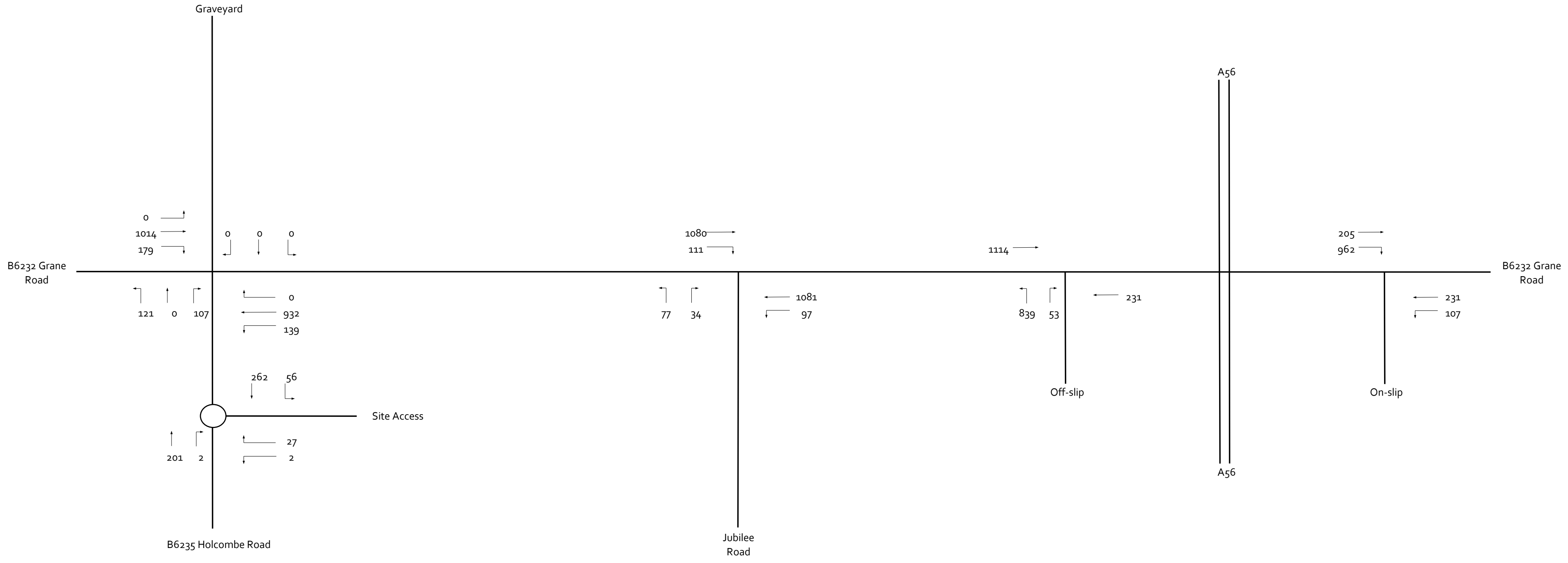


Figure 10 2024 With Development Flows - PM Peak

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

PLANS

TAYLOR WIMPEY				Croft Transport Planning & Design Hill Quays 9 Jordan Street Manchester M15 4PY Email: info@croftts.co.uk Tel: 0161 667 3746 Web: www.croftts.co.uk	CROFT
PROPOSED RESIDENTIAL DEVELOPMENT HOLCOMBE ROAD, HASLINGDEN SITE LOCATION PLAN					
DRAWN: GM	DATE: 18.01.19	CHECKED: SM	DATE: 18.01.19	SCALE: N.T.S	DRAWING NUMBER: 0165-01 / REVISION: -

Legend

- Denotes affordable home (for tenure refer to AH-01)
- Existing tree to be retained (if possible)
- Existing tree to be removed
- Homes requiring acoustic glazing. Note that the majority of the plots require improved ventilation (refer to REC report ref AC106724-1 for detail)

Refer to MB-01 for details of boundary treatments and materials.

Indicative tree planting shown, refer to Randall Thorp plans for details.

For ecological mitigation refer to TEP reports.

PLAN 2

Schedule

		number	%
Affordable (PH)			
PA25	Canford	11	8%
PA34	Gosford	11	8%
NA32	Byford	10	8%
PT36	Easedale	7	5%
	subtotals:	***39***	*30%*
Private Mews			
PT36	Easedale	7	5%
PA34	Gosford	12	9%
NA32	Byford	14	11%
NB31	Braxton	16	12%
	subtotals:	***49***	*37%*
Private Detached			
PD30	Amersham	7	5%
PA42	Lydford	9	7%
NT41	Trusdale	12	9%
ND40	Coltham	8	6%
NA44	Manford	7	5%
	subtotals:	***43***	*33%*
Totals		131	

REVISIONS

DRAWING NUMBER	SITE CODE	DATE	SCALE
1036-PL-01	-	JULY 19	1:500 @ A0

TITLE
PLANNING LAYOUT

GTD

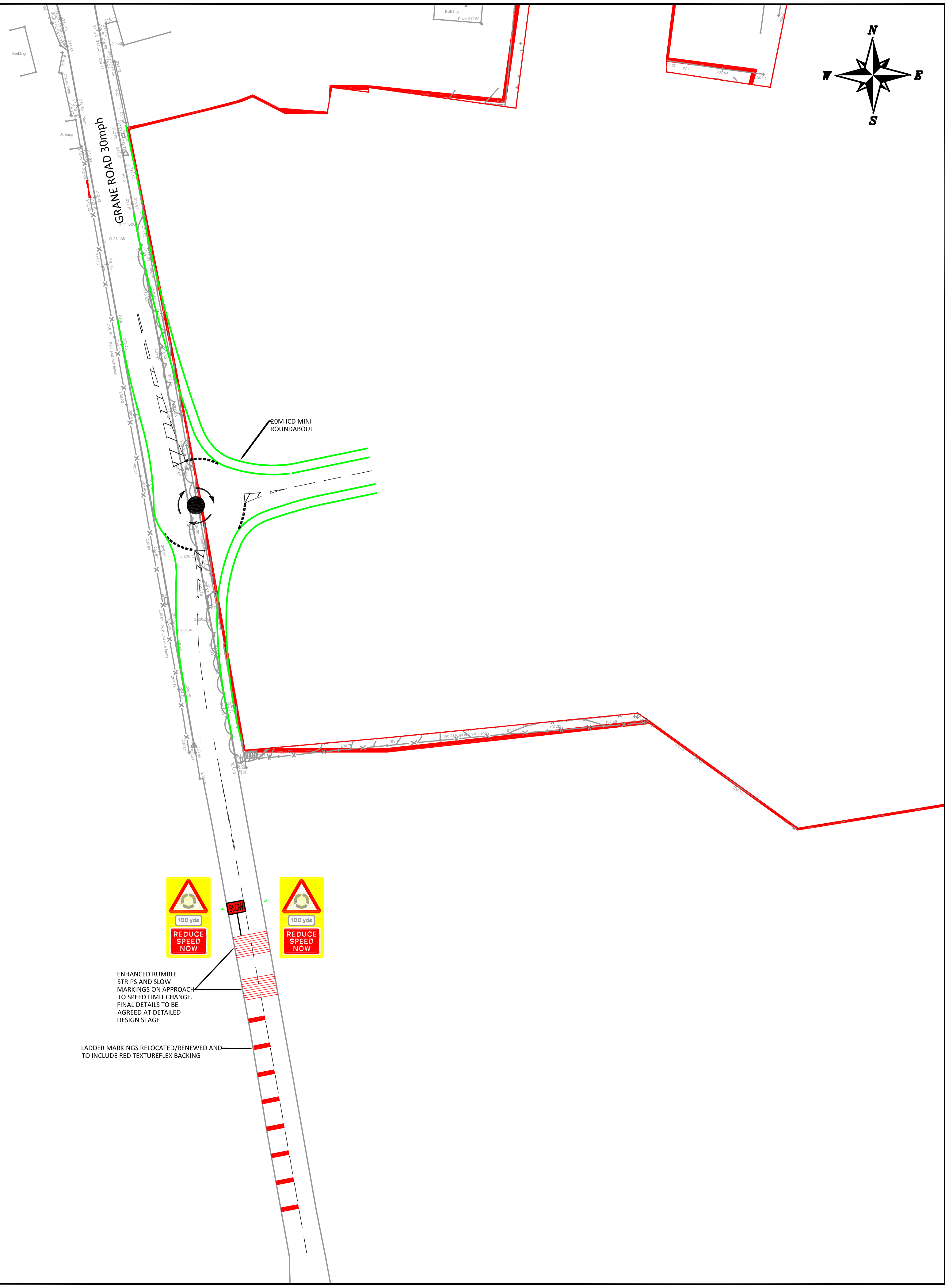
Taylor Wimpey

Taylor Wimpey Manchester
1 Lumsdale Road
Stretford
Manchester M32 0UT

Holcombe Road
HASLINGDEN

REV -

NORTH SOUTH AERIAL VIEW



NOTES

THIS IS NOT A CONSTRUCTION DRAWING AND IS FOR INDICATIVE PURPOSES ONLY. THE DRAWING WILL BE SUBJECT TO CHANGE FOLLOWING LOCAL AUTHORITY REVIEW AND CONFIRMATION OF PUBLIC HIGHWAY AND THIRD PARTY LAND BOUNDARIES.

INDICATIVE SITE BOUNDARY

DENOTES NEW KERBS

PLAN 3

REV	DETAILS	DRAWN	CHECKED	DATE
-	-	-	-	-

CLIENT:

TAYLOR WIMPEY

PROJECT:

HOLCOMBE ROAD, HASLINGDEN

DRAWING TITLE:

PROPOSED MINI-ROUNDABOUT WITH TRAFFIC CALMING

SCALES: 1:1000 @ A3

DRAWN:	CHECKED:	DATE:
MC	MC	FEB 19

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Hill Quays
9 Jordan Street
Manchester
M15 4PY

Email: info@croftts.co.uk
Tel: 0161 667 3746
Web: www.croftts.co.uk

CROFT

DRAWING NUMBER: 0165-06

REVISION: D

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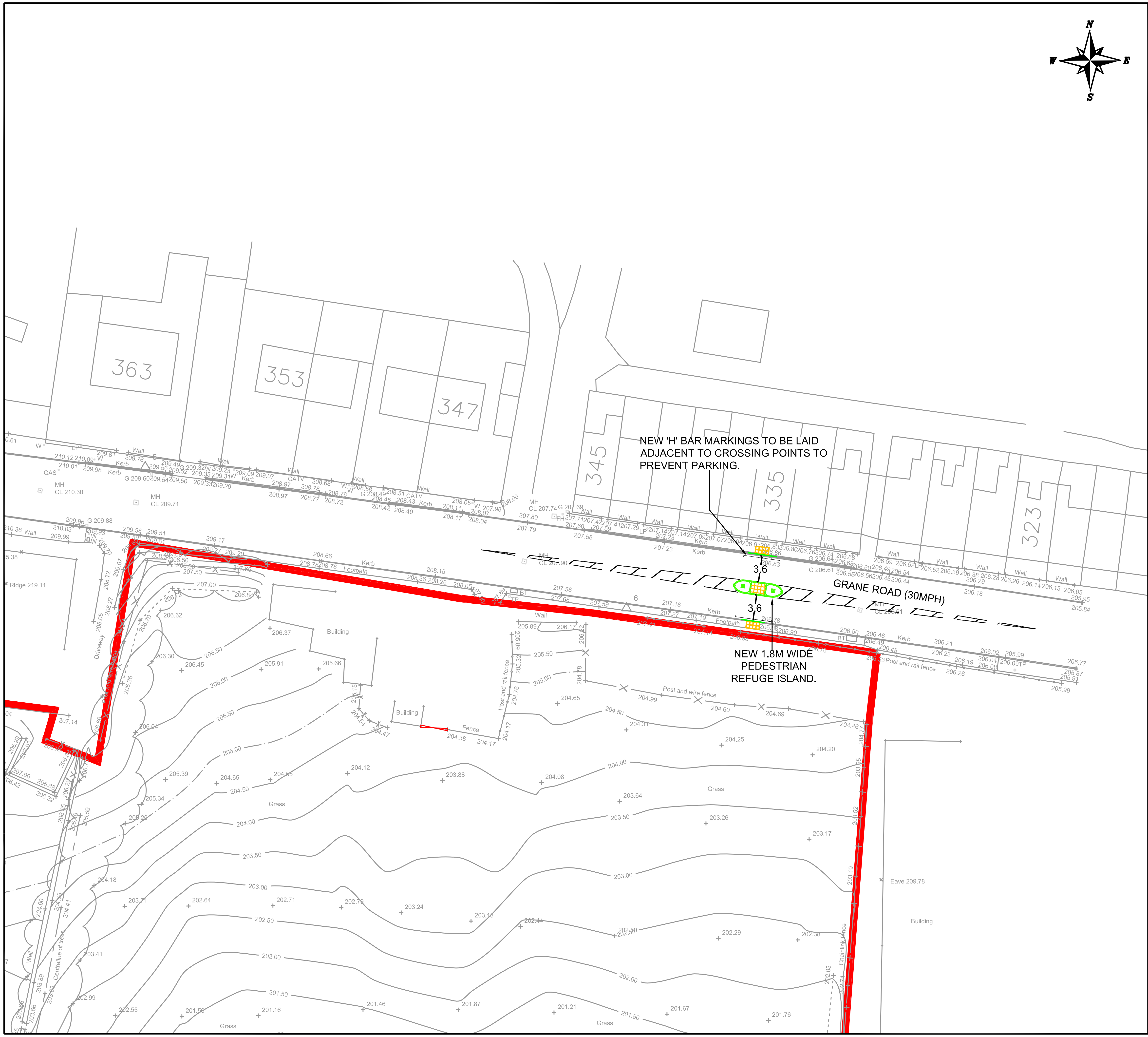

NOTES

THIS IS NOT A CONSTRUCTION DRAWING AND IS FOR INDICATIVE PURPOSES ONLY. THE DRAWING WILL BE SUBJECT TO CHANGE FOLLOWING LOCAL AUTHORITY REVIEW AND CONFIRMATION OF PUBLIC HIGHWAY AND THIRD PARTY LAND BOUNDARIES.

INDICATIVE SITE BOUNDARY

DENOTES NEW KERBS

PLAN 4

REV	DETAILS	DRAWN	CHECKED	DATE
-	-	-	-	-

CLIENT:

TAYLOR WIMPEY

PROJECT:

HOLCOMBE ROAD, HASLINGDEN

DRAWING TITLE:

PROPOSED PEDESTRIAN REFUGE ISLAND ON GRANE ROAD

SCALES: 1:500 @ A3

DRAWN:	CHECKED:	DATE:
JC	TSB	FEB 19

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

Email: info@croftts.co.uk
Tel: 0161 667 3746
Web: www.croftts.co.uk

CROFT

DRAWING NUMBER: 0165-05

REVISION: -

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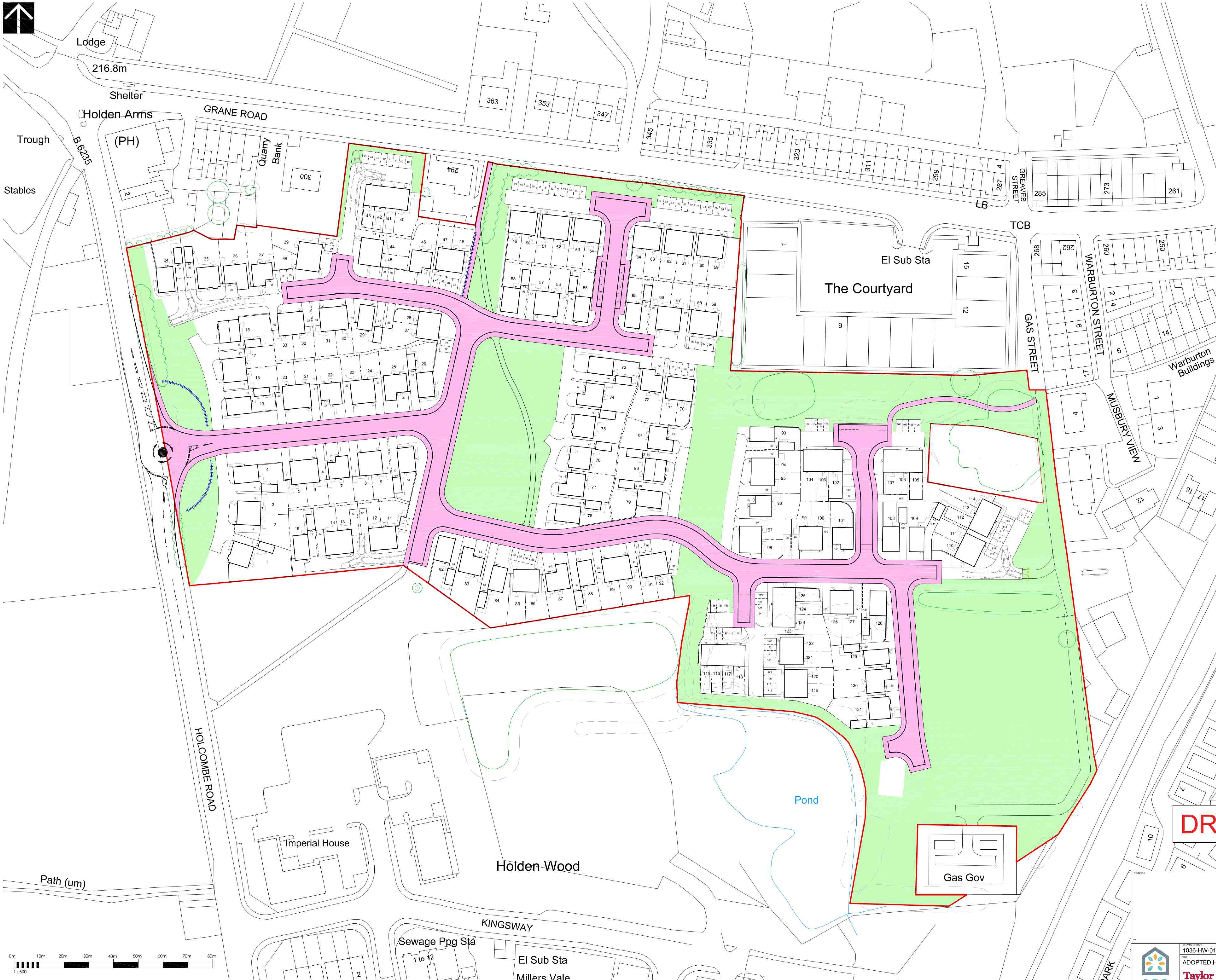


Adoption Legend

Indicative extent of adoptable highway

Management company area

All other areas (white) to be private and/or affordable housing provider

PLAN 5

DRAFT

DRAWING NUMBER	SITE CODE	DATE	SCALE
1036-HW-01	-	JUNE 19	1:500 @ A0

TITLE

ADOPTED HIGHWAY LAYOUT

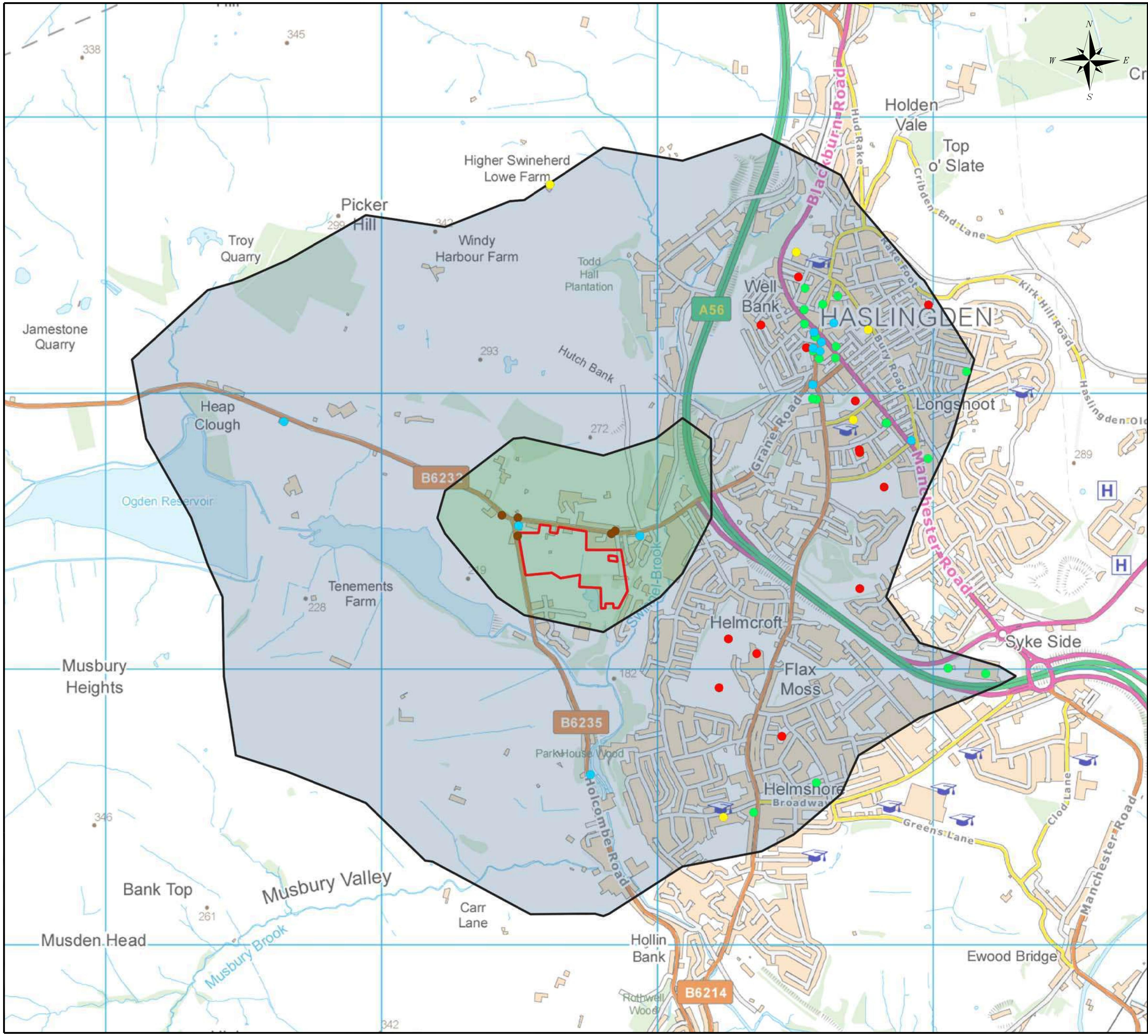
GTD

Taylor Wimpey

Taylor Wimpey Manchester
1 Lumsdale Road
Stretford
Manchester M32 0UT

Holcombe Road
HASLINGDEN

REV -



NOTES

PLAN 6

Legend

- Site Location
- 800m Pedestrian Catchment
- 2km Pedestrian Catchment
- Nearest Bus Stops
- Cafe/Takeaway/Public House
- Education
- Leisure/Sport
- Retail

REV	DETAILS	DRAWN	CHECKED	DATE
-	-	-	-	-

CLIENT:

TAYLOR WIMPEY

PROJECT:

PROPOSED RESIDENTIAL DEVELOPMENT, HOLCOMBE ROAD, HASLINGDEN

DRAWING TITLE:

800M & 2KM PEDESTRIAN CATCHMENTS WITH AMENITIES

SCALES:

NTS @ A3

DRAWN:	CHECKED:	DATE:
GM	SM	JAN 19

Croft Transport Planning & Design
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9 Jordan Street
Manchester
M15 4PY

Email: info@croftts.co.uk
Tel: 0161 667 3746
Web: www.croftts.co.uk

CROFT

DRAWING NUMBER:	REVISION:
0165-G03	-

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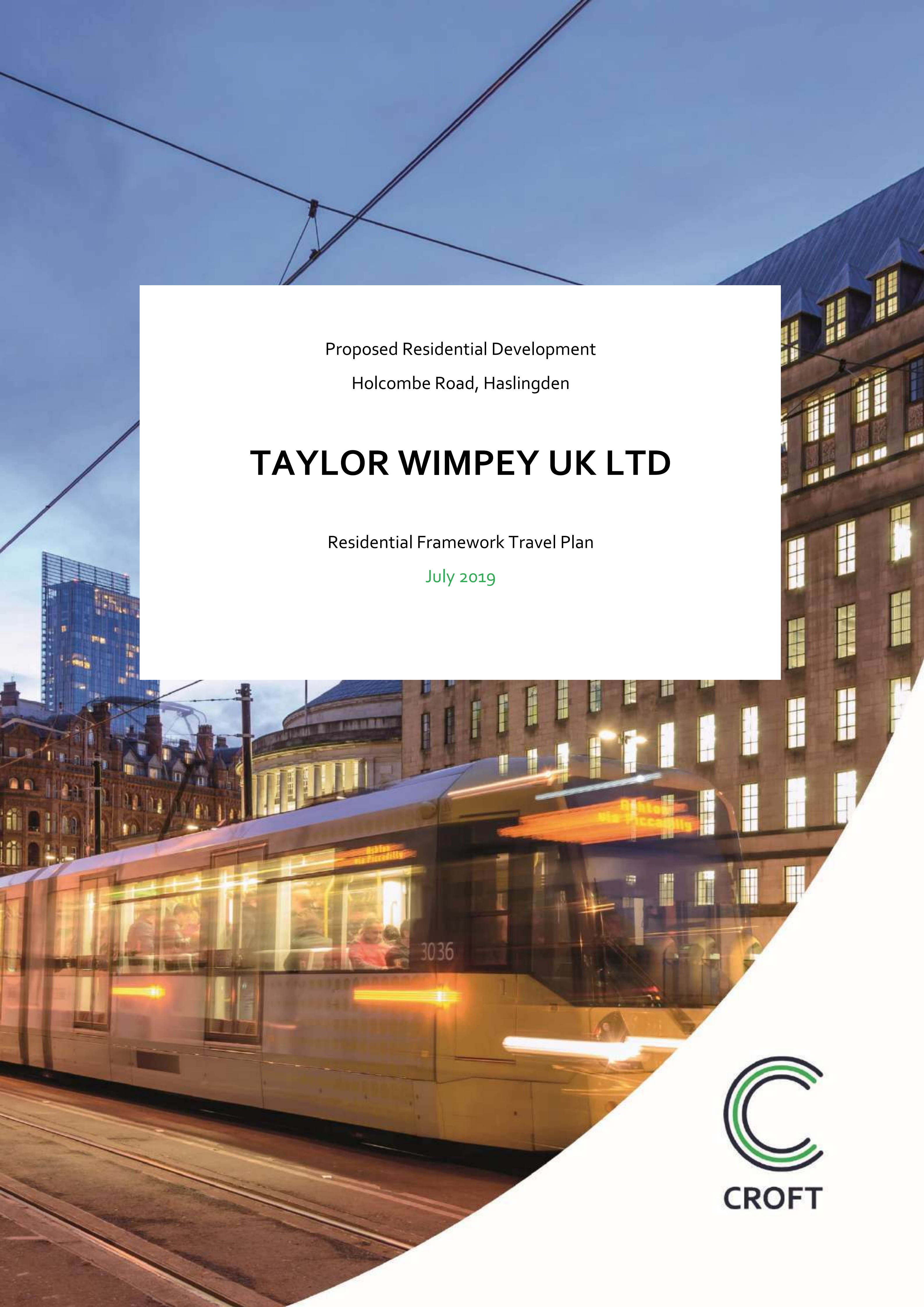
APPENDICES

APPENDIX 1

Framework Travel Plan



Proposed Residential Development

Holcombe Road, Haslingden

TAYLOR WIMPEY UK LTD

Residential Framework Travel Plan

July 2019

CROFT

Contents

PLANS

(See Transport Assessment)

1 INTRODUCTION

1.1 Preamble

1.1.1 Croft have been instructed by Taylor Wimpey UK LTD to advise on the traffic and transportation issues relating to a proposed residential development on land off Holcombe Road in Haslingden.

1.1.2 The location of the site in relation to the surrounding area is presented in **Plan 1**, contained within the Transport Assessment (TA).

1.1.3 This Travel Plan Framework will set out the principal strategies that will be put in place once the development is open and residents are occupying the dwellings, to encourage sustainable travel to the development.

1.1.4 The Department for Transport has issued two separate guides on the preparation of travel plans which are of relevance to this proposed development, these documents are as follows;

- Making Residential Travel Plans Work - Published in September 2005.
- Good Practice Guidelines: Delivering Travel Plans through the Planning Process - Published in April 2009.

1.2 Structure of the Travel Plan

1.2.1 Following this introduction, Section 2 details Travel Plan Policy and guidance and presents the 'Travel Plan Pyramid'.

1.2.2 Section 3 sets out a series of management measures that will be implemented as part of the Travel Plan.

1.2.3 Section 4 of the Travel Plan considers the accessibility of the site by non-car modes, including walking, cycling and public transport. Section 5 discusses targets for reducing trips by the private car while Section 6 details the monitoring of the Travel Plan.

1.2.4 Section 7 draws together the findings and conclusions.

1.3 Development Proposals

1.3.1 This document has been produced in support of an outline planning application for residential development of up to 134 dwellings and associated public open space. The proposed site masterplan is displayed in **Plan 2.**

1.4 The Travel Plan

1.4.1 The aim of the Travel Plan is as follows:

- To encourage residents and visitors to use alternatives to the private car;
- To increase the awareness of the advantages and potential for travel by more environmentally friendly modes; and
- To introduce a package of management measures that will facilitate travel by modes of transport other than the private car.

1.5 Residents Travel Pack

1.5.1 The principal measure will consist of a Residents Travel Pack containing relevant material to promote non-car modes of travel and the provision of certain physical measures. This will be discussed further in Section 3.

2 TRAVEL PLANNING POLICY AND GUIDANCE

2.1 Travel Planning Policy

2.1.1 The need to manage transport in new developments is included within national and local policy. The need to reduce car dependency, increase travel choices and encourage sustainable distribution is supported by the National Planning Policy Framework (NPPF) which states that all developments which generate significant amounts of movement should be required to provide a Travel Plan.

2.1.2 The NPPF further reinforces the importance of travel plans in the planning context and states "*Travel Plans should be considered in parallel to development proposals and readily integrated into the design and occupation of a new site".*

2.2 Travel Planning Guidance

2.2.1 The preparation and adoption of a Travel Plan is an important element of managing the demand for travel to all modern developments.

2.2.2 The document, entitled *'Good Practice Guidelines: Delivering Travel Plans through the Planning Process'* sets out an overview of the process and delivery of Travel Plans and states that "*A Travel Plan is a long-term management strategy for an occupier or site that seeks to deliver sustainable transport objectives through positive action and is articulated in a document that is regularly reviewed*."

2.2.3 The DfT document entitled "*Making Residential Travel Plans Work"* states that *Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas" and goes on to say "Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas".*

2.2.4 The DfT's *'Making Residential Travel Plans Work'* also introduces the concept of a 'Travel Plan Pyramid'. This helps demonstrate how successful plans are built on the firm foundations of a good location and site design. The pyramid is presented in **Figure 2.1** below;

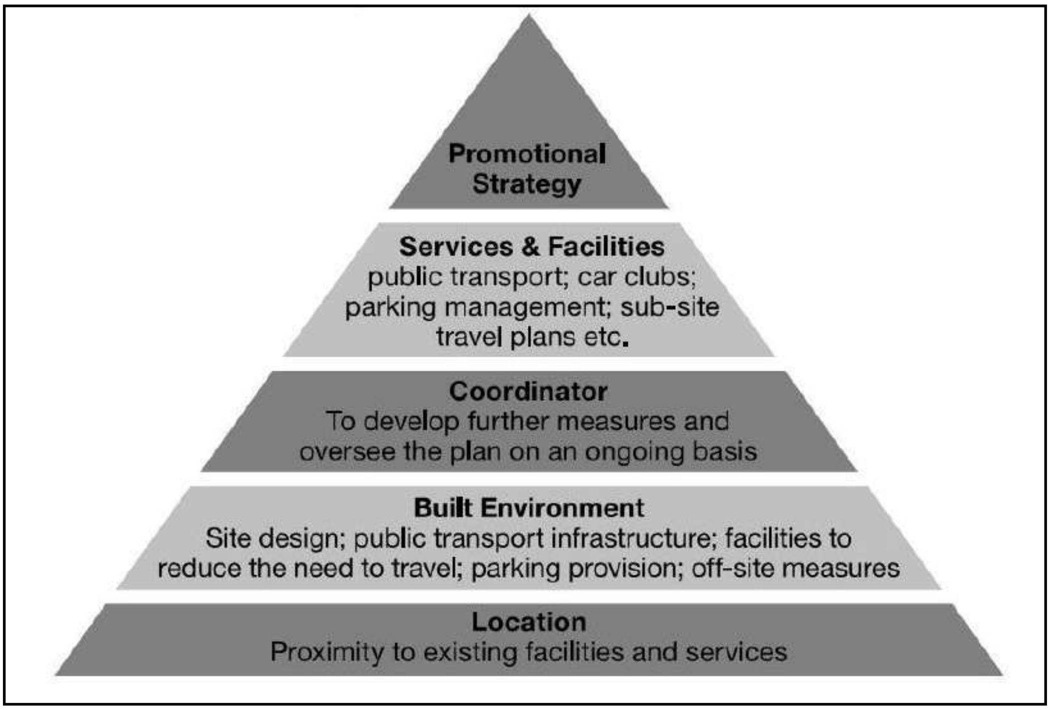


Figure 2.1 – The Travel Plan Pyramid

2.2.5 The hierarchy of 5 tiers of measures and criteria are well illustrated in pyramid form since the concept presented within that "good practice" is that each higher layer builds upon the more important foundations of the criteria and initiatives below it.

2.2.6 The most important layer of the pyramid is considered to be the base, this shows the key to making Travel Plans work is the actual location of the development and its proximity to local facilities and services essential to everyday life.

2.2.7 The second layer of the pyramid refers to how the layout of the site can assist in reducing the need to travel, which in this instance is again linked to the existing level of provision to facilitate sustainable travel.

2.2.8 As indicated in level 3 of the pyramid, the Travel Plan co-ordinator will be free to develop further measures to maximise the sustainability of the site.

2.2.9 The fourth layer of the pyramid looks at how parking management and public transport can influence travel choice, while the top layer of the pyramid relates to how the Travel Plan will be marketed and how the measures within are to be promoted.

3 MANAGEMENT MEASURES

3.1 Introduction

3.1.1 The following Travel Plan measures will be implemented:

i) Appointment of Travel Plan Co-ordinator

ii) Resident's Travel Pack

iii) Travel Awareness and Information

iv) Promotion of Lift Share Scheme

v) Encouraging Walking/Cycling

vi) Encouraging Home Working and Delivery Services

vii) Encouraging Travel by Public Transport

viii) Marketing and Promotion

3.2 Appointment of Travel Co-ordinator

3.2.1 A Travel Plan Co-ordinator (TPC) is to be appointed by the housebuilder or developer at least one month before the first properties being occupied.

3.2.2 The TPC will be responsible for all aspects of the Travel Plan.

3.2.3 Their primary functions will be as follows;

- Liaison with the local planning and highways authorities;
- Provision of a Residents Travel Pack containing information for residents;

- Promotion of the sustainable transport options available to residents, including public transport, cycle, walking and car sharing schemes; and

- Maintenance of all necessary systems, data and paperwork.

3.2.4 The role of the TPC will also be to develop and manage the Travel Plan for the site.

3.2.5 The duties will include monitoring, reviewing targets and forming action plans to remedy areas where the Travel Plan in not performing. Annual progress reports will be prepared and submitted to the Council.

3.2.6 Details of the nominated TPC will be submitted to the Planning and Highway Authority and the appropriate local bus companies at least one month prior to first occupation at the site. Similarly, the TPC will be advised of appropriate contact personnel at the Council.

3.3 Resident's Travel Pack

3.3.1 It is an important and emerging principle in residential developments that where appropriate, the implementation of travel plan type measures can establish a pattern of travel behaviour favouring sustainable modes from the inception of the development.

3.3.2 The proposed development is very well placed for encouraging access on foot or by cycle to a wide range of facilities. Similarly, the existence of a local bus and rail services will encourage choice of public transport as a primary means of travel for the development.

3.3.3 However, in order to build on these locational advantages, it is recommended that a Residents' Travel Pack is provided for the occupants of each new dwelling.

3.3.4 The contents of such a travel pack would include information relating to walking and cycling routes in the area and the provision of up to date bus and rail timetable information, as well as identification of the location of nearby amenity facilities as part of the information supplied to prospective purchasers.

3.3.1 The contents of the packs will vary depending upon the information available on sources such as the internet or local bus stops.

3.3.2 However, the Travel Packs will include:

- Information about the local area, e.g. location, distance and directions to local shops, schools, Post Offices, Doctor Surgeries, Hospitals, Banks, Libraries, Parks, attractions and other local amenities.
- Copies of the most recently published public transport information.
- Details of web sites and other sources of information which can be accessed in the future such as:
    - Public Transport - Links to timetable information e.g. www.traveline.org.uk and www.nationalrail.co.uk
    - Car Sharing - Links to websites that co-ordinate car sharing such as www.carshare.com, www.liftshare.org.uk and www.nationalcarshare.co.uk to encourage car sharing.
    - Cycling - Link to the UK's National Cyclists Organisation website www.ctc.org.uk and Sustrans www.sustrans.org.uk
    - Local Amenities - local supermarkets offering internet shopping would reduce the need for car travel.

3.3.3 The adoption of such travel packs is recognised as being an important element in ensuring that access by non-car modes is promoted from the earliest occupation of a residential development. Within the Resident's Welcome Pack, residents will be encouraged to consider ways in which to reduce their need to travel such as home delivery for shopping and working from home.

3.3.4 The first issue of the Resident's Travel Pack will be the responsibility of the house builder.

3.4 Travel Awareness and Information

3.4.1 Residents will be made aware of the existence of the Travel Plan and its aims. As mentioned previously, Resident's Travel Packs will be issued for new residents moving into the development and prospective buyers will be made aware of the Travel Plan when viewing properties.

3.5 Promotion of Lift Share Scheme

3.5.1 The Travel Plan Co-ordinator will promote the use of car sharing via registering on the Liftshare website. It allows users to register their details, where they are travelling to, if they are offering a lift or need a lift to their destination.

3.5.2 The website can be found at the following location www.liftshare.com

3.6 Encouraging Walking/Cycling

3.6.1 Residents will be provided with information and advice concerning safe pedestrian and cycle routes to the site through the WalkBUDi/BikeBUDi schemes.

3.6.2 Information on these schemes is available on the following websites www.walkbudi.com and www.bikebudi.com.

3.6.3 The WalkBUDi/BikeBUDi schemes are part of the National Lift Share Network and are simple and free to use. They simply match individuals with others walking or cycling the same way so they can walk or cycle together. The matches are displayed in both table and map format, allowing the user to easily find the most suitable people.

3.6.4 The WalkBUDi/BikeBUDi schemes aim to help individuals to meet others wanting to travel the same way. They can be used for regular trips such as walking or cycling to the office or going to the station as well as making a journey safer.

3.6.5 As part of these schemes the provision of walking/cycling signage will be investigated by the Travel Plan Co-ordinator, this signage could provide details on the routes and distances to and from local services and amenities in the area.

3.7 Encouraging Travel by Public Transport

3.7.1 The TPC will liaise with the local bus operators to promote the use of bus and rail services and ensure that up to date timetable information is readily available to residents.

3.7.2 Travel by public transport will be promoted and residents will be encouraged to access the public transport information provided on relevant websites, as well as utilising the Journey Planning tools available.

3.8 Marketing and Promotion

3.8.1 To ensure that potential residents of the site are informed about the Travel Plan and its goals from the earliest stage, the Travel Plan will have a significant presence within the sales suite of the development which will include a display outlining the sustainable travel measures being implemented and details of access by sustainable travel modes.

3.8.2 The sales staff will be given training to promote the Travel Plan as an asset and selling point of the development and key concepts relating to accessibility included in marketing/sales particulars.

4 ACCESSIBILITY BY NON CAR MODES

4.1 Introduction

4.1.1 In order to accord with the aspirations of the NPPF, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

4.1.2 New proposals should attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

4.1.3 The accessibility of the proposed site has been considered by the following modes of transport:

- Accessibility on foot.
- Accessibility by cycle.
- Accessibility by bus.
- Accessibility by rail.

4.2 Accessibility on Foot

4.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life.

4.2.2 This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

4.2.3 The nearest footways to the site are located to the north of the site on the B6232 Grane Road and to the west of the site on the B6235Holcombe Road. These footways provide pedestrian links throughout Haslingden and provides direct linkages to the nearby day to day amenities within the town.

4.2.4 The CIHT document 'Planning for Walking' from 2015 states, in paragraph 2.1, that in 2012 that 79% of all journeys made in the UK of less than a mile (1.6 kilometres) are carried out on foot.

4.2.5 Within the Institution of Highways and Transportation (IHT) document, entitled "Guidelines for Providing for Journeys on Foot", Table 2.2 suggests distances for desirable, acceptable and preferred maximum walks to 'town centres', 'commuting/schools' and 'elsewhere'. The 'preferred maximum' distances are shown below in Table 5.1.

Suggested Preferred Maximum Walk		
Town Centre	**Commuting/School**	**Elsewhere**
800m	2,000m	1,200m

Table 5.1 – IHT 'Providing for Journeys on Foot' Walk Distances

4.2.6 Reference to the 2,000 metre walking distance is also made in the now superseded Planning Policy Guidance (PPG) Note 13 which advised that 'walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2km'.

4.2.7 Manual for Streets (MfS) continues the theme of the acceptability of the 2,000 metre distance in paragraph 4.4.1. This states that '*walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this* *is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km*'.

4.2.8 Table 5.2 below summarises this guidance in tabular form.

'Comfortable' Walk	'Preferred Maximum' Walk
800m	2,000m

Table 5.2 – Manual for Streets Walk Distances

4.2.9 More specific guidance on the distances that children will walk to school is found in the July 2014 document published by the Department for Education (DfE) entitled 'Home to School Travel and Transport' statutory guidance document. This suggests that the maximum walking distance to schools is 2 miles (3.2 kilometres) for children under 8 and 3 miles (4.8 kilometres) for children over the age of 8. This is summarised below in Table 5.3.

Children under 8 Walk Distance	Children over 8 Walk Distance
3,200m	4,800m

Table 5.3 – DfE Walk Distances to Schools

4.2.10 Further evidence that people will walk further than the suggested 'preferred maximum' distances in the IHT 'Providing for Journeys on Foot' is contained in a WYG Report entitled 'Accessibility – How Far do People Walk and Cycle'. This report refers to National Travel Survey (NTS) data for the UK as a whole, excluding London, that the 85th percentile walking distance for:

- All journey purposes – 1,930 metres.

- Commuting – 2, 400 metres.
- Shopping – 1,600 metres.
- Education – 3,200 or 4,800 metres.
- Personal business – 1,600 metres.

4.2.11 Overall, in Table 5.1, the document states that 1,950 metres is the 85th percentile distance for walking as the main mode of travel. Table 5.4 below summarises the various 85th percentile walking distances suggested as guidelines in the WYG Study.

85th Percentile Walk Distances					Overall Recommended Preferred
All Journeys	Commuting	Shopping	Education	Personal	
1,950m	2,100m	1,600m	3,200/4,800m	1,600m	1,950m

Table 5.4 – WYG Report/NTS Data Walk Distances

4.2.12 In summary, it is considered that the distance of 1,950 metres, or around 2 kilometres, represents an acceptable maximum walking distance for the majority of land uses although clearly the DfE guidance for walking to school is up to 3.2 kilometres.

4.2.13 Section 3.1 of the CIHT guidance 'Planning for Walking' mentioned earlier in this report provides a useful reminder of the health benefits of walking. This states that:

'A brisk 20 minute walk each day could be enough to reduce an individual's risk of an early death'.

4.2.14 A 20 minute walk equates to a walking distance of around 1,600 metres.

4.2.15 In light of the above review, a pedestrian catchment of 2 kilometres from the centre of the site, using all usable pedestrian routes, has been provided in **Plan 4** and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.

4.2.16 In addition, to the pedestrian catchment plan, a review of the proximity of local facilities such as pharmacies/doctor's surgeries, schools (both primary and secondary) local shops/retail outlets and leisure facilities has been undertaken and the location of these is also shown in **Plan 4**.

4.2.17 The 2,000 metre pedestrian catchment illustrates that large areas of Haslingden can be accessed along with various amenities such as The Holden Arms public house, Nisa & convenience store, Co-op food store, Haslingden Health Centre, Cohens Pharmacy, Haslingden Primary School, Haslingden St James Church of England Primary School and Adreline Centre

4.2.18 Table 5.5 below, shows the walking distance from the centre of the site to the local amenities in the vicinity of the site. The table also confirms whether or not the particular amenity is within the 'preferred maximum' walking distances using the above guideline criteria:

Local Amenity	Distance	Guidance Criteria	Meets with Guidance?
Nisa Convenience store	1,350m	1,600m	**YES**
Haslingden Health Centre	1,360m	1,600m	**YES**
Cohens Pharmacy	1,360m	1,600m	**YES**
Adrenalince Centre	1,400m	1,600m	**YES**
Haslingden Primary School	1,480m	3,200m	**YES**
Co-op Concenvience Store	1,600m	1,600m	**YES**
Haslingden St James Church of England Primary School	1,700m	3,200m	**YES**

Table 5.5 - Distance from Site to Local Facilities

4.2.19 As can be seen in the above table, the site is located within close proximity to a number of local amenities including primary services as well as leisure facilities.

4.2.20 All of the day to day amenities are well within the 'preferred maximum' walk distances described earlier in this section and indeed many, including the nearest convenience store, pharmacy and nearest primary school.

4.2.21 It is therefore considered that the existing pedestrian infrastructure together with the proposed improvements will facilitate safe and direct pedestrian linkages between the site and local destinations.

4.3 Accessibility by Cycle

4.3.1 An alternative mode of travel to the site could be achieved by bicycle.

4.3.2 A distance of 5 kilometres is generally accepted as a distance where cycling has the potential to replace short car journeys. This distance equates to a journey of around 25 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass Haslingden, Edenfield, Rawtenstall and Rossendale.

4.3.3 Regional Route 91 is located to the immediate north of the site on Grane Road, this route is also known as the Lancashire cycleway which travels along the outskirts of Blackburn, Burnley, Bolton, Wigan and Preston.

4.3.4 National Cycle Route 6 is located approximately 290 metres east from the centre of the site. This route passes through Watford, Luton, Milton Keynes, Northampton, Market Harborough, Leicester, Derby,Nottingham, Worksop, Sheffield, Manchester, Blackburn, Preston, Lancaster, Kendal and Windermere.

4.3.5 The site can therefore be considered as being accessible by cycle.

4.4 Accessibility by Bus

4.4.1 The nearest bus stops to the site are located to the north of the site on Grane Road, approximately 200 metres from the centre of the site, consisting of bus shelter with a bus service timetable. All the nearest bus stops to the site are shown on **Plan 3**.

4.4.2 A summary of the services available from the nearest bus stops from the development site is provided in Table 5.6 below.

Service No	Route	Monday – Friday Frequency per hour				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
11	Haslingden - Rawtenstall	1	1	1	0	1	0
481	Bury - Blackburn	1	1	1	0	1	0

Table 5.6 - Existing Bus Services Operating Past the Site

4.4.3 As can be seen from Table 5.6, the nearest bus stops to the site provide two hourly service to and from Bury and Blackburn in the weekday am peak and up to 2 services per hour on a Saturday.

4.4.4 It is noted that the above services provide a choice of how people travel with the bus services operating from around 6.40am to around 6:50pm making travel by public transport an alternative to travelling by car for commuting trips.

4.4.5 The first bus to Blackburn from the site between Monday and Friday is at 06:43 whilst the last bus to Blackburn leaves the site at 17:43. On a Saturday, the first bus to Blackburn is at 08:08 and the last bus to leave the site is 17:08. In the opposite direction, the first bus towards Bury between Monday and Firday sets off at 07:42 and the last bus leaves the site at 18:54. On a Saturday, the first bus leaves at 09:22 whilst the last bus towards Bury leaves at 18:22.

4.4.6 Based on this, in can be concluded that the local bus service provides an appropriate option for commute trips to and from Bury and Blackburn, which are the main areas of employment for potential residents of the development.

4.4.7 It is therefore concluded that the proposed development site is accessible by bus.

4.5 Accessibility by Rail

4.5.1 The most accessible train station to the site is Blackburn train station. Although this falls outside the recommended 2 kilometre pedestrian walking catchment, it is accessible via a 32 minute bus journey on service bus No. 481.

4.5.2 This train station is managed by Northern and has 4 platforms, offering 8 services per hour to destinations such as York, Rochdale, Southport, Preston (Lancs) , Colne and Clitheroe.

4.5.3 These services increase the opportunity for residents to travel further afield by public transport, with access to Preston, which in turn provides frequent services to destinations throughout the UK.

4.5.4 This provides opportunities for commuting/leisure opportunities from the site via rail.

4.6 Accessibility Summary

4.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed residential development.

4.6.2 The following conclusions can be drawn from this section of the Report:

- The site is accessible on foot and these provisions will be improved as part of the works on the development site.
- It has been demonstrated that the site is accessible by cycle, with Regional Route 91 is located to the immediate north of the site and National Cycle Route 6 situated approximately 290 metres east from the centre of the site.
- The site is accessible to bus stops located north of the site on Grane Road, providing access to and from Haslingden, Bury and Blackburn.

- The site is accessible via rail with Blackburn train station located around 32 minutes away on bus service 481.

4.6.3 In light of the above, it is considered the site is accessible by non-car modes and will cater for needs of the development's residents and assist in promoting a choice of travel modes other than the private car.

5 TRAVEL PLAN TARGETS

5.1 Introduction

5.1.1 This section of the Travel Plan deals with the post development scenario i.e. once the development is complete, occupied and the Travel Plan has been implemented and relates to targets against which the success of the Plan in achieving its objectives will be measured.

5.1.2 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.

5.1.3 In order to set the targets, further information (e.g. through a travel survey) may have to be obtained in order to establish against which to set the targets. This information will be related to existing patterns of movement (i.e. the proportion of residents who travel to their workplace by non-car mode) and may be obtained from sources such as the National Travel Survey and the National Census.

5.1.4 More accurate information to establish the baseline targets however, will be obtained from a Residents Travel Survey which will be undertaken within one month of the development being 100% occupied.

5.1.5 Suitable targets for reducing the need to travel by private car will be set against the baseline targets and agreed with the Council and included in the final Residential Travel Plan for the whole development.

5.2 Potential Targets

5.2.1 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.

5.2.2 Targets which according to the DfT may potentially be included in the Travel Plan include the following:

- Car trips per household - targets set on the basis of predicted trip rates for the development.

- Uptake of alternatives - targets for bus patronage, registration and participation in the Liftshare car share scheme, cycle counts and pedestrian counts.

- Car ownership and mode of travel - trip based targets may be supplemented by targets related to car ownership, travel to work by mode and travel to school by mode.

- Travel Plan awareness targets - for example, a target can be established to ensure a significant percentage of residents are aware of the Travel Plan and its purpose.

5.3 Action Plan

5.3.1 Table 5.1 below provides an Action Plan and timescales to assist the Travel Plan Co-ordinator (TPC) to implement the obligations of the Travel Plan;

Action	Target Date	Indicator/Measured by	Responsibility
Appointment of TPC	TPC appointed one month prior to first occupation of site	Appointment of TPC by target date	Housebuilder
Production of Residents Travel Pack	Upon Occupation	Resident travel survey	Housebuilder
Undertake initial travel surveys	Within 3 months of reaching 100% occupation of development	Receipt of survey results	TPC
Agree Travel Plan Targets	1 month after initial travel survey undertaken	Receipt of written agreements of targets	TPC
Achieve target car driver travel to work mode split	5 years after initial travel survey	Residents travel surveys conducted in years 1, 3 and 5	TPC

Table 5.1 – Travel Plan Action Plan and Timescales

5.3.2 The table above sets out the key tasks that will need to be undertaken by the Travel Plan Co-ordinator as part of the Travel Plan including guidance as to timescales for the tasks to be undertaken.

6 PLAN MONITORING AND ASSESSMENT

6.1.1 DfT best practice guidelines state that monitoring of the Travel Plan should normally take place on the following basis:

- Early on in the occupation period of the site - for example, triggered by 100% occupancy to provide the information base for the review of the plan;
- Annually or at least every two years thereafter to provide on-going information on the impact of the plan;
- Monitoring should take place over a wide range of time periods to reflect the different pattern of journeys that can be generated by residential development.

6.1.2 The monitoring could include items such as:

- Full residential surveys to be completed in year 1, year 3 and year 5 and snap shot surveys to be completed every 6 to 12 months.
- Feedback from bus operators to establish demand for local bus services.

6.1.3 Once planning permission has been granted, consideration will be given on how best to monitor and measure the success of the Travel Plan measures when preparing the final Travel Plan for the development. Appropriate monitoring arrangements will be discussed and agreed with the Council.

6.1.4 The monitoring and assessment of the Travel Plan will include the submission of annual progress reports detailing the results of the travel surveys with regards to targets, budgets, general effectiveness and current initiatives.

6.1.5 An annual report is to be submitted to the local authority no later than one month following the anniversary of the approval of the Travel Plan.

6.1.6 This will allow effective measures to be promoted and increased while ineffective measures can be revised and rectified. New initiatives for the coming year will also be contained within the report and submitted to officers at the Council.

7 CONCLUSIONS

7.1.1 This Travel Plan has detailed the proposals associated with the development site to promote sustainable modes of travel and reduce the dependency of the private car.

7.1.2 Additionally, the Travel Plan has presented a series of measures to be implemented to reduce the number of single car occupancy trips.

7.1.3 The information contained within the Travel Plan and details of sustainable modes of transport in the vicinity of the site will be accessible to residents and visitors to the development. The aim of the Travel Plan is:

- to encourage residents to use sustainable modes of transport to access the site;
- reduce the reliance on single car occupancy journeys; and
- generally reduce traffic related pollution and noise.

7.1.4 A wide range of measures and actions will be used to encourage car sharing, public transport use, cycling and walking.

7.1.5 The Travel Plan Co-ordinator will ensure the Travel Plan is implemented and is operating effectively.

7.1.6 A detailed resident Travel Survey will be undertaken to establish travel modes of residents and following this, specific targets will be set and agreed with the Travel Plan team at the Council.

7.1.7 The site has been demonstrated to benefit from excellent non-car accessibility and it should, therefore, be expected that the adoption of a Travel Plan would be particularly effective.

7.1.8 It can therefore be concluded that the proposals will provide a highly sustainable development and should be considered acceptable to the local highway authority.

CROFT

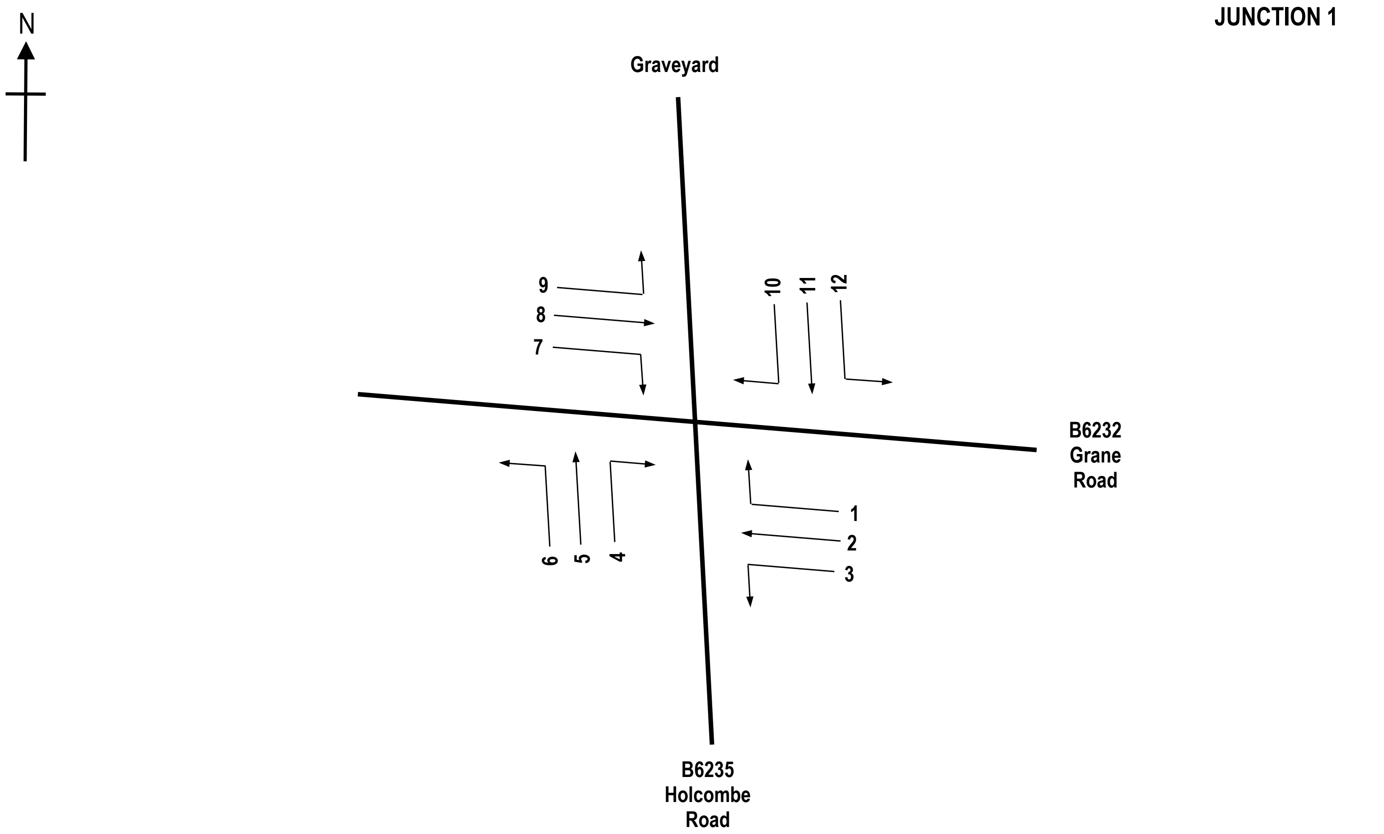
Croft Transport Solutions
[redacted]
info@croftts.co.uk
www.croftts.co.uk

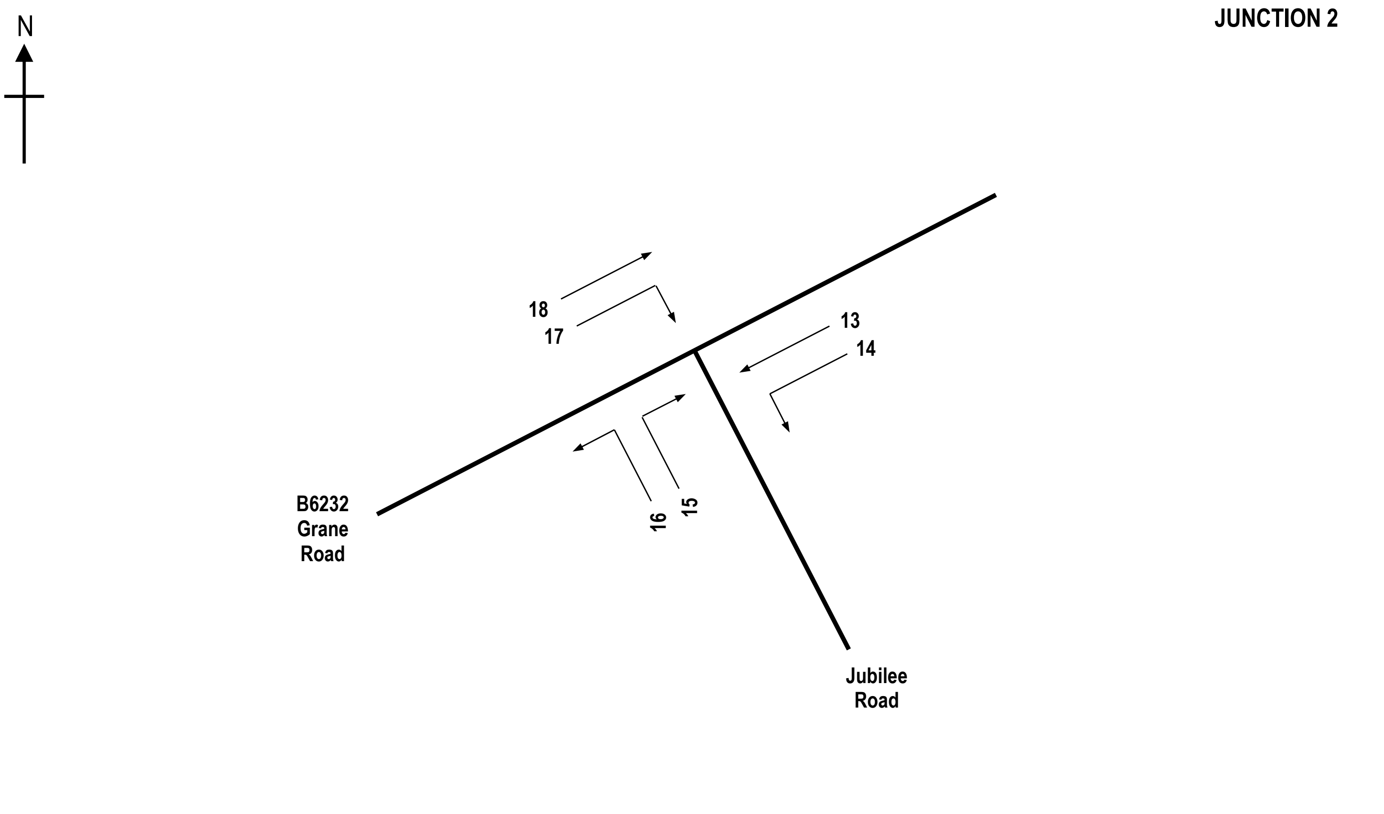
APPENDIX 2

Traffic Count Data

SURVEY CONTROL

Client:	Croft Transport Solutions
Client Contact:	Phil Wooliscroft
Survey Location:	Haslingden
Date(s) of Survey:	Wednesday 28 September 2016
Notes:	
On Site Supervisor:	Gary Dixon
Data Checking:	Richard Adams
Survey Reference:	2016.133 Haslingden
Status:	Final
Date of Issue:	3 October 2016





DRAWING TITLE

TRAFFIC MOVEMENT REFERENCE

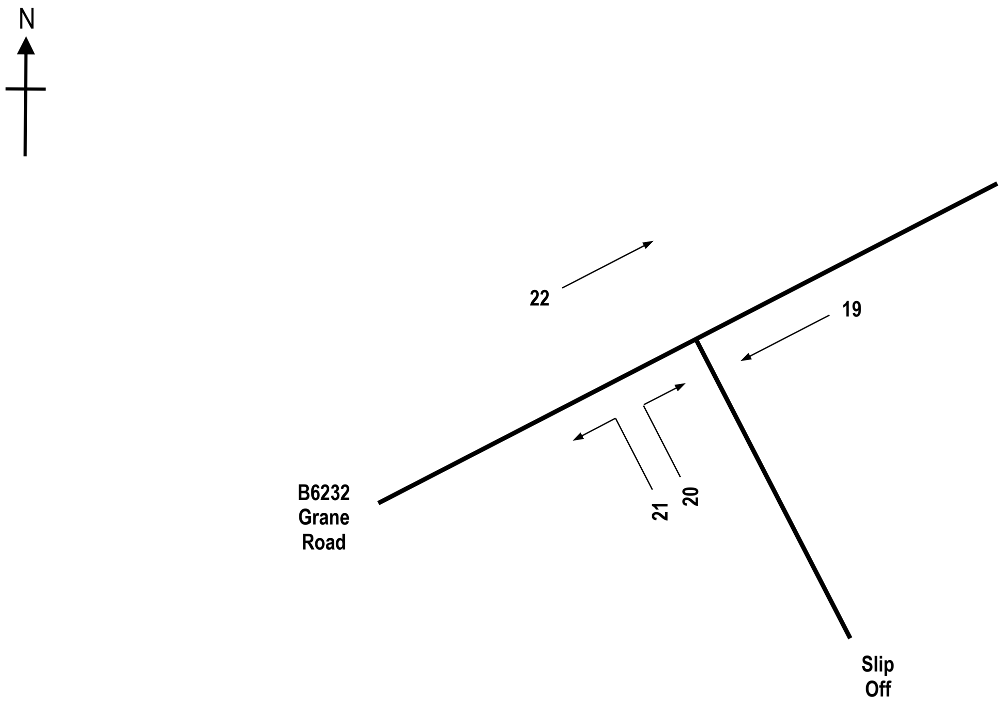
JOB TITLE

2016.133 HASLINGDEN

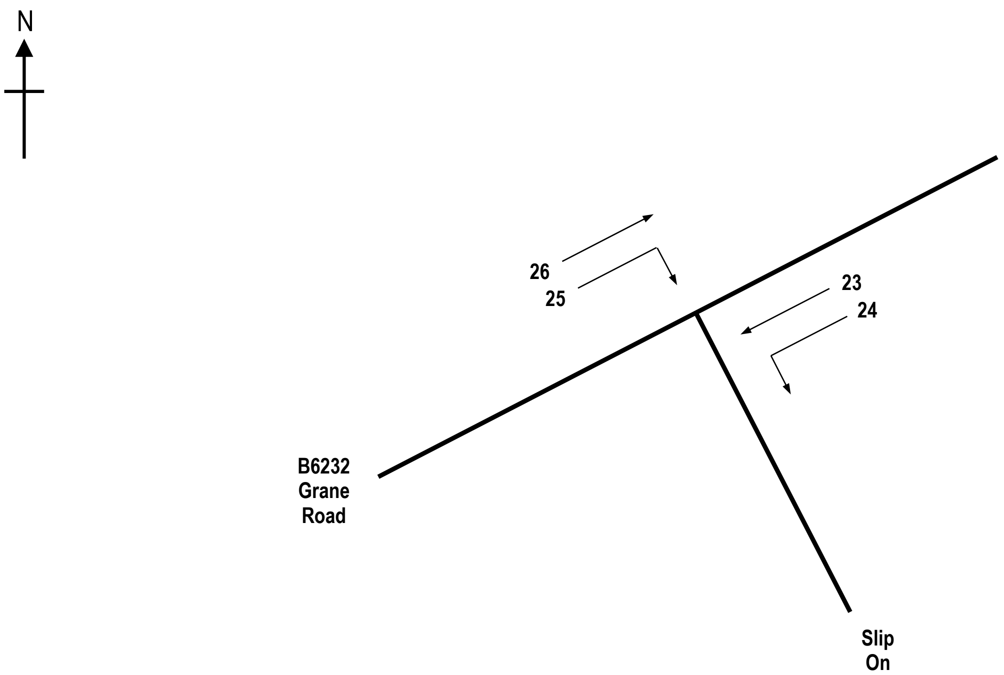
DRAWN BY	DATE	SCALE	REF
DC	SEP 2016	NTS	FIGURE 1

signal surveys
Traffic Counts and Car Park Surveys
Parkway House, Palatine Road, Northenden, Manchester,
M22 4DB
Tel 0161 998 4226 Fax 0161 998 1189

JUNCTION 3



JUNCTION 4



DRAWING TITLE **TRAFFIC MOVEMENT REFERENCE**	**signal surveys** Traffic Counts and Car Park Surveys Parkway House, Palatine Road, Northenden, Manchester, M22 4DB Tel 0161 998 4226 Fax 0161 998 1189
JOB TITLE **2016.133 HASLINGDEN**	

DRAWN BY	DATE	SCALE	REF
DC	SEP 2016	NTS	FIGURE 2

Time Beginning	B6232 Grane Road/B6235 Holcombe Road - Wednesday 28 September 2016																							
	1		2		3		4		5		6		7		8		9		10		11		12	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
0730	0	0	223	6	15	0	17	0	0	0	42	0	22	0	214	5	0	0	0	0	0	0	0	0
0745	0	0	206	9	22	1	7	0	0	0	31	0	16	0	224	8	0	0	0	0	0	0	0	0
0800	0	0	165	4	26	0	25	0	0	0	34	0	21	0	187	3	0	0	0	0	0	0	0	0
0815	0	0	140	3	30	3	24	1	0	0	34	0	16	0	184	7	0	0	0	0	0	0	0	0
0830	0	0	161	7	30	1	28	2	0	0	18	0	20	0	181	4	0	0	0	0	0	0	0	0
0845	0	0	134	7	32	2	15	3	0	0	21	0	20	0	192	6	0	0	0	0	0	0	0	0
0900	0	0	127	8	13	2	18	4	0	0	21	2	10	0	154	8	0	0	0	0	0	0	0	0
0915	0	0	126	2	16	2	27	2	0	0	12	1	11	2	148	4	0	0	0	0	0	0	0	0

Time Beginning	B6232 Grane Road/B6235 Holcombe Road - Wednesday 28 September 2016																							
	1		2		3		4		5		6		7		8		9		10		11		12	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1630	0	0	215	3	29	2	26	0	0	0	27	0	37	0	250	11	0	0	0	0	0	0	0	0
1645	0	0	171	6	17	2	15	0	0	0	26	0	30	0	187	5	0	0	0	0	0	0	0	0
1700	0	0	206	1	20	0	27	0	0	0	19	2	37	0	221	5	0	0	0	0	0	0	0	0
1715	0	0	239	5	29	0	15	2	0	0	23	0	35	0	229	4	0	0	0	0	0	0	0	0
1730	0	0	172	0	16	1	10	0	0	0	17	0	37	0	178	1	0	0	0	0	0	0	0	0
1745	0	0	169	5	23	0	14	0	0	0	18	0	43	0	192	3	0	0	0	0	0	0	0	0
1800	0	0	153	2	13	0	14	0	0	0	14	0	43	0	208	1	0	0	0	0	0	0	0	0
1815	0	0	132	0	13		7	0	0	0	17	0	18	0	126	1	0	0	0	0	0	0	0	0

Time Beginning	B6232 Grane Road/Jubilee Road - Wednesday 28 September 2016											
	13		14		15		16		17		18	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
0730	237	7	6	0	3	0	22	0	13	0	215	7
0745	238	8	7	0	9	0	26	0	19	0	212	8
0800	181	4	10	1	10	1	34	0	18	1	171	4
0815	176	7	14	0	16	0	29	1	15	0	201	5
0830	188	9	9	0	8	0	36	0	16	0	180	10
0845	167	11	10	0	13	0	29	0	6	0	184	7
0900	134	12	10	0	8	0	18	0	6	0	166	9
0915	124	8	7	0	15	0	16	0	8	0	151	8

Time Beginning	B6232 Grane Road/Jubilee Road - Wednesday 28 September 2016											
	13		14		15		16		17		18	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1630	221	3	14	0	9	0	12	1	26	0	257	12
1645	178	12	24	0	10	0	19	0	14	0	194	10
1700	216	1	28	0	7	0	23	0	38	1	246	6
1715	218	5	24	0	5	0	14	0	21	0	217	8
1730	204	0	25	1	6	0	13	0	23	0	214	1
1745	188	6	13	0	0	0	5	1	25	0	222	3
1800	152	3	19	0	7	0	12	0	22	0	196	2
1815	151	1	16	0	10	0	10	0	16	0	142	2

Time Beginning	B6232 Grane Road/Slip Off - Wednesday 28 September 2016							
	19		20		21		22	
	LV	HV	LV	HV	LV	HV	LV	HV
0730	30	0	18	0	213	7	218	7
0745	52	0	13	0	193	8	221	8
0800	44	1	14	1	147	4	181	5
0815	33	1	15	1	157	6	217	5
0830	39	0	18	0	158	9	188	10
0845	35	1	10	0	142	10	197	7
0900	23	0	6	0	121	12	174	9
0915	22	2	8	0	109	6	166	8

Time Beginning	B6232 Grane Road/Slip Off - Wednesday 28 September 2016							
	19		20		21		22	
	LV	HV	LV	HV	LV	HV	LV	HV
1630	52	0	13	1	183	3	266	12
1645	34	4	16	0	168	8	204	10
1700	72	0	5	0	172	1	253	6
1715	38	2	13	0	204	3	222	8
1730	31	0	6	0	198	1	220	1
1745	30	2	9	0	171	4	222	3
1800	15	1	6	0	156	2	203	2
1815	40	0	10	0	127	1	152	2

Time Beginning	B6292 Grane Road/Slip On - Wednesday 28 September 2016							
	23		24		25		26	
	LV	HV	LV	HV	LV	HV	LV	HV
0730	30	0	9	0	213	6	23	1
0745	52	0	5	1	200	5	34	3
0800	44	1	7	1	162	4	33	2
0815	33	1	9	0	182	5	50	1
0830	39	0	17	0	163	9	43	1
0845	35	1	8	1	172	4	35	3
0900	23	0	8	4	141	9	39	0
0915	22	2	8	1	142	8	32	0

Time Beginning	B6292 Grane Road/Slip On - Wednesday 28 September 2016							
	23		24		25		26	
	LV	HV	LV	HV	LV	HV	LV	HV
1630	52	0	26	2	220	11	59	2
1645	34	4	15	1	187	8	33	2
1700	72	0	34	0	214	6	44	0
1715	38	2	16	1	200	4	35	4
1730	31	0	19	2	190	0	36	1
1745	30	2	10	0	192	3	39	0
1800	15	1	4	1	167	2	42	0
1815	40	0	8	0	137	1	25	1

SURVEY CONTROL

Client:	Croft Transport Planning & Design
Client Contact:	Tom Bentley
Survey Location:	Haslingden
Date(s) of Survey:	Wednesday 12 December 2018 - Friday 14 December 2018
Notes:	
On Site Supervisor:	David Cheng
Data Checking:	David Cheng
Survey Reference:	2018.008 Haslingden ATC
Status:	Final
Date of Issue:	14 December 2018

Grane Rd
Holden Wood
Tea Rooms
Grane Rd
The Holden Arms
B6235
Grane Rd
ATC 1
EASTBOUND
ATC 1
WESTBOUND
B6232
Grane Rd
Google

Default

Globals

Report Id	CustomList-399
Descriptor	Default
Created by	MetroCount Traffic Executive
Creation Time (UTC)	2018-12-14T11:28:37
Legal	Copyright (c)1997 - 2016 MetroCount
Graphic	
Language	English
Country	United Kingdom
Time	UTC + 0 min
Create Version	5.0.2.0
Metric	Non metric
Speed Unit	mph
Length Unit	ft
Mass Unit	ton

Dataset

Site Name	ATC 1
Site Attribute	Haslingden
File Name	\\192.168.1.65\Public\Surveys 2019\2019.008 Haslingden ATC\ATC 1 0 2018-12-14
File Type	Plus
Algorithm	Factory default axle
Description	^
Lane	0
Direction	8
Direction Text	8 - East bound A]B, West bound B]A.
Layout Text	Axle sensors - Paired (Class/Speed/Count)
Setup Time	2018-12-12T13:23:41
Start Time	2018-12-12T13:23:41
Finish Time	2018-12-14T11:21:41
Operator	DC
Configuration	40 MC5600 00 00 00 00 00 ? Y3344VHW MC56-L5 [MC55] (c)Microcom 19Oct04

Profile

Name	Default Profile
Title	MetroCount Traffic Executive
Graphic Logo	
Header	
Footer	
Percentile 1	85
Percentile 2	95
Pace	10
Filter Start	2018-12-12T15:00:00
Filter End	2018-12-14T10:00:00
Class Scheme	ARX
F	Cls(1-12) Dir(E) Sp(0,100) Headway(]0) Span(0 - 300) Lane(0-16)
Low Speed	0
High Speed	100
Posted Limit	40
Speed Limits	40 40 40 40 40 40 40 40 40 40
Separation	0.000
Separation Type	Headway
Direction	East
Encoded Direction	2

Column

Time	24-hour time (0000 - 2359)

Total	Number in time step
Cls 1	Class totals
Cls 2	Class totals
Cls 3	Class totals
Cls 4	Class totals
Cls 5	Class totals
Cls 6	Class totals
Cls 7	Class totals
Cls 8	Class totals
Cls 9	Class totals
Cls 10	Class totals
Cls 11	Class totals
Cls 12	Class totals
Mean	Average speed
Vpp 85	Percentile speed

12 December 2018

Time	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9
1500	622	1	542	3	69	1	2	0	3	1
1600	846	2	768	8	62	2	3	0	1	0
1700	846	2	782	8	50	1	1	0	0	0
1800	589	3	553	2	31	0	0	0	0	0
1900	327	1	307	1	17	1	0	0	0	0
2000	237	1	226	0	10	0	0	0	0	0
2100	152	0	140	0	8	3	0	0	1	0
2200	111	1	107	0	3	0	0	0	0	0
2300	69	0	64	0	5	0	0	0	0	0
07-19	**2903**	**8**	**2645**	**21**	**212**	**4**	**6**	**0**	**4**	**1**
06-22	**3619**	**10**	**3318**	**22**	**247**	**8**	**6**	**0**	**5**	**1**
06-00	**3799**	**11**	**3489**	**22**	**255**	**8**	**6**	**0**	**5**	**1**
00-00	**3799**	**11**	**3489**	**22**	**255**	**8**	**6**	**0**	**5**	**1**

13 December 2018

Time	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9
0000	33	1	30	0	1	0	0	0	0	0
0100	25	0	20	0	4	0	0	0	0	1
0200	18	0	13	0	5	0	0	0	0	0
0300	13	0	11	0	2	0	0	0	0	0
0400	28	0	21	0	6	0	0	0	0	1
0500	103	0	87	0	16	0	0	0	0	0
0600	491	1	439	2	49	0	0	0	0	0
0700	786	4	705	7	65	0	2	1	2	0
0800	757	2	668	6	76	3	0	1	0	0
0900	639	0	543	3	90	0	1	0	0	1
1000	494	1	397	2	89	1	1	1	1	1
1100	446	1	358	2	79	0	1	0	4	1
1200	487	0	413	2	68	1	2	0	1	0
1300	514	3	429	5	73	0	0	1	0	1
1400	549	1	458	8	76	1	1	0	3	1
1500	691	1	619	5	59	1	4	1	1	0
1600	841	4	775	6	52	1	0	0	1	1
1700	806	1	747	12	45	1	0	0	0	0
1800	544	1	510	3	29	0	0	0	1	0

1900	324	0	312	0	11	0	0	0	1	0
2000	235	1	219	2	13	0	0	0	0	0
2100	151	0	141	0	8	0	1	0	0	0
2200	126	0	118	0	8	0	0	0	0	0
2300	73	0	71	1	1	0	0	0	0	0
07-19	**7554**	**19**	**6622**	**61**	**801**	**9**	**12**	**5**	**14**	**6**
06-22	**8755**	**21**	**7733**	**65**	**882**	**9**	**13**	**5**	**15**	**6**
06-00	**8954**	**21**	**7922**	**66**	**891**	**9**	**13**	**5**	**15**	**6**
00-00	**9174**	**22**	**8104**	**66**	**925**	**9**	**13**	**5**	**15**	**8**

14 December 2018

Time	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9
0000	40	1	35	0	4	0	0	0	0	0
0100	28	0	22	0	6	0	0	0	0	0
0200	25	0	21	0	4	0	0	0	0	0
0300	11	0	6	0	5	0	0	0	0	0
0400	17	0	13	0	4	0	0	0	0	0
0500	106	0	88	0	17	0	0	0	1	0
0600	374	0	333	3	37	0	0	1	0	0
0700	686	4	614	7	58	1	1	0	0	0
0800	678	0	592	3	76	1	1	0	1	0
0900	528	1	447	7	68	0	2	0	2	1
07-19	**1892**	**5**	**1653**	**17**	**202**	**2**	**4**	**0**	**3**	**1**
06-22	**2266**	**5**	**1986**	**20**	**239**	**2**	**4**	**1**	**3**	**1**
06-00	**2266**	**5**	**1986**	**20**	**239**	**2**	**4**	**1**	**3**	**1**
00-00	**2493**	**6**	**2171**	**20**	**279**	**2**	**4**	**1**	**4**	**1**

Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0	0	0	26.7	29.4
0	0	0	24.9	27.6
2	0	0	24.8	27.7
0	0	0	25.8	28.2
0	0	0	26.9	29.6
0	0	0	27.3	29.4
0	0	0	27.5	30.3
0	0	0	28	30.1
0	0	0	28.8	31.1
2	**0**	**0**	**25.5**	**28.3**
2	**0**	**0**	**25.8**	**28.5**
2	**0**	**0**	**25.9**	**28.7**
2	**0**	**0**	**25.9**	**28.7**

Cls 10	Cls 11	Cls 12	Mean	Vpp 85
1	0	0	28.2	30.4
0	0	0	29.4	32.8
0	0	0	27.9	31.5
0	0	0	29	35.6
0	0	0	30.1	35.3
0	0	0	27.8	30
0	0	0	26.1	28.6
0	0	0	25.7	28.2
1	0	0	25.4	28.1
1	0	0	25.7	28.5
0	0	0	25.8	29.1
0	0	0	26.8	29.2
0	0	0	26.7	29.1
1	0	1	26.7	29.2
0	0	0	26.2	29
0	0	0	26.4	28.9
1	0	0	25.4	28.4
0	0	0	25.4	28
0	0	0	26	28.4

0	0	0	27.1	29.7
0	0	0	27.3	29.6
1	0	0	27.2	29.8
0	0	0	28	30.8
0	0	0	28.2	30.8
4	**0**	**1**	**25.9**	**28.7**
5	**0**	**1**	**26**	**28.7**
5	**0**	**1**	**26.1**	**28.8**
6	**0**	**1**	**26.2**	**28.9**

Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0	0	0	28.5	32.2
0	0	0	30	33.6
0	0	0	28.5	33.9
0	0	0	29.4	34
0	0	0	29.7	34
0	0	0	27.7	30.5
0	0	0	26.6	29.1
1	0	0	25.8	28.4
3	0	1	26	28.4
0	0	0	26.8	29.1
4	**0**	**1**	**26.2**	**28.6**
4	**0**	**1**	**26.2**	**28.6**
4	**0**	**1**	**26.2**	**28.6**
4	**0**	**1**	**26.4**	**28.9**

Default

Globals

Report Id	CustomList-400
Descriptor	Default
Created by	MetroCount Traffic Executive
Creation Time (UTC)	2018-12-14T11:28:48
Legal	Copyright (c)1997 - 2016 MetroCount
Graphic	
Language	English
Country	United Kingdom
Time	UTC + 0 min
Create Version	5.0.2.0
Metric	Non metric
Speed Unit	mph
Length Unit	ft
Mass Unit	ton

Dataset

Site Name	ATC 1
Site Attribute	Haslingden
File Name	\\192.168.1.65\Public\Surveys 2019\2019.008 Haslingden ATC\ATC 1 0 2018-12-14
File Type	Plus
Algorithm	Factory default axle
Description	^
Lane	0
Direction	8
Direction Text	8 - East bound A]B, West bound B]A.
Layout Text	Axle sensors - Paired (Class/Speed/Count)
Setup Time	2018-12-12T13:23:41
Start Time	2018-12-12T13:23:41
Finish Time	2018-12-14T11:21:41
Operator	DC
Configuration	40 MC5600 00 00 00 00 00 ? Y3344VHW MC56-L5 [MC55] (c)Microcom 19Oct04

Profile

Name	Default Profile
Title	MetroCount Traffic Executive
Graphic Logo	
Header	
Footer	
Percentile 1	85
Percentile 2	95
Pace	10
Filter Start	2018-12-12T15:00:00
Filter End	2018-12-14T10:00:00
Class Scheme	ARX
F	Cls(1-12) Dir(W) Sp(0,100) Headway(]0) Span(0 - 300) Lane(0-16)
Low Speed	0
High Speed	100
Posted Limit	40
Speed Limits	40 40 40 40 40 40 40 40 40 40
Separation	0.000
Separation Type	Headway
Direction	West
Encoded Direction	8

Column

Time	24-hour time (0000 - 2359)

Total	Number in time step
Cls 1	Class totals
Cls 2	Class totals
Cls 3	Class totals
Cls 4	Class totals
Cls 5	Class totals
Cls 6	Class totals
Cls 7	Class totals
Cls 8	Class totals
Cls 9	Class totals
Cls 10	Class totals
Cls 11	Class totals
Cls 12	Class totals
Mean	Average speed
Vpp 85	Percentile speed

12 December 2018

Time	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9
1500	604	1	523	2	74	0	1	0	2	0
1600	802	5	730	1	66	0	0	0	0	0
1700	765	5	714	0	45	1	0	0	0	0
1800	522	4	494	0	24	0	0	0	0	0
1900	325	1	307	1	16	0	0	0	0	0
2000	196	1	183	0	11	0	0	0	1	0
2100	140	0	132	0	8	0	0	0	0	0
2200	124	0	121	0	3	0	0	0	0	0
2300	104	0	101	0	3	0	0	0	0	0
07-19	**2693**	**15**	**2461**	**3**	**209**	**1**	**1**	**0**	**2**	**0**
06-22	**3354**	**17**	**3083**	**4**	**244**	**1**	**1**	**0**	**3**	**0**
06-00	**3582**	**17**	**3305**	**4**	**250**	**1**	**1**	**0**	**3**	**0**
00-00	**3582**	**17**	**3305**	**4**	**250**	**1**	**1**	**0**	**3**	**0**

13 December 2018

Time	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9
0000	25	0	23	0	2	0	0	0	0	0
0100	28	0	24	0	4	0	0	0	0	0
0200	20	0	18	0	2	0	0	0	0	0
0300	16	0	11	0	5	0	0	0	0	0
0400	31	0	24	0	7	0	0	0	0	0
0500	112	0	101	0	11	0	0	0	0	0
0600	497	3	446	1	46	0	0	0	0	1
0700	911	2	839	2	64	0	0	0	3	0
0800	763	3	685	4	68	1	0	0	1	1
0900	499	1	428	1	67	1	0	0	0	0
1000	473	1	382	0	84	0	3	0	1	2
1100	488	2	414	2	68	1	0	0	0	1
1200	498	3	432	2	60	1	0	0	0	0
1300	473	1	394	1	76	0	0	0	1	0
1400	498	1	435	0	60	1	0	0	1	0
1500	631	3	559	2	65	0	0	1	1	0
1600	766	3	707	0	53	0	1	1	0	0
1700	723	4	670	2	47	0	0	0	0	0
1800	581	2	546	1	32	0	0	0	0	0

1900	339	0	328	0	11	0	0	0	0	0
2000	210	1	200	0	9	0	0	0	0	0
2100	147	0	138	0	9	0	0	0	0	0
2200	111	1	107	0	3	0	0	0	0	0
2300	87	0	80	0	6	0	0	0	0	0
07-19	**7304**	**26**	**6491**	**17**	**744**	**5**	**4**	**2**	**8**	**4**
06-22	**8497**	**30**	**7603**	**18**	**819**	**5**	**4**	**2**	**8**	**5**
06-00	**8695**	**31**	**7790**	**18**	**828**	**5**	**4**	**2**	**8**	**5**
00-00	**8927**	**31**	**7991**	**18**	**859**	**5**	**4**	**2**	**8**	**5**

14 December 2018

Time	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9
0000	47	0	43	0	4	0	0	0	0	0
0100	36	0	30	0	6	0	0	0	0	0
0200	23	0	18	1	4	0	0	0	0	0
0300	14	0	13	0	1	0	0	0	0	0
0400	29	0	21	0	8	0	0	0	0	0
0500	106	0	91	1	12	0	1	1	0	0
0600	424	4	366	1	52	0	0	0	1	0
0700	770	2	686	2	73	0	1	0	2	2
0800	658	1	590	2	63	0	0	0	2	0
0900	484	3	419	0	59	0	1	0	0	2
07-19	**1912**	**6**	**1695**	**4**	**195**	**0**	**2**	**0**	**4**	**4**
06-22	**2336**	**10**	**2061**	**5**	**247**	**0**	**2**	**0**	**5**	**4**
06-00	**2336**	**10**	**2061**	**5**	**247**	**0**	**2**	**0**	**5**	**4**
00-00	**2591**	**10**	**2277**	**7**	**282**	**0**	**3**	**1**	**5**	**4**

[redacted]

Cls 10	Cls 11	Cls 12	Mean	Vpp 85
1	0	0	27.7	30.4
0	0	0	26.5	29.1
0	0	0	26.5	28.9
0	0	0	27.8	30.5
0	0	0	28.4	30.7
0	0	0	29.2	32.2
0	0	0	29.3	32.3
0	0	0	30.2	33.8
0	0	0	30	34.5
1	**0**	**0**	**27**	**29.6**
1	**0**	**0**	**27.4**	**30**
1	**0**	**0**	**27.5**	**30.3**
1	**0**	**0**	**27.5**	**30.3**

Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0	0	0	31	37.6
0	0	0	31.4	37.7
0	0	0	31	37.9
0	0	0	30.5	35
0	0	0	31.2	38.2
0	0	0	28.5	30.8
0	0	0	28.2	30.6
1	0	0	27.2	29.4
0	0	0	27.2	29.8
1	0	0	28.6	31.2
0	0	0	27.7	30.9
0	0	0	28.8	31.6
0	0	0	29.3	32.7
0	0	0	29	32.2
0	0	0	28.7	32.2
0	0	0	27.9	31
1	0	0	27	30
0	0	0	26.6	29.4
0	0	0	26.8	29.4

0	0	0	28.2	31
0	0	0	28.6	31.5
0	0	0	29.1	32.7
0	0	0	28.8	31.7
1	0	0	29.3	33.9
3	**0**	**0**	**27.7**	**30.7**
3	**0**	**0**	**27.8**	**30.8**
4	**0**	**0**	**27.9**	**30.8**
4	**0**	**0**	**27.9**	**30.9**

Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0	0	0	30.1	34.7
0	0	0	30	34.6
0	0	0	31.8	37.9
0	0	0	30.2	36.7
0	0	0	29.3	36.2
0	0	0	28.7	31.1
0	0	0	28.4	30.6
2	0	0	27.3	29.6
0	0	0	28	30.6
0	0	0	28	31.5
2	**0**	**0**	**27.7**	**30.5**
2	**0**	**0**	**27.9**	**30.5**
2	**0**	**0**	**27.9**	**30.5**
2	**0**	**0**	**28**	**30.7**

APPENDIX 3

ARCADY Output – B6235 Holcombe Road/Site Access Mini-roundabout Junction

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Holcombe Road - Site Access.j9
Path: Z:\projects\0165 Grane Village, Rossendale\Arcady
Report generation date: 22/05/2019 10:10:03

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2024 with Development Flows							
Arm 1	0.2	4.67	0.16	A	0.6	6.37	0.38	A
Arm 2	0.1	6.16	0.10	A	0.1	6.93	0.06	A
Arm 3	0.3	5.32	0.21	A	0.3	5.51	0.25	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	Holcombe Road - Site Access
Location	Haslingden
Site number	
Date	22/05/2019
Version	
Status	(new file)
Identifier	
Client	TW
Jobnumber	0165
Enumerator	Croft Transport Planning & Design
Description	

Units

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

Analysis Options

Mini-roundabout model	Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
JUNCTIONS 9			0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 with Development Flows	AM	ONE HOUR	07:45	09:15	15
D2	2024 with Development Flows	PM	ONE HOUR	16:30	18:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 with Development Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		1, 2, 3	5.22	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Name	Description
1	Holcombe Road (N)	
2	Site Access	
3	Holcombe Road (S)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.85	3.85	4.50	1.6	15.90	6.50	0.0	
2	3.00	3.00	3.60	3.7	15.30	5.00	0.0	
3	4.10	4.10	4.50	0.1	19.70	12.00	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.633	917
2	0.605	727
3	0.638	897

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 with Development Flows	AM	ONE HOUR	07:45	09:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	133	100.000
2		✓	60	100.000
3		✓	164	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	18	115
	2	56	0	4
	3	163	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.16	4.67	0.2	A
2	0.10	6.16	0.1	A
3	0.21	5.32	0.3	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	100	0.75	917	0.109	100	0.1	4.402	A
2	45	86	675	0.067	45	0.1	5.709	A
3	123	42	870	0.142	123	0.2	4.814	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	120	0.90	917	0.130	119	0.1	4.515	A
2	54	103	665	0.081	54	0.1	5.893	A
3	147	50	865	0.171	147	0.2	5.017	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	146	1	917	0.160	146	0.2	4.672	A
2	66	126	651	0.102	66	0.1	6.156	A
3	181	62	857	0.211	180	0.3	5.316	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	146	1	917	0.160	146	0.2	4.673	A
2	66	127	651	0.102	66	0.1	6.157	A
3	181	62	857	0.211	181	0.3	5.319	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	120	0.90	917	0.130	120	0.2	4.519	A
2	54	104	665	0.081	54	0.1	5.898	A
3	147	50	864	0.171	148	0.2	5.025	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	100	0.75	917	0.109	100	0.1	4.410	A
2	45	87	675	0.067	45	0.1	5.720	A
3	123	42	870	0.142	124	0.2	4.827	A

2024 with Development Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 94% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Mini-roundabout		1, 2, 3	6.09	A

Junction Network Options

Driving side	Lighting	Road surface	In London
Left	Normal/unknown	Normal/unknown	

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024 with Development Flows	PM	ONE HOUR	16:30	18:00	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	319	100.000
2		✓	30	100.000
3		✓	203	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	57	262
	2	28	0	2
	3	201	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.38	6.37	0.6	A
2	0.06	6.93	0.1	A
3	0.25	5.51	0.3	A

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	240	1	916	0.262	239	0.4	5.302	A
2	23	196	609	0.037	22	0.0	6.140	A
3	153	21	883	0.173	152	0.2	4.918	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	287	2	916	0.313	286	0.5	5.712	A
2	27	235	585	0.046	27	0.0	6.452	A
3	182	25	881	0.207	182	0.3	5.154	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	351	2	916	0.383	351	0.6	6.358	A
2	33	288	553	0.060	33	0.1	6.923	A
3	224	31	877	0.255	223	0.3	5.503	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	351	2	916	0.383	351	0.6	6.374	A
2	33	288	553	0.060	33	0.1	6.927	A
3	224	31	877	0.255	224	0.3	5.508	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	287	2	916	0.313	287	0.5	5.730	A
2	27	236	584	0.046	27	0.0	6.459	A
3	182	25	881	0.207	183	0.3	5.161	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	240	2	916	0.262	241	0.4	5.329	A
2	23	198	608	0.037	23	0.0	6.155	A
3	153	21	883	0.173	153	0.2	4.931	A

APPENDIX 4

PICADY Output – B6232 Grane Road/B6235 Holcombe Road

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: B6232 Grane Road - B6235 Holcombe Road - Direct.j9
Path: Z:\projects\0165 Grane Village, Rossendale\Picady\2019 Models
Report generation date: 23/05/2019 10:17:12

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2016 Surveyed Flows							
Stream B-CD	0.0	6.17	0.03	A	0.0	6.23	0.04	A
Stream B-AD	0.0	8.54	0.05	A	0.1	9.14	0.06	A
Stream A-BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream D-ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-ABD	0.0	5.74	0.00	A	0.1	6.15	0.06	A
	2024 Base Flows							
Stream B-CD	0.0	6.24	0.04	A	0.1	6.32	0.05	A
Stream B-AD	0.1	8.72	0.05	A	0.1	9.37	0.06	A
Stream A-BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream D-ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-ABD	0.0	5.78	0.00	A	0.1	6.23	0.07	A
	2024 with Development Flows							
Stream B-CD	0.1	6.37	0.05	A	0.1	6.39	0.05	A
Stream B-AD	0.1	8.89	0.07	A	0.1	9.53	0.07	A
Stream A-BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream D-ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-ABD	0.0	5.81	0.01	A	0.1	6.34	0.08	A

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

File summary

File Description

Title	B6232 Grane Road/B6235 Holcombe Road
Location	Haslingden
Site number	
Date	21/05/2019
Version	
Status	(new file)
Identifier	
Client	TW
Jobnumber	0165
Enumerator	Croft Transport Planning & Design
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15
D5	2024 with Development Flows	AM	DIRECT	07:45	08:45	60	15
D6	2024 with Development Flows	PM	DIRECT	16:30	17:30	60	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2016 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.64	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	B6232 Grane Road (E)		Major
B	B6235 Holcombe Road		Minor
C	B6232 Grane Road (W)		Major
D	Graveyard		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	8.00				50.0	✓	0.00
C	8.00		✓	3.00	100.0	✓	6.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare		10.00	5.90	5.00	4.40	4.20	✓	2.00	45	45
D	One lane	2.20								45	45

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	603	-	-	-	-	-	-	0.213	0.305	0.213	-	-	-
1	B-A	523	0.087	0.220	0.220	-	-	-	0.138	0.314	-	0.220	0.220	0.110
1	B-C	663	0.093	0.234	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	523	0.087	0.220	0.220	-	-	-	0.138	0.314	0.138	-	-	-
1	B-D, offside lane	523	0.087	0.220	0.220	-	-	-	0.138	0.314	0.138	-	-	-
1	C-B	687	0.243	0.243	0.347	-	-	-	-	-	-	-	-	-
1	D-A	600	-	-	-	-	-	-	0.212	-	0.084	-	-	-
1	D-B, nearside lane	473	0.125	0.125	0.284	-	-	-	0.199	0.199	0.079	-	-	-
1	D-B, offside lane	473	0.125	0.125	0.284	-	-	-	0.199	0.199	0.079	-	-	-
1	D-C	473	-	0.125	0.284	0.099	0.199	0.199	0.199	0.199	0.079	-	-	-

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

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000
D			100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	101	778	0
	B	75	0	75	0
	C	855	5	0	0
	D	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.03	6.17	0.0	A
B-AD	0.05	8.54	0.0	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.00	5.74	0.0	A
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	21	604	0.034	20	0.0	6.165	A
B-AD	21	442	0.046	20	0.0	8.534	A
A-BCD	0	553	0.000	0	0.0	0.000	A
A-B	27			27			
A-C	210			210			
D-ABC	0	426	0.000	0	0.0	0.000	A
C-ABD	1	629	0.002	1	0.0	5.738	A
C-D	0			0			
C-A	231			231			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	21	604	0.034	20	0.0	6.170	A
B-AD	21	442	0.046	20	0.0	8.538	A
A-BCD	0	553	0.000	0	0.0	0.000	A
A-B	27			27			
A-C	210			210			
D-ABC	0	426	0.000	0	0.0	0.000	A
C-ABD	1	629	0.002	1	0.0	5.738	A
C-D	0			0			
C-A	231			231			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	18	613	0.029	18	0.0	6.051	A
B-AD	18	454	0.039	18	0.0	8.248	A
A-BCD	0	561	0.000	0	0.0	0.000	A
A-B	23			23			
A-C	179			179			
D-ABC	0	437	0.000	0	0.0	0.000	A
C-ABD	1	638	0.002	1	0.0	5.661	A
C-D	0			0			
C-A	197			197			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	18	613	0.029	18	0.0	6.046	A
B-AD	18	468	0.037	18	0.0	7.992	A
A-BCD	0	582	0.000	0	0.0	0.000	A
A-B	23			23			
A-C	179			179			
D-ABC	0	458	0.000	0	0.0	0.000	A
C-ABD	0.57	638	0.001	0.57	0.0	5.656	A
C-D	0			0			
C-A	97			97			

2016 Surveyed Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.93	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000
D			100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	103	861	0
	B	87	0	99	0
	C	937	139	0	0
	D	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.04	6.23	0.0	A
B-AD	0.06	9.14	0.1	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.06	6.15	0.1	A
C-D				
C-A				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	605	0.044	26	0.0	6.225	A
B-AD	23	417	0.056	23	0.1	9.126	A
A-BCD	0	537	0.000	0	0.0	0.000	A
A-B	28			28			
A-C	232			232			
D-ABC	0	413	0.000	0	0.0	0.000	A
C-ABD	38	624	0.060	37	0.1	6.142	A
C-D	0			0			
C-A	253			253			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	5	624	0.008	5	0.0	5.820	A
B-AD	4	440	0.010	4	0.0	8.266	A
A-BCD	0	552	0.000	0	0.0	0.000	A
A-B	22			22			
A-C	180			180			
D-ABC	0	433	0.000	0	0.0	0.000	A
C-ABD	29	638	0.046	29	0.0	5.921	A
C-D	0			0			
C-A	197			197			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	25	609	0.041	25	0.0	6.157	A
B-AD	22	425	0.052	22	0.1	8.932	A
A-BCD	0	542	0.000	0	0.0	0.000	A
A-B	26			26			
A-C	215			215			
D-ABC	0	419	0.000	0	0.0	0.000	A
C-ABD	35	628	0.055	35	0.1	6.070	A
C-D	0			0			
C-A	234			234			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	604	0.044	27	0.0	6.230	A
B-AD	23	417	0.056	23	0.1	9.136	A
A-BCD	0	537	0.000	0	0.0	0.000	A
A-B	28			28			
A-C	232			232			
D-ABC	0	412	0.000	0	0.0	0.000	A
C-ABD	38	624	0.060	38	0.1	6.147	A
C-D	0			0			
C-A	253			253			

2024 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000
D			100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	110	847	0
	B	82	0	82	0
	C	931	5	0	0
	D	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.04	6.24	0.0	A
B-AD	0.05	8.72	0.1	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.00	5.78	0.0	A
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	22	599	0.037	22	0.0	6.237	A
B-AD	22	435	0.051	22	0.1	8.712	A
A-BCD	0	549	0.000	0	0.0	0.000	A
A-B	30			30			
A-C	228			228			
D-ABC	0	420	0.000	0	0.0	0.000	A
C-ABD	1	624	0.002	1	0.0	5.785	A
C-D	0			0			
C-A	252			252			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	22	599	0.037	22	0.0	6.241	A
B-AD	22	435	0.051	22	0.1	8.718	A
A-BCD	0	549	0.000	0	0.0	0.000	A
A-B	30			30			
A-C	228			228			
D-ABC	0	420	0.000	0	0.0	0.000	A
C-ABD	1	624	0.002	1	0.0	5.785	A
C-D	0			0			
C-A	252			252			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	19	608	0.031	19	0.0	6.110	A
B-AD	19	448	0.042	19	0.0	8.393	A
A-BCD	0	557	0.000	0	0.0	0.000	A
A-B	25			25			
A-C	195			195			
D-ABC	0	432	0.000	0	0.0	0.000	A
C-ABD	1	633	0.002	1	0.0	5.698	A
C-D	0			0			
C-A	214			214			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	19	608	0.031	19	0.0	6.112	A
B-AD	19	448	0.042	19	0.0	8.394	A
A-BCD	0	557	0.000	0	0.0	0.000	A
A-B	25			25			
A-C	195			195			
D-ABC	0	432	0.000	0	0.0	0.000	A
C-ABD	1	633	0.002	1	0.0	5.700	A
C-D	0			0			
C-A	214			214			

2024 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.03	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000
D			100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	111	932	0
	B	94	0	107	0
	C	1014	150	0	0
	D	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.05	6.32	0.1	A
B-AD	0.06	9.37	0.1	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.07	6.23	0.1	A
C-D				
C-A				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	29	599	0.048	29	0.1	6.310	A
B-AD	25	409	0.062	25	0.1	9.364	A
A-BCD	0	532	0.000	0	0.0	0.000	A
A-B	30			30			
A-C	252			252			
D-ABC	0	405	0.000	0	0.0	0.000	A
C-ABD	40	618	0.065	40	0.1	6.230	A
C-D	0			0			
C-A	274			274			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	22	615	0.036	22	0.0	6.077	A
B-AD	20	433	0.045	20	0.0	8.712	A
A-BCD	0	548	0.000	0	0.0	0.000	A
A-B	23			23			
A-C	196			196			
D-ABC	0	426	0.000	0	0.0	0.000	A
C-ABD	32	634	0.050	32	0.1	5.988	A
C-D	0			0			
C-A	213			213			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	604	0.044	27	0.0	6.232	A
B-AD	23	417	0.056	23	0.1	9.140	A
A-BCD	0	537	0.000	0	0.0	0.000	A
A-B	28			28			
A-C	233			233			
D-ABC	0	412	0.000	0	0.0	0.000	A
C-ABD	38	623	0.060	37	0.1	6.149	A
C-D	0			0			
C-A	254			254			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	29	599	0.048	29	0.1	6.315	A
B-AD	25	409	0.062	25	0.1	9.374	A
A-BCD	0	532	0.000	0	0.0	0.000	A
A-B	30			30			
A-C	252			252			
D-ABC	0	405	0.000	0	0.0	0.000	A
C-ABD	40	618	0.065	40	0.1	6.234	A
C-D	0			0			
C-A	274			274			

2024 with Development Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	2024 with Development Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000
D			100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	119	847	0
	B	111	0	108	0
	C	931	14	0	0
	D	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.05	6.37	0.1	A
B-AD	0.07	8.89	0.1	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.01	5.81	0.0	A
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	29	594	0.049	29	0.1	6.366	A
B-AD	30	435	0.069	30	0.1	8.877	A
A-BCD	0	548	0.000	0	0.0	0.000	A
A-B	32			32			
A-C	229			229			
D-ABC	0	419	0.000	0	0.0	0.000	A
C-ABD	4	623	0.006	4	0.0	5.814	A
C-D	0			0			
C-A	251			251			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	29	594	0.049	29	0.1	6.371	A
B-AD	30	435	0.069	30	0.1	8.887	A
A-BCD	0	548	0.000	0	0.0	0.000	A
A-B	32			32			
A-C	229			229			
D-ABC	0	419	0.000	0	0.0	0.000	A
C-ABD	4	623	0.006	4	0.0	5.814	A
C-D	0			0			
C-A	251			251			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	25	604	0.041	25	0.0	6.212	A
B-AD	25	448	0.057	25	0.1	8.514	A
A-BCD	0	556	0.000	0	0.0	0.000	A
A-B	27			27			
A-C	195			195			
D-ABC	0	431	0.000	0	0.0	0.000	A
C-ABD	3	633	0.005	3	0.0	5.724	A
C-D	0			0			
C-A	214			214			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	25	604	0.041	25	0.0	6.210	A
B-AD	25	448	0.057	25	0.1	8.513	A
A-BCD	0	556	0.000	0	0.0	0.000	A
A-B	27			27			
A-C	195			195			
D-ABC	0	431	0.000	0	0.0	0.000	A
C-ABD	3	633	0.005	3	0.0	5.724	A
C-D	0			0			
C-A	214			214			

2024 with Development Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.18	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	2024 with Development Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000
D			100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	140	932	0
	B	108	0	121	0
	C	1014	179	0	0
	D	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.05	6.39	0.1	A
B-AD	0.07	9.53	0.1	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.08	6.34	0.1	A
C-D				
C-A				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	33	596	0.055	33	0.1	6.386	A
B-AD	29	407	0.072	29	0.1	9.518	A
A-BCD	0	530	0.000	0	0.0	0.000	A
A-B	38			38			
A-C	251			251			
D-ABC	0	403	0.000	0	0.0	0.000	A
C-ABD	48	617	0.078	48	0.1	6.332	A
C-D	0			0			
C-A	274			274			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	25	612	0.041	25	0.0	6.133	A
B-AD	23	431	0.052	23	0.1	8.812	A
A-BCD	0	546	0.000	0	0.0	0.000	A
A-B	29			29			
A-C	196			196			
D-ABC	0	425	0.000	0	0.0	0.000	A
C-ABD	38	632	0.060	38	0.1	6.061	A
C-D	0			0			
C-A	213			213			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	30	601	0.050	30	0.1	6.301	A
B-AD	27	415	0.065	27	0.1	9.273	A
A-BCD	0	535	0.000	0	0.0	0.000	A
A-B	35			35			
A-C	233			233			
D-ABC	0	410	0.000	0	0.0	0.000	A
C-ABD	45	622	0.072	45	0.1	6.244	A
C-D	0			0			
C-A	253			253			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	33	596	0.055	33	0.1	6.394	A
B-AD	29	407	0.072	29	0.1	9.532	A
A-BCD	0	530	0.000	0	0.0	0.000	A
A-B	38			38			
A-C	251			251			
D-ABC	0	403	0.000	0	0.0	0.000	A
C-ABD	48	617	0.078	48	0.1	6.339	A
C-D	0			0			
C-A	274			274			

APPENDIX 5

PICADY Output – B6232 Grane Road/Jubilee Way

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: B6232 Grane Road - Jubilee Way - Direct.j9
Path: Z:\projects\0165 Grane Village, Rossendale\Picady\2019 Models
Report generation date: 23/05/2019 16:30:57

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2016 Surveyed Flows							
Stream B-AC	0.1	6.85	0.07	A	0.1	6.94	0.05	A
Stream C-AB	0.0	6.22	0.03	A	0.0	6.36	0.05	A
	2024 Base Flows							
Stream B-AC	0.1	7.00	0.08	A	0.1	7.09	0.06	A
Stream C-AB	0.0	6.27	0.03	A	0.1	6.41	0.05	A
	2024 with Development Flows							
Stream B-AC	0.1	7.01	0.08	A	0.1	7.10	0.06	A
Stream C-AB	0.0	6.28	0.03	A	0.1	6.43	0.05	A

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

File summary

File Description

Title	B6232 Grane Road/Jubilee Way
Location	Haslingden
Site number	
Date	21/05/2019
Version	
Status	(new file)
Identifier	
Client	TW
Jobnumber	0165
Enumerator	Croft Transport Planning & Design
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15
D5	2024 with Development Flows	AM	DIRECT	07:45	08:45	60	15
D6	2024 with Development Flows	PM	DIRECT	16:30	17:30	60	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2016 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.74	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	B6232 Grane Road (E)		Major
B	Jubilee Way		Minor
C	B6232 Grane Road (W)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	8.50		✓	2.50	90.0	✓	1.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.70	17	28

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	532	0.086	0.218	0.137	0.312
1	B-C	687	0.094	0.237	-	-
1	C-B	647	0.223	0.223	-	-

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

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	39	884
	B	40	0	113
	C	847	67	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.07	6.85	0.1	A
C-AB	0.03	6.22	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	40	569	0.070	40	0.1	6.800	A
C-AB	18	599	0.029	18	0.0	6.190	A
C-A	220			220			
A-B	10			10			
A-C	230			230			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	41	566	0.072	41	0.1	6.853	A
C-AB	18	598	0.031	18	0.0	6.216	A
C-A	229			229			
A-B	11			11			
A-C	238			238			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	34	580	0.059	34	0.1	6.600	A
C-AB	15	606	0.025	15	0.0	6.100	A
C-A	186			186			
A-B	9			9			
A-C	194			194			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	37	574	0.064	37	0.1	6.700	A
C-AB	16	602	0.027	16	0.0	6.146	A
C-A	203			203			
A-B	9			9			
A-C	213			213			

2016 Surveyed Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.60	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	90	975
	B	31	0	70
	C	986	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.05	6.94	0.1	A
C-AB	0.05	6.36	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	27	545	0.050	27	0.1	6.936	A
C-AB	28	595	0.047	28	0.0	6.353	A
C-A	265			265			
A-B	24			24			
A-C	264			264			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	562	0.039	22	0.0	6.666	A
C-AB	23	603	0.037	23	0.0	6.209	A
C-A	216			216			
A-B	20			20			
A-C	212			212			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	27	545	0.050	27	0.1	6.943	A
C-AB	28	595	0.047	28	0.0	6.355	A
C-A	265			265			
A-B	24			24			
A-C	264			264			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	555	0.043	24	0.0	6.782	A
C-AB	25	599	0.041	25	0.0	6.272	A
C-A	236			236			
A-B	22			22			
A-C	234			234			

2024 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.75	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	42	962
	B	44	0	123
	C	922	73	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.08	7.00	0.1	A
C-AB	0.03	6.27	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	43	562	0.076	43	0.1	6.924	A
C-AB	19	596	0.032	19	0.0	6.244	A
C-A	240			240			
A-B	11			11			
A-C	250			250			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	45	559	0.080	45	0.1	6.999	A
C-AB	20	594	0.034	20	0.0	6.272	A
C-A	249			249			
A-B	11			11			
A-C	260			260			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	37	574	0.064	37	0.1	6.707	A
C-AB	16	603	0.027	16	0.0	6.147	A
C-A	203			203			
A-B	9			9			
A-C	212			212			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	40	568	0.070	40	0.1	6.815	A
C-AB	18	599	0.030	18	0.0	6.195	A
C-A	221			221			
A-B	10			10			
A-C	231			231			

2024 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.56	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	97	1055
	B	34	0	76
	C	1067	109	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.06	7.09	0.1	A
C-AB	0.05	6.41	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	538	0.056	30	0.1	7.081	A
C-AB	30	592	0.051	30	0.1	6.412	A
C-A	288			288			
A-B	26			26			
A-C	285			285			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	555	0.043	24	0.0	6.778	A
C-AB	24	599	0.041	24	0.0	6.269	A
C-A	235			235			
A-B	21			21			
A-C	233			233			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	538	0.056	30	0.1	7.087	A
C-AB	30	592	0.051	30	0.1	6.415	A
C-A	288			288			
A-B	26			26			
A-C	285			285			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	6	548	0.011	6	0.0	6.645	A
C-AB	27	596	0.045	27	0.0	6.329	A
C-A	255			255			
A-B	23			23			
A-C	254			254			

2024 with Development Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.75	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	2024 with Development Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	42	970
	B	44	0	124
	C	949	75	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.08	7.01	0.1	A
C-AB	0.03	6.28	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	562	0.078	44	0.1	6.945	A
C-AB	20	596	0.033	20	0.0	6.250	A
C-A	246			246			
A-B	11			11			
A-C	252			252			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	45	559	0.081	45	0.1	7.007	A
C-AB	21	594	0.035	21	0.0	6.278	A
C-A	255			255			
A-B	11			11			
A-C	262			262			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	37	573	0.065	37	0.1	6.714	A
C-AB	17	603	0.028	17	0.0	6.150	A
C-A	208			208			
A-B	9			9			
A-C	214			214			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	40	568	0.070	40	0.1	6.823	A
C-AB	18	599	0.030	18	0.0	6.201	A
C-A	228			228			
A-B	10			10			
A-C	233			233			

2024 with Development Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	2024 with Development Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	97	1082
	B	34	0	78
	C	1081	111	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.06	7.10	0.1	A
C-AB	0.05	6.43	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	537	0.056	30	0.1	7.092	A
C-AB	31	591	0.052	31	0.1	6.432	A
C-A	291			291			
A-B	26			26			
A-C	292			292			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	555	0.043	24	0.0	6.781	A
C-AB	25	599	0.041	25	0.0	6.280	A
C-A	237			237			
A-B	21			21			
A-C	238			238			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	537	0.056	30	0.1	7.098	A
C-AB	31	591	0.052	31	0.1	6.433	A
C-A	291			291			
A-B	26			26			
A-C	292			292			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	27	548	0.049	27	0.1	6.913	A
C-AB	27	595	0.046	27	0.0	6.343	A
C-A	259			259			
A-B	23			23			
A-C	260			260			

APPENDIX 6

PICADY Output – B6232 Grane Road/A56 Off-Slip

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: B6232 Grane Road - A56 Off-Slip - Direct.j9
Path: Z:\projects\0165 Grane Village, Rossendale\Picady\2019 Models
Report generation date: 23/05/2019 11:10:45

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2016 Surveyed Flows							
Stream B-C	0.4	7.66	0.30	A	0.4	7.63	0.30	A
Stream B-A	0.0	7.47	0.03	A	0.0	7.53	0.03	A
Stream C-AB	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	2024 Base Flows							
Stream B-C	0.5	8.00	0.33	A	0.5	7.93	0.33	A
Stream B-A	0.0	7.56	0.04	A	0.0	7.61	0.03	A
Stream C-AB	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	2024 with Dev Flows							
Stream B-C	0.5	8.03	0.33	A	0.5	8.02	0.34	A
Stream B-A	0.0	7.57	0.04	A	0.0	7.63	0.03	A
Stream C-AB	0.0	0.00	0.00	A	0.0	0.00	0.00	A

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

File summary

File Description

Title	B6232 Grane Road/A56 Off-slip
Location	Haslingden
Site number	
Date	21/05/2019
Version	
Status	(new file)
Identifier	
Client	TW
Jobnumber	0165
Enumerator	Croft Transport Planning & Design
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15
D5	2024 with Dev Flows	AM	DIRECT	07:45	08:45	60	15
D6	2024 with Dev Flows	PM	DIRECT	16:30	17:30	60	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2016 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.36	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	B6232 Grane Road (E)		Major
B	A56 Off-slip		Minor
C	B6232 Grane Road (W)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	8.00		✓	3.00	90.0	✓	1.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane Width (Left) (m)	Lane Width (Right) (m)	Visibility to left (m)	Visibility to right (m)
B	Two lanes	3.55	3.55	40	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	544	0.090	0.228	0.144	0.326
1	B-C	692	0.097	0.245	-	-
1	C-B	681	0.241	0.241	-	-

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

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	163
	B	64	0	760
	C	887	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.30	7.66	0.4	A
B-A	0.03	7.47	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	205	675	0.303	203	0.4	7.603	A
B-A	17	499	0.035	17	0.0	7.466	A
C-AB	0	1339	0.000	0	0.0	0.000	A
C-A	239			239			
A-B	0			0			
A-C	44			44			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	205	675	0.303	205	0.4	7.657	A
B-A	17	499	0.035	17	0.0	7.469	A
C-AB	0	1339	0.000	0	0.0	0.000	A
C-A	239			239			
A-B	0			0			
A-C	44			44			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	167	678	0.246	167	0.3	7.058	A
B-A	14	507	0.028	14	0.0	7.298	A
C-AB	0	1343	0.000	0	0.0	0.000	A
C-A	195			195			
A-B	0			0			
A-C	36			36			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	183	677	0.270	182	0.4	7.282	A
B-A	15	504	0.031	15	0.0	7.366	A
C-AB	0	1342	0.000	0	0.0	0.000	A
C-A	213			213			
A-B	0			0			
A-C	39			39			

2016 Surveyed Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.03	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	208
	B	49	0	757
	C	1017	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.30	7.63	0.4	A
B-A	0.03	7.53	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	205	673	0.304	203	0.4	7.628	A
B-A	13	491	0.027	13	0.0	7.527	A
C-AB	0	1334	0.000	0	0.0	0.000	A
C-A	275			275			
A-B	0			0			
A-C	56			56			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	174	676	0.257	174	0.3	7.178	A
B-A	11	499	0.023	11	0.0	7.380	A
C-AB	0	1337	0.000	0	0.0	0.000	A
C-A	234			234			
A-B	0			0			
A-C	48			48			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	190	675	0.281	190	0.4	7.421	A
B-A	12	495	0.025	12	0.0	7.454	A
C-AB	0	1335	0.000	0	0.0	0.000	A
C-A	254			254			
A-B	0			0			
A-C	52			52			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	190	675	0.281	190	0.4	7.424	A
B-A	12	495	0.025	12	0.0	7.454	A
C-AB	0	1335	0.000	0	0.0	0.000	A
C-A	254			254			
A-B	0			0			
A-C	52			52			

2024 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.50	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	177
	B	70	0	827
	C	965	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.33	8.00	0.5	A
B-A	0.04	7.56	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	223	673	0.331	221	0.5	7.929	A
B-A	19	495	0.038	19	0.0	7.555	A
C-AB	0	1337	0.000	0	0.0	0.000	A
C-A	261			261			
A-B	0			0			
A-C	48			48			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	223	673	0.331	223	0.5	7.997	A
B-A	19	495	0.038	19	0.0	7.558	A
C-AB	0	1337	0.000	0	0.0	0.000	A
C-A	261			261			
A-B	0			0			
A-C	48			48			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	182	677	0.268	182	0.4	7.287	A
B-A	15	504	0.030	15	0.0	7.367	A
C-AB	0	1342	0.000	0	0.0	0.000	A
C-A	212			212			
A-B	0			0			
A-C	39			39			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	198	675	0.294	198	0.4	7.543	A
B-A	17	500	0.034	17	0.0	7.442	A
C-AB	0	1340	0.000	0	0.0	0.000	A
C-A	232			232			
A-B	0			0			
A-C	43			43			

2024 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.14	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	225
	B	53	0	819
	C	1101	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.33	7.93	0.5	A
B-A	0.03	7.61	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	222	672	0.330	220	0.5	7.933	A
B-A	14	487	0.029	14	0.0	7.613	A
C-AB	0	1331	0.000	0	0.0	0.000	A
C-A	297			297			
A-B	0			0			
A-C	61			61			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	189	675	0.280	189	0.4	7.424	A
B-A	12	495	0.025	12	0.0	7.451	A
C-AB	0	1335	0.000	0	0.0	0.000	A
C-A	253			253			
A-B	0			0			
A-C	52			52			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	205	673	0.304	205	0.4	7.680	A
B-A	13	491	0.027	13	0.0	7.530	A
C-AB	0	1334	0.000	0	0.0	0.000	A
C-A	275			275			
A-B	0			0			
A-C	56			56			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	205	673	0.304	205	0.4	7.684	A
B-A	13	491	0.027	13	0.0	7.530	A
C-AB	0	1334	0.000	0	0.0	0.000	A
C-A	275			275			
A-B	0			0			
A-C	56			56			

2024 with Dev Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.49	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	2024 with Dev Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	179
	B	70	0	834
	C	993	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.33	8.03	0.5	A
B-A	0.04	7.57	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	225	673	0.334	223	0.5	7.963	A
B-A	19	494	0.038	19	0.0	7.572	A
C-AB	0	1337	0.000	0	0.0	0.000	A
C-A	268			268			
A-B	0			0			
A-C	48			48			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	225	673	0.334	225	0.5	8.033	A
B-A	19	494	0.038	19	0.0	7.575	A
C-AB	0	1337	0.000	0	0.0	0.000	A
C-A	268			268			
A-B	0			0			
A-C	48			48			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	184	677	0.271	184	0.4	7.317	A
B-A	15	503	0.031	15	0.0	7.378	A
C-AB	0	1342	0.000	0	0.0	0.000	A
C-A	218			218			
A-B	0			0			
A-C	39			39			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	200	675	0.296	200	0.4	7.574	A
B-A	17	500	0.034	17	0.0	7.456	A
C-AB	0	1340	0.000	0	0.0	0.000	A
C-A	238			238			
A-B	0			0			
A-C	43			43			

2024 with Dev Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.19	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	2024 with Dev Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	231
	B	53	0	840
	C	1114	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.34	8.02	0.5	A
B-A	0.03	7.63	0.0	A
C-AB	0.00	0.00	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	227	671	0.338	225	0.5	8.024	A
B-A	14	486	0.029	14	0.0	7.625	A
C-AB	0	1331	0.000	0	0.0	0.000	A
C-A	301			301			
A-B	0			0			
A-C	62			62			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	193	674	0.286	193	0.4	7.488	A
B-A	12	495	0.025	12	0.0	7.463	A
C-AB	0	1335	0.000	0	0.0	0.000	A
C-A	256			256			
A-B	0			0			
A-C	53			53			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	210	673	0.312	210	0.4	7.769	A
B-A	13	490	0.027	13	0.0	7.546	A
C-AB	0	1333	0.000	0	0.0	0.000	A
C-A	279			279			
A-B	0			0			
A-C	58			58			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	210	673	0.312	210	0.5	7.776	A
B-A	13	490	0.027	13	0.0	7.546	A
C-AB	0	1333	0.000	0	0.0	0.000	A
C-A	279			279			
A-B	0			0			
A-C	58			58			

APPENDIX 7

PICADY Output – B6232 Grane Road/A56 On-Slip

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.0.6896

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: B6232 Grane Road - A56 On-Slip - Direct.j9
Path: Z:\projects\0165 Grane Village, Rossendale\Picady\2019 Models
Report generation date: 23/05/2019 13:50:37

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2016 Surveyed Flows							
Stream B-AC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-AB	0.5	7.95	0.32	A	0.6	8.60	0.37	A
	2024 Base Flows							
Stream B-AC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-AB	0.5	8.31	0.35	A	0.7	9.07	0.40	A
	2024 with Dev Flows							
Stream B-AC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-AB	0.6	8.44	0.36	A	0.7	9.15	0.41	A

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

File summary

File Description

Title	B6232 Grane Road/A56 On-slip
Location	Haslingden
Site number	
Date	21/05/2019
Version	
Status	(new file)
Identifier	
Client	TW
Jobnumber	0165
Enumerator	Croft Transport Planning & Design
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15
D5	2024 with Dev Flows	AM	DIRECT	07:45	08:45	60	15
D6	2024 with Dev Flows	PM	DIRECT	16:30	17:30	60	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2016 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		5.55	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	B6232 Grane Road (E)		Major
B	A56 Off-slip		Minor
C	B6232 Grane Road (W)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	8.00		✓	3.00	90.0	✓	6.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.20	40	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	474	0.079	0.199	0.125	0.285
1	B-C	603	0.084	0.213	-	-
1	C-B	681	0.241	0.241	-	-

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

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2016 Surveyed Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	34	159
	B	0	0	0
	C	154	797	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.32	7.95	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	481	0.000	0	0.0	0.000	A
C-AB	199	669	0.298	198	0.4	7.623	A
C-A	39			39			
A-B	8			8			
A-C	40			40			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	476	0.000	0	0.0	0.000	A
C-AB	215	668	0.322	215	0.5	7.953	A
C-A	42			42			
A-B	9			9			
A-C	43			43			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	485	0.000	0	0.0	0.000	A
C-AB	184	670	0.274	184	0.4	7.417	A
C-A	35			35			
A-B	8			8			
A-C	36			36			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	480	0.000	0	0.0	0.000	A
C-AB	199	669	0.298	199	0.4	7.669	A
C-A	39			39			
A-B	8			8			
A-C	40			40			

2016 Surveyed Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		5.50	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2016 Surveyed Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	99	208
	B	0	0	0
	C	187	879	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.37	8.60	0.6	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	464	0.000	0	0.0	0.000	A
C-AB	246	660	0.372	243	0.6	8.603	A
C-A	52			52			
A-B	28			28			
A-C	58			58			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	479	0.000	0	0.0	0.000	A
C-AB	194	664	0.292	194	0.4	7.681	A
C-A	41			41			
A-B	22			22			
A-C	46			46			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	466	0.000	0	0.0	0.000	A
C-AB	238	661	0.359	237	0.6	8.493	A
C-A	50			50			
A-B	27			27			
A-C	56			56			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	476	0.000	0	0.0	0.000	A
C-AB	202	664	0.304	202	0.4	7.823	A
C-A	43			43			
A-B	23			23			
A-C	48			48			

2024 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		5.78	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2024 Base Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	37	173
	B	0	0	0
	C	168	867	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.35	8.31	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	476	0.000	0	0.0	0.000	A
C-AB	217	668	0.325	215	0.5	7.926	A
C-A	42			42			
A-B	9			9			
A-C	44			44			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	471	0.000	0	0.0	0.000	A
C-AB	234	667	0.350	234	0.5	8.310	A
C-A	45			45			
A-B	10			10			
A-C	47			47			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	480	0.000	0	0.0	0.000	A
C-AB	199	669	0.298	200	0.4	7.685	A
C-A	39			39			
A-B	8			8			
A-C	40			40			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	476	0.000	0	0.0	0.000	A
C-AB	217	668	0.325	217	0.5	7.985	A
C-A	42			42			
A-B	9			9			
A-C	44			44			

2024 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		5.81	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2024 Base Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	107	225
	B	0	0	0
	C	202	951	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.40	9.07	0.7	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	458	0.000	0	0.0	0.000	A
C-AB	267	658	0.405	264	0.7	9.073	A
C-A	56			56			
A-B	30			30			
A-C	63			63			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	474	0.000	0	0.0	0.000	A
C-AB	210	663	0.316	210	0.5	7.974	A
C-A	44			44			
A-B	24			24			
A-C	49			49			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	461	0.000	0	0.0	0.000	A
C-AB	257	659	0.391	257	0.6	8.940	A
C-A	55			55			
A-B	29			29			
A-C	61			61			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	472	0.000	0	0.0	0.000	A
C-AB	219	662	0.330	219	0.5	8.141	A
C-A	46			46			
A-B	24			24			
A-C	52			52			

2024 with Dev Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		5.90	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	2024 with Dev Flows	AM	DIRECT	07:45	08:45	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	37	175
	B	0	0	0
	C	172	891	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.36	8.44	0.6	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	475	0.000	0	0.0	0.000	A
C-AB	223	668	0.334	221	0.5	8.029	A
C-A	43			43			
A-B	9			9			
A-C	44			44			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	469	0.000	0	0.0	0.000	A
C-AB	241	667	0.361	240	0.6	8.441	A
C-A	46			46			
A-B	10			10			
A-C	47			47			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	479	0.000	0	0.0	0.000	A
C-AB	205	669	0.306	205	0.4	7.777	A
C-A	39			39			
A-B	9			9			
A-C	40			40			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	474	0.000	0	0.0	0.000	A
C-AB	223	668	0.334	223	0.5	8.092	A
C-A	43			43			
A-B	9			9			
A-C	44			44			

2024 with Dev Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		5.85	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	2024 with Dev Flows	PM	DIRECT	16:30	17:30	60	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			100.000
C			100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	107	231
	B	0	0	0
	C	205	962	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	A
C-AB	0.41	9.15	0.7	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	457	0.000	0	0.0	0.000	A
C-AB	270	658	0.410	267	0.7	9.154	A
C-A	57			57			
A-B	30			30			
A-C	65			65			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	473	0.000	0	0.0	0.000	A
C-AB	212	663	0.320	213	0.5	8.021	A
C-A	45			45			
A-B	23			23			
A-C	51			51			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	460	0.000	0	0.0	0.000	A
C-AB	260	659	0.394	259	0.6	8.997	A
C-A	55			55			
A-B	29			29			
A-C	62			62			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	471	0.000	0	0.0	0.000	A
C-AB	221	662	0.334	221	0.5	8.192	A
C-A	47			47			
A-B	25			25			
A-C	53			53			

APPENDIX 8

Crashmap Output

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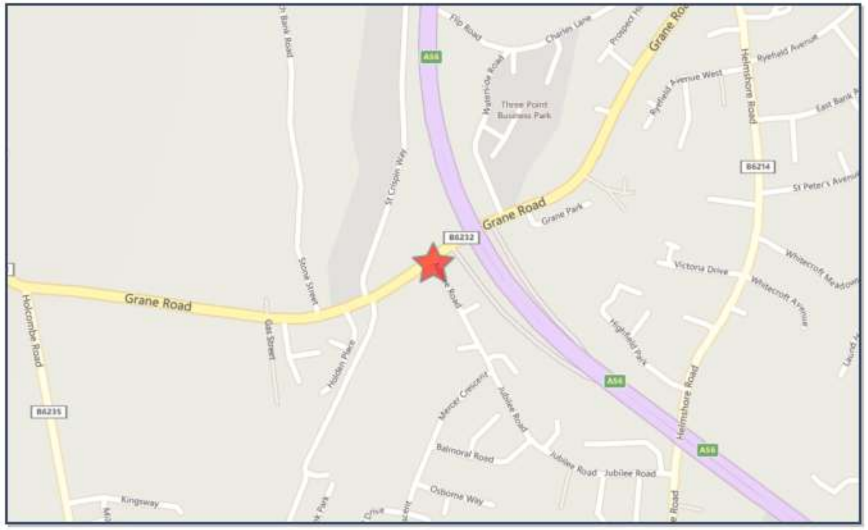
2018 data is provisional and is subject to change

Crash Date:	Tuesday, May 08, 2018	**Time of Crash:**	8:55:00 AM	**Crash Reference:**	**201804EF18101**
Highest Injury Severity:	Slight	**Road Number:**	B6234	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	378110 422580
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	T or staggered junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

2018 data is provisional and is subject to change

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Car (excluding private hire)	-1	Female	25-34	Vehicle is in the act of turning left	Unknown	Commuting to/from work	None	None
1	Pedal cycle	-1	Male	35-44	Vehicle proceeding normally along the carriageway, not on a bend	Unknown	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	35-44	Unknown or other	Unknown or other

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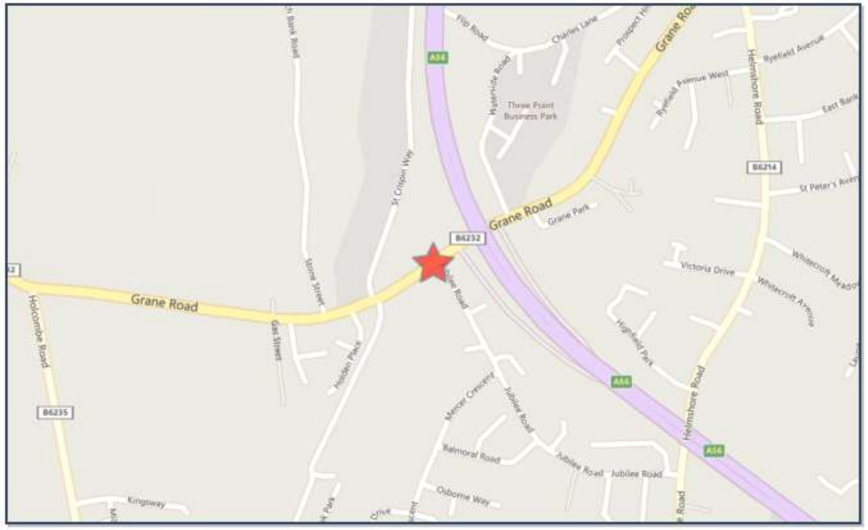
Crash Date:	Wednesday, September 27, 2017	**Time of Crash:**	6:00:00 PM	**Crash Reference:**	**201704EF17211**
Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	378100 422580

Weather Description:	Raining without high winds
Road Surface Description:	Wet or Damp
Speed Limit:	30
Light Conditions:	Darkness: street lights present and lit
Carriageway Hazards:	None
Junction Detail:	T or staggered junction
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres
Road Type:	Single carriageway
Junction Control:	Give way or uncontrolled



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Car (excluding private hire)	4	Female	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Other	None	None
1	Car (excluding private hire)	2	Female	66 - 75	Vehicle is in the act of turning left	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Female	36 - 45	Unknown or other	Unknown or other

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Crash Date:	Sunday, July 23, 2017	**Time of Crash:**	2:00:00 PM	**Crash Reference:**	**201704EF17209**
Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	377470 422540

Weather Description:	Fine without high winds
Road Surface Description:	Wet or Damp
Speed Limit:	60
Light Conditions:	Daylight: regardless of presence of streetlights
Carriageway Hazards:	None
Junction Detail:	Not at or within 20 metres of junction
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres
Road Type:	Single carriageway
Junction Control:	Not Applicable

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Car (excluding private hire)	14	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Back	Other	None	None
1	Car (excluding private hire)	2	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

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Crash Date:	Sunday, May 21, 2017	**Time of Crash:**	9:40:00 AM	**Crash Reference:**	**201704EF17107**
Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	378190 422630

Weather Description: Fine without high winds

Road Surface Description: Dry

Speed Limit: 30

Light Conditions: Daylight: regardless of presence of streetlights

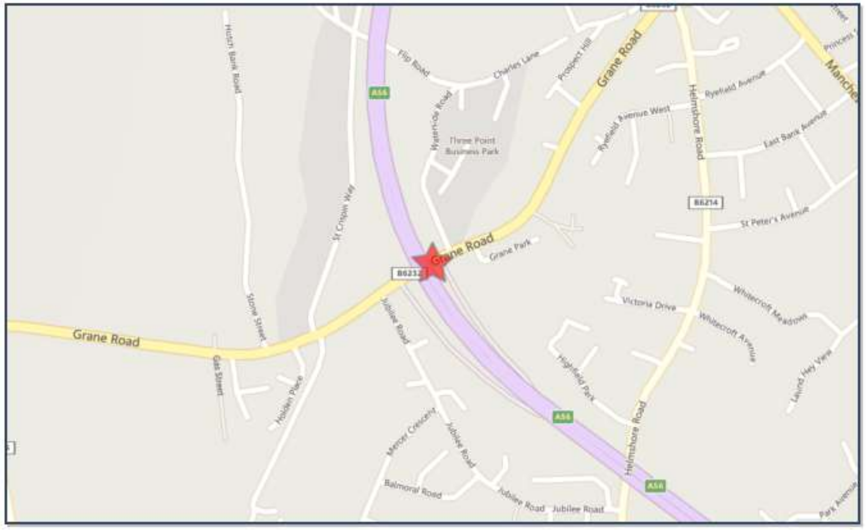
Carriageway Hazards: None

Junction Detail: Other junction

Junction Pedestrian Crossing: No physical crossing facility within 50 metres

Road Type: Single carriageway

Junction Control: Give way or uncontrolled



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Pedal cycle	-1	Male	46 - 55	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
1	Car (excluding private hire)	2	Female	46 - 55	Vehicle is in the act of turning right	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	46 - 55	Unknown or other	Unknown or other

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Crash Date:	Monday, November 28, 2016	**Time of Crash:**	3:00:00 PM	**Crash Reference:**	**201604EF16314**

Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	1
Local Authority:	Rossendale Borough			**OS Grid Reference:**	377470 422540

Weather Description:	Fine without high winds
Road Surface Description:	Dry
Speed Limit:	50
Light Conditions:	Daylight: regardless of presence of streetlights
Carriageway Hazards:	None
Junction Detail:	Not at or within 20 metres of junction
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres
Road Type:	Single carriageway
Junction Control:	Not Applicable

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Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Motorcycle over 50cc and up to 125cc	5	Male	16 - 20	Vehicle proceeding normally along the carriageway, on a right hand bend	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	16 - 20	Unknown or other	Unknown or other

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Crash Date:	Tuesday, August 16, 2016	**Time of Crash:**	2:15:00 PM	**Crash Reference:**	**201604EF16217**

Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	377800 422500

Weather Description:	Fine without high winds
Road Surface Description:	Dry
Speed Limit:	30
Light Conditions:	Daylight: regardless of presence of streetlights
Carriageway Hazards:	None
Junction Detail:	Not at or within 20 metres of junction
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres
Road Type:	Single carriageway
Junction Control:	Not Applicable

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Car (excluding private hire)	10	Male	46 - 55	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Other	None	None
1	Car (excluding private hire)	3	Male	66 - 75	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	46 - 55	Unknown or other	Unknown or other

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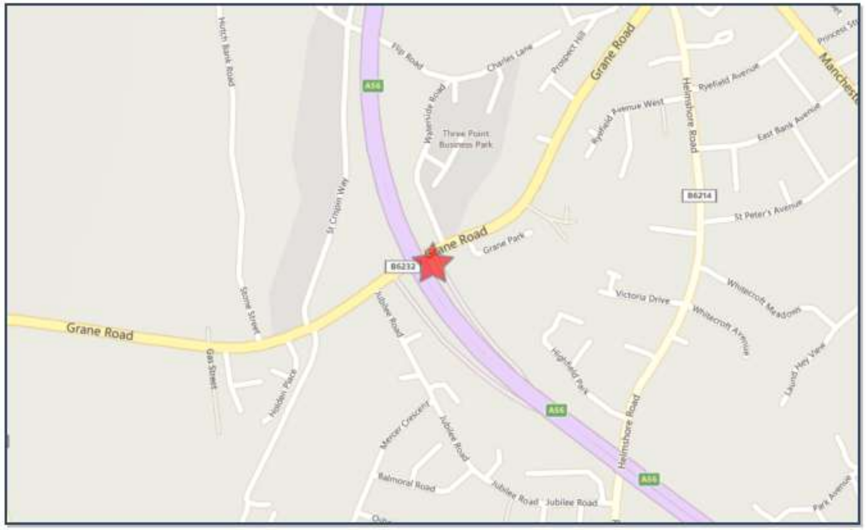
Crash Date:	Wednesday, June 22, 2016	**Time of Crash:**	11:51:00 AM	**Crash Reference:**	**201604EF16154**
Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	2
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	378200 422630

Weather Description:	Fine without high winds
Road Surface Description:	Dry
Speed Limit:	30
Light Conditions:	Daylight: regardless of presence of streetlights
Carriageway Hazards:	None
Junction Detail:	T or staggered junction
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres
Road Type:	Single carriageway
Junction Control:	Give way or uncontrolled



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Car (excluding private hire)	-1	Male	66 - 75	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
1	Car (excluding private hire)	7	Female	56 - 65	Vehicle is in the act of turning right	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Female	56 - 65	Unknown or other	Unknown or other
2	2	Slight	Driver or rider	Male	66 - 75	Unknown or other	Unknown or other

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Crash Date: Monday, March 21, 2016 **Time of Crash:** 4:10:00 PM **Crash Reference:** **201604EF16118**

Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	1
Local Authority:	Rossendale Borough			**OS Grid Reference:**	377490 422510
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	T or staggered junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				

For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	12	Unknown	Unknown	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Pedestrian	Female	16 - 20	In carriageway, crossing elsewhere	Unknown or other

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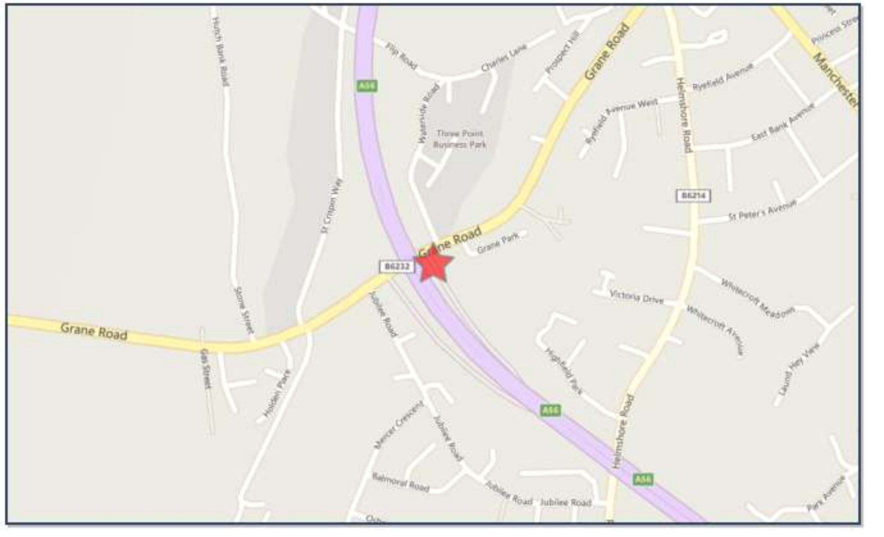
Crash Date:	Thursday, March 24, 2016	**Time of Crash:**	1:24:00 PM	**Crash Reference:**	**201604EF16097**
Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale Borough			**OS Grid Reference:**	378210 422630

Weather Description:	Raining without high winds
Road Surface Description:	Wet or Damp
Speed Limit:	30
Light Conditions:	Daylight: regardless of presence of streetlights
Carriageway Hazards:	None
Junction Detail:	T or staggered junction
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres
Road Type:	Single carriageway
Junction Control:	Give way or uncontrolled



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	8	Female	46 - 55	Vehicle is moving off	Front	Commuting to/from work	None	None
2	Car (excluding private hire)	13	Female	21 - 25	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Female	46 - 55	Unknown or other	Unknown or other

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Crash Date: Monday, October 05, 2015 **Time of Crash:** 1:00:00 PM **Crash Reference:** **201504EF15316**

Highest Injury Severity: Slight

Road Number: B6232

Number of Casualties: 1

Highway Authority: Lancashire

Number of Vehicles: 2

Local Authority: Rossendale District (B)

OS Grid Reference: 377420 422560

Weather Description: Raining without high winds

Road Surface Description: Wet or Damp

Speed Limit: 50

Light Conditions: Daylight: regardless of presence of streetlights

Carriageway Hazards: None

Junction Detail: Not at or within 20 metres of junction

Junction Pedestrian Crossing: No physical crossing facility within 50 metres

Road Type: Single carriageway

Junction Control: Not Applicable

For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Car (excluding private hire)	23	Female	46 - 55	Vehicle proceeding normally along the carriageway, on a right hand bend	Offside	Other	None	None
1	Car (excluding private hire)	10	Female	26 - 35	Vehicle proceeding normally along the carriageway, on a left hand bend	Offside	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Female	46 - 55	Unknown or other	Unknown or other

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Crash Date:	Thursday, April 24, 2014	**Time of Crash:**	11:50:00 AM	**Crash Reference:**	**201404FL14035**

Highest Injury Severity:	Slight	**Road Number:**	B6232	**Number of Casualties:**	1
Highway Authority:	Lancashire			**Number of Vehicles:**	2
Local Authority:	Rossendale District (B)			**OS Grid Reference:**	377925 422495
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				

For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

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Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
2	Pedal cycle	-1	Male	56 - 65	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Other	None	None
1	Goods vehicle over 3.5 tonnes and under 7.5 tonnes mgw	16	Male	46 - 55	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Journey as part of work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	56 - 65	Unknown or other	Unknown or other

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