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Report No: 5194/R1
Rev A 28th June 2010

320110460P

**WHALLEY NEW ROAD
BILLINGTON
LANCASHIRE**

FLOOD RISK ASSESSMENT

JUNE 2010

Prepared By: John E Lees B.Sc., C.Eng., M.I.C.E., M.C.I.W.E.M.

Client:

**Paul Smith
Acland Bracewell Limited
Tarleton
PR4 6UP**



PROJECT QUALITY CONTROL DATA SHEET

Site Name:	Whalley, Billington
Report Title:	Flood Risk Assessment
Report Number:	5194/R1

Revision	Date	Status
-	January 2010	For Approval
A	June 2010	For Formal Issue

Client: Acland Bracewell Limited

Client Contact: Paul Smith

Prepared By: John E Lees B.Sc., C.Eng., M.I.C.E., M.C.I.W.E.M.

Signature:



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1.0 INTRODUCTION

- 1.1 Lees Roxburgh have been instructed by Janet Dixon Town Planners on behalf of Acland Bracewell Ltd. to carry out a Flood Risk Assessment (FRA) in connection with the housing development of land at Billington for housing.
- 1.2 This report has been prepared to accompany a proposed outline planning application.
- 1.3 The site lies within an area designated on EA Flood mapping as Flood Risk Zone 1 and therefore comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year ($< 0.1\%$).
- 1.4 The FRA has been prepared in accordance with the requirements of *Planning Policy Statement 25 (PPS25): Development and Flood Risk*.

In accordance with this document, developers are required to provide an assessment which addresses the following;

- The potential for the proposed development to be affected by flooding either from the development proposal or external sources.
- The potential for the proposed development to increase the flood risk elsewhere.
- That mitigation measures introduced to deal with any risks identified can be successfully managed.
- That the site can be developed and occupied safely.

PPS25 states that an assessment of flood risk should be proportionate to the risk and appropriate to the scale, nature and location of the development. This report reflects the requirements of PPS25 in this respect.

2.0 SITE DETAILS

2.1 Surrounding Area

Reference is made to **Appendix 1A**.

The site is situated to the east of the village of Billington to south west of Whalley.

It lies within an area of open farmland bounded by clusters of residential development with a commercial vehicle bodybuilding works (Meadowville Works) immediately to the east. Otherwise, the site is bounded by residential property to the north east and south east and by open fields continuing to the west.

A railway line runs in a south east to north westerly direction and at its closest is some 40m from the north west corner of the site.

The site fronts on to Whalley New Road to the north and Whalley Old Road/Painter Wood to the south east.

Beyond the railway line there is further residential development and the village centre.

Longworth Road to the north contains the limit of housing beyond which there are open fields running down to the River Calder which runs in a south east to north westerly direction some 300m from the site.

The Whalley Viaduct carries the railway line over the Calder valley.

2.2 The Site

The site occupies an area of just under 4 acres in area and comprises open fields which as noted extend into open countryside to the south west.

Some wooden huts are situated within the south corner of the site at Whalley Old Road.

2.3 Access and Egress

The site fronts onto two roads as noted with access to the field being obtained at the north west corner of the site from Whalley New Road.

2.4 Levels

The general topography, and the site fall steeply in a north westerly and northerly direction.

Reference to the topographical survey identifies the following approx. key levels at each corner of the site;

- South corner- 87m AOD
- South east corner- 80m AOD
- North west corner- 62m AOD
- North east corner- 65m AOD

Levels continue to fall down towards the River Calder. Although there is no available level information near the river, reference to United Utilities public sewer records identifies a level on Longworth Road at the Whalley Aqueduct of 44.7m AOD, i.e. some 17m below the lowest site level.

2.5 Existing Drainage, Watercourses and Water Features

There are numerous ditch and watercourse systems in the area of the site and these have been overmarked on an extract from the sewer records and included in **Appendix 1B**. The most significant watercourse runs some 150m to the south west of the site in a separate small valley.

Drainage from the site runs alongside the west boundary and makes its way into a system to the opposite side of Whalley New Road continuing north to the River Calder. It was noted that this system was part open ditch/part culverted with water noted as locally running overground. The system is therefore relatively minor and in need of maintenance.

Site inspection also confirmed the presence of the adopted foul drainage system identified on United Utilities public sewer records (**Appendix 3**).

2.6 Development Proposals

The development proposals comprise some 39 No. dwellings and are incorporated in **Appendix 4**. However it is stressed that the proposals are in outline only at this stage.

3.0 **FLOOD RISK**

3.1 Environment Agency Flood Map

- 3.1.1 Reference to the Environment Agency Flood Map (**Figure 1**) indicates that the site is situated within a Flood Zone 1 Area of flood risk. This is land defined within PPS25 as land assessed as having a less than 1 in 1000 annual probability of flooding (<0.1% in any year). All uses of land are appropriate in this zone.

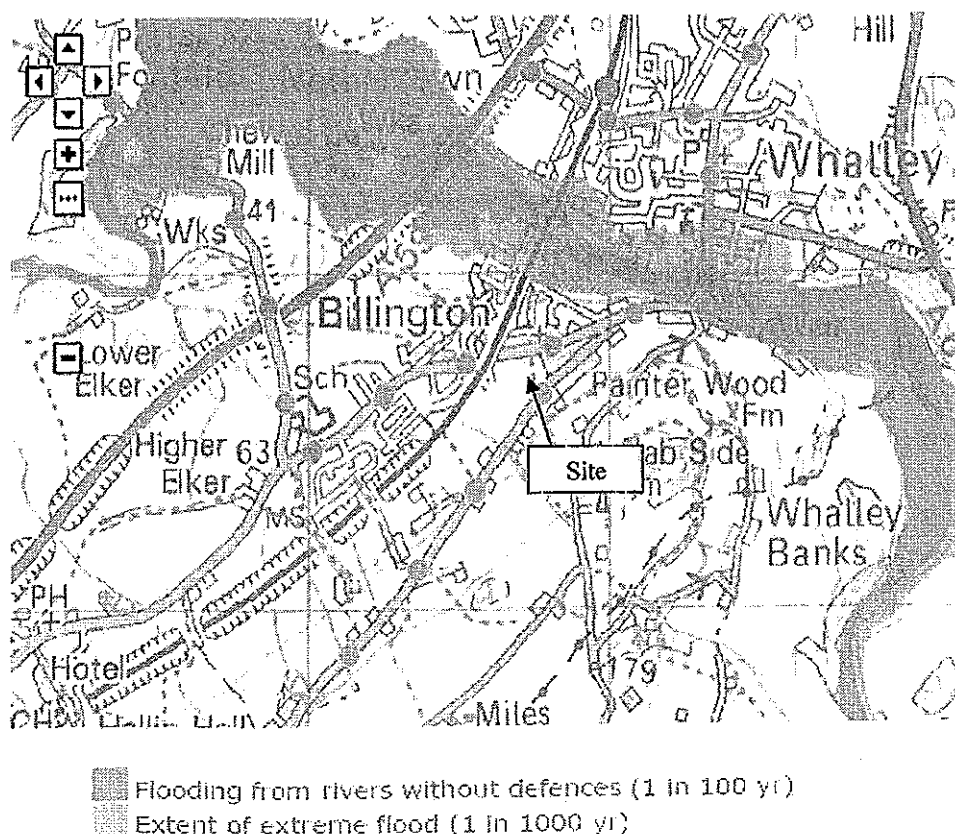


Figure 1: Environment Agency Flood Mapping



3.2 Sequential and Exception Tests

- 3.2.1 The proposed development is situated within a Flood Zone 1 Risk Area. On this basis, the Sequential and Exception Tests all as described in PPS25 are not applicable.

3.3 Sources of Flood Risk

3.3.1 River Calder

As noted, the River Calder runs some 300m to the north east of the site.

The lowest site level is a minimum of 17m above Longworth Road itself at a level well above the River Calder.

On this basis, the site is not at risk of flooding from the River Calder and this is reflected in the EA flood mapping.

3.3.2 Watercourses and Ditches

- 3.3.2.1 There are numerous watercourses and ditches in the area.

The most significant watercourse runs in a valley to the south west and any flooding associated with this watercourse will flow in a south westerly direction, well below and away from the site.

- 3.3.2.2 There are two locations to the north of Whalley Old Road where overland and ditch flows were noted above the level of the site.

Both appear to enter gullies within the road.

However, flows in the vicinity of the south west corner of the site continue along the west boundary where a ditch appears and continues towards and across Whalley New Road.

The steep slopes above the site with associated overland flows and ditches therefore present a modest risk of flooding to the site and will need to be addressed.

- 3.3.2.3 The watercourse system to the opposite side of Whalley New Road is not Main River and is therefore an ordinary watercourse. Site levels are sufficiently high for the risk of flooding associated with this system to be discounted.

3.3.3 Existing Drainage

- 3.3.3.1 United Utilities public sewer records have been obtained and have identified the following;

- Foul system of unknown diameter within Whalley Old Road but not shown as continuing with the records therefore incomplete.

- Foul system to rear of Nos.19-49 Whalley Old Road draining ultimately in a northerly direction and connecting into a combined system in Longworth Road. The system in Whalley Old Road possibly links into this system.
- No public surface water sewers are shown.

3.3.3.2 In addition to the public sewer system, various manholes, chambers and gullies were noted in the area of the site.

3.3.4 **Comment**

3.3.4.1 On the basis of the assessment of the potential sources of flood risk described above, it is concluded that there is a risk of flooding from external sources associated with overland and ditch flows from the steep slopes to the south east.

3.3.4.2 The Flood Risk Assessment should therefore assess this risk together with the risk of flooding associated with drainage proposals for the development.

4.0 SURFACE WATER RUNOFF

4.1 Requirements for Surface Water Drainage of the Site

4.1.1 PPS25 recommends that surface water generated by the development site, should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development.

4.1.2 Proposals should ensure that volumes and peak flow rates of surface water leaving the developed site are no greater than those prior to development, reducing surface water run off where possible and taking climate change into consideration.

4.2 Site Area

4.2.1 The area proposed for development comprises 1.58 Ha.

4.3 Existing Site Run Off

4.3.1 The site is currently greenfield and a greenfield runoff rate has been calculated in accordance with EA recommended design practice, the ICP SUDs input method, and assessed as 10 litres/sec.

4.4 Surface Water Run Off from the Developed Site

4.4.1 The development proposals have been similarly assessed and have identified an impermeable area of 6,500m².

4.4.2 Flows associated with the proposed development will therefore be considerably in excess of those associated with the undeveloped greenfield site.

- 4.4.3 Contact has been made with the Environment Agency who have advised it would be acceptable to discharge surface water from the existing site subject to flows being attenuated to the greenfield runoff rate and designed to accommodate a 1 in 100 year storm event plus an allowance for climate change.

4.5 Comment

- 4.5.1 The nearest available positive outfall point for surface water drainage from the development is the ordinary watercourse which appears to the opposite side of Whalley New Road.

The Environment Agency have no objection to connection into this system subject to the flow attenuation criteria advised.

- 4.5.2 It is therefore proposed to connect the development's surface water drainage system into this watercourse thus capturing and controlling surface water discharge from the development. The point of connection to the downstream system will be dictated by levels and routing.

It is proposed that the new systems will be adopted under an S104 Agreement with United Utilities.

5.0 FLOOD MITIGATION MEASURES

- 5.1 A risk of flooding from overland land drainage flows generated within the steep slopes to the south of the site has been identified

Flows from the south continue along the western site boundary appearing at a ditch partway along its length and continuing towards the watercourse system to the north.

Slab levels within the development will be set a minimum of 150mm above external levels.

External levels generally will also need to be set to direct any overland flows around proposed properties to mitigate against the risk of flooding.

Consideration should also be given to the incorporation of some land drainage to pick up flows at site boundaries

- 5.2 It is proposed to limit flows from the development to the greenfield runoff rate of 10 litres/sec.

The proposed drainage system will be designed to comply with Sewers for Adoption 6th Edition and to accommodate storms up to and including the 1 in 100 year event plus an allowance of 30% for climate change. A stored surface water volume of 380m³ has been assessed for preliminary purposes but subject to design development in the context of the scheme proposal (ref. Appendix 5).

It is proposed these systems will be adopted by United Utilities under a Section 104 Agreement.

- 5.3 Any flooding of the proposed system arising from a storm event more onerous than that for which the system will be designed, will result in overland flows down the highway system and into and along Whalley New Road to the west and into the nearby watercourse system.
- 5.4 On this basis, no additional mitigation measures are warranted.

6.0 CONCLUSIONS

- 6.1 The FRA has concluded that the risk of flooding to the development from any major watercourse systems can be discounted.

However, a risk has been identified with respect to overland and land drainage flows from the steep slopes to the south of the site.

Levels within the development will therefore need to be set to direct flows away from, and mitigate the risk of flooding to, properties.

Consideration should also be given to incorporation of land drainage to critical areas

- 6.2 A greenfield runoff rate of 10 litres/sec has been established.

Flows from the proposed drainage scheme will be limited to this value. The onsite system will incorporate surface water attenuation designed in accordance with Sewers for Adoption 6th Edition for a 1 in 100 year event plus an allowance for climate change.

It will be put forward for adoption by United Utilities under a Section 104 Agreement and United Utilities will therefore become responsible for the long term maintenance of the new site drainage system

Private drainage (i.e. not adoptable) serving houses within the development will be designed to current building standards.

- 6.3 On this basis, it is concluded that this FRA has demonstrated that the risk of flooding from external sources can be managed and the development proposals will not increase flood risk either within the site or to the surrounding area and is therefore appropriate.

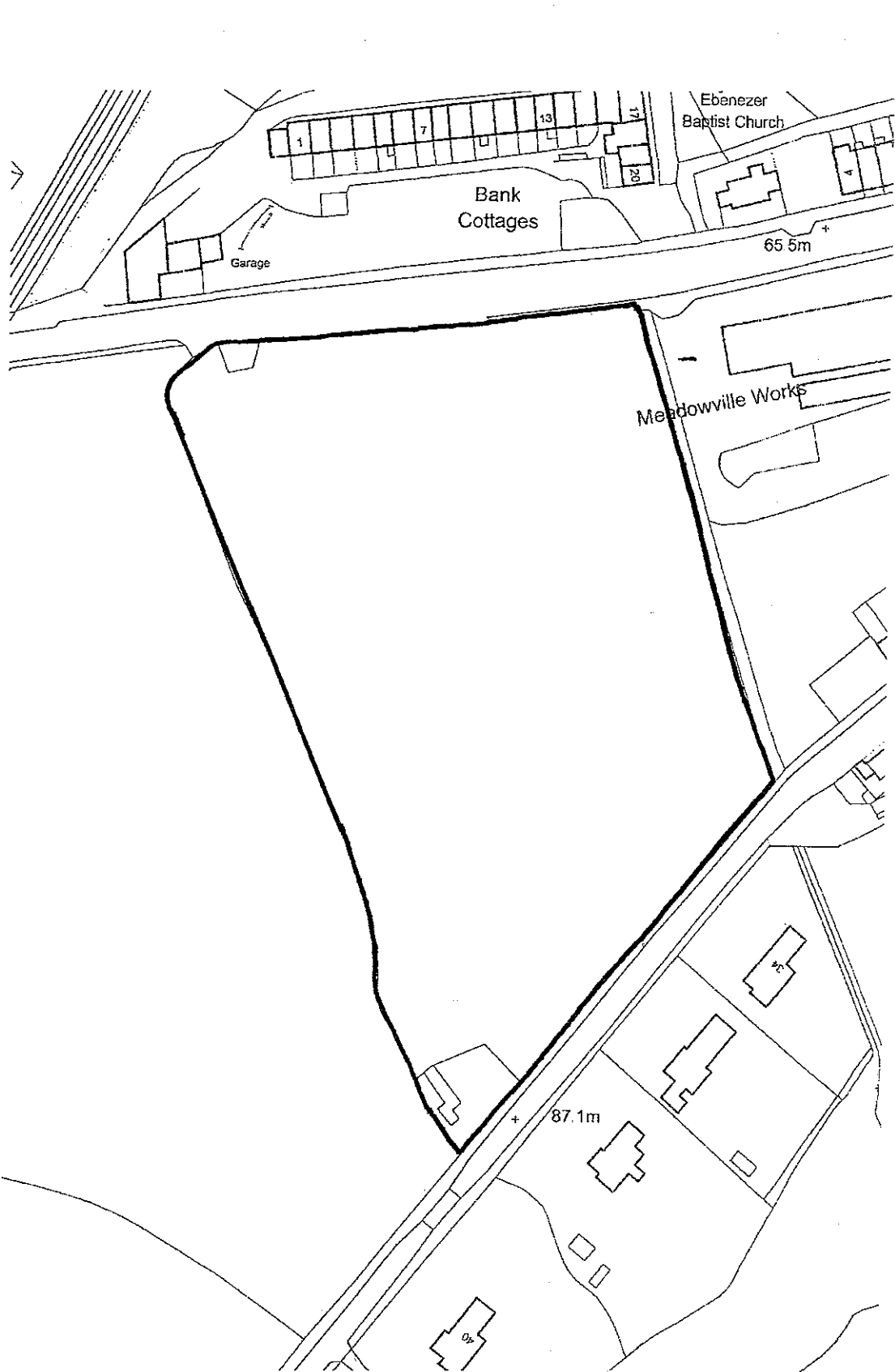


APPENDIX 1 EXISTING SITE PLANS
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APPENDIX 1A

Location



**SITE
LOCATION PLAN**
Scale: 1:1,250

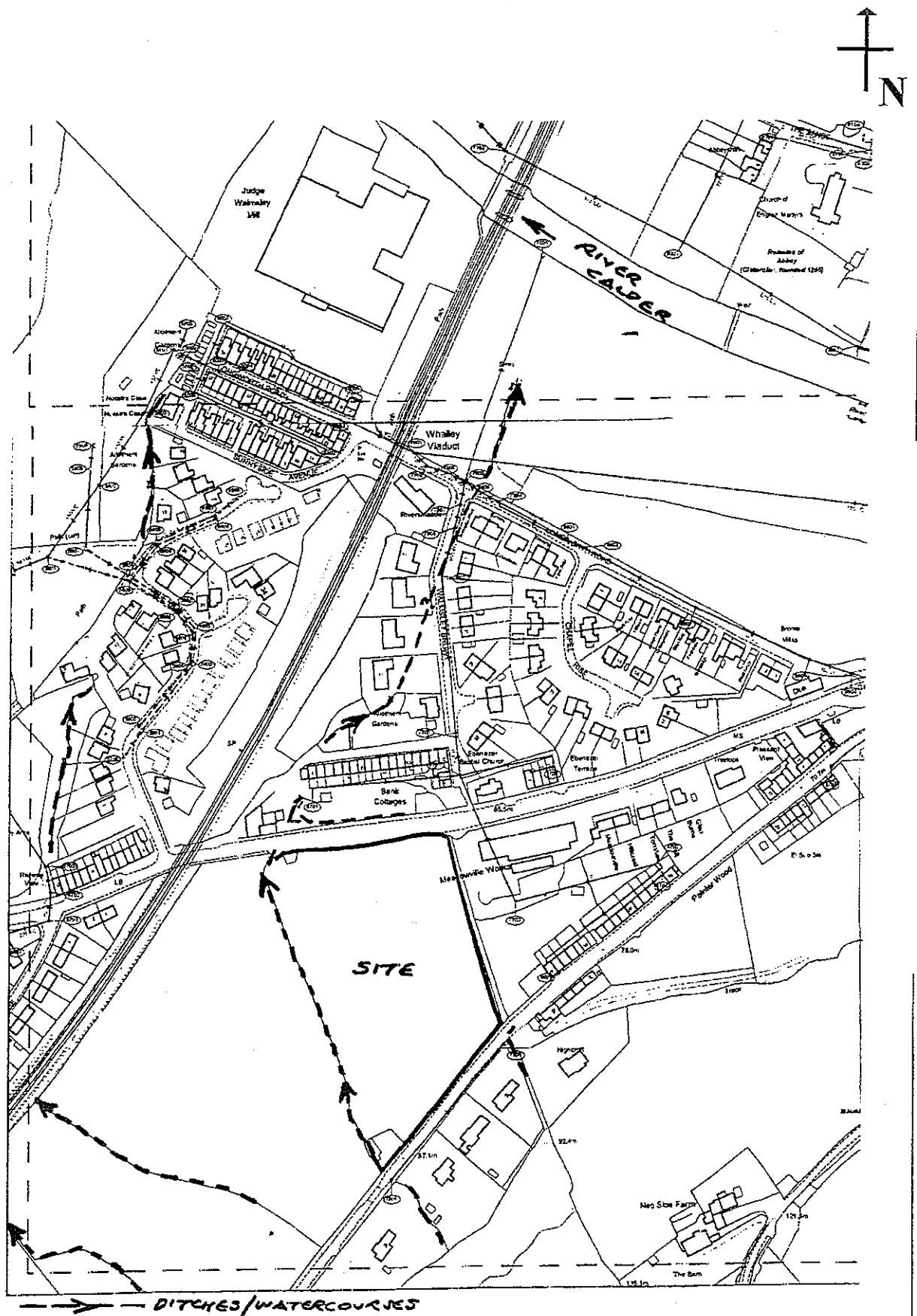
**WHALLEY NEW ROAD,
BILLINGTON,
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APPENDIX 1B

Watercourses



**EXISTING SITE PLAN
WATERCOURSES
NTS**

**WHALLEY NEW ROAD
BILLINGTON
LANCASHIRE**





APPENDIX 2 TOPOGRAPHICAL SURVEY



- BM Bench Mark
- BT Cover
- CL Cover Level
- EH Eaves Height
- GV Gas Valve
- GU Gully
- LP Lamp Post
- MH Man Hole
- RH Ridge/Roof Height
- SP Sign Post
- TP Telegraph Pole
- TH Top of Hedge
- TW Top of Wall
- WV Water Valve

NOTE

Datum level (76.2m) taken from the OS
Bench Mark located on corner of building to
East of site on Whalley Old Road
Levels of falling edge of carriageway are
observed at channel bottom of field.



Client Details: Mr Paul Smith
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Tarleton, PR4 6UP

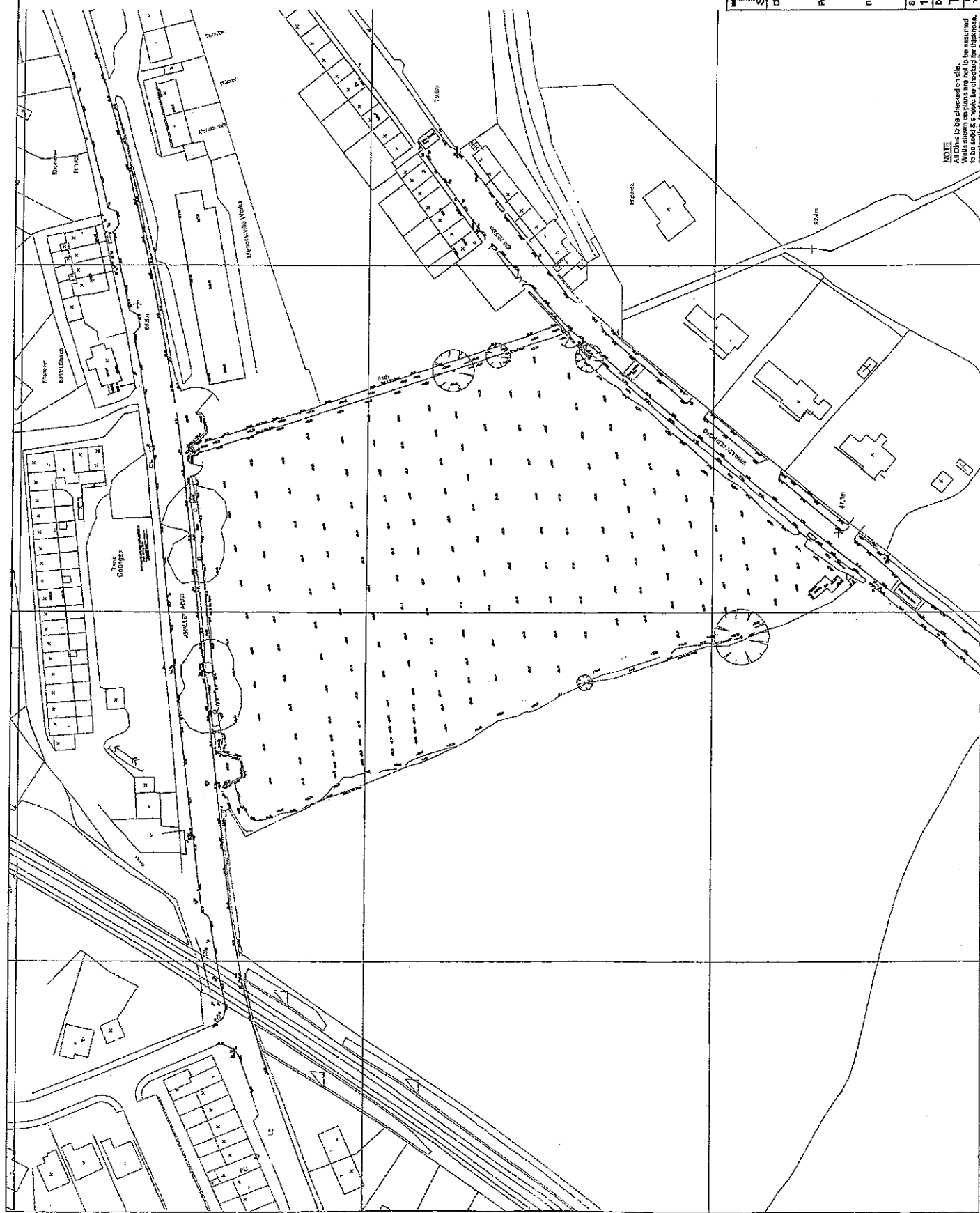
Project Details: Land Between
Whalley Road and Whalley
Old Road, Billington

Drawing Title: Site Survey

Scale	Date	Drawn By	Sheet	Row
1:1000@A3	30/11/2009	MW		
Drawing Number				
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NOTE

All Data to be checked on site.
The survey is not to be assumed
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APPENDIX 3

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5194/51



Karen,

Please find attached report with additional sheets as requested

Please note we only supply the additional sheets if area is close to borderline or shows on more than one sheet
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Pamela Hardcastle

Technician

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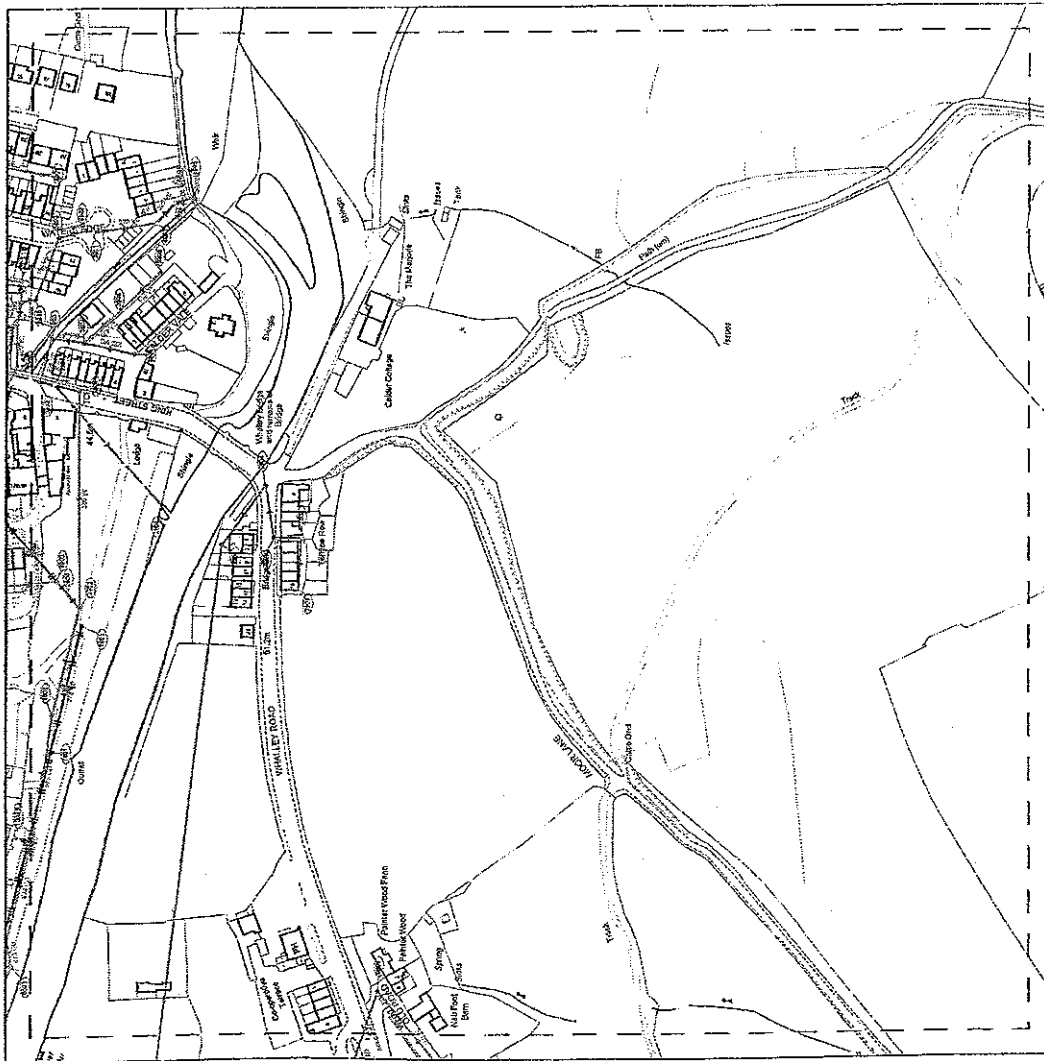
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OS Sheet No: SD7335NW
Scale 1:1250 Date: 27-Nov-2009

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Notes: Sewer Pipe Type (inverted siphon) shown in blue. (See also OS Map)

100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
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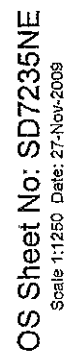
- WASTE WATER SYMBOLS**
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- MANHOLE FUNCTION**
- 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

- SEWER MATERIAL**
- 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

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31 Notes
Sheet 1 of 1
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SEWER RECORDS

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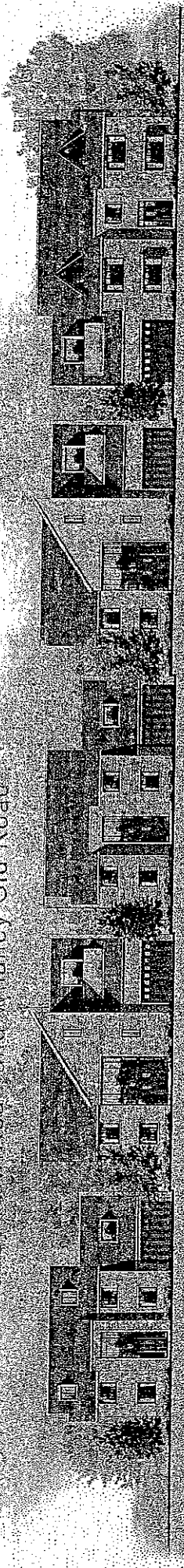


APPENDIX 4

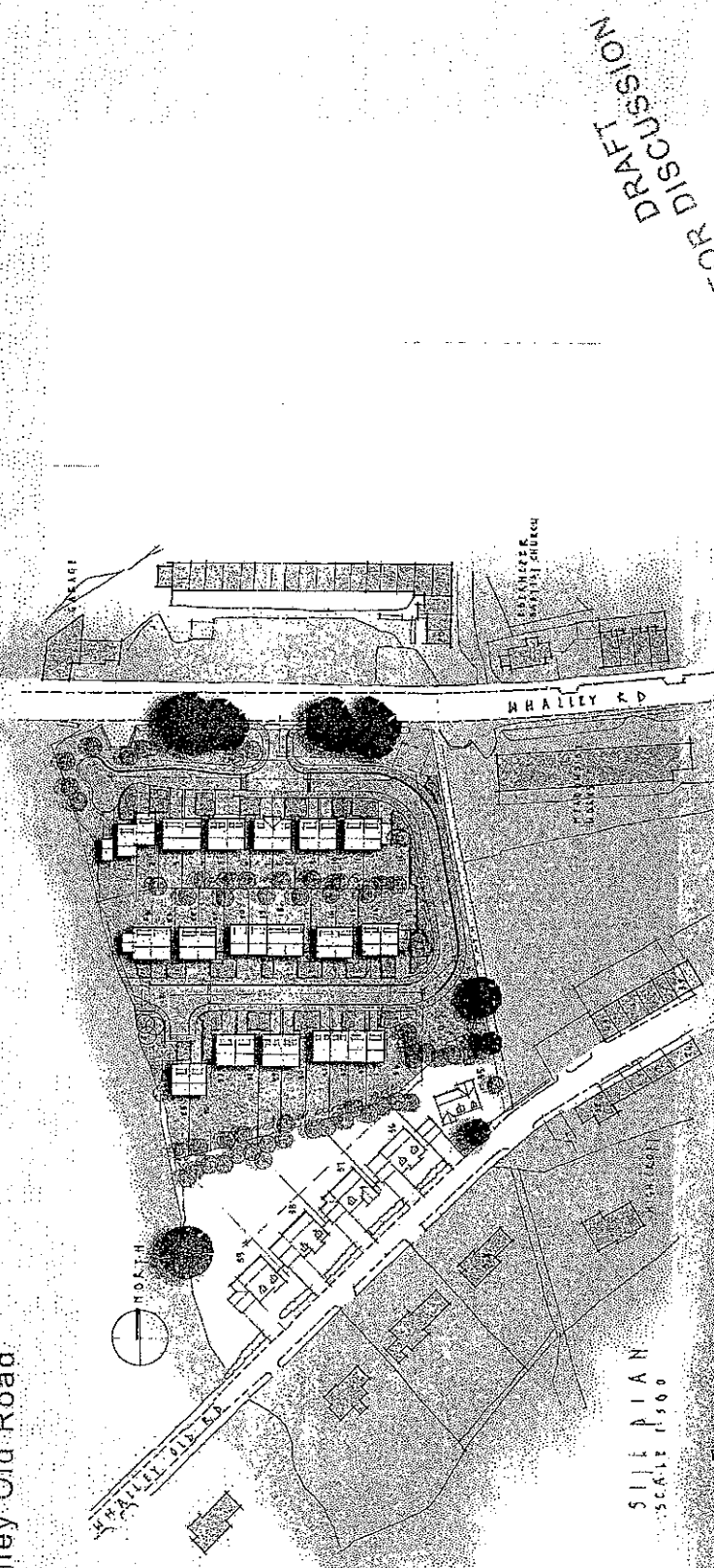
DRAFT SCHEME PROPOSALS

Proposed Residential Development

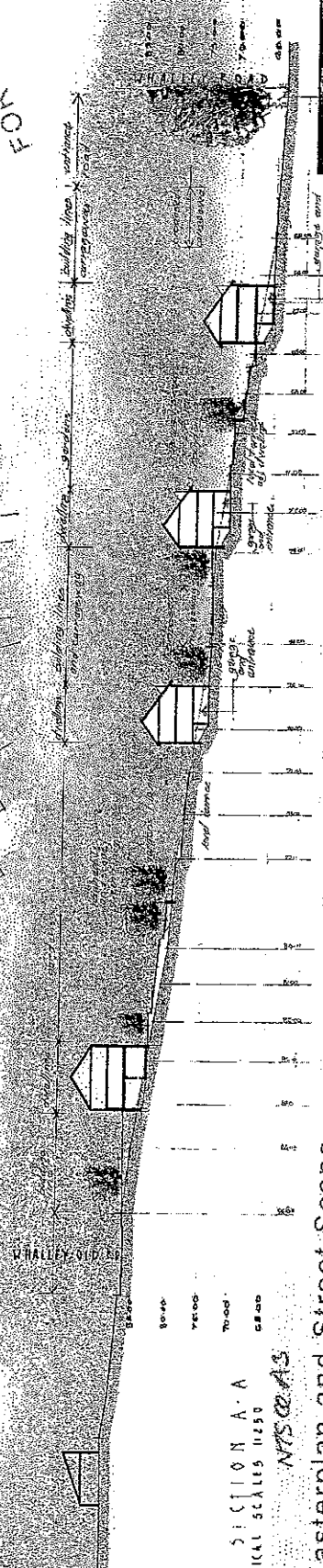
Land Adjacent to Whalley New Road and Whalley Old Road



Street Scene From Whalley Old Road



FOR DISCUSSION
DRAFT



NTS 2/23/23

Proposed Masterplan and Street Scene





APPENDIX 5

SCHEMATIC DRAINAGE

