SURFACE WATER DRAINAGE STRATEGY

for

REEDLEY PROPERTIES LIMITED

LAND REAR OF ROCKLEA & STANDRIDGE

WHALLEY ROAD, BILLINGTON, BB7 9NA

DECEMBER 2018

REFORD

Consulting Engineers Limited

7 Hall Road, Fulwood, Preston, PR2 9QD

Mobile: 07970 265334 Email: r.e.ford@virginmedia.com

Company number: 09620365 VAT Reg. 215 5638 12

CONTENTS

1. INTRODUCTION

1.1 This surface water drainage strategy has been produced on behalf of Reedley Properties Limited to address Condition 14 of the Outline Planning Permission from Ribble Valley Borough Council (Reference 3/2018/0296) for the erection of three detached, three-bedroom bungalows including access on land to the rear of Rocklea and Standridge, Whalley Road, Billington, BB7 9NA. A location plan is included within Appendix A.

1.2 Condition 14 states the following:

Prior to the commencement of any development, a surface water drainage scheme, based on the hierarchy of drainage options in the National Planning Practice Guidance with evidence of an assessment of the site conditions shall be submitted to and approved in writing by the Local Planning Authority.

The surface water drainage scheme must be in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement standards and unless otherwise agreed in writing by the Local Planning Authority, no surface water shall discharge to the public sewerage system either directly or indirectly.

1.3 This surface water drainage strategy describes the existing site conditions and proposed development. It assesses the potential impact of proposals on existing sewers and includes a proposed strategy for the provision of new surface water drainage to serve the proposed development.

2. BASE INFORMATION

Existing site

2.1 The proposal relates to a trapezoidal piece of land (approx. 0.146 hectare) to the rear of the existing properties Rocklea and Standridge that lie along the northern channel of Whalley Road, Billington.

2.2 The application site is the rear gardens of the properties, which lie within the settlement boundary of Billington. Neddy lane forms the northern boundary of the site and a children's play area lies to the east.

2.3 Vehicular access to the site is along the east side of Rocklea from Whalley Road.

2.4 The site is generally level. However Whalley Road is slightly higher than the site and Neddy Lane is slightly lower than the site.

Site geology

2.5 The online Soilscapes viewer has identified the geology of this parcel of land as slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage.

2.6 Infiltration tests have not been carried out as the ground would not be conducive to infiltration.

Understanding of existing drainage local to the site

2.7 A watercourse flows along the eastern side of the play area that lies on the eastern side of the site. At the northern end of the play area the watercourse goes into culvert for approx. 90m under properties that lie on Dale View and flows to the north to emerge into open ditch adjacent allotment gardens and ultimately discharge into the River Calder.

2.9 Sewer records have been obtained from United Utilities and are included within Appendix B.

2.10 A 150mm diameter public sewer is identified within Neddy Lane that lies along the site's northern boundary. A manhole lies within Neddy Lane at the north eastern corner of the development site and the sewer flows to the north to flow into a 225mm diameter combined sewer some 80m from the site.

2.11 The existing Rocklea and Standridge dwellings have an existing combined drainage system and drain to the public sewer.

Proposed development

2.12 It is proposed that the development will comprise three detached residential dwellings. The illustrative site layout plan is shown on drawing REED-14 Dwg-03C.

3. PROPOSED DRAINAGE STRATEGY

Surface water drainage

3.1 In accordance with the National Standards for Sustainable Drainage, the drainage strategy should incorporate the use of Sustainable Drainage (SUDS) where possible. The approach promotes the use infiltration features in the first instance. If drainage cannot be achieved solely through infiltration due to site conditions or contamination risks, the preferred options are (in order of preference):

(i) a controlled discharge to a local waterbody or watercourse, or

(ii) a controlled discharge into the public sewer network (depending on availability and capacity).

3.2 The rate and volume of discharge should strive to provide betterment and be restricted to the pre-development values as far as practicable.

3.3 The nature of the geology of the site means that infiltration back into the ground is not feasible.

3.4 A watercourse flows along the eastern side of the play area that lies on the eastern side of the site. At the northern end of the play area the watercourse goes into culvert for approx. 90m under properties that lie on Dale View and flows to the north to emerge into open ditch adjacent allotment gardens approx. 150m from the northeast corner of the site and ultimately discharge into the River Calder. It is therefore not feasible to make a connection to the watercourse.

3.5 A 150mm diameter public sewer is identified within Neddy Lane that lies along the site's northern boundary. A manhole lies within Neddy Lane at the north eastern corner of the development site and the sewer flows to the north to flow into a 225mm diameter combined sewer some 80m from the site.

3.6 It is therefore intended that surface water runoff from the developed site will be attenuated and discharge into the public sewer.

3.7 Due to the size of the site, the flow from the development will be controlled to 5 l/s allowing surface water runoff generated by all rainfall events up to the 100 year critical rain storm plus 30% on stored volumes to discharge into the public sewer. The additional 30% is to allow for climate change and has been included in the surface water volume.

3.8 A preliminary surface water drainage design has been carried out for the proposed site development for all events up to the 100 year critical rain storm plus 30% for climate change on stored volumes. Attenuation is provided using oversized pipes under the proposed access road. The preliminary surface water drainage design is included within Appendix C.

4. SUMMARY AND CONCLUSIONS

4.1 This surface water drainage strategy has been produced on behalf of Reedley Properties Limited to address Condition 14 of the Outline Planning Permission from Ribble Valley Borough Council (Reference 3/2018/0296) for the erection of three detached, three-bedroom bungalows including access on land to the rear of Rocklea and Standridge, Whalley Road, Billington, BB7 9NA.

4.2 The nature of the local geology means that infiltration of surface water runoff back into the ground is not feasible.

4.3 A watercourse flows along the eastern side of the play area that lies on the eastern side of the site. At the northern end of the play area the watercourse goes into culvert and flows to the north to emerge into open ditch adjacent allotment gardens approx. 150m from the northeast corner of the site. It is therefore not feasible to make a connection to the watercourse.

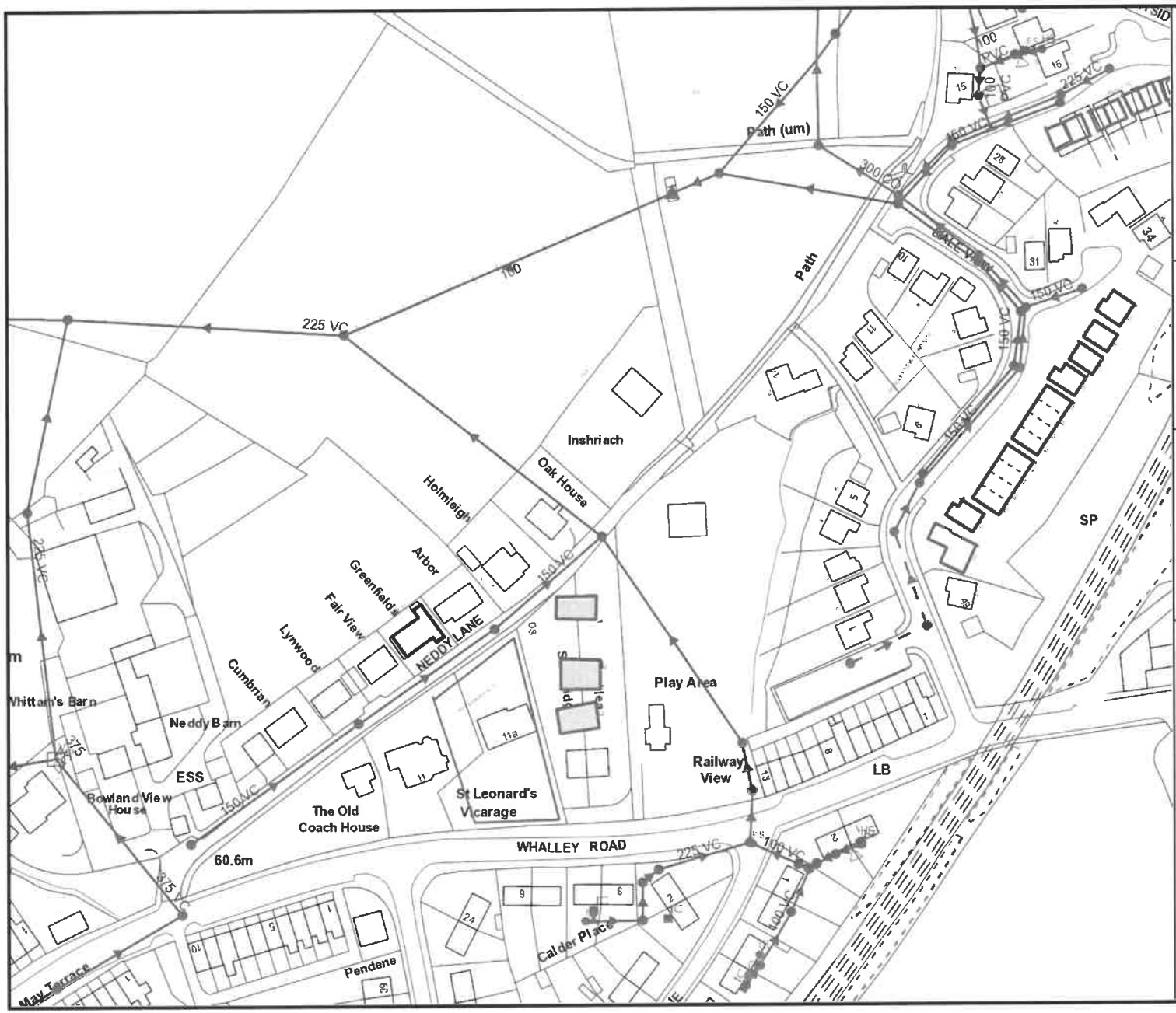
4.4 Surface water runoff from the developed site will be attenuated and discharge into the public sewer that lies within Neddy Lane. The flow from the development will be controlled to 5 l/s.

4.5 The preliminary surface water drainage design has catered for surface water runoff generated by all rainfall events up to the 100 year critical rain storm plus 30% on stored volumes. The additional 30% is to allow for climate change and has been included in the surface water volume.

APPENDIX A

LOCATION PLAN

APPENDIX B



United Utilities
helping life flow smoothly

SEWER RECORDS

Address or Site Reference

Billington,

Scale: 1:1250
Date: 17/10/2018

Printed by: Property Searches

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.

APPENDIX C

CAUSEWAY

Drainage Design Report

Flow

v7.0

Network	Storm Network
Filename	C:\Users\Bob\Documents\reford\18.524 billington\drainage design\billington.pfd
Username	Bob Ford (r.e.ford@virginmedia.com)
Last analysed	10/12/2018 13:01:56
Report produced on	10/12/2018 13:04:28

Causeway Sales

Tel:	+44(0) 1628 552000
Fax:	+44(0) 1628 552001
Email:	marketing@causeway.com
Web:	www.causeway.com

Technical support web portal:

http://support.causeway.com

Rainfall Methodology	FSR
Return Period (years)	2
Additional Flow (%)	0
FSR Region	England and Wales
M5-60 (mm)	18.900
Ratio-R	0.300
CV	0.750
Time of Entry (mins)	5.00
Maximum Time of Concentration (mins)	30.00
Maximum Rainfall (mm/hr)	75.0
Minimum Velocity (m/s)	1.00
Connection Type	Level Soffits
Minimum Backdrop Height (m)	2.000
Preferred Cover Depth (m)	0.450
Enforce best practice design rules	

Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Node Type	Diameter (mm)	Depth (m)
1	0.012	5.00		100.000	Manhole	1200	1.185
2	0.003	5.00		100.000	Manhole	100	0.550
3	0.003	5.00		100.000	Manhole	450	0.735
4	0.006	5.00		100.000	Manhole	100	0.550
5	0.003	5.00		100.000	Manhole	450	1.004
6	0.006	5.00		100.000	Manhole	1200	1.289
7	0.003	5.00		100.000	Manhole	100	0.550
8	0.003	5.00		100.000	Manhole	450	0.735
9	0.006	5.00		100.000	Manhole	100	0.550
10	0.003	5.00		100.000	Manhole	450	1.004
11	0.006	5.00		100.000	Manhole	1200	1.339
12	0.003	5.00		100.000	Manhole	100	0.550
13	0.003	5.00		100.000	Manhole	450	0.735
14	0.006	5.00		100.000	Manhole	100	0.550
15	0.003	5.00		100.000	Manhole	450	1.004
16	0.009	5.00		100.000	Manhole	1200	1.389
17	0.008	5.00		100.000	Manhole	1200	1.479
18				100.000	Manhole	1200	1.539

Name	US Node	DS Node	Length (m)	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)	Min DS IL (m)	Lateral Area (ha)	Lateral Ins Point (%)	Lateral T of E (mins)
3.000	1	6	25.000	98.815	98.711	0.104	240.4	300	Circular	5.41	55.5				
1.000	2	3	11.000	99.450	99.265	0.185	59.5	100	Circular	5.18	56.5				
1.001	3	5	16.000	99.265	98.996	0.269	59.5	100	Circular	5.45	55.4				
2.000	4	5	9.000	99.450	98.996	0.454	19.8	100	Circular	5.09	56.9				
1.002	5	6	5.000	98.996	98.911	0.085	58.8	100	Circular	5.53	55.0				
1.003	6	11	12.000	98.711	98.651	0.050	240.0	300	Circular	5.73	54.3				
4.000	7	8	11.000	99.450	99.265	0.185	59.5	100	Circular	5.18	56.5				
4.001	8	10	16.000	99.265	98.996	0.269	59.5	100	Circular	5.45	55.4				
5.000	9	10	9.000	99.450	98.996	0.454	19.8	100	Circular	5.09	56.9				
4.002	10	11	5.000	98.996	98.861	0.135	37.0	100	Circular	5.52	55.1				
1.004	11	16	12.000	98.661	98.611	0.050	240.0	300	Circular	5.93	53.5				
6.000	12	13	11.000	99.450	99.265	0.185	59.5	100	Circular	5.18	56.5				
6.001	13	15	16.000	99.265	98.996	0.269	59.5	100	Circular	5.45	55.4				
7.000	14	15	9.000	99.450	98.996	0.454	19.8	100	Circular	5.09	56.9				
6.002	15	16	2.000	98.996	98.811	0.185	10.8	100	Circular	5.46	55.3				
1.005	16	17	22.000	98.611	98.521	0.090	244.4	300	Circular	6.29	52.2				
1.006	17	18	6.000	98.521	98.461	0.060	100.0	150	Circular	6.39	51.9				

Rainfall Methodology	FSR	**Return Period (years)**	**Climate Change (%)**
FSR Region	England and Wales	1	0
M5-60 (mm)	18.900	30	0
Ratio-R	0.300	100	0
Summer CV	0.750	100	30
Winter CV	0.840		
Analysis Speed	Normal		
Drain Down Time (mins)	240		
Additional Storage (m³/ha)	20.0		
Storm Durations (mins)	15		
	30		
	60		
	120		
	180		
	240		
	360		
	480		
	600		
	720		
	960		
	1440		
Check Discharge Rate(s)	x		
1 year (l/s)			
30 year (l/s)			
100 year (l/s)			
Check Discharge Volume	x		
100 year 360 minute (m³)			

Hydro-Brake®

Node	Flap Valve	Online / Offline	Replaces Downstream Link	Loop to Node	Invert Level (m)	Design Depth (m)	Design Flow (l/s)	Objective	Sump Available	Product Number	Min Outlet Diameter (m)	Min Node Diameter (mm)
17	x	Online	x		98.521	1.480	5.0	(HE) Minimise upstream storage		CTL-SHE-0099-5000-1480-5000	0.150	1200

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.76%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	11	98.844	0.029	1.5	0.0391	0.0000	OK	3.000	6	1.4	0.286	0.020	0.1482	
15 minute winter	2	10	99.465	0.015	0.4	0.0017	0.0000	OK	1.000	3	0.4	0.399	0.046	0.0099	
15 minute winter	3	11	99.285	0.020	0.8	0.0048	0.0000	OK	1.001	5	0.7	0.410	0.088	0.0273	
15 minute winter	4	11	99.465	0.015	0.7	0.0035	0.0000	OK	2.000	5	0.7	0.554	0.051	0.0138	
15 minute winter	5	11	99.030	0.034	1.8	0.0074	0.0000	OK	1.002	6	1.7	0.780	0.219	0.0111	
15 minute winter	6	14	98.769	0.058	3.9	0.0713	0.0000	OK	1.003	11	3.8	0.447	0.054	0.1869	
15 minute winter	7	10	99.465	0.015	0.4	0.0017	0.0000	OK	4.000	8	0.4	0.399	0.046	0.0099	
15 minute winter	8	11	99.285	0.020	0.8	0.0048	0.0000	OK	4.001	10	0.7	0.455	0.088	0.0244	
15 minute winter	9	11	99.465	0.015	0.7	0.0035	0.0000	OK	5.000	10	0.7	0.566	0.051	0.0122	
15 minute winter	10	11	99.026	0.030	1.8	0.0065	0.0000	OK	4.002	11	1.7	0.923	0.174	0.0094	
30 minute winter	11	23	98.769	0.108	5.3	0.1324	0.0000	OK	1.004	16	4.8	0.445	0.067	0.3633	
15 minute winter	12	10	99.465	0.015	0.4	0.0017	0.0000	OK	6.000	13	0.4	0.399	0.046	0.0099	
15 minute winter	13	11	99.285	0.020	0.8	0.0048	0.0000	OK	6.001	15	0.7	0.567	0.088	0.0194	
15 minute winter	14	11	99.465	0.015	0.7	0.0035	0.0000	OK	7.000	15	0.7	0.711	0.051	0.0094	
15 minute winter	15	11	99.019	0.023	1.8	0.0049	0.0000	OK	6.002	16	1.7	1.392	0.093	0.0025	
30 minute winter	16	23	98.769	0.158	7.1	0.1992	0.0000	OK	1.005	17	5.3	0.236	0.074	1.0981	
30 minute winter	17	23	98.769	0.248	6.0	0.3070	0.0000	SURCHARGED	1.006	18	4.4	0.800	0.249	0.0332	6.5
30 minute winter	18	23	98.512	0.051	4.4	0.0000	0.0000	OK							

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.76%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	46	99.207	0.392	5.4	0.5231	0.0000	SURCHARGED	3.000	6	-3.5	0.276	-0.049	1.7605	
15 minute winter	2	10	99.472	0.022	0.9	0.0026	0.0000	OK	1.000	3	0.9	0.509	0.110	0.0189	
15 minute winter	3	10	99.297	0.032	1.8	0.0076	0.0000	OK	1.001	5	1.7	0.507	0.215	0.0695	
15 minute winter	4	10	99.474	0.024	1.8	0.0055	0.0000	OK	2.000	5	1.8	0.610	0.130	0.0372	
60 minute winter	5	46	99.209	0.213	2.5	0.0466	0.0000	SURCHARGED	1.002	6	2.6	0.856	0.326	0.0391	
60 minute winter	6	46	99.207	0.496	6.5	0.6072	0.0000	SURCHARGED	1.003	11	3.5	0.400	0.048	0.8450	
15 minute winter	7	10	99.472	0.022	0.9	0.0026	0.0000	OK	4.000	8	0.9	0.509	0.110	0.0189	
15 minute winter	8	10	99.297	0.032	1.8	0.0076	0.0000	OK	4.001	10	1.7	0.577	0.215	0.0670	
15 minute winter	9	10	99.474	0.024	1.8	0.0055	0.0000	OK	5.000	10	1.8	0.686	0.130	0.0360	
60 minute winter	10	46	99.209	0.213	2.5	0.0466	0.0000	SURCHARGED	4.002	11	2.6	1.014	0.260	0.0391	
60 minute winter	11	46	99.207	0.546	5.8	0.6667	0.0000	SURCHARGED	1.004	16	4.1	0.387	0.058	0.8450	
15 minute winter	12	10	99.472	0.022	0.9	0.0026	0.0000	OK	6.000	13	0.9	0.509	0.110	0.0189	
15 minute winter	13	10	99.297	0.032	1.8	0.0076	0.0000	OK	6.001	15	1.7	0.762	0.215	0.0683	
15 minute winter	14	10	99.474	0.024	1.8	0.0055	0.0000	OK	7.000	15	1.8	0.931	0.130	0.0365	
60 minute winter	15	46	99.208	0.212	2.6	0.0464	0.0000	SURCHARGED	6.002	16	2.5	1.454	0.135	0.0156	
60 minute winter	16	46	99.207	0.596	7.5	0.7514	0.0000	SURCHARGED	1.005	17	5.3	0.278	0.075	1.5492	
60 minute winter	17	46	99.206	0.685	6.4	0.8492	0.0000	SURCHARGED	1.006	18	4.9	0.822	0.277	0.0359	21.1
30 minute summer	18	20	98.515	0.054	4.9	0.0000	0.0000	OK							

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.76%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	49	99.551	0.736	7.2	0.9815	0.0000	SURCHARGED	3.000	6	-4.6	0.281	-0.065	1.7605	
60 minute winter	2	48	99.552	0.102	0.7	0.0119	0.0000	SURCHARGED	1.000	3	0.7	0.475	0.089	0.0861	
60 minute winter	3	48	99.551	0.286	2.1	0.0690	0.0000	SURCHARGED	1.001	5	1.4	0.507	0.177	0.1252	
60 minute winter	4	49	99.552	0.102	1.3	0.0230	0.0000	SURCHARGED	2.000	5	1.3	0.579	0.095	0.0704	
60 minute winter	5	49	99.551	0.555	3.4	0.1216	0.0000	SURCHARGED	1.002	6	3.1	0.891	0.398	0.0391	
60 minute winter	6	49	99.551	0.840	7.4	1.0277	0.0000	SURCHARGED	1.003	11	3.6	0.402	0.050	0.8450	
60 minute winter	7	48	99.552	0.102	0.7	0.0119	0.0000	SURCHARGED	4.000	8	0.7	0.475	0.089	0.0861	
60 minute winter	8	48	99.551	0.286	2.2	0.0690	0.0000	SURCHARGED	4.001	10	1.4	0.550	0.177	0.1252	
60 minute winter	9	49	99.552	0.102	1.3	0.0230	0.0000	SURCHARGED	5.000	10	1.3	0.668	0.095	0.0704	
60 minute winter	10	49	99.551	0.555	3.4	0.1216	0.0000	SURCHARGED	4.002	11	3.1	1.039	0.307	0.0391	
60 minute winter	11	49	99.551	0.890	6.6	1.0862	0.0000	SURCHARGED	1.004	16	4.5	0.390	0.062	0.8450	
60 minute winter	12	48	99.551	0.101	0.7	0.0119	0.0000	SURCHARGED	6.000	13	0.7	0.475	0.089	0.0861	
60 minute winter	13	48	99.551	0.286	2.2	0.0688	0.0000	SURCHARGED	6.001	15	1.4	0.701	0.177	0.1252	
60 minute winter	14	49	99.551	0.101	1.3	0.0229	0.0000	SURCHARGED	7.000	15	1.3	0.880	0.095	0.0704	
60 minute winter	15	49	99.551	0.555	3.4	0.1215	0.0000	SURCHARGED	6.002	16	3.1	1.515	0.165	0.0156	
60 minute winter	16	49	99.551	0.940	8.0	1.1848	0.0000	SURCHARGED	1.005	17	5.1	0.288	0.072	1.5492	
60 minute winter	17	49	99.550	1.029	6.2	1.2755	0.0000	SURCHARGED	1.006	18	4.9	0.822	0.277	0.0359	27.2
120 minute summer	18	64	98.515	0.054	4.9	0.0000	0.0000	OK							

Results for 100 year +30% Critical Storm Duration. Lowest mass balance: 99.76%

Event	US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	52	99.931	1.116	8.3	1.4884	0.0000	FLOOD RISK	3.000	6	-5.4	0.274	-0.075	1.7605	
60 minute winter	2	55	99.933	0.483	1.3	0.0565	0.0000	FLOOD RISK	1.000	3	0.9	0.493	0.114	0.0861	
60 minute winter	3	56	99.933	0.668	2.7	0.1610	0.0000	FLOOD RISK	1.001	5	1.6	0.514	0.204	0.1252	
60 minute winter	4	56	99.933	0.483	1.7	0.1091	0.0000	FLOOD RISK	2.000	5	1.7	0.578	0.124	0.0704	
60 minute winter	5	52	99.932	0.936	4.1	0.2050	0.0000	FLOOD RISK	1.002	6	3.4	0.903	0.431	0.0391	
60 minute winter	6	56	99.931	1.220	9.2	1.4930	0.0000	FLOOD RISK	1.003	11	-4.4	0.379	-0.061	0.8450	
60 minute winter	7	55	99.933	0.483	1.3	0.0565	0.0000	FLOOD RISK	4.000	8	0.9	0.493	0.114	0.0861	
60 minute winter	8	56	99.933	0.668	2.8	0.1610	0.0000	FLOOD RISK	4.001	10	1.6	0.578	0.204	0.1252	
60 minute winter	9	56	99.933	0.482	1.7	0.1090	0.0000	FLOOD RISK	5.000	10	1.7	0.666	0.124	0.0704	
60 minute winter	10	56	99.932	0.936	4.1	0.2050	0.0000	FLOOD RISK	4.002	11	3.5	1.053	0.346	0.0391	
60 minute winter	11	56	99.931	1.270	6.3	1.5503	0.0000	FLOOD RISK	1.004	16	4.2	0.433	0.058	0.8450	
60 minute winter	12	53	99.932	0.482	1.3	0.0564	0.0000	FLOOD RISK	6.000	13	0.9	0.493	0.114	0.0861	
60 minute winter	13	55	99.932	0.667	2.6	0.1608	0.0000	FLOOD RISK	6.001	15	1.6	0.736	0.204	0.1252	
60 minute winter	14	56	99.932	0.482	1.7	0.1088	0.0000	FLOOD RISK	7.000	15	1.7	0.883	0.124	0.0704	
60 minute winter	15	56	99.931	0.935	4.1	0.2048	0.0000	FLOOD RISK	6.002	16	3.4	1.492	0.186	0.0156	
60 minute winter	16	56	99.931	1.320	8.1	1.6640	0.0000	FLOOD RISK	1.005	17	5.0	0.279	0.071	1.5492	
60 minute winter	17	56	99.930	1.409	6.7	1.7459	0.0000	FLOOD RISK	1.006	18	4.9	0.822	0.277	0.0359	36.0
60 minute winter	18	117	98.515	0.054	4.9	0.0000	0.0000	OK							

SUPPLEMENTARY SURFACE WATER DRAINAGE STRATEGY

for

REEDLEY PROPERTIES LIMITED

LAND REAR OF ROCKLEA & STANDRIDGE

WHALLEY ROAD, BILLINGTON, BB7 9NA

MARCH 2019

REFORD

Consulting Engineers Limited

7 Hall Road, Fulwood, Preston, PR2 9QD

Mobile: 07970 265334 Email: r.e.ford@virginmedia.com

Company number: 09620365 VAT Reg. 215 5638 12

1. INTRODUCTION

This supplementary surface water drainage strategy has been produced on behalf of Reedley Properties Limited to address comments from United Utilities regarding the discharge of surface water from the proposed development comprising the erection of three detached, three-bedroom bungalows on land to the rear of Rocklea and Standridge, Whalley Road, Billington, BB7 9NA. A site location plan is included within Appendix A.

This document should be read in conjunction with the drainage strategy that has been submitted in support of discharging Condition 14 of the Outline Planning Permission from Ribble Valley Borough Council (Reference 3/2018/0296).

2. UNDERSTANDING OF EXISTING DRAINAGE LOCAL TO THE SITE

A watercourse flows along the eastern side of the play area that lies on the eastern side of the site. At the northern end of the play area the watercourse goes into culvert for approx. 90m under properties that lie on Dale View and flows to the north to emerge into open ditch adjacent allotment gardens and ultimately discharge into the River Calder.

Sewer records have been obtained from United Utilities and are included within Appendix B. A 150mm diameter public sewer is identified within Neddy Lane that lies along the site's northern boundary. A manhole lies within Neddy Lane at the north eastern corner of the development site and the sewer flows to the north to flow into a 225mm diameter combined sewer some 80m from the site.

The existing Rocklea and Standridge dwellings have an existing combined drainage system and drain to the public sewer.

The online Soilscapes viewer has identified the geology of this parcel of land as slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage. This has been confirmed by trial holes that have been excavated on the site that have shown the existing geology on the site to comprise clays.

3. PROPOSED SURFACE WATER DRAINAGE STRATEGY

In accordance with the National Standards for Sustainable Drainage, the drainage strategy should incorporate the use of Sustainable Drainage (SUDS) where possible. The approach promotes the use infiltration features in the first instance. If drainage cannot be achieved solely through infiltration due to site conditions or contamination risks, the preferred options are (in order of preference):

(i) a controlled discharge to a local waterbody or watercourse, or

(ii) a controlled discharge into the public sewer network (depending on availability and capacity).

The rate and volume of discharge should strive to provide betterment and be restricted to the pre-development values as far as practicable.

To check whether surface water runoff from the site could infiltrate back into the ground via soakaways, infiltration testing to BRE365 has been carried out on the site. Only one test was carried out as the water did not drain, having been left for more than 24 hours. A photograph of the test hole is included within Appendix C.

A discharge of surface water runoff from the site is not feasible into the local watercourse due to its distance from the development site and third party land issues.

It is therefore intended that surface water runoff from the developed site will be attenuated and discharge into the public sewer that lies within the north eastern corner of the development site.

Due to the size of the site, the flow from the development will be controlled to 5 l/s allowing surface water runoff generated by all rainfall events up to the 100 year critical rain storm plus 30% on stored volumes to discharge into the public sewer. The additional 30% is to allow for climate change and has been included in the surface water volume.

A preliminary surface water drainage design has been carried out for the proposed site development for all events up to the 100 year critical rain storm plus 30% for climate change on stored volumes. Attenuation is provided using oversized pipes under the proposed access

road. The surface water drainage design is included within drainage strategy submitted in support of discharging Condition 14 of the Outline Planning Permission from Ribble Valley Borough Council (Reference 3/2018/0296).

4. CONCLUSIONS

Infiltration testing to BRE365 has demonstrated that the ground is not suitable for the discharge of surface water by infiltration.

A discharge of surface water runoff from the site is not feasible into the local watercourse due to its distance from the development site and third party land issues.

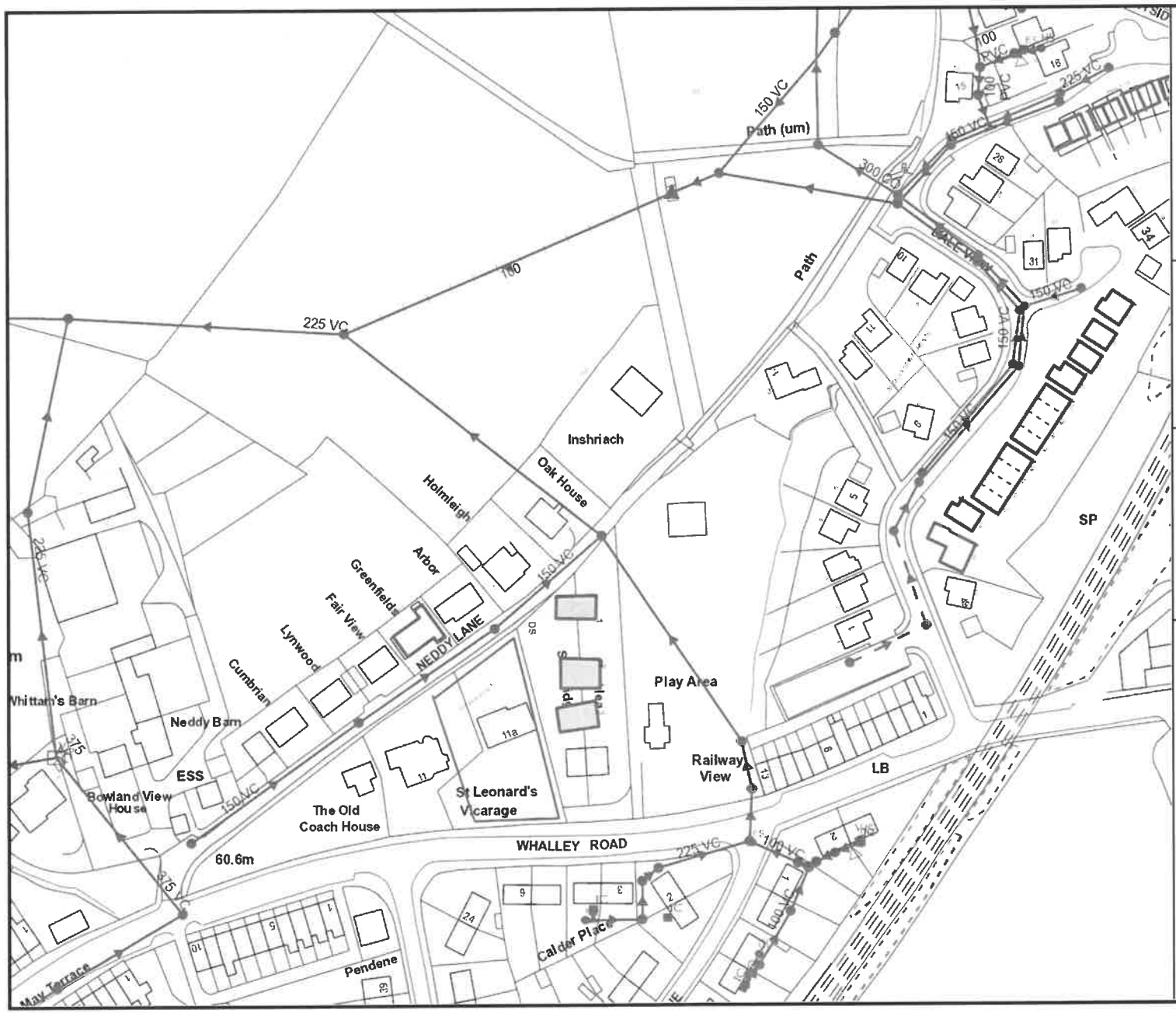
There are no other waterbodies local to the site into which a discharge of surface water could be made.

A public sewer lies within the site. The sewer takes combined drainage from the existing dwellings. It is therefore intended that an attenuated surface water discharge will be made to the public sewer.

APPENDIX A

LOCATION PLAN

APPENDIX B



United Utilities
helping life flow smoothly

SEWER RECORDS

Address or Site Reference

Billington,

Scale: 1:1250
Date: 17/10/2018

Printed by: Property Searches

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.

APPENDIX C