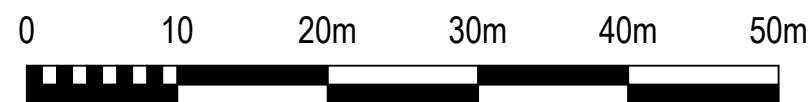
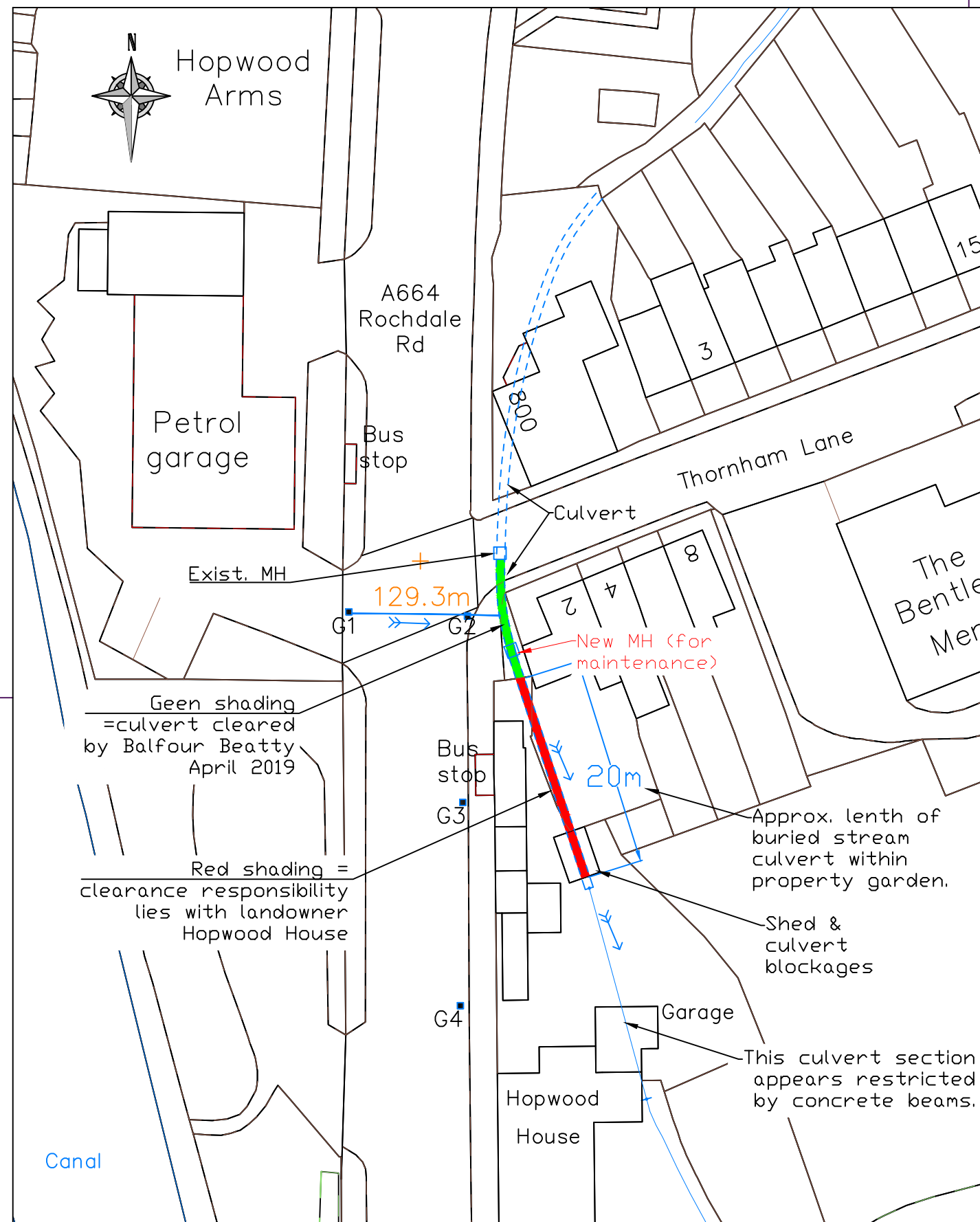


APPENDIX H THORNHAM ROAD CULVERT CLEARANCE DRAWING



SCALE 1:1000
WHEN PRINTED AT A1 SIZE



Photo 1: of silt looking towards Hopwood House. 70cm deep silt & 30cm freeboard (clear)



Photo 2:- Deep layer of silt still in culvert under Hopwood House 'garden' (April 2019).



Photo 3: Steel drooping into culvert under shed (Hopwood House)



Photo 5: Beam partially blocking culvert under garage (Hopwood House)

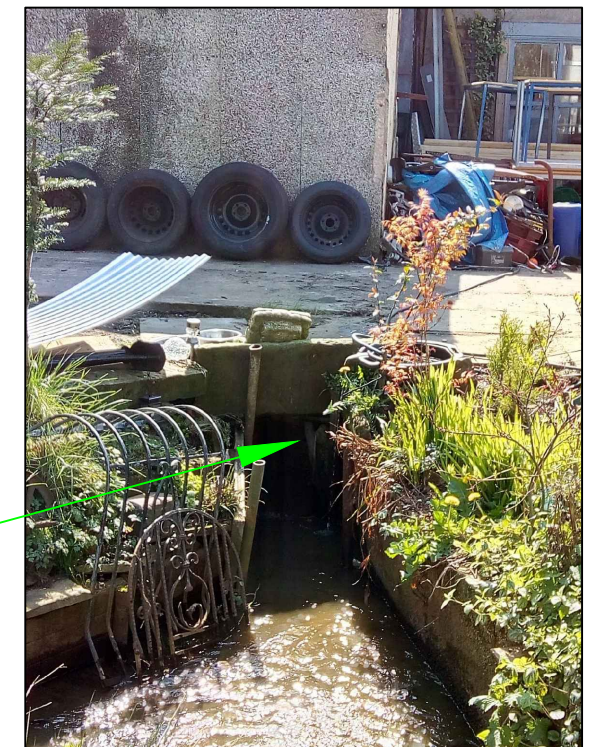
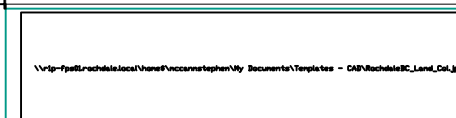


Photo 4: Culvert goes under garage (Hopwood House)



NEIGHBOURHOODS
Director: M. Widdup
HIGHWAYS & PROPERTY
Assistant Director: D. Bowler

Project:
Thornham La. Culvert

Title:
Clearance Works
April 2019

Drawn: SMcC
Check'd & Approv'd: *
Safety Audit Check *

Scale: 1:1000
Date: 02/05/19

Dwg No.: A3/ThornhamLa/01

APPENDIX I

LLFA CORRESPONDENCE



Highways and Engineering Service - Economy and Environment

DRAINAGE CONSULTATION ON PREAPP/00091/22

Consultation Response on behalf of Head of Highways and Engineering

Date of Response: 2nd Nov 2022

LOCATION & APPLICATION DETAILS:

Land at Stakehill, Middleton. Hybrid planning permission is sought for up to 1500 dwellings, a new local centre, land reserved for the extension of St John's Primary School, a landscaping scheme & sustainable drainage measures.

DOCUMENTS REVIEWED

- Site Boundary Plan
- Letter to Planning from Stantec, the Planning Agent
- Concept Masterplan by Stantec dated Sept 2022
- Correspondence and enquiries from RSK's Hydrologist
- Stakehill Phase 1 Site Layout – by Redrow, dated Sept 2022

GENERAL DRAINAGE COMMENTS

Phase 1 Drainage Viability:- The land contours may be interpreted to conclude that most of the land within Phase 1 of the site falls within the catchments of the unnamed stream on the western boundary of the site.

There are existing issues with the three downstream sections of the unnamed streamway – with the issues highlighted on the Council's Annotated drawing that accompanies this Drainage Consultation.

Although the Applicant may argue that poor maintenance and inadequate culvert provision in the 3 locations is not something for the Applicant to resolve. However, it does mean that the Council will be looking very carefully about any flow discharge rates that are proposed by the Applicant to the unnamed SW stream, because high flows could result in flooding of the highway – as shown in the Photo 1 below.

Later Phases Drainage Viability:- I doubt that any other parts of the site in later phases can be legitimately claimed to drain to the unnamed western streamway. It is therefore not at all clear how any sustainable drainage would be implemented for any later phases of the site's development, because there is no known stream and no current SW drainage pipes.

No indication of methods of dealing with attenuated SW has been presented for either Phase 1 or Phase 2 to the Planning Authority, as of 3rd Nov 2022.

Greenfield Runoff rate discussion – Phase 1: A rough estimate (from overlaying the Redrow plan of the development onto an AutoCAD plan indicates that the area of the housing development would be approximately 10 hectares within a boundary of approximately 21 hectares.

The Drainage Designer RSK for the Applicant has asked if the Qbar (Average annual) Greenfield runoff rate of 7.3 l/s would be an acceptable design value. The Drainage Officer notes that this calculation is correct as provided by *Windes Source Control Rural Runoff calculator*. RSK has asked if the allowed runoff rate from the development (Phase 1) can be pro-rata to the hectares of the Developable land. It depends what is meant by 'developable' land. I would argue that only the paved areas should be counted, which would probably amount to about 9 hectares for Phase 1 i.e. $7.3 \times 9 = 66$ l/s.

Culverts on the western boundary of the site:-

Cricket Culvert:- The first culvert on the site is a very long one, under the cricket club. It looks as though a pipe was laid at the time of the cricket club construction. The condition and viability of the culvert is somewhat



unknown; it is long and therefore susceptible to blockage and it too long to be rodded. Whether this existing cricket field culvert could reliably carry larger, newer flows from the housing development site is highly questionable. Perhaps a ditch to the side of the cricket pitch would be a much better option and could easily be constructed by the Applicant's contractor as a stream ditch?

Culvert under corner of Church Ave /Grange Rd:- this culvert is known to block. The culvert starts in the land that is owned by the Applicant. I would argue that a new culvert route should be made, by the applicant, by extending the ditch until the church footpath and then installing a very short concrete pipe at least 600mm dia. under the footpath – no screen would be needed (because no-one would remember to clean it). This would completely resolve the current flooding issue.

Culvert under Thornham Rd and under Hopwood farm house land:- There are issues with poorly maintained parts of this culvert, particularly under Hopwood farm house, where the current owner appears to be oblivious to his responsibilities to allow the stream to flow freely. In the past this has caused regular flooding of the main road. There is a report – by the Drainage Officer –which highlights the ongoing issue. The Drainage Officer is re-raising this issue with Highway Maintenance so that they are aware that ongoing flooding could become more frequent and that enforcement action may be considered if highway flooding can be linked to the poorly maintained and inadequate culvert on Hopwood Farm House Land.



Photo 1. Highway flooding that used to occur regularly before the major works to desilt the culvert under Thornham Rd was undertaken by the Council Highways team. This could easily recur because the culvert in Hopwood Farm house land has not be adequately desilted and is not very accessible for desilt activities.

DRAINAGE ENQUIRIES FROM RSK TO COUNCIL DRAINAGE OFFICER

Email enquiries received from Ryan Whitfield, Hydrologist of RSK in Oct 2022

Please could I check with you the runoff rates attached/below will be acceptable for our drainage strategy. Based on Windes Source Control Rural Runoff calculator for the National Grid coordinates 388,409 we get a discharge rate of 7.3l/s/ha.

This would look in line with BGS geological map which suggests Hummocky superficial geology on site.

We are proposing a runoff rate equivalent to 7.3l/s/ha pro rata to the developable area of the site (to be confirmed). Attenuation will be provided for 1 in 100yr from the impermeable area, plus a 45% allowance for climate change. I assume 10% urban creep would be required as per the North West Suds Proforma?



Many thanks, **Ryan Whitfield**
Hydrologist BSc(Hons) MSc MCIWEM

From: Ryan Whitfield <RWhitfield@rsk.co.uk>
Sent: 26 October 2022 09:34
To: Stephen McCann <Stephen.McCann@Rochdale.Gov.UK>
Subject: RE: Stakehill area - Culvert info

Thanks for the information supplied. I showed this to the land owner on the site visit who did confirm they know of frequent flooding on the highway. As the bottle neck appears to be immediately downstream of the site it might seem like we have a limited number of tools to deal with the flooding besides restricting runoff. Though perhaps if the flooding is caused by reduced capacity of the culvert from siltation, then it could be argued development of the site will reduce silt reaching the watercourse with the use of attenuation basins which will encourage some settlement prior to discharge.

Has there been a reduction in flooding here since the clearing works in 2019?

I've seen your email to the planning department and I've been able to dig out the Waterco FRA (2020) from the mass of old reports the client has sent us. Attached for your record.

From talking to the land owner and site observations there is a watercourse (the landowner calls 'The Dell/Del') which issues from a '12 inch drain' at coordinates 388822 E, 409179 N. The drain is fed from a network of 150mm diameter land drains upstream.

The current proposals are for anything upstream of The Dell (at 388822 E, 409179 N) to be developed and provide positive drainage from impermeable areas to attenuation features and discharge at GRR QBar to The Dell (at 388822 E, 409179 N). Development downstream of the Dell (at 388822 E, 409179 N) will be offset from the watercourse and the Dell will be retained through the site as existing.

I've also attached a DWG topo to help inform with any information you are able to provide, but I can provide as PDFs if required.

The current development plans are high level so I don't have anything else to send at this time which won't change. But let me know if there's anything further to these points you'd like to discuss.

Refer also to the Drainage Plan with Notes issued by Stephen McCann

This Drainage Consultation was compiled by Stephen McCann

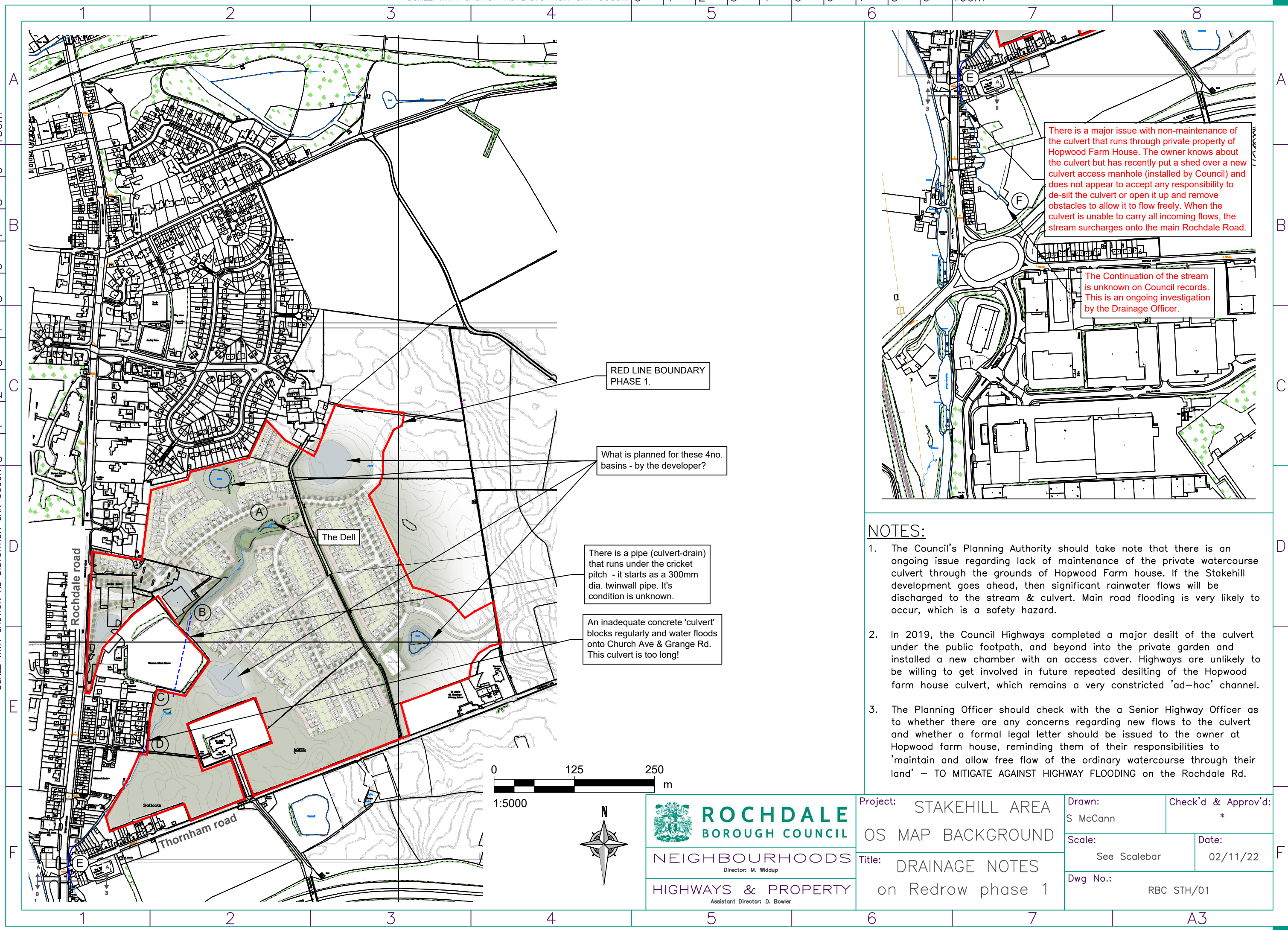
Drainage & Flooding Officer



[07552 570262](tel:07552570262) 01706 924606



stephen.mccann@rochdale.gov.uk



There is a major issue with non-maintenance of the culvert that runs through private property of Hopwood Farm House. The owner knows about the culvert but has recently put a shed over a new culvert access manhole (installed by Council) and does not appear to accept any responsibility to de-silt the culvert or open it up and remove obstacles to allow it to flow freely. When the culvert is unable to carry all incoming flows, the stream surcharges onto the main Rochdale Road.

The Continuation of the stream is unknown on Council records. This is an ongoing investigation by the Drainage Officer.

NOTES:

1. The Council's Planning Authority should take note that there is an ongoing issue regarding lack of maintenance of the private watercourse culvert through the grounds of Hopwood Farm house. If the Stakehill development goes ahead, then significant rainwater flows will be discharged to the stream & culvert. Main road flooding is very likely to occur, which is a safety hazard.
2. In 2019, the Council Highways completed a major desilt of the culvert under the public footpath, and beyond into the private garden and installed a new chamber with an access cover. Highways are unlikely to be willing to get involved in future repeated desilting of the Hopwood farm house culvert, which remains a very constricted 'ad-hoc' channel.
3. The Planning Officer should check with the a Senior Highway Officer as to whether there are any concerns regarding new flows to the culvert and whether a formal legal letter should be issued to the owner at Hopwood farm house, reminding them of their responsibilities to 'maintain and allow free flow of the ordinary watercourse through their land' – TO MITIGATE AGAINST HIGHWAY FLOODING on the Rochdale Rd.

ROCHDALE BOROUGH COUNCIL
NEIGHBOURHOODS
Director: M. Widdup
HIGHWAYS & PROPERTY
Assistant Director: D. Bowler

Project: STAKEHILL AREA
OS MAP BACKGROUND
Title: DRAINAGE NOTES
on Redrow phase 1

Drawn: S McCann	Check'd & Approv'd: *
Scale: See Scalebar	Date: 02/11/22
Dwg No.: RBC STH/01	

APPENDIX J

TOTAL SITE GREENFIELD RUNOFF CALCULATIONS

RSK LDE Ltd		Page 1																								
18 Frogmore Road Hemel Hempstead Herts, HP3 9RT																										
Date 07/12/2022 13:07 File	Designed By RWhitfield Checked By																									
Elstree Computing Ltd	Source Control W.12.5																									
<u>ICP SUDS Mean Annual Flood</u> Input <table> <tr> <td>Return Period (years)</td> <td>100</td> <td>Soil</td> <td>0.450</td> </tr> <tr> <td>Area (ha)</td> <td>89.280</td> <td>Urban</td> <td>0.000</td> </tr> <tr> <td>SAAR (mm)</td> <td>1078</td> <td>Region Number</td> <td>Region 10</td> </tr> </table> Results l/s <table> <tr> <td>QBAR Rural</td> <td>609.9</td> </tr> <tr> <td>QBAR Urban</td> <td>609.9</td> </tr> <tr> <td>Q100 years</td> <td>1268.5</td> </tr> <tr> <td>Q1 year</td> <td>530.6</td> </tr> <tr> <td>Q30 years</td> <td>1034.0</td> </tr> <tr> <td>Q100 years</td> <td>1268.5</td> </tr> </table>			Return Period (years)	100	Soil	0.450	Area (ha)	89.280	Urban	0.000	SAAR (mm)	1078	Region Number	Region 10	QBAR Rural	609.9	QBAR Urban	609.9	Q100 years	1268.5	Q1 year	530.6	Q30 years	1034.0	Q100 years	1268.5
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APPENDIX K

1HA GREENFIELD RUNOFF CALCULATIONS

RSK LDE Ltd		Page 1																								
18 Frogmore Road Hemel Hempstead Herts, HP3 9RT																										
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