

DRAINAGE STRATEGY
CARRS LANE, CUDWORTH
FOR
JAGUAR ESTATES



44335-001

14 August 2019

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CARRS LANE, CUDWORTH
FOR
JAGUAR ESTATES

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Approved :



Phil Richardson

Also at: Centaur House, Ancells Business Park, Ancells Rd, Fleet GU51 2UJ Tel: 01252 360580

Directors: P Richardson BSc, CEng, MICE, MIStructE
S R Ellis BEng, CEng, MIStructE, MICE K R Pursall BEng, CEng, MIStructE
C A Topliss BSc, CEnv, CSci, CGeol, SiLC, MICE, FGS S J English BEng, CEng, MIStructE A R Priest BEng
Senior Associates: K Newsome BSc, CEng, MICE, MIStructE S J Mitchell BSc, MSc, CEng, MEI, MCIBSE, MASHRAE A Allison BEng
M Young MA, CEng, MICE, MIStructE C A Wood BSc, CEng, MIStructE, MICE
Associates: K Edwards MSc, CGeol, FGS A J Kerslake BEng A G Marshall BEng, CEng, MIStructE C Hodge EngTech, MICE P A Harrison BEng, CEng, MIStructE
M P Chappell BEng, IEng, AMIStructE M Dyson BSc, CEng, MIStructE
Consultant: S D Preston BEng, CEng, FICE, FIStructE

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Issue 1: 7 August 2019 – First draft

Issue 2: 14 August 2019 – Alteration to foul discharge

1.0 BRIEF

1.1 Introduction

This Drainage Strategy has been prepared on the instruction of Jaguar Estates. Any other parties using the information in this report do so at their own risk, unless previously approved in writing.

The project comprises the development of a 0.6 hectare greenfield site for residential use.

1.2 Site location and description

The site is located within southern Cudworth, east of Barnsley, South Yorkshire, and is centred on Grid Reference 438870, 408071 (Appendix 1).

The site is bounded by residential dwellings to the north, by Carrs Lane to the east with residential dwellings beyond, by a new road to the south with a farm and fields beyond and by a new residential development to the west. The site is accessed from Carrs Lane to the east of the site.

The site is currently occupied by open fields bounded by hedgerows and mature trees. The site falls to the south from 43.0 mAOD in the north-west corner to 36.1 mAOD in the south-east corner at an average gradient of 1 in 22 (Appendix 2).

Proposals are for 10 residential dwellings (Appendix 3).

2.0 FLOOD RISK

2.1 Potential sources of flooding

The Environment Agency and Strategic Flood Risk Assessment maps are intended for general guidance on flood risk and it is also necessary to consider other, more detailed, sources in relation to local factors.

2.1.1 Fluvial

The nearest watercourse is Small Bridge Dike, an ordinary watercourse, located approximately 130 m south of the site with a north-west to south-east orientation. Small Bridge Dike is a tributary of the River Dearne located approximately 1 km south of the site.

The site is elevated approximately 2 m relative to Small Bridge Dike and approximately 5 m relative to River Dearne. Flood risk from this source is therefore assessed as negligible.

2.1.2 Environment Agency - Flood Map for Planning

The Environment Agency's Flood Map for Planning (Appendix 4) shows the site lies within Zone 1 (low risk); land having a less than 1 in 1,000 annual probability of river flooding.

2.1.3 Surface water

The Environment Agency surface water flood risk map (Appendix 4) shows the majority of the site is at very low risk of surface water flooding. Very low risk corresponds to the unshaded areas of the map.

There is a low to medium risk surface water flow pathway intruding into the south-east corner of the site. Low risk refers to land having between a 1 in 1,000 and 1 in 100 annual probability of flooding (0.1% - 1%). Medium risk refers to land having between 1 in 100 and 1 in 30 annual probability of flooding (1% - 3.33%).

2.1.4 Groundwater

Groundwater is a potential flood risk to areas which are low lying and on permeable ground or, occasionally, to areas of higher ground in the vicinity of springs. The site is relatively low lying and so there is a low risk of shallow groundwater and groundwater emergence.

2.1.5 Sewerage

The surrounding public sewer network is owned and maintained by Yorkshire Water. There is no public record of any flood risk to the site associated with these sewers.

2.2 Residual flood risk

The site is not at significant risk of flooding from any source.

There is a risk of shallow surface water flooding in the south-eastern corner of the site. However this there is a small stone wall, bank and hedgerow along the eastern boundary so it is believed that any surface water flooding will actually be contained within the road.

There is a low risk of groundwater emergence. These risks are not a development constraint and can be managed by the mitigation measures noted below.

2.3 Flood Mitigation Measures

Finished floor levels of any buildings adjacent the surface water flow pathway will be set to a minimum of 300 mm above the existing ground levels.

3.0 DRAINAGE STRATEGY

3.1 Existing drainage

There is no visual evidence of surface water drainage on site. The site currently comprises open fields therefore it is assumed that surface water flows south following the natural topography to the ordinary watercourse.

There is a public surface water sewer and public foul sewer recorded within Carrs Lane.

3.2 Consultations

3.2.1 Barnsley Metropolitan Borough Council

An email correspondence was sent to Barnsley Metropolitan Borough Council with regards to SuDS and discharge points of connection for surface water and foul. The council responded that the Internal Drainage Board are the Lead Local Flood Authority and we should consult them (Appendix 5).

3.2.2 Shire Group Internal Drainage Board

An email correspondence was sent to the local IDB with regards to discharge rate previously agreed, SuDS and discharge points of connection for surface water. They stated that they would expect to see no increase in existing runoff and normal discharge would be 1.4 l/s/ha or greenfield. They suggested speaking to the LLFA concerning SuDS features (Appendix 6).

3.3 Ground conditions

The British Geological Survey maps show that the site overlies sandstone of Glass Houghton Rock. Superficial deposits are not recorded on the site.

A Phase 1 Preliminary Risk Assessment was undertaken by Siltstone Environmental Ltd; their report 19052 dated April 2019. The Phase 1 reported the natural ground is considered to comprise sandstone above mudstone, siltstone and sandstones.

A Geo-environmental Appraisal Report was undertaken for the neighbouring development site by Sirius in April 2017. The natural ground was recorded to comprise gravelly clayey sand with areas of sandy clay and gravel of sandstone, siltstone and mudstone. 5 soakaway

tests were undertaken across the site which 3 of 5 had successful infiltration rates to BRE standards. Due to the varying results and difficulties of producing separate adoptable systems, soakaways were discounted on the neighbouring site and surface water discharge was to watercourse via a new surface water sewer in Carrs Lane to outfall to Small Bridge Dike.

3.4 Drainage hierarchy

Surface water disposal should be in accordance with the drainage hierarchy in Building Regulations Part H 2002¹ and Planning Practice Guidance 'Reducing the causes and impacts of flooding', paragraph 080. Disposal via SuDS methods should be considered as the first option. Disposal to the public sewer should be considered only when SuDS methods and disposal to the watercourse are shown to be unsuitable.

3.4.1 Sustainable Drainage Systems (SuDS)

SuDS methods include water infiltration systems such as soakaways, basins and filter strips, together with swales, pervious pavements, detention basins, ponds and other wetland solutions. The various methods are considered in detail in The SuDS Manual (CIRIA C753).

Infiltration type SuDS such as soakaways are not expected to be viable on the site due to the varying infiltration results recorded on the neighbouring site of which the unsuccessful rates were located within the south of the site adjacent this proposed development site.

Other SuDS methods may be applicable and their use is summarised in the appended SuDS checklist.

3.4.2 Watercourse

Small Bridge Dike lies approximately 130 m south of the site. Surface water disposal from the new neighbouring development site is to Small Bridge Dike.

3.4.3 Public sewer

There is a public surface water sewer located in Carrs Lane.

¹ <https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h>

3.5 Proposals for surface water disposal

The final disposal strategy for surface water run-off requires detailed consideration and approval during the design phase of the project. The final design will need the approval of the relevant statutory bodies but will broadly follow these principles as illustrated in Appendix 7:

- Surface water disposal will be to the surface water sewer located Carrs Lane which was introduced to support the neighbouring development. The sewer outfalls to Small Bridge Dike south of the site.
- The neighbouring development designed their attenuation storage to account for this proposed development therefore attenuation storage for events up to the 1 in 100 year plus climate change rainfall should be provided in the neighbouring pond.
- The calculated attenuation storage required for the proposed development site is 2050 m², 3000 m² was provided to account for the proposed development in the neighbouring storage pond.
- Surface water discharge will be attenuated to a rate calculated at 37.5 l/s for the neighbouring development inclusive of the proposed development site.

3.6 Proposals for foul disposal

Foul effluent for all plots will discharge via gravity to the public foul sewer in Carrs Lane via the foul connection from the neighbouring development.

3.7 Residual flood risk

There is a potential flood risk to site occupiers and to others from surface water runoff as a result of developing the site. The residual risk can be managed by the general flood mitigation measures outlined below.

3.8 Mitigation measures

The proposed surface water drainage system is designed to current best practice and to the standards laid out in the publication 'Sewers for Adoption (6th Edition)' and Building Regulations Part H 2002.

In the event of surface water exceedance during extreme rainfall events the site is laid out so that surface water runoff is directed away from houses, including those on neighbouring streets.

4.0 CONCLUSIONS

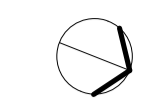
1. The site is within Flood Zone 1 and is not at significant risk of flooding from any source.
2. There is a low to medium risk of shallow surface water flooding and groundwater emergence. These risks can be mitigated by raised building levels.
3. Surface water disposal will be to the surface water sewer located Carrs Lane which was introduced to support the neighbouring development. The sewer outfalls to Small Bridge Dike south of the site.
4. Attenuation storage is provided above ground in a pond within the neighbouring development who accounted 3000 m² of storage for this proposed development site. The calculated attenuation storage required for the proposed development site is actually only 2050 m².
5. Surface water discharge will be attenuated to 37.5 l/s already designed for the neighbouring development site.
6. The level of risk and safeguards available are considered appropriate to this class of development.

APPENDICES

Location

Carrs Lane, Cudworth, South Yorkshire, S72 8EG





All drawings should be read in conjunction with the entire PL Series drawings. Full details and specifications will be provided following approval of the planning application and through a formal Building Control submission prior to commencement of site works & construction.

- Application Boundary:
- TOTAL AREA: 5,990m²
0.60 ha
- ROADS - Public Adopted Highway
- HARD SURFACE - Paths / Patios
- HARD SURFACE - Driveways
- SOFT LANDSCAPING - Grass / Planting
- PARKING - External / Garage Spaces
- BUILDINGS - Houses
- BUILDINGS - Garages



Rev	Description	Date	By
A	Planning Issue	01/05/19	LW

peakarchitects
incorporated in the United Kingdom. Registered Office: 100, The Quadrant, Brighton, BN1 1AB. www.peakarchitects.co.uk

Project		274-2018	
Client		Carns Lane, Cudworth	
Site		Jaquar Estates	
Status	Information	Comment	Approval
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drawing		CLB - PA - PL - 002	
Existing Site Plan			
Revision	A	Date	25/04/19
Scale	1 : 250 @ A1		

Existing Site Plan
1:250

All drawings should be read in conjunction with the entire PL Series drawings. Full details and specifications will be provided following approval of the planning application and through a formal Building Control submission prior to commencement of site works & construction.

- - - Application Boundary
- TOTAL AREA: 5,990m²
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- SOFT LANDSCAPING - Grass / Planting
- PARKING - External / Garage Spaces
- BUILDINGS - Houses
- BUILDINGS - Garages



Proposed Site Plan
1:250

Rev	Description	Date	By
A	Planning Issue	01/05/19	LW

peakarchitects
www.peakarchitects.co.uk

Project: 274-2018	
Cans Lane, Cudworth	
Client: Jaguar Estates	
Status:	Information
Comment	Approval
Tender	Construction
As-Built	
Drawing: CLB - PA - PL - 003	
Proposed Site Plan	
Revision: A	Date: 25/04/19
Scale:	1:250 @ A1

Planning



Flood map for planning

Your reference
44335

Location (easting/northing)
438876/408063

Created
2 Aug 2019 9:36

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Flood map for planning









Your reference
44335

Location (easting/northing)
438876/408063

Scale
1:2500

Created
2 Aug 2019 9:36



-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m



Learn more about flood risk

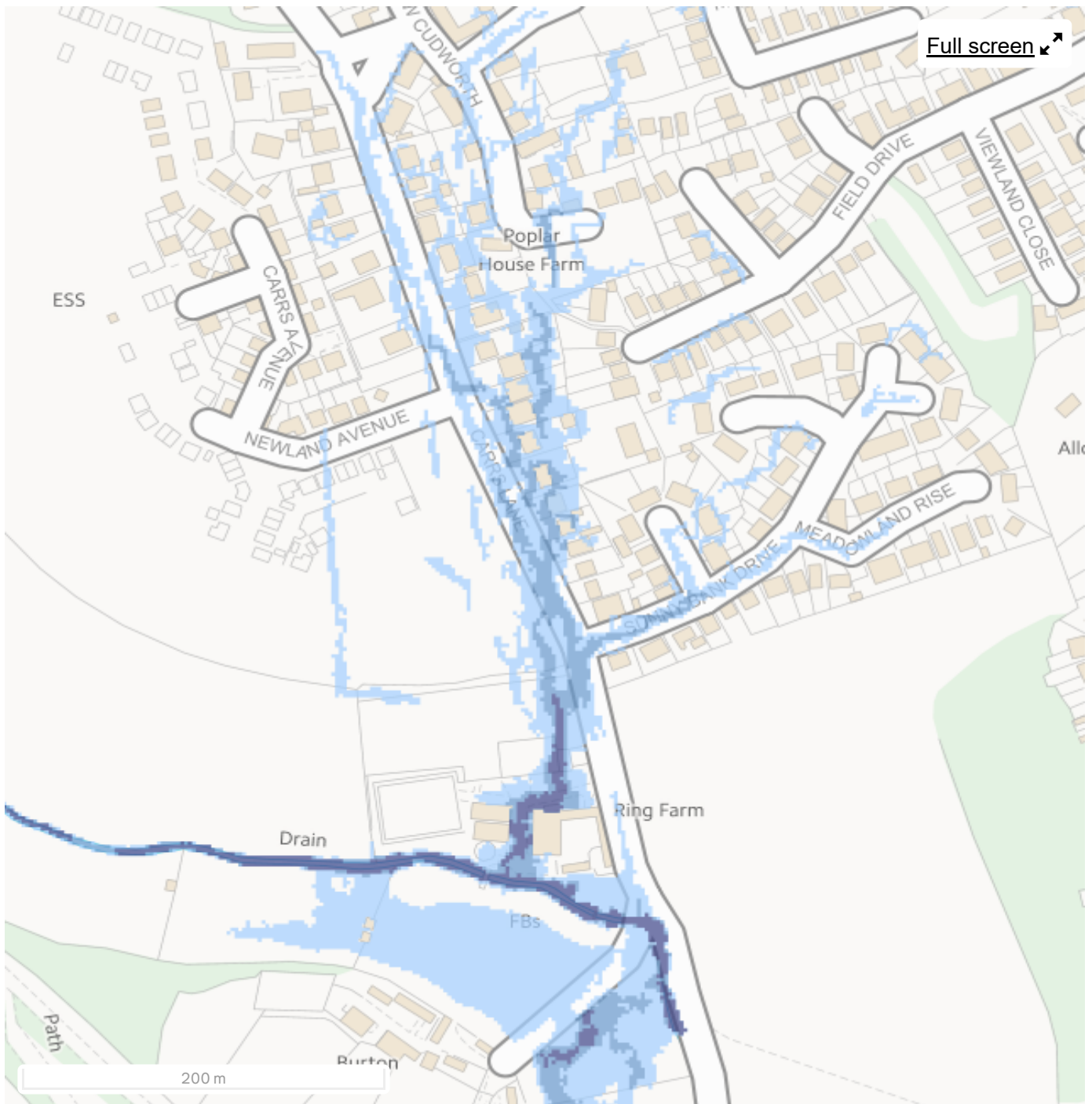
You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.

'Detailed view' shows more technical information.

All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.

From the list below, select the information you're interested in. The map view will then update.





Flood risk

High

Medium

Low

Very low

Location you selected

▶ [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

Barnsley Metropolitan Borough Council Correspondences

Hi Chris,

Not only is Small Bridge Dyke an IDB watercourse the site lies within the IDB area therefore they are Lead Local Flood Authority for that area so you should consult with them regarding their requirements.

Regards

Wayne Atkins

Principal Engineer – Asset Management

Environment & Transport

Place Directorate

Barnsley Metropolitan Borough Council

Telephone: 01226 772182

E-mail: wayneatkins@barnsley.gov.uk

From: Chris Hodge [<mailto:chris.hodge@eastwoodandpartners.com>]

Sent: 30 July 2019 14:29

To: Atkins , Wayne

Cc: Lorna Nicholson; Phil Richardson

Subject: 44335 - Carrs Lane, Cudworth

Good afternoon Wayne,

We are just looking at the attached site and have been asked to prepare a SuDS/drainage statement to accompany planning. We have obviously designed the adjacent scheme for Barratts and recall that we have allowed for free discharge from this parcel (drained area of circa 0.3Ha in the model). We just need to confirm points of connection/discuss with Barratts. What type of SuDS would you expect to see – would BMBC insist on permeable paved drives for example?

This ultimately discharges to IDB Small Bridge Dyke and discharge rates have previously been agreed with the IDB

Foul water to main sewer in Carrs Lane.

If you have 5 minutes to call tomorrow am that would be great.

Regards

Chris Hodge

Associate

Eastwood&Partners
CONSULTING ENGINEERS

IDB Correspondences

Dear Grace,

Thank you for the email.

I think there has been a slight misunderstanding. The LLFA under the Flood & Water Management Act 2010 will always be a Council; Borough or County.

The IDB is a Risk Management Authority under the Flood & Water Management Act 2010, and is also the Drainage Authority under the Land Drainage Act 1991 (as amended).

You are correct that part of the IDB Drainage District is situated close to Small Bridge Drain and the IDB consent would be required for discharge into that Ordinary Watercourse and for any works within 9 metres of the edge of the watercourse bank top.

We would expect to see, at the very minimum, no increase in existing runoff, and normal constraints for IDB Consent (separate to Planning Permission) would be for discharge to be restricted 1.4 litres per second per hectare and/or greenfield runoff. However, we would not comment on type of SuDS to be implement.

Trust this is of assistance but happy to talk about any potential Consent Applications to the IDB.

Kind regards,

For and on behalf of the Danvm Drainage Commissioners,

Paul Jones BSc (Hons) MSc (Eng) GMICE

Engineer to the Board

Lead Water Level Management Engineer

From: Grace Holley <Grace.Holley@eastwoodandpartners.com>

Sent: 31 July 2019 14:22

To: Paul Jones <Paul.Jones@shiregroup-idbs.gov.uk>

Cc: Chris Hodge <chris.hodge@eastwoodandpartners.com>; Lorna Nicholson <lorna.nicholson@eastwoodandpartners.com>

Subject: 44335 - Carrs Lane, Cudworth

Good afternoon Paul,

We are just looking at the attached site and have been asked to prepare a SuDS/drainage statement to accompany planning. We have designed the adjacent scheme for Barratts and recall that we have allowed for free discharge from this parcel (drained area of circa 0.3Ha in the model). We just need to confirm points of connection/discuss with Barratts.

The Barratts site ultimately discharges to IDB Small Bridge Dyke at a discharge rate that has previously been agreed with yourselves. We have spoken with Barnsley Council who suggested that as the site falls within the IDB area that you are the Lead Local Flood Authority. We were just

wondering what types of SuDS you would expect to see – would you insist on permeable paved drives for example?

Kind regards,

Grace Holley
Engineer

Eastwood&Partners
CONSULTING ENGINEERS

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Registered office: St Andrew's House, 23 Kingfield Road, Sheffield, S11 9AS

Web: www.eastwoodandpartners.com

Tel: 0114 255 4554

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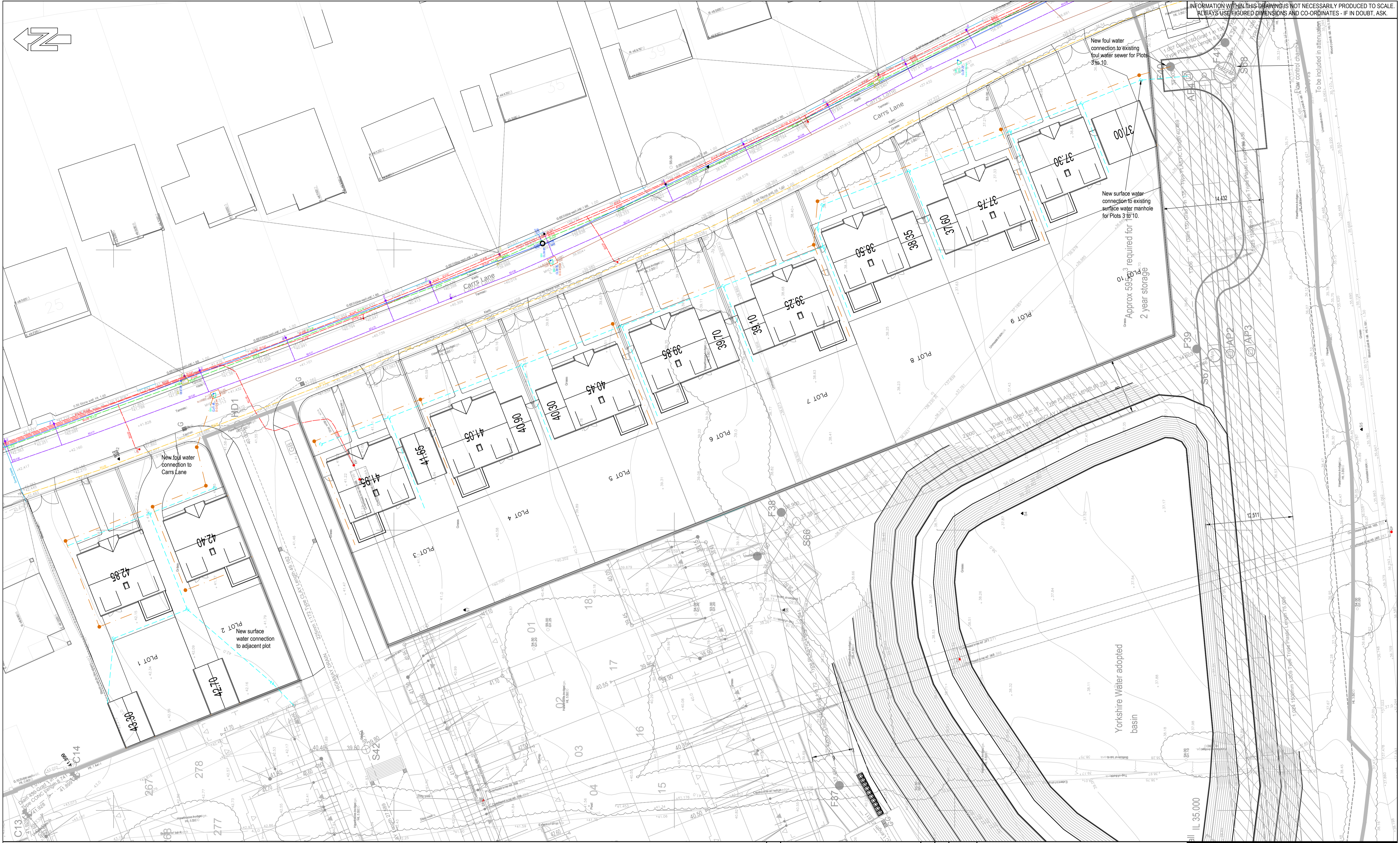
JBA Consulting, Epsom House, Chase Park, Redhouse Interchange, Doncaster, South Yorkshire, DN6 7FE. Telephone: +441302 337798

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www.shiregroup-idbs.gov.uk

INFORMATION WITHIN THIS DRAWING IS NOT NECESSARILY PRODUCED TO SCALE.
ALWAYS USE FIGURED DIMENSIONS AND CO-ORDINATES - IF IN DOUBT, ASK.



NOTES

REV	DESCRIPTION	SIG	CHK	DATE
A	First Issue.			

JAGUAR ESTATES

CARRS LANE, CUDWORTH

DRAINAGE APPRAISAL

Eastwood & Partners
CONSULTING ENGINEERS

St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS
Tel 0114 255 4554
Fax 0114 255 4330
mail@eastwoodandpartners.com
www.eastwoodandpartners.com



SCALE WHEN PLOTTED AT A1
1:250

DRAWING STATUS
PRELIMINARY

DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
RJ	CH	01.08.19	44335/001	A

SUDS Type	SUDS Technique	Description	Suitable	Comments
Source Control	Green roof	Vegetated roof that reduces runoff volume and rate	No	Expected planning requirement for traditional pitched roofs to match neighbouring housing.
	Rainwater harvesting/rainwater butts	Rainwater is stored and re-used	No	Individual storage tank capacity unlikely to meet volume required. Individual water butts can be used for garden watering.
	Permeable paving	Paving which allows inflow of rainwater into underlying construction/soil	Possible	May be suitable for private drives. Private permeable paving areas could provide limited infiltration within the underlying construction material.
Infiltration	Soakaway	Pit or trench which stores and disposes of water to the ground	No	Unsuccessful rates on the neighbouring site.
	Filter Drain	Trench which conveys and/or disposes of water to the ground.	No	
	Infiltration Basin	Shallow basin which stores and disposes of water to the ground	No	
Conveyance	Swale	Shallow vegetated depression which conducts and retains water	No	Difficulties of adoption and lack of public open space.
Detention	Subsurface storage	Traditional underground pipes, tank storage, or modular systems	No	Basin is preferred and already designed.
	Detention Basin	Normally dry but may have small permanent water pools at the inlet and outlet. They can function as POS	Yes	Provided on the neighbouring site with storage available.
	Pond	Permanent body of water	No	Basin is preferred and already designed.
	Wetland	Permanent body of shallow water or marsh	No	Basin is preferred and already designed.