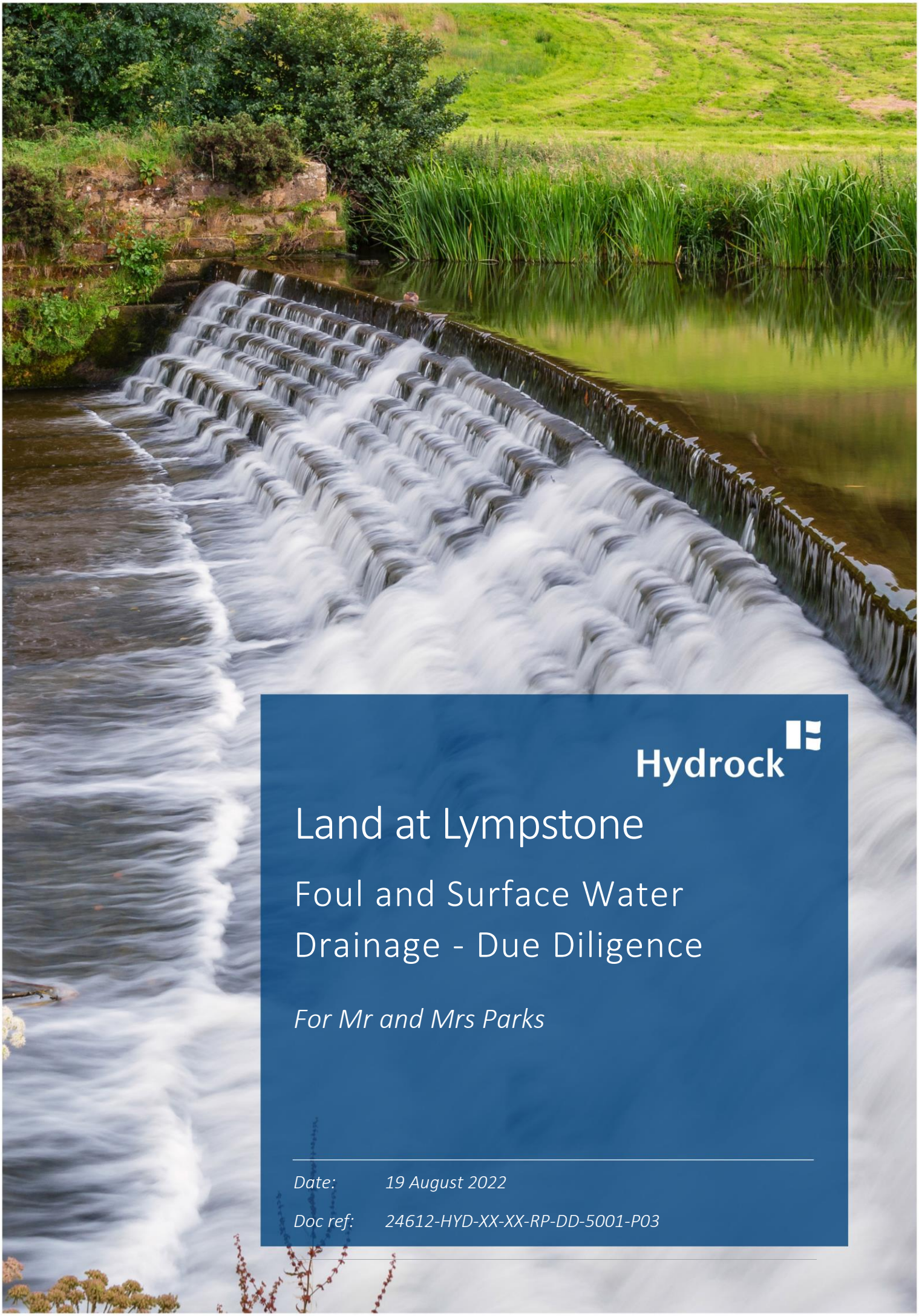

Hydrock

Land at Lympstone

Foul and Surface Water Drainage - Due Diligence

For Mr and Mrs Parks

Date: *19 August 2022*

Doc ref: *24612-HYD-XX-XX-RP-DD-5001-P03*

DOCUMENT CONTROL SHEET

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P01	S2	21/07/2022	First Issue
P02	S2	22/07/2022	Existing drain reference added
P03	S2	19/08/2022	Site boundary amended

CONTENTS

Tables

Figures

1. INTRODUCTION

This Foul and Surface Water Due Diligence report has been produced by Hydrock Consultants Limited (Hydrock) on behalf of Mr and Mrs Parks in support of representations to the East Devon District Council Local Plan. Information reviewed and summarised within this document has been acquired through desktop means. As such, discrepancies may be present between the information provided within this document and the physical conditions on site.

2. EXISTING SITE INFORMATION

2.1 Site Location

The site is identified as site GH/ED/72 in the working draft local plan for East Devon District Council. It is located in the north of Lympstone and bordered to the north by agricultural fields, to the east by properties fronting Exmouth Road (A376), to the south by existing residential development and Meeting Lane and to the west by Nutwell Road.

A copy of the site boundary plan taken from the Draft Local Plan is included in Appendix A.

The site is predominantly 'greenfield' however, it is noted that two new large buildings complete with concrete hardstanding areas have been built in the centre of the site.

The site information including address and Ordnance Survey reference is included in Table 1 with the site location shown in Figure 1.

Table 1: Site Referencing Information

Site Referencing Information	
Site Address	Land north of Meeting Lane Lympstone EX8 5HR
Grid Reference	SX994847 299414, 84759

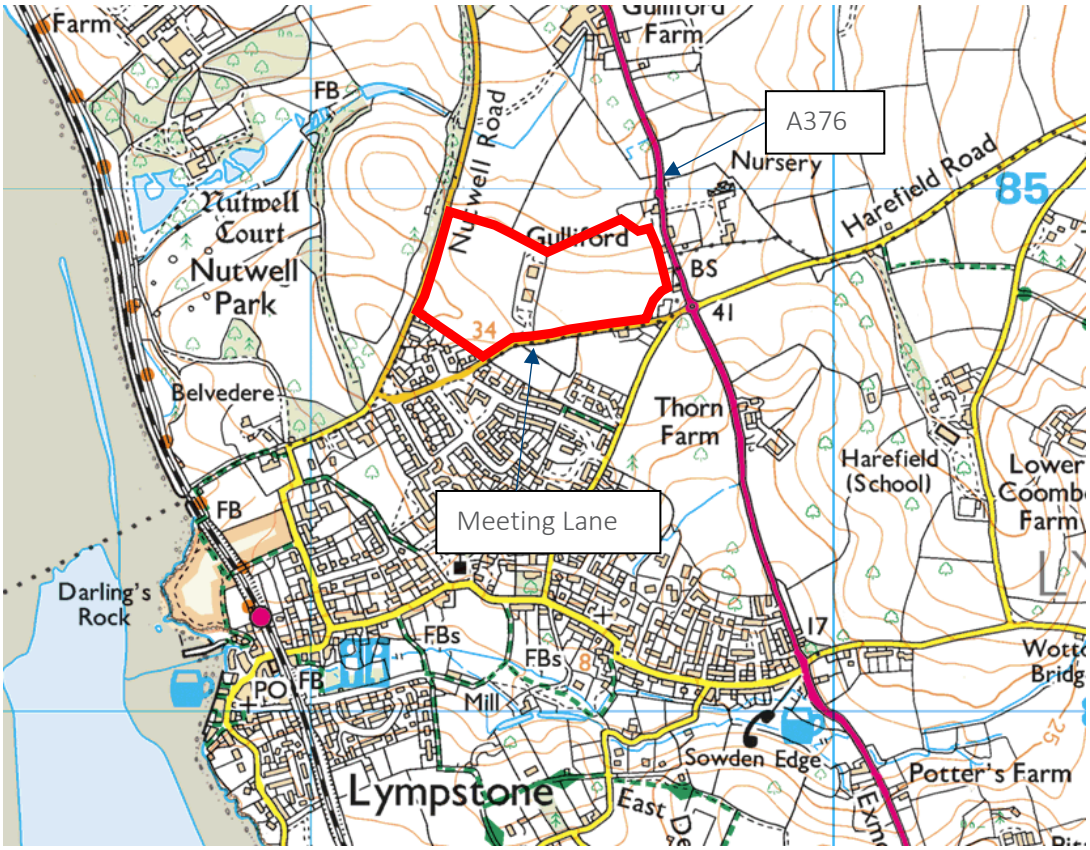


Figure 1: Site Location

2.2 Topography

In lieu of a topographic survey, LiDAR data has been used which shows the site to lie at an elevation of 40m AOD in the east of the site sloping to 24m AOD in the west of the site and 23.5m in the north-east.

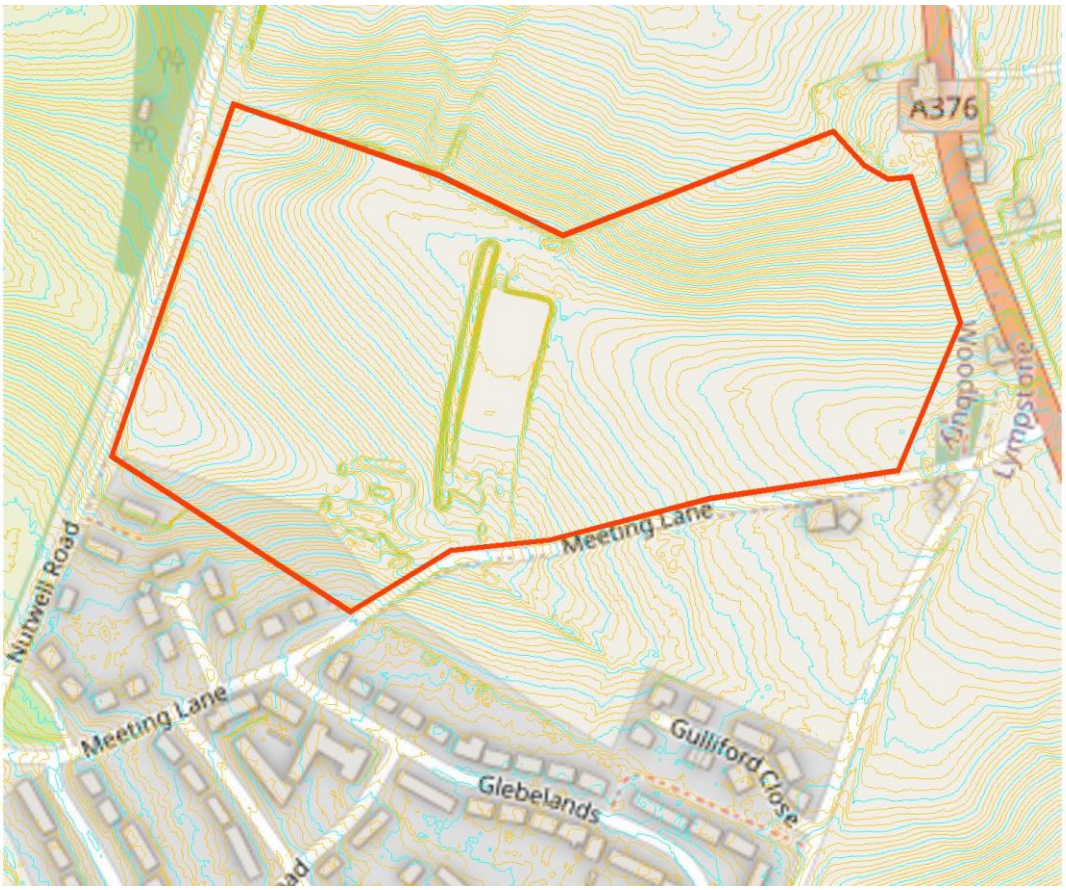


Figure 2: LiDAR Data

2.3 Geology and Hydrogeology

Referring to the British Geological Society online data, the site is underlain by bedrock of the Exmouth mudstone and sandstone formation suggesting that there is little likelihood of groundwater flooding. No superficial deposits are recorded.

2.4 Surface Water Flooding

The Environment Agency Surface Water Flood Risk Map shows the majority of the site to be at low to medium risk of surface water flooding on the southern edge of the site, as shown in Figure 3 below. The medium risk is confined to the eastern side of Nutwell Road.

The flows appear to be generated within the site boundary and not from outside the site, therefore these should be able to be dealt with within the development proposals through an appropriate drainage strategy.

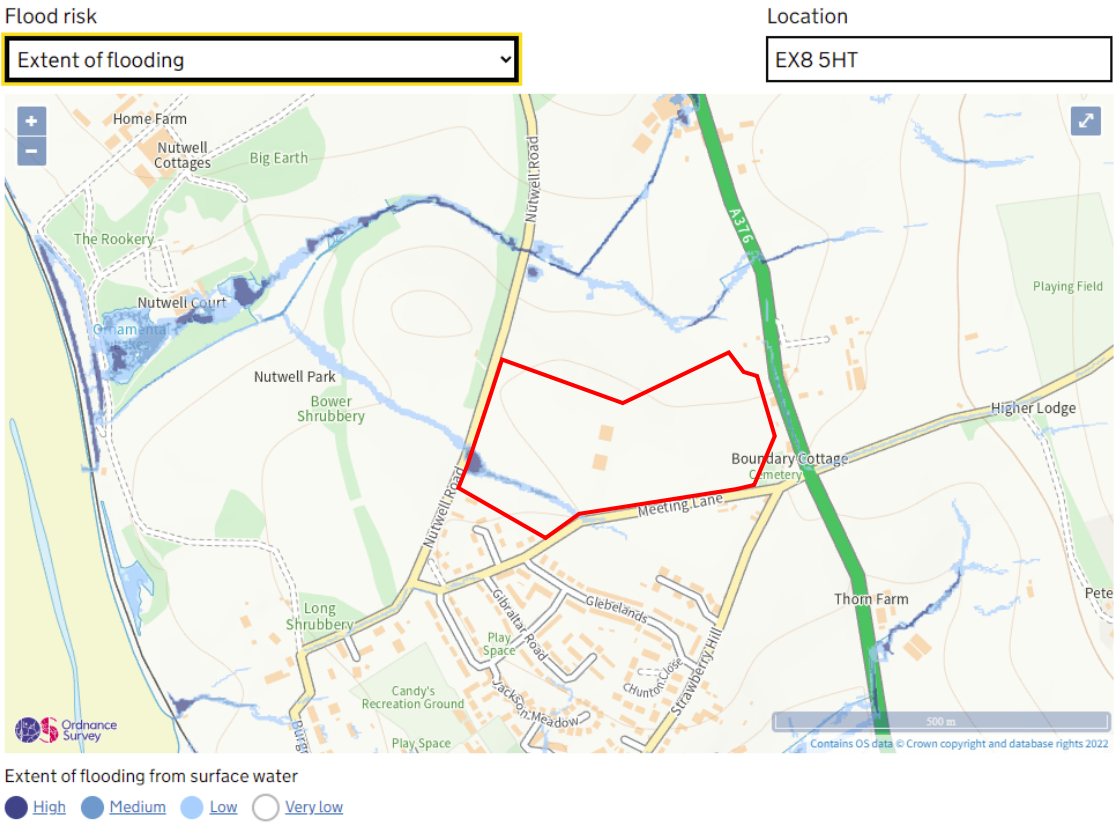


Figure 3. EA Surface Water Risk Mapping

2.5 Existing Drainage

The site falls within the operational area of South West Water in terms of public drainage.

A copy of the sewer record plans is included in Appendix A.

The plan indicates that there are no public sewers adjacent to the site in Nutwell Road, Meeting Lane, Strawberry Hill or in the A376 Exmouth Road. There is a 150mm diameter combined sewer in Glebelands serving the existing residential development to the south of the site. In addition, there is a 150mm diameter foul sewer and an unknown size surface water sewer at the eastern end of Glebelands which drain south along Huanton Close.

No public sewers are recorded in Gulliford Close to the south-east of the site and therefore any drainage serving these properties must assumed to be private.

The site is predominantly greenfield however there are two large buildings with associated concrete hardstanding areas in the centre of the site. It is not known whether these buildings are served by any formal drainage systems and, if there are, where these may discharge to.

It is reported that a 225mm diameter pipe, installed by the landowner, runs along the base of the valley between Meeting Lane and Nutwell Road and likely continues further to the west, possibly also taking highway runoff from Meeting Lane.

3. PROPOSED DEVELOPMENT DRAINAGE

3.1 Site Proposals

It is understood that the site will be developed for residential use together with associated access roads and open space areas. There are no layout proposals available at the time of the writing of this report.

The gross site area is approximately 8.7 hectares.

3.2 Surface Water Drainage

The South West Water sewer record plans indicate that there are no public surface water sewers within or in the vicinity of the site. The existing residential developments to the south appear to be predominantly served by combined sewers.

Any proposed drainage management strategy will be required to adhere to the details set forth by the National Planning Policy Framework (NPPF). As such the proposed drainage system should follow the Sustainable Drainage Systems (SuDS) hierarchy in the following preferential order:

1. Infiltration to ground

2. Discharge to local watercourse.

3. Discharge to a local surface water sewer network.

4. Discharge to a local combined water sewer network.

Given that the desk top geology information indicates no superficial gravel deposits and underlying bedrock of sandstone and mudstone, it is unlikely that infiltration to ground will be a viable and practical option for disposing of surface water. Site specific testing may be required to prove this assumption…

Given the available LiDAR data, the topography of the site is such that all but the extreme north-east corner of the site naturally drains to the south-west to a point adjacent to Nutwell Road. This conforms with the surface water mapping in Figure 3 above. There is no evidence of a watercourse continuing to the west and it is recommended that further site survey work is carried out to determine if any unmapped features are present.

On the basis that the use of soakaways is not practicable then surface water can be discharged either to a suitable watercourse or to a public surface water sewer. Given the existing undeveloped nature of the site, flows will need to be restricted to greenfield rates to ensure no detrimental impact and compliance with the NPPF. Greenfield discharge rates are shown in the table below, subject to area of impermeability, assumed at 60% (60% of 8.7 ha equating to 5.2 ha impermeable area).

Event	Discharge Rate	
1 Year	1.6 l/s/ha	8.3 l/s
30 Year	3.9 l/s/ha	20.3 l/s
100 Year	4.8 l/s/ha	25.0 l/s
Qbar	2.0 l/s/ha	10.4 l/s

Rates calculated using the Wallingford UK SuDS FEH method.

Any proposed drainage management strategy must ensure no flooding in storm events up to and including the 1 in 30 year event and all flows generated for the 1 in 100 year plus a climate change allowance are managed and contained within the site. Given the residential nature of the proposed development an allowance of 40% for climate change has been accommodated.

Assuming the use of the Qbar discharge rate to the drainage network, an approximate storage volume of 6,260m^3 has been calculated.

The site can be split into two catchment areas following the existing topography, west and east, apportioned at 71% and 29% respectively. Splitting the overall storage requirement in the same proportions gives 4,445m^3 and 1,815m^3 for the west and east basins.

Discharge can be made to the watercourse located approximately 150m to the north of the site as the Developer also owns the land across which outfall sewers would need to be laid.

It is not known at this time as to where the existing large buildings and hardstanding areas within the site boundary drain to however, the landowner reports that a 225 mm diameter drain was laid following the line of the base of the valley between Meeting Lane and Nutwell Road by Devon County Council a number of years ago and is assumed to be a highway drain. It may be necessary to divert this drain to accommodate any future layout proposals.

3.3 Foul Water Drainage

The South West Water sewer record plans indicate that there are no public foul water sewers within the site, however, the existing residential developments to the south appear to be served by combined sewers.

Due to the site topography, the natural fall for any proposed site drainage will be to the south-west corner of the site, outfalling to Nutwell Road where the nearest public combined sewer is located some 200m further south at the junction with Meeting Lane and Burgmanns Hill. The combined sewer is 225mm diameter at this point.

The Draft Local Plan indicates a total anticipated number of dwellings of approximately 100. Based on an allowance of 4,000 litres/dwelling day, as set out in the Water UK guidance document Sewerage Sector Guidance Appendix C, the predicted peak foul flow will be 4.6 l/s. It will be necessary to confirm with South West Water that there is sufficient capacity in the existing system however, under current South West Water Charging Arrangements, any off-site infrastructure upgrades are funded through standard Infrastructure Charges.

4. CONCLUSION

4.1 From the above review of available information, it is concluded that any proposed development of the site can be effectively drained, both in terms of foul and surface water.

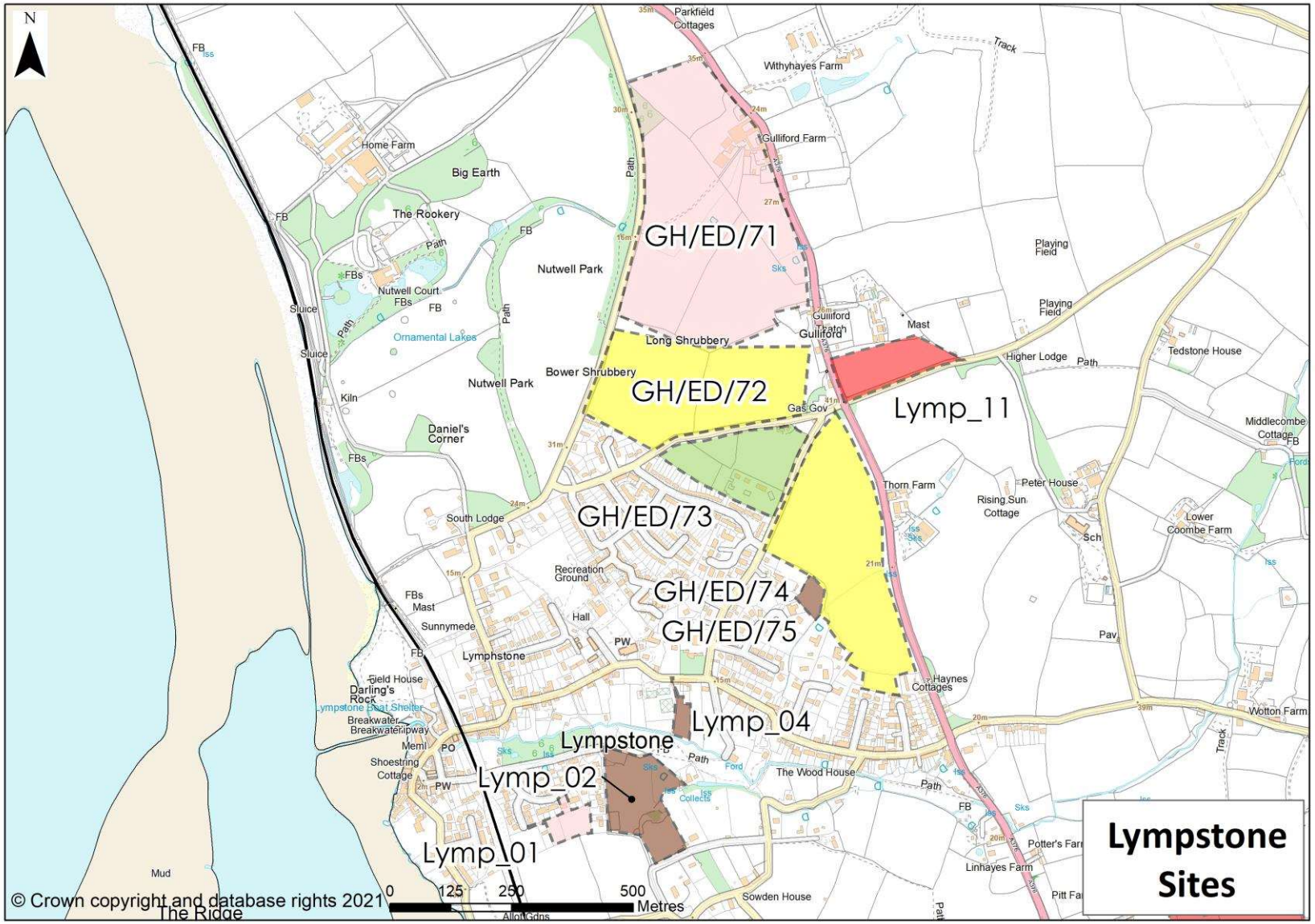
Further investigations will be required at the detailed design stage however, it is evident that appropriate discharge options are available.

APPENDIX A

Site Location Plan for Draft Local Plan

South West Water Sewer Records

Lympstone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GH/ED/72
GH/ED/73
GH/ED/74
GH/ED/75
Lymp_11
Lymp_04
Lymp_02
Lymp_01
Lympstone Sites
Parkfield Cottages
Withyhayes Farm
Gulliford Farm
Home Farm
Big Earth
The Rookery
Nutwell Park
Nutwell Court
Ornamental Lakes
Long Shrubbery
Bower Shrubbery
Kiln
Daniel's Corner
South Lodge
Recreation Ground
Hall
Sunnymede
Lymphstone
Field House
Darling's Rock
Breakwater
Shoestring Cottage
Playing Field
Mast
Higher Lodge
Tedstone House
Gas Gov
Thorn Farm
Peter House
Rising Sun Cottage
Lower Coombe Farm
Middlecombe Cottage
Haynes Cottages
Wotton Farm
The Wood House
Linhayes Farm
Potter's Farm
Sowden House
Pitt Farm
The Ridge
Mud
© Crown copyright and database rights 2021
0 125 250 500 Metres

23.8m
El Sub Sta
CF
MEETING LANE
0.91m RH
Def
El Sub Sta
30.8m
Long Shrubbery
Path (um)
EDINBURGH CRESCENT
Churchill Court
TCB
Play Area
The Rectory
23.5m
BURGMANNS HILL
0.91m RH
Burgmanns House
Clouds Reach
GULLIFORD CLOSE
Path (um)
Ppg Sta

Sewerage Pipe Details

Examples of the abbreviation details above a Sewer Pipe (details will be in the same colour as the pipe itself):

A B C D

Cir / 225 / VC / 82

A: Shape
B: Diameter (replaced by width & length on non-circular pipes
C: Material
D: Gradient (1: number shown)

Public - Foul

Public - Surface

Public - Combined

Public - Treated

Private Sewer

Unverified

Highway

Abandoned Sewer A

Pumping Main

Elevated Sewer /EL

Syphon S

Shapes

Circular	Cir	Rectangular	Rec	Barrel	Brl	Trapezodial	Trpz
U Shaped	UShp	Horseshoe	Hsho				

Materials

Vitrified Clay	VC	Clay (Salt Glaze)	SG	Pre-cast Concrete	PCO	Concrete	CO
Asbestos Cement	AC	Brick	BR	Stone (Masonry)	MAC	Alkathene	AK
Steel	ST	Concrete Box	CB	Glass Reinforced Plastic	GRP	Plastic	PL
Polypropylene	PP	Unplasticised Polyvinylchloride	UPVC	Polyethylene	PE	Polyvinylchloride	PVC
Concrete Segments Bolted	CSB	Pitch Fibre	PF	Concrete Segments Unbolted	CSU	Medium Density Polyethylene	MDPE
Not Known	NK						

Sewerage Structures (shown in common colours)

Manhole Foul / Trade	Manhole Surface	Manhole Private	Manhole Combined
Soakaway SK	Washout WO	Catchpit CP	Hatchbox HB
Flushing FC	Lamphole LH	Tank Online TN	Tank Offline TO
Septic Tank S	Cesspit C	Header E	Drain LD
Reflux Valve RV	Sluice Valve	Air Valve AV	Venting Pole VP
Storm Overflow SO		Undefined Connection	Side Entry
Outfall OF		Backdrop	

Sewerage Installations

Pumping Station	Treatment Works WWTW

Details on Covers

Lockable k	Gas / Water Tight t	Bolted b

Location

Buried BL	Unable to Locate UL

APPENDIX B

Indicative Drainage Plan

OS NORTH

OUTFALL TO EXISTING WATERCOURSE

OUTFALL TO EXISTING WATERCOURSE

PROPOSED OUTFALL SEWER ACROSS DEVELOPER OWNED LAND

PROPOSED OUTFALL SEWER ACROSS DEVELOPER OWNED LAND

POTENTIAL SURFACE WATER ATTENUATION FEATURE

WEST CATCHMENT

EAST CATCHMENT

POTENTIAL SURFACE WATER ATTENUATION FEATURE

EXISTING HIGHWAY DRAIN TO BE DIVERTED AROUND STORAGE FEATURE

A376

Meeting Lane

Thunwell Road

OINT OF
FOR FOUL
NAGE

Key

- Site boundary
- Attenuation basin
- Existing surface water drain
- Proposed surface water outfall sewer

REVISIONS

Rev	Date	Description	By	Ckd	App
P03	19/08/22	Site boundary updated. Drainage amended.	RJH	JAC	JAC
P02	22/07/22	Existing drain added.	RJH	JAC	JAC
P01	20/07/22	First Issue.	RJH	JAC	JAC

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JILLINGS HUTTON PLANNING

PROJECT
LAND AT LYMPSTONE

TITLE
SITE PLAN AND DRAINAGE PLAN

HYDROCK PROJECT NO.	SCALE @ A1
24612-IOCB	1:1,250
STATUS DESCRIPTION: INFORMATION	STATUS: S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 24612-HYD-XX-XX-DR-D-2001	REVISION: P03