Lanes Group PLC
Bourne End Junior Sports Club
Flood Risk Assessment

Final Report Rev 0

May 2021

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Contents

1.0 INTRODUCTION

This report has been prepared in support of a planning application to be submitted to Buckinghamshire County Council for the construction of a new swimming pool and associated facilities at the Bourne End Junior Sports Club.

Local Planning Authorities are advised by the Government' *National Planning Policy Framework* (*NPPF)* to consult the Environment Agency (EA) and Buckinghamshire County Council (BCC) in their role as the Lead Local Flood Authority (LLFA) on development proposals in areas at risk of flooding and/or for sites over 1ha in area. This Flood Risk Assessment has been prepared to support the application owing to the site being located adjacent to a Wycombe Critical Drainage Area (WCDA).

The report considers the requirements for undertaking an FRA stipulated in Annex E of *NPPF* and those requested by BCC. Only those requirements that are appropriate to a development of this nature have been considered in the compilation of this report.

This report has been developed in accordance with current EA policy.

2.0 SITE INFORMATION

2.1 Site Location

The site is referenced in Table 1.

Item	Brief Description
Site address and location	Bourne End Junior Sports Club, New Road, Woodburn Green, Bourne End, SL8 5BW.
Approximate Grid Reference	489850, 187790 SU898877

Table 1: Site Referencing Information

2.2 Existing Site

Boundaries and Surrounding Land

The site is located in the County of Buckinghamshire on the eastern side of New Road in the town of Bourne End. Bourne End Academy is to the immediate south with East Ridge to the north. To the east the site is bounded by a football pitch.

The development site currently consists of an existing tennis court.

2.3 Proposed Development

Outline of Development Proposals

The proposals are for the construction of a new swimming pool and associated facilities.

NPPF Vulnerability Classification

Owing to the predominant use being proposed for leisure, *NPPF* considers these as 'more vulnerable' development in respect of flood risk and is therefore considered as having a design life of 100years.

3.0 IDENTIFICATION OF FLOOD RISK

Flood risk to the proposed development site is considered from all sources of flooding, as defined by the *NPPF*.

3.1 Sources of information

Table 3.1 summarises the main sources of information used in the identification of flood risk.

Source of Information	Details
EA flood modeling information (viewed online only)	Viewed online
Strategic Flood Risk Assessment (SFRA) produced on behalf of Wycombe District Council	Viewed Online and undated

Table 2: Sources of information used in the identification of flood risk

This assessment of flood risk draws primarily on assessment of the site and surrounding watercourses from readily available information provided by the EA and a review of supporting documents that have been prepared on behalf of Wycombe District Council (Strategic Flood Risk Assessment).

3.2 Flooding from Rivers (Fluvial) and Sea (Tidal)

The Environment Agency's (EA's) Flood Zone Mapping (figure 1) shows that the site is located entirely within Flood Zone 1 which is land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.

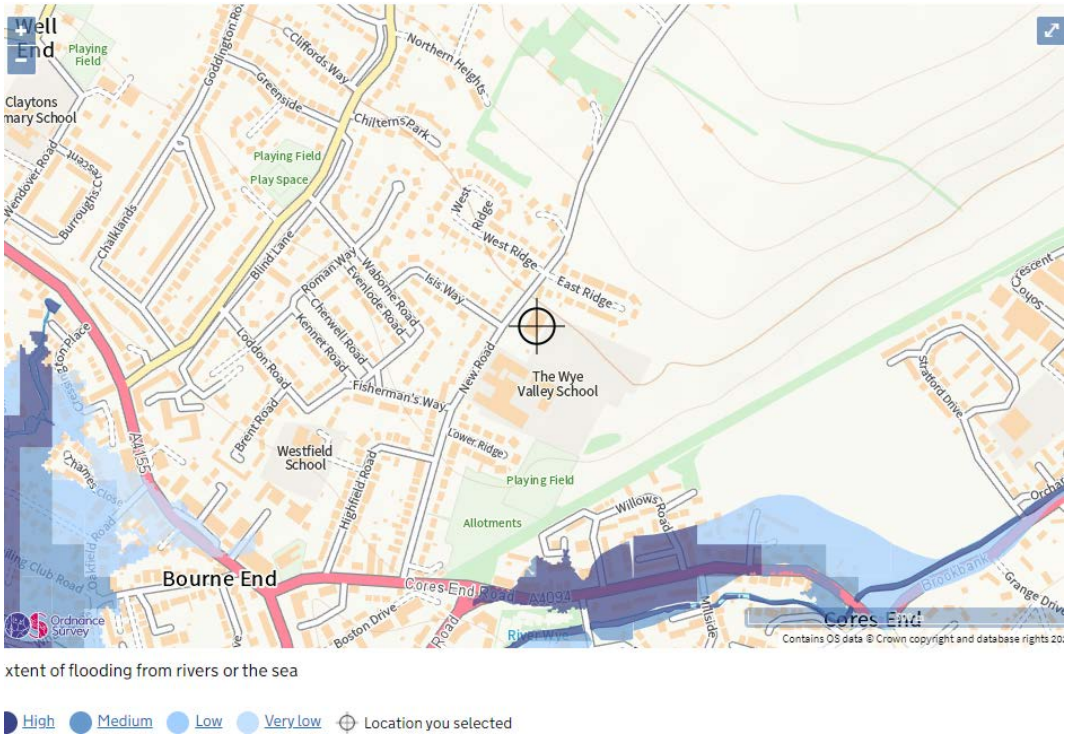


Figure 1: Food Map for Planning

Owing to the site location, topography, and classification as being within Flood Zone 1, it is also concluded as being at negligible risk from tidal sources.

3.3 Flooding from the land (Surface Water)

Wycombe Critical Drainage Areas have been designated to indicate where residential or commercial properties could be at risk of flooding from surface run-off generated by intense rainfall.

Both the EA's flooding from surface water mapping (Figure 2 below) and mapping within Wycombe's SFRA (Attached as Appendix A) shows the footprint of the site as being outside but marginal to areas of increased risk from surface water flooding and therefore categorised as being at 'very low' risk. The nearby areas of increased risk (both 'low' and 'medium') are along New Road and within the car parking area of the sports club.

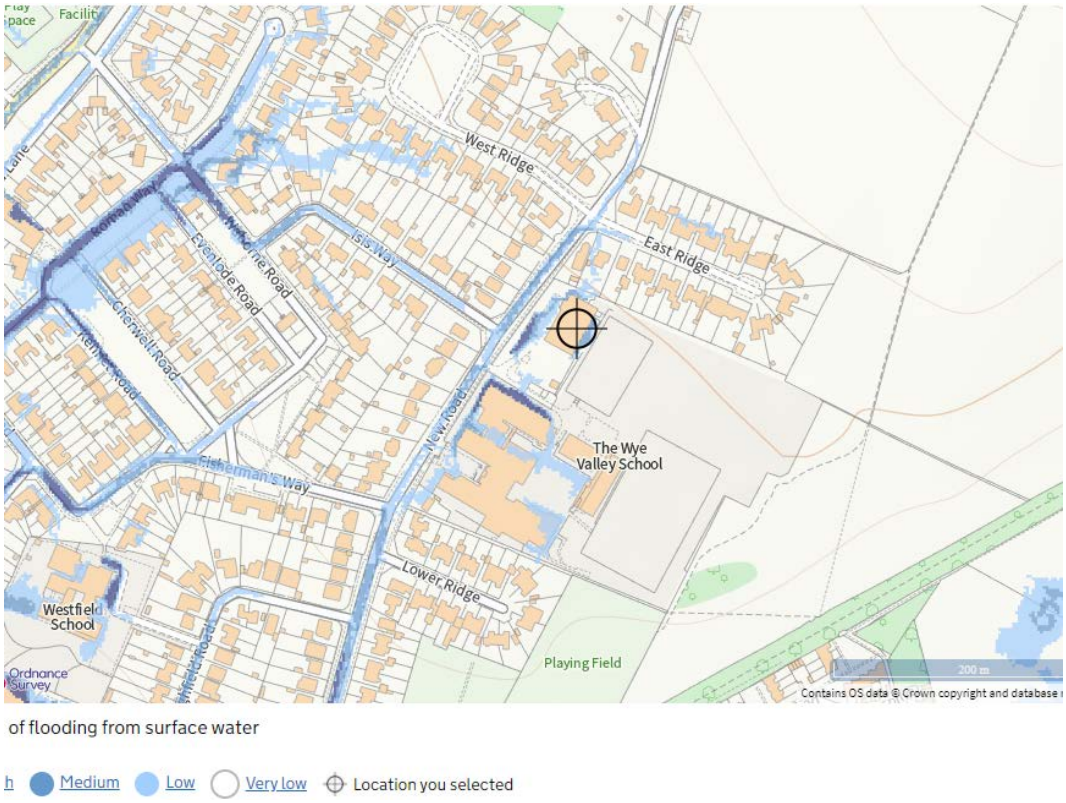


Figure 2: Surface Water Flood Map

The areas of increased risk predicted along New Road form part of a wider area drainage route with flows being shown to drain with the surrounding topography in a south western direction and ultimately away from the site.

The SFRA for the area identifies that the site is located adjacent to a Wycombe Critical Drainage Area. This critical drainage area has been designated owing to the potential risk from Surface Water but no specific mention (or reference to record historical events) is made of New Road or the immediately surrounding area.

As part of the SFRA, detailed modelling of the area was undertaken and relevant outputs have been included within the report (available online). On review, all of the provided outputs and modelled events confirm that the site is located within an area outside the predicted areas of risk and confirms the site is at 'very low' risk. All areas of existing risk

are contain within the road network which is considered to act as a preferential flow route in the event of overland flows being generated.

Whilst the potential effects of climate change could increase the frequency, depth and extent of on-site surface water flooding, given the sloping topography of the site, any increase in flood risk is considered unlikely to be of a magnitude which would result in a significant increase in the risk of on-site surface water flooding

3.4 Flooding from Groundwater

The SFRA and SWMP states that whilst the site is located adjacent to an area designation as being a critical drainage area there are no records of historical flooding in the area.

Owing to available information, and that the proposals are to result in no interaction with the existing groundwater table, the site is concluded as being at low risk from groundwater flooding.

Given that the determination of groundwater flood risk in this instance is driven by geological and topographical factors, both of which will be unaffected by the potential effects of climate change, the risk of groundwater flooding posed to the site is considered unlikely to increase as a result of climate change.

3.5 Flooding from Sewers

Due to the urban nature of the area surrounding the site, it is considered that the majority of any sewer flooding is as the result of overloading or failure of the sewer network (both combined and foul drainage systems). In the event of the surcharging of any existing sewer network, it is considered that flows would mimic the surface water flood extents shown on the EA mapping. As such, any surcharged sewer flows are considered to be conveyed within the existing road network and pose no increased risk to the site.
The site is therefore considered to be at low risk from sewer flooding.

3.6 Summary

The EA shows that the site is located entirely at low risk from both fluvial and tidal flooding and within Flood Zone 1. The site is also concluded as being at low risk from all other assessed sources of flooding.

Given the identified nature of the subsoil and geology at the site and surrounding area, it is concluded that the risk from groundwater flooding would be low given the low possibility of perched water tables.

NPPF AND THE PROPOSED DEVELOPMENT SITE

3.7 Planning Policy Requirements

The proposed extension has been confirmed as being located at low risk from tidal and fluvial flooding (Flood Zone 1).

The proposed development is considered ‘more vulnerable’ in terms of flood risk.

The *NPPF* Flood Risk Vulnerability and Flood Zone Compatibility matrix (Table 3) indicates that ‘more vulnerable’ development is appropriate in Flood Zone 1 and accordingly the proposed development is considered to meet the requirements of the Sequential Test.

3.8 Exception Test

Assuming the site is demonstrated to pass the Sequential Test, the following section details potential measures necessary to mitigate any residual flood risks, to ensure that the proposed development and occupants would be safe, and that flood risk would not be increased elsewhere within the design life of the proposed development, akin to the requirements of the second section of the Exception Test.

3.9 Resistance and Resilience of Proposed Building

Whilst the site is concluded as being at low risk of flooding, the neighbouring highway network is shown as being at an increase risk and, as such, it would be recommended for the proposed development to maintain the existing approach of finished floor level (FFL) be raised above both the road and pavement levels. It would be recommended that, where practicable, finished floor levels being raised a minimum of 300mm above existing ground levels.

Should the raising of FFL’s not be possible it would be recommended that the ground floor (which is to be lower vulnerability uses) adopt a flood resilient approach to design (concrete floors, plus sockets a minimum of 300mm above existing ground levels etc). Such an approach would minimise the impact in the unlikely event of internal flooding from surface water flooding.

It is considered that both approaches suggested would ensure the proposals adopt a design for exceedance approach throughout the development design life.

4.0 Conclusions and summary of recommendations

This report has considered the flood risk posed to the proposal site from a variety of sources of flooding, as defined by the NPPF Technical Guide.

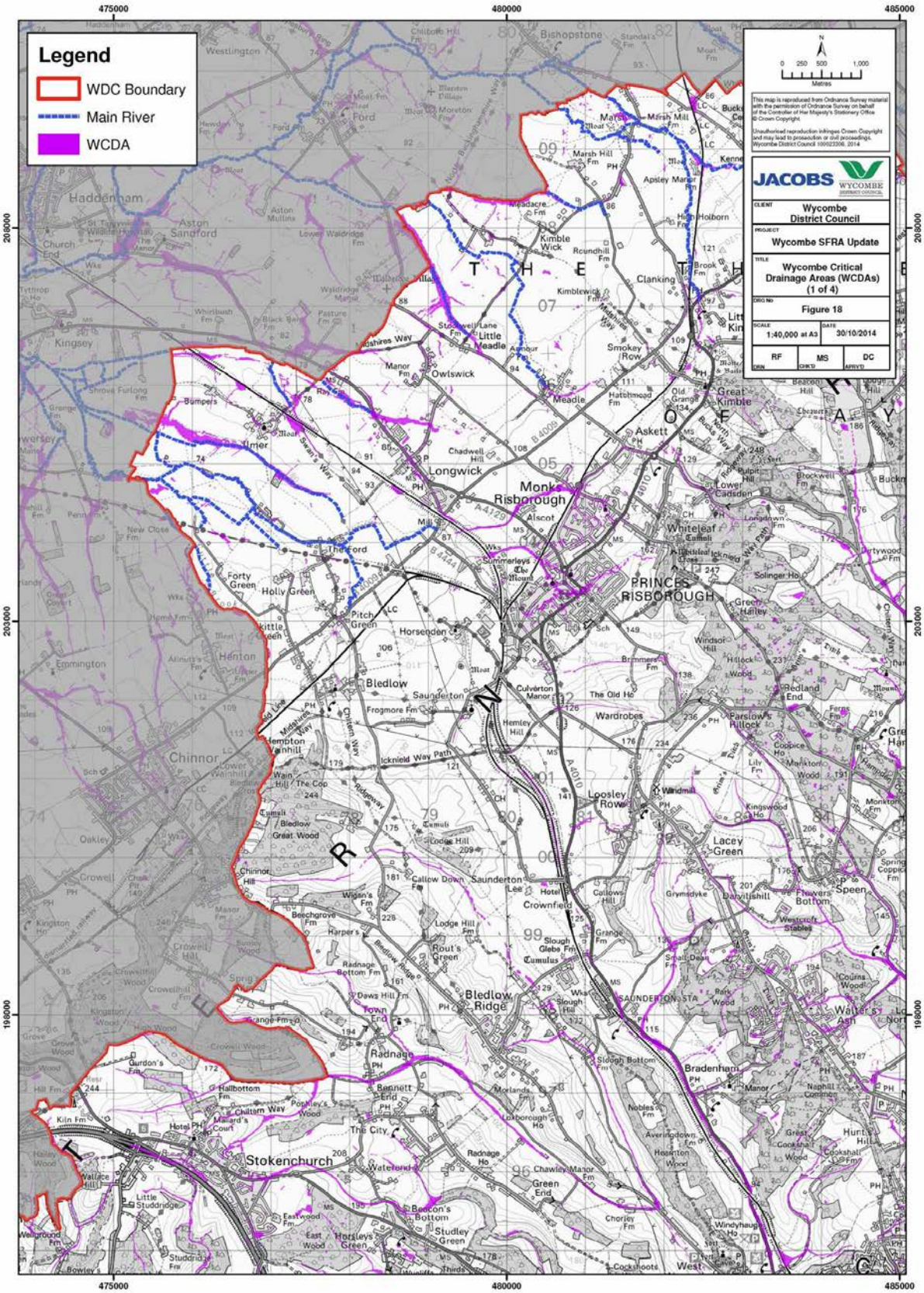
The EA and SFRA data show that the site is located entirely at low risk from both fluvial and tidal flooding and within Flood Zone 1. The site has also been concluded as being at low risk from all other sources of flooding.

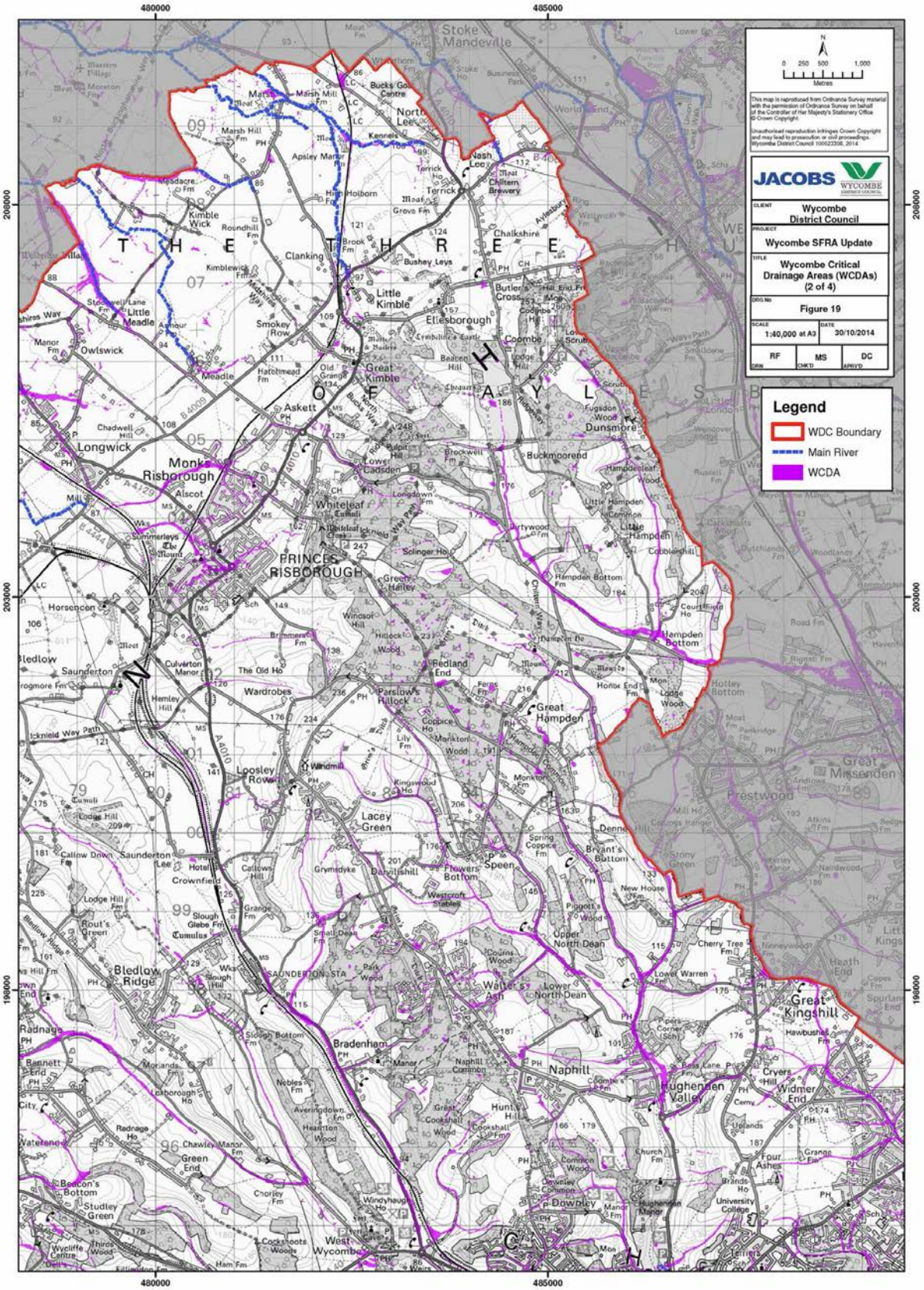
Given the identified nature of the subsoil and geology at the site and surrounding area, it is concluded that the risk from groundwater flooding would be low given the low possibility of perched water tables. As such the potential risk to groundwater levels/flow routes has been assumed as being nil.

Owing to the classification of the site as being located entirely within Flood Zone 1, the proposed development is considered to meet the requirements of the Sequential Test.

Whilst the site is located within an area classified as being at low risk from all assessed sources, it is recognised that New Road (to the west) is at an increased risk. As such, it is recommended that the proposals adopt a design for exceedance approach through either the setting of finished floor levels a minimum of 300mm and/or adopting a flood resilient approach to design on the ground floor. This could be achieved through use of demountable flood barriers, concrete floors, raising sensitive equipment (plug sockets etc).

Appendix A – Critical Drainage Areas




480000
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206000
203000
198000
THE THREE HAYLES
Stoke Mandeville
Bucks Gol Centre
North Lee
Marsh
Marsh Mill Fm
Marsh Hill Fm
Apsley Manor
Kennels
Nash Lee
Terrick
Chiltern Brewery
High Holborn
Grove Fm
Kimble Wick
Roundhill Fm
Clanking
Brook Fm
Chalkshire
Bushey Leys
Little Kimble
Butler's Cross
Ellesborough
Coombe
Smokey Row
Little Meadle
Owlswick
Meadle
Hatchmead Fm
Great Kimble
Askett
Longwick
Monks Risborough
Alscot
Chadwell Hill
Lowe Cadsden
Pulpit Hill
Brockwell Fm
Buckmoorend
Dunsmore
Fugadon Wood
Hampdenleaf Wood
Little Hampden Common
Little Hampden
Cobblershill
Whiteleaf Cumuli
Longdown Fm
Dirtywood Fm
PRINCES RISBOROUGH
Selinger Ho
Green Hailey
Hampden Bottom Fm
Horsenden
Windsor Hill
Hillock Wood
Brimmers Fm
Hampden Ho
Courtfield Ho
Hampden Bottom
Bledlow
Saunderton
Culverton Manor
The Old Ho
Pedland End
Wardrobes
Parslows Hillock
Horne End Fm
Lodge Wood
Hemley Hill
Great Hampden
Icknield Way Path
Coppice Ho
Lily Fm
Manktonn Wood
Loosley Row
Windmill
Monkton Fm
Kingswood Ho
Lacey Green
Great Missenden
Prestwood
Callow Down
Saunderton Lee
Hotel
Crownfield
Callows Hill
Grymmdyke
Dandylishill
Flowers Bottom
Speen
Spring Coppice Fm
Denne Hill
Bryant's Bottom
New House Fm
Westcroft Stables
Lodge Hill Fm
Rout's Green
Slough Glebe Fm
Tumulus
Grange Fm
Small Dean Fm
Upper North Dean
Cherry Tree Fm
Lower Warren
Bledlow Ridge
SAUNDERTON STA
Park Wood
Courns Wood
Walter's Ash
Lower North Dean
Great Kingshill
Radnage
Slough Bottom Fm
Bradenham
Naphill Common
Naphill
Hughenden Valley
Cryers Hill
Widmer End
Bannett End
Morands Fm
Nobles Fm
Averingdown Fm
Hunt's Hill
Great Cookshall Wood
Cookshall Fm
Heamton Wood
Lakborough Ho
Radnage Ho
Chawley Manor Fm
Green End
Common Wood
Church Fm
Four Ashes
Brands Ho
University College
Beacon's Bottom
Studley Green
Chorley Fm
Dowdeswell Common
Dowdeswell
Hughenden Manor
Windyhaugh
Cockshoots Woods
West Wycombe
Wycliffe Centre
Ham Fm
Legend
WDC Boundary
Main River
WCDA
JACOBS
WYCOMBE DISTRICT COUNCIL
CLIENT
Wycombe District Council
PROJECT
Wycombe SFRA Update
TITLE
Wycombe Critical Drainage Areas (WCDAs) (2 of 4)
DRG No
Figure 19
SCALE
1:40,000 at A3
DATE
30/10/2014
DRN
RF
CHK'D
MS
APRV'D
DC
0 250 500 1,000
Metres
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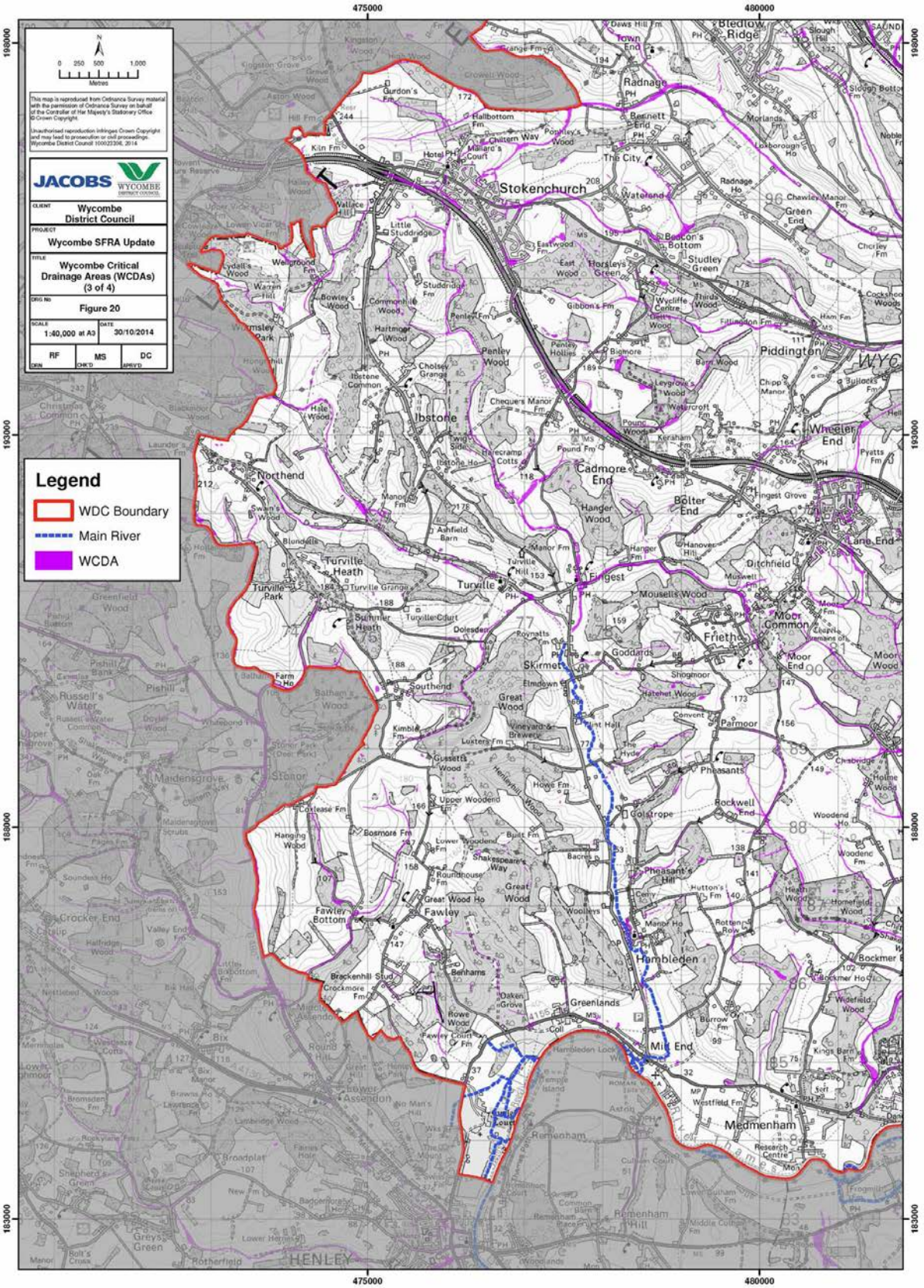
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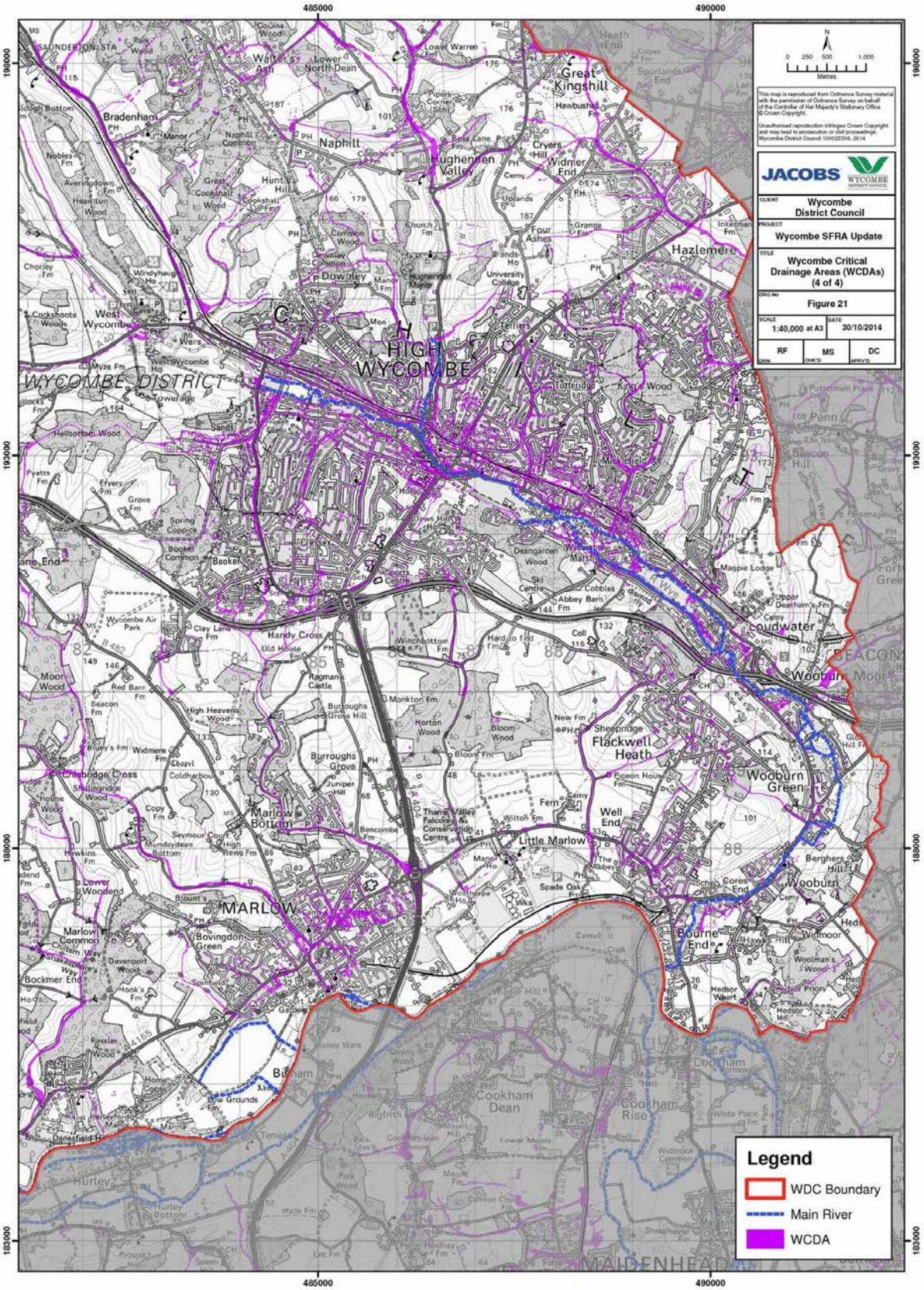
JACOBS
WYCOMBE DISTRICT COUNCIL
CLIENT
Wycombe District Council
PROJECT
Wycombe SFRA Update
TITLE
Wycombe Critical Drainage Areas (WCDAs) (3 of 4)
DRG No
Figure 20
SCALE
1:40,000 at A3
DATE
30/10/2014
RF
DRN
MS
CHK'D
DC
APRV'D
Legend
WDC Boundary
Main River
WCDA
Stokenchurch
Radnage
Bledlow Ridge
Piddington
Wheeler End
Ibstone
Northend
Cadmore End
Bolter End
Turville Heath
Turville
Fingest
Skirmett
Frieth
Moor Common
Hambleden
Mill End
Medmenham
Fawley
Fawley Bottom
Colstrope
Pheasants
Parmoor
Southend
Great Wood
Greenlands
Remenham
Remenham Hill
Lower Assendon
Bix
HENLEY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Wycombe District Council
PROJECT
Wycombe SFRA Update
TITLE
Wycombe Critical Drainage Areas (WCDAs) (4 of 4)
DRG No
Figure 21
SCALE
1:40,000 at A3
DATE
30/10/2014
RF
MS
DC
DRN
CHK'D
APRV'D
Legend
WDC Boundary
Main River
WCDA
HIGH WYCOMBE
WYCOMBE DISTRICT
MARLOW
Bourne End
Wooburn
Wooburn Green
Flackwell Heath
Little Marlow
Marlow Bottom
Loudwater
Hazlemere
Great Kingshill
Naphill
Hughenden Valley
Downley
West Wycombe
Bradenham
Cookham Dean
Cookham Rise
Bisham
Hurley
MAIDENHEAD

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