



- KEY:
- Site Boundary
  - Low Risk of Surface Water Flooding (1 in 1000)
  - Medium Risk of Surface Water Flooding (1 in 100)
  - High Risk of Surface Water Flooding (1 in 30)

A	29/11/19	GBB	FIRST ISSUE	DB	DB
REV	DATE	DRW	DESCRIPTION	CHK	APP

STATUS:  
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[www.wsp.com](http://www.wsp.com)

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Pigeon Hemel Hempstead Ltd

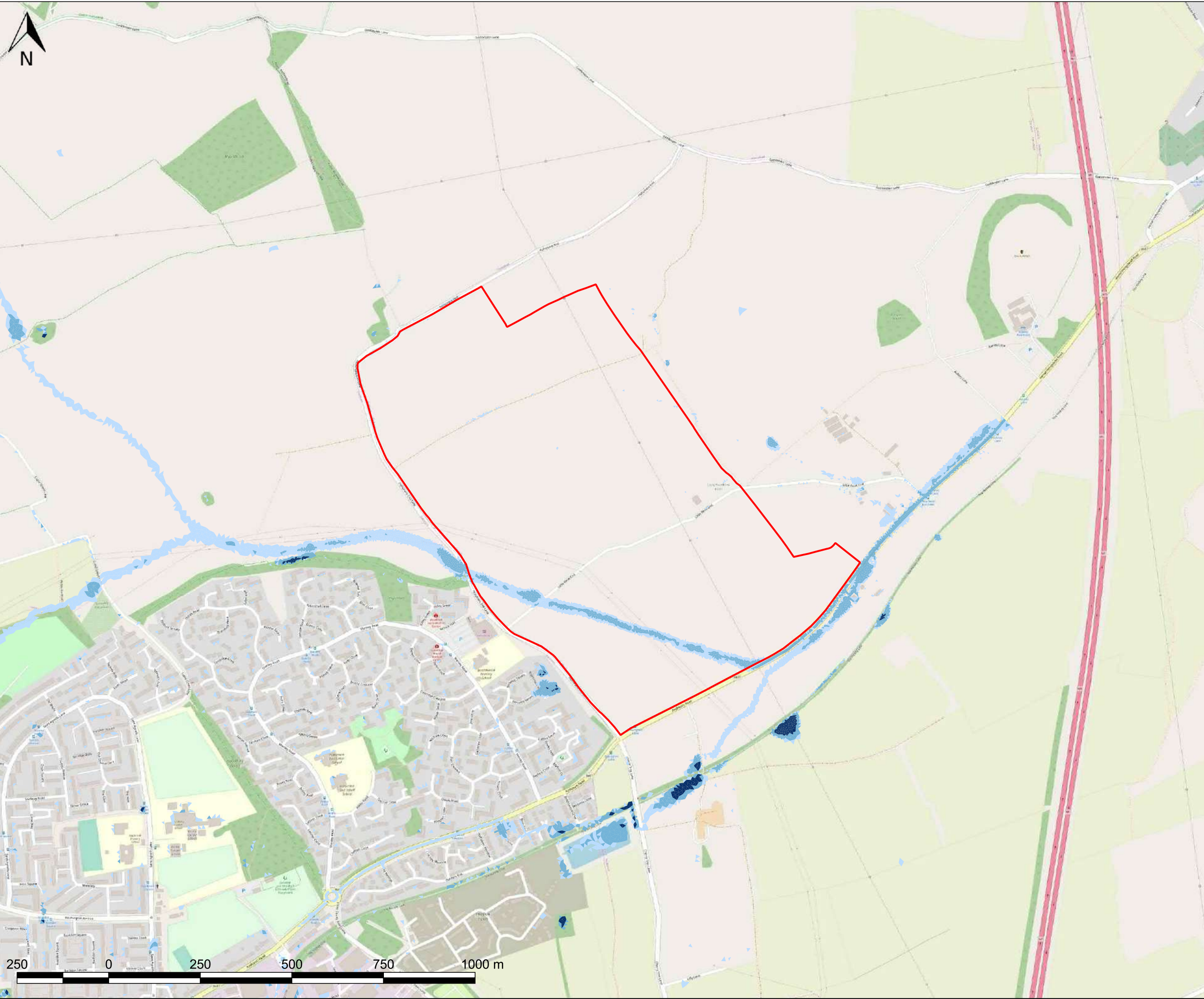
ARCHITECT:  
-

PROJECT:  
North Hemel Hempstead

TITLE:  
WSP Hydraulic Model Results  
Risk of Flooding from Surface Water

DRAWN: GBB	CHECKED: DB	APPROVED: DB
QGIS FILE: Hemel Hempstead GBB.qgs	SCALE @A3: 1:10000	DATE: 29/11/19
PROJECT No: 70061267	DRAWING No: 70061267-D-002	REV: A





KEY:

Site Boundary

1 in 100yr +40% Peak Depths

< 0.30mm

0.30mm - 0.90mm

> 0.90mm

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ARCHITECT:

-

PROJECT:

North Hemel Hempstead

TITLE:

WSP Hydraulic Model Results  
1 in 100 year + 40%  
Surface Water Peak Depths

DRAWN: GBB	CHECKED: DB	APPROVED: DB
QGIS FILE: Hemel Hempstead GBB.qgs	SCALE @A3: 1:10000	DATE: 29/11/19
PROJECT No: 70061267	DRAWING No: 70061267-D-003	REV: A





KEY:

- Site Boundary
- 1 in 100yr (baseline)
- 1 in 100yr 25% Cini
- 1 in 100yr 50% Cini

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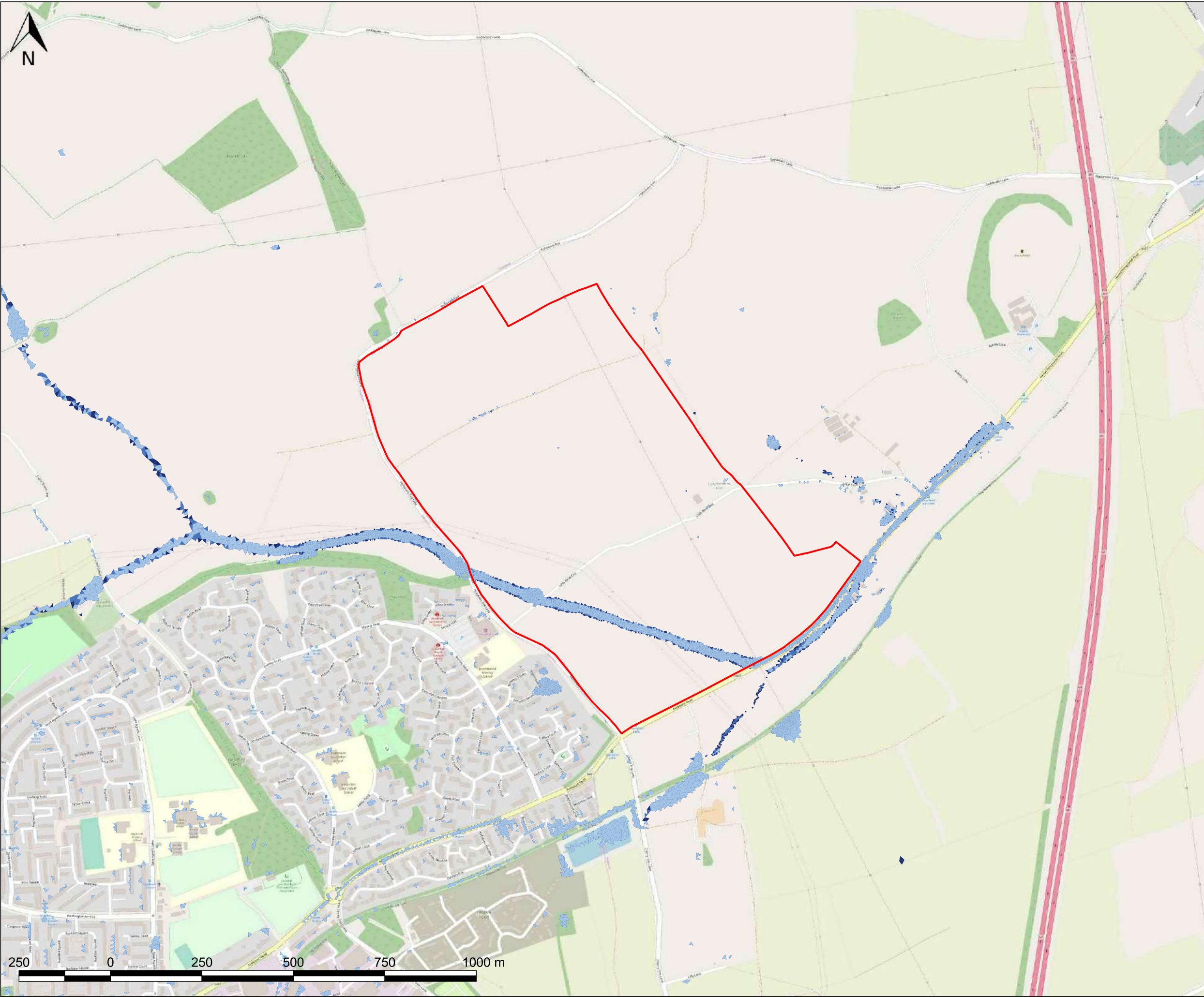
ARCHITECT:  
-

PROJECT:  
North Hemel Hempstead

TITLE:  
WSP Hydraulic Model Results  
1 in 100 year  
Cini Sensitivity Test

DRAWN: GBB	CHECKED: DB	APPROVED: DB
QGIS FILE: Hemel Hempstead GBB.qgs	SCALE @A3: 1:10000	DATE: 29/11/19
PROJECT No: 70061267	DRAWING No: 70061267-D-004	REV: A





**KEY:**

- Site Boundary
- 1 in 100yr Rural Roughness: 0.02
- 1 in 100yr Rural Roughness: 0.033 (baseline)
- 1 in 100yr Rural Roughness: 0.05

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REV	DATE	DRW	DESCRIPTION	CHK	APP

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CLIENT:  
**Pigeon Hemel Hempstead Ltd**

ARCHITECT:  
-

PROJECT:  
**North Hemel Hempstead**

TITLE:  
**WSP Hydraulic Model Results  
1 in 100 year  
Rural Roughness Sensitivity Test**

DRAWN: <b>GBB</b>	CHECKED: <b>DB</b>	APPROVED: <b>DB</b>
QGIS FILE: Hemel Hempstead GBB.qgs	SCALE @A3: <b>1:10000</b>	DATE: <b>29/11/19</b>
PROJECT No: <b>70061267</b>	DRAWING No: <b>70061267-D-005</b>	REV: <b>A</b>

# Appendix J

## GREENFIELD RUNOFF RATE CALCULATIONS



Calculated by:

Site name:

Site location:

## Site coordinates

Latitude:

Longitude:

This is an estimation of the greenfield runoff rate limits that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments", W5-074/A/TR1/1 rev. E (2012) and the SuDS Manual, C753 (Ciria, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Reference:

Date:

## Methodology

IH124

## Site characteristics

Total site area (ha)	1
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## Methodology

Qbar estimation method	Calculate from SPR and SAAR
SPR estimation method	Calculate from SOIL type

	Default	Edited
SOIL type	1	1
HOST class	---	---
SPR/SPRHOST	0.1	0.1

## Hydrological characteristics

	Default	Edited
SAAR (mm)	698	698
Hydrological region	6	6
Growth curve factor: 1 year	0.85	0.85
Growth curve factor: 30 year	2.3	2.3
Growth curve factor: 100 year	3.19	3.19

## Notes:

(1) Is  $Q_{BAR} < 2.0$  l/s/ha?

Normally limiting discharge rates which are less than 2.0 l/s/ha are set at 2.0 l/s/ha.

(2) Are flow rates  $< 5.0$  l/s?

Where flow rates are less than 5.0 l/s consents are usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set in which case blockage work must be addressed by using appropriate drainage elements

(3) Is  $SPR/SPRHOST \leq 0.3$ ?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite may be a requirement for disposal of surface water runoff.

## Greenfield runoff rates

	Default	Edited
Qbar (l/s)	0.17	0.17
1 in 1 year (l/s)	0.14	0.14
1 in 30 years (l/s)	0.39	0.39
1 in 100 years (l/s)	0.53	0.53

# Appendix K

## SURFACE WATER DRAINAGE STRATEGY

