

**LAND AT WINGS NURSERY, LIDSEY
ROAD, WOODGATE, CHICHESTER, WEST
SUSSEX PO20 3SU**

RESIDENTIAL DEVELOPMENT

Flood Risk Assessment

Incorporating Foul and Surface Water
Drainage Statement and Lidsey Foul Water
Environmental Assessment Statement

Prepared on Behalf of

ADM Architects

2017/D1382/FRA1.1

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DRAWINGS

SK100 Site Location Plan
SK101 Topographical Survey with Contours
SK200 Impermeable Areas Comparison
SK300 Drainage Strategy
SK301 Contours, Proposed Finished Floor Levels and Overland Flows

APPENDICIES

Appendix A Architects Layout GA
Appendix B Public Sewer Maps
Appendix C EA/LLFA Flood Risk
Appendix D Lidsey SWMP Extracts
Appendix E Historical Borehole Records
Appendix F Microdrainage/Run-off Calculations

1 INTRODUCTION

1.1 Background

- 1.1.1 RGP Design Ltd (RGP) is instructed by ADM Architects to prepare a Site-Specific Flood Risk Assessment (FRA) to support a planning application for a residential development in relation to the Land at Wings Nursery, Lidsey Road, Woodgate, Chichester, West Sussex PO20 3SU.
- 1.1.2 This FRA has been undertaken in accordance with Planning Practice Guidance: Flood Risk and Coastal Change (FRCC) and National Planning Policy Framework Section 10.
- 1.1.3 The proposed development will involve the construction of up to 55 new residential units at the above location, as shown on drawing **SK300**.
- 1.1.4 In preparing this report, RGP has made reference to the following documents and information:
- Environment Agency Flood Maps for Planning
 - Long Term Flood Risk Assessment Surface Water Flood Risk Maps
 - Long Term Flood Risk Assessment Reservoir Flood Risk Maps
 - Local Authorities Strategic Flood Risk Assessment
 - Southern Water and Local Authority Drainage Records
 - British Geological Survey & Records
- 1.1.5 This FRA has been prepared to assess if the proposed development is suitable for the site and confirms if mitigation is required to ensure that flood risk is not increased and that the proposed development remains safe during its design life.
- 1.1.6 This report has been prepared for the benefit of the named Client only.

1.2 Site Location and Description

- 1.2.1 The site totals 2.55Ha in size and covers land to the west of Lidsey Road (A29).
- 1.2.2 The site is located approximately 6.44km north of Bognor Regis, 10.94km east of Chichester, 26.07km west of Worthing and 40km east of Portsmouth. The site itself is currently largely an undeveloped greenfield location in a semi-rural/residential area. An area to the south-east of the site is currently occupied by a number of greenhouses with some areas of hardstanding.
- 1.2.3 The topography of the site is demonstrated as lying at approximately 9.51m to 8.19m AOD, generally falling from west to east, as shown on drawing **SK101**. This has been assessed via LiDAR information obtained as no topographical survey has yet been undertaken on site.

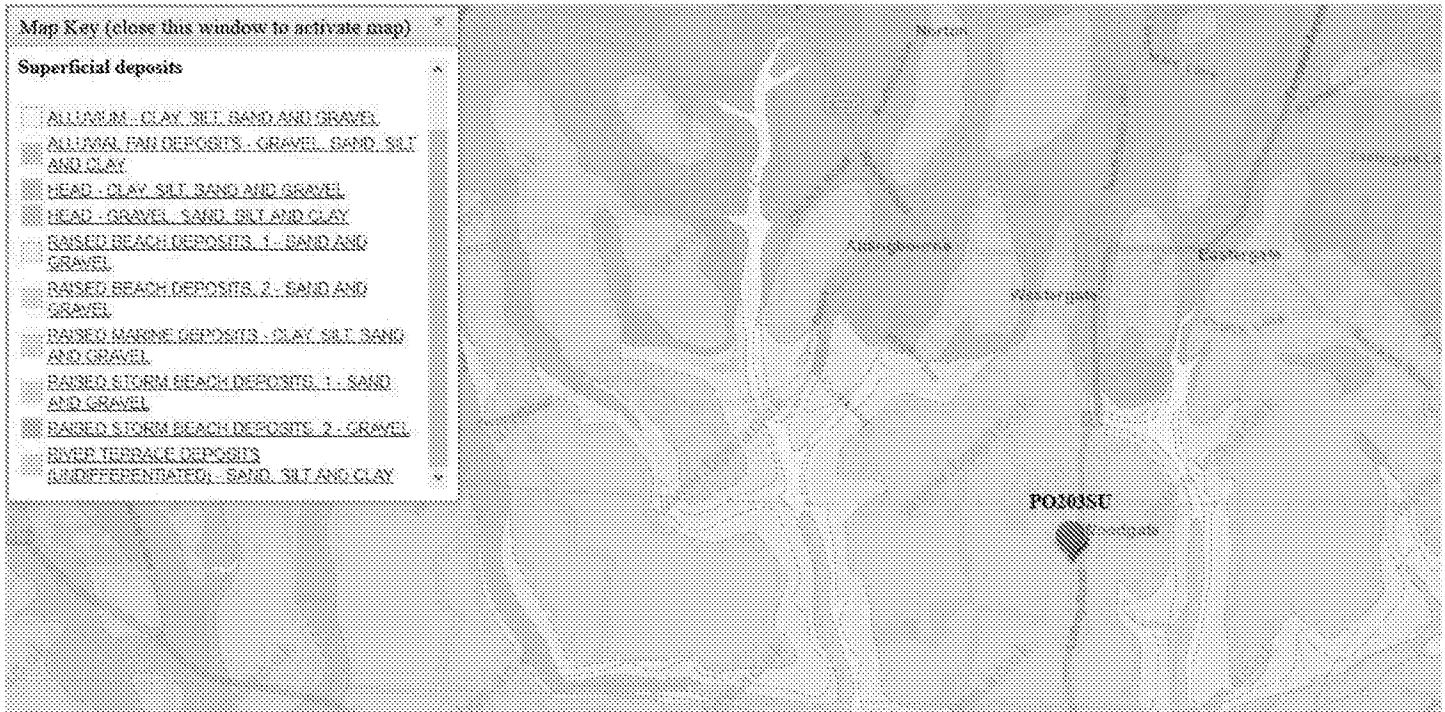
- 1.2.4 A watercourse is present to the east of site which stretches from the south-eastern corner up to the northern boundary of the site. Sections of this watercourse are culverted, including across the frontage of the existing 'Wings Nursery' building(s). It is believed that this watercourse diverts under Lidsey Road, to the east via an existing culvert. In addition to this watercourse, a further open watercourse runs along the western boundary of the site. Both watercourses are unnamed. It is believed the watercourse to the east of the site flows in a northerly direction, whilst the watercourse at the western boundary flows in a southerly direction.
- 1.2.5 The proposed development will involve the construction of 55 no. residential dwellings with associated hard standing for access and off-street parking and shown on drawing **SK300**, as well as in **Appendix A**.
- 1.2.6 The overall site area is 2.55Ha as shown on drawing **SK100**.
- 1.2.7 The existing impermeable area is 1,653m².

1.3 Ground Conditions

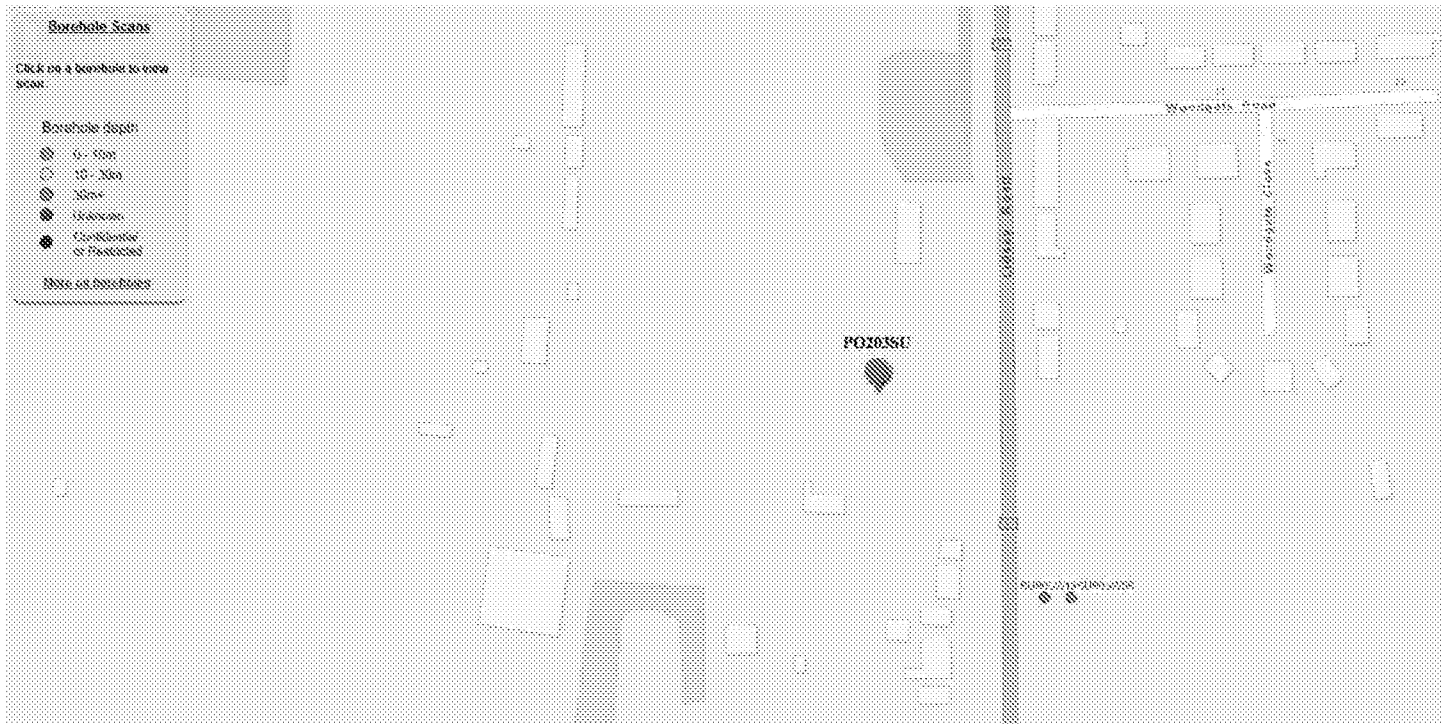
- 1.3.1 An intrusive geotechnical study has not been undertaken for the site, meaning precise infiltration testing results are not available. Furthermore, as a direct result it has not been possible to ascertain or determine the level of Groundwater, as Groundwater monitoring has not been conducted.
- 1.3.2 In view of 1.3.1, reference has instead been made to the British Geological Survey (BGS) website.
- 1.3.3 Bedrock geology is reported by the BGS as being 'London Clay Formation – Clay, Silt and Sand'.



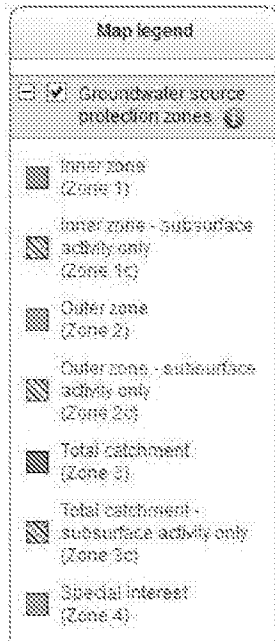
- 1.3.4 The composition of Superficial deposits is demonstrated as being variable. The data available on the BGS website suggests that Superficial deposits consist of 'Raised Beach Deposits 2 – Sand and Gravel', 'Raised Storm Beach Deposits 1 – Sand and Gravel', as well as 'River Terrace Deposits (Undifferentiated) – Sand, Silt and Clay'.



- 1.3.5 An historical borehole (SU90SW56) exists to the south-east of the site, on to the east of Lidsey Road (A29) at OS co-ordinates 493830E and 104000N, which extends to a depth of 156m bgl. Topsoil was recorded as being 0.50m thick, below which 'sandy brown clay', 'clay with stones' and 'bed of gravel' was experienced, to depths of up to 3m bgl. Below this level, 'London Clay Formation' was reported, consisting of 'sandy blue clay' was experienced to a depth of 12m, beneath which 'blue clay with bands of hard stone', 'bed of blue coloured clay', 'very hard black stone with pyrites' and 'blue clay with bands of stone' to depths up to 102m. 'Sandy green/brown clay', 'red mottled clay' and 'dark blue mottled clay', 'red mottled clay', 'red clay with bands of blue/green shale', 'red/blue mottled clay' and 'red clay mottled green and yellow' was recorded up to depths of 136m bgl, after which 'chalk and flints' were experienced for the remainder of the bore, to depths of 156m bgl.

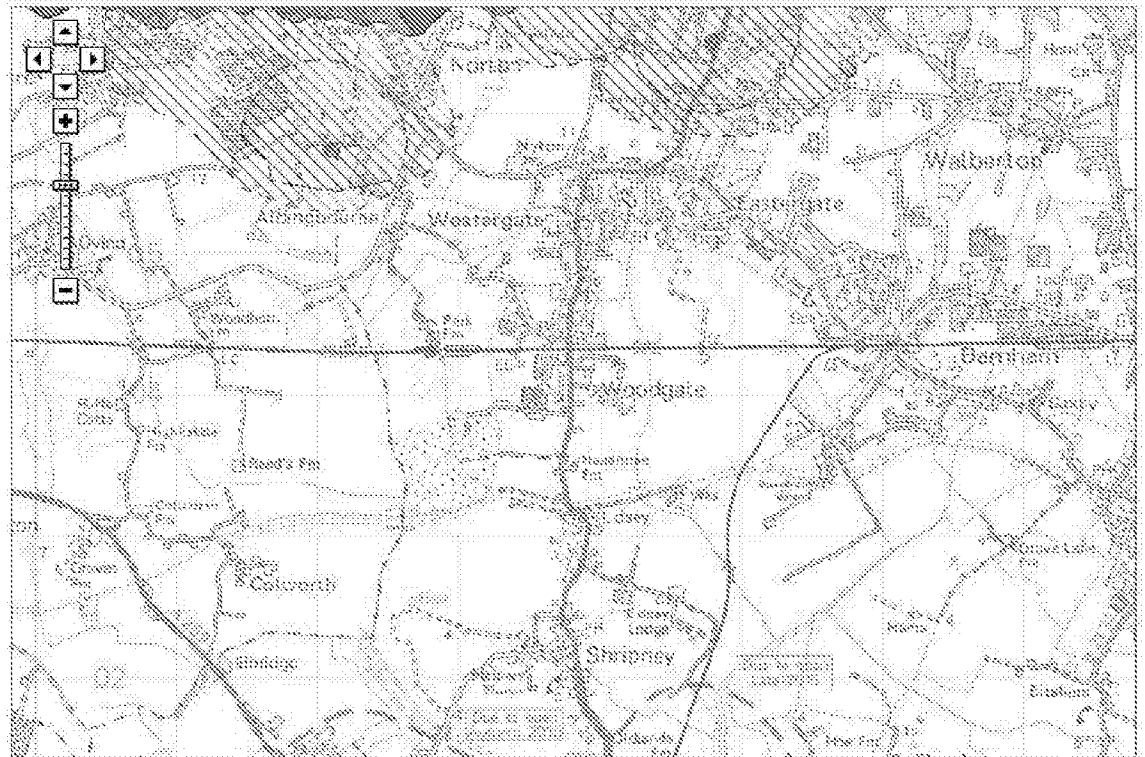


- 1.3.6 It was not possible to ascertain the level at which Groundwater was stuck in relation to this borehole, owing to the method of excavation employed (mud-flush rotary).
- 1.3.7 Information obtained from West Sussex County Council confirms that JBA groundwater mapping suggests groundwater could rise to within 0.025m bgl, meaning infiltration during high periods of groundwater unlikely.
- 1.3.8 Environment Agency Groundwater Mapping indicates that the site is not located nearby to Groundwater Source Protection Zones. The same mapping tool indicates that the site is classified as falling within a 'Minor Aquifer High' Groundwater Vulnerability Zone.



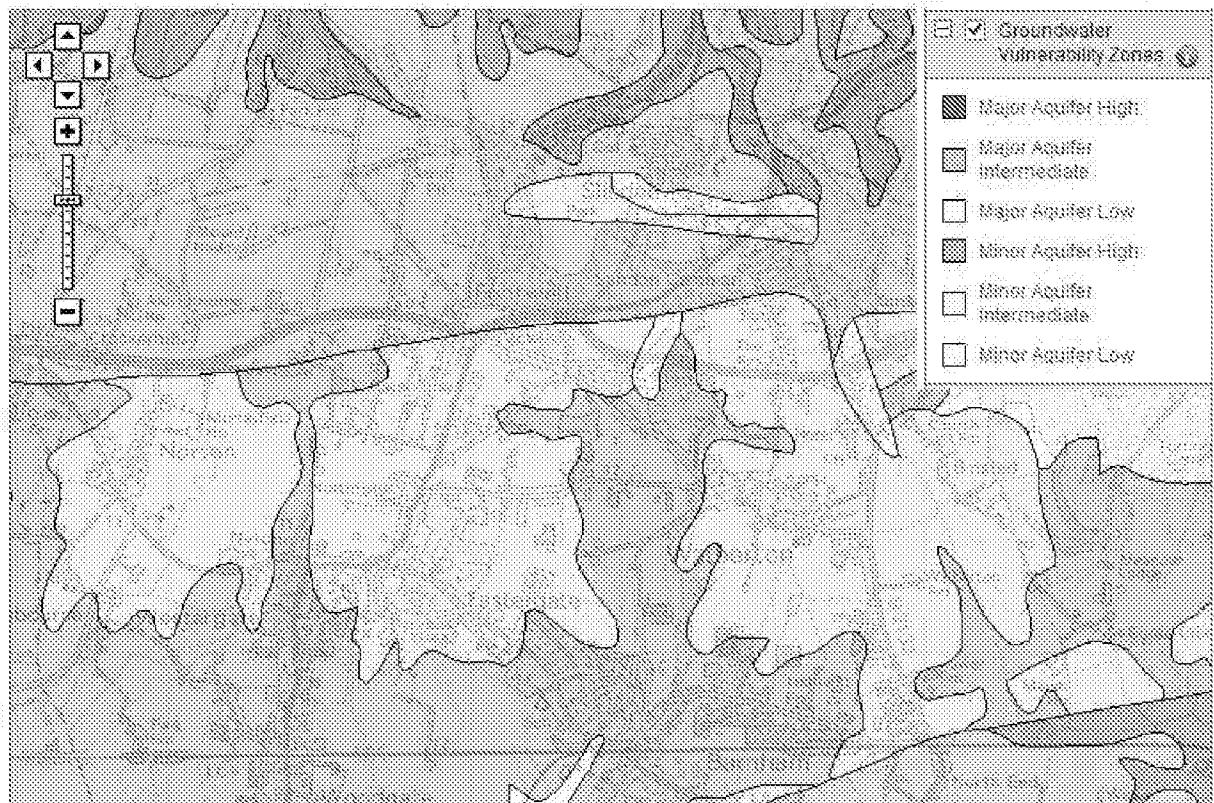
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Other maps ☒ Data search ☒ Text only version ☒



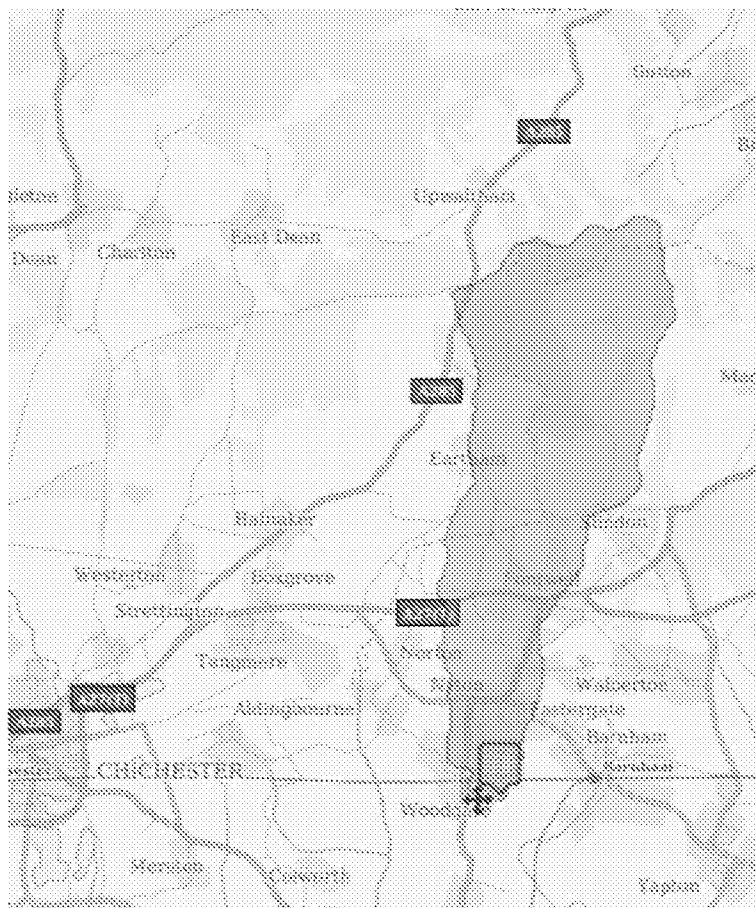
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Other maps ☒ Data search ☒ Text only version ☒



1.4 Existing Drainage

- 1.4.1 The site falls within the Lidsey Foul Water Treatment Catchment Area, as confirmed by Arun District Council and WSCC. This is recognised as being a sensitive area in terms of drainage for both foul and surface water. WSCC (as LLFA) alongside Southern Water, commissioned The Lidsey Surface Water Management Plan (SWMP) which largely covers the same area as the Lidsey Foul Water Treatment Catchment Area.
- 1.4.2 The existing drainage systems have been identified by reviewing OS mapping along with statutory records obtained from the local Water Authority, Southern Water. It has not been possible to refer to site specific topographical data as a topographical survey has not yet been commissioned in relation to the site.
- 1.4.3 Surface Water:
- The Southern Water public sewer records (**Appendix B**) demonstrate that there are no public surface water sewers located within the vicinity of the site.
 - It is believed that the site is drained partially by infiltration, whilst surface water is also discharged to the existing watercourse(s) located at the eastern and western boundaries of the site, via naturally occurring overland flow routes.
 - The Flood Estimation Handbook (FEH) website data confirms that the site does not fall directly within any significant catchment.



- Greenfield runoff rate (Qbar) has been calculated to be 9.7l/s (Q1=8.2l/s, Q30=22.0l/s and Q100 = 30.9l/s)
- The Greenfield run-off volume is calculated to be 645.559m³ (Based on FEH, SPR of 37.00%).

1.4.4 Foul Water:

- The Southern Water public sewer records (**Appendix B**) show that there are existing public foul water sewers located within the confines of the site. A 150mm dia. public foul water sewer is located at the southern boundary of the site, flowing in an easterly direction. The sewer then diverts and heads in a northerly direction before leaving the confines of the site, exiting at the eastern boundary and running down the centre of Woodgate Road to the east of the site.

It is understood that the site does not have any existing connections to the public foul water sewers stated in 1.4.4.

1.4.5 Highway Drainage:

- There is existing positive drainage infrastructure which currently serves Lidsey Road. Road gullies exist along Lidsey Road and connect to a piped highway drainage system, the outfall of which has been confirmed by WSCC as being to the south of the site. In addition to this, WSCC have also confirmed that, at present, no future improvements are currently planned in relation to the existing infrastructure.

2 PROBABILITY

2.1 Sources of Information

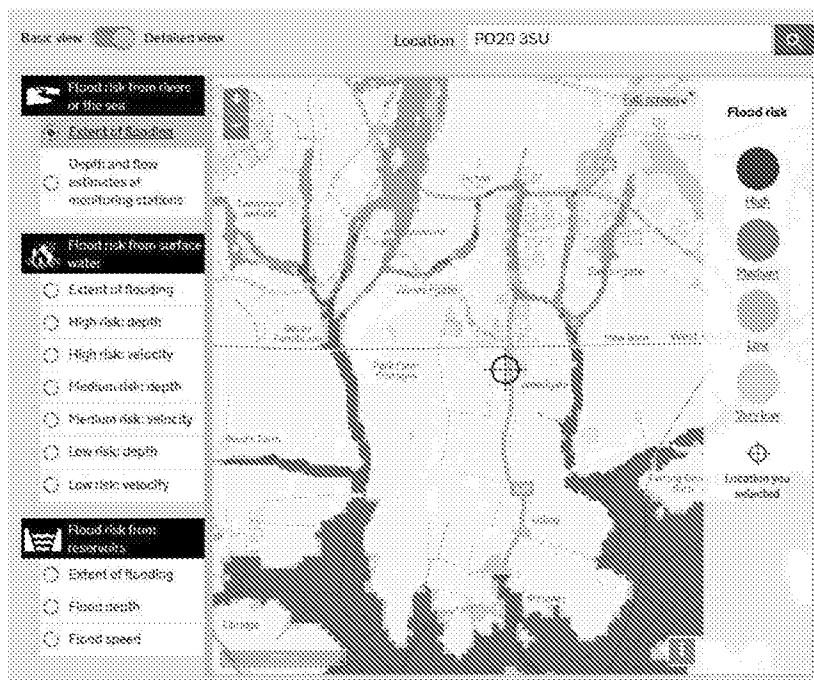
2.1.1 The NPPF requires that all sources of flooding are considered being Tidal, Fluvial, Pluvial, Groundwater, Sewers and Man-made reservoirs/canals.

2.1.2 The likelihood of the site flooding has been established by reviewing the following information:

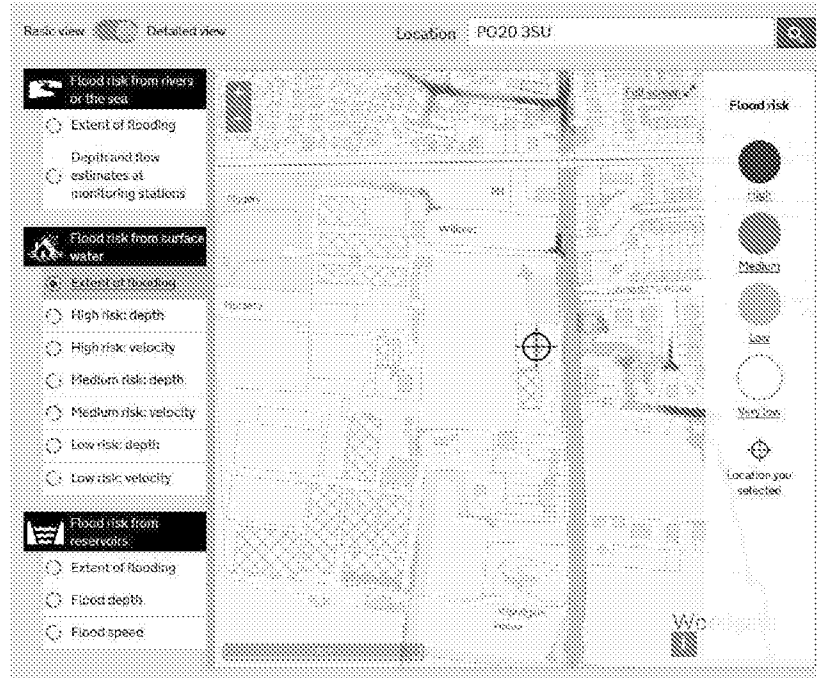
- Environment Agency Flood Maps for Planning
- Long Term Flood Risk Assessment Surface Water Flood Risk Maps
- Long Term Flood Risk Assessment Reservoir Flood Risk Maps
- Local Authorities Strategic Flood Risk Assessment
- Consultation with Local Authority/Lead Local Flood Authority

2.2 Flood Maps and Modelling

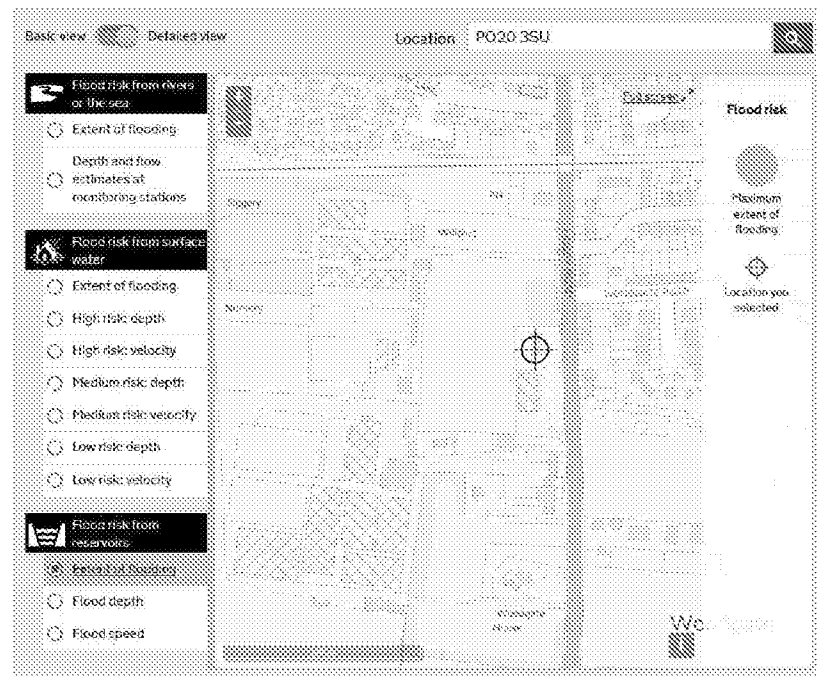
2.2.1 The Environment Agency's on-line Flood Maps for Planning (rivers and sea) show that the site is located fully within flood zone 1, as demonstrated below. This is also confirmed by information and mapping obtained from The Environment Agency, which is consist within other flood risk mapping reviewed.



- 2.2.2 The Long-Term Flood Risk Map for Surface Water show that the site is largely at very low risk of flooding. Small areas to the north-eastern corner of the site are illustrated as being susceptible to low risk of surface water flooding, whilst a small area to the south-western corner of the site is also shown to be susceptible to low risk of surface water flooding. This information is consistent with that provided by WSCC.



- 2.2.3 The Flood Maps for Reservoirs (gov.uk) show that the site is not at risk from this source.



- 2.2.4 The Lidsey Surface Water Management Plan refers to the fact that flooding from sewers has occurred in the past, nearby to the site – specifically in Oak Tree Lane.

- 2.2.5 There are no known artificial sources in the area.

2.3 Strategic Flood Risk Assessment

- 2.3.1 The site falls within the boundaries of West Sussex County Council (WSSC) and Arun District Council (ADC).
- 2.3.2 WSSC has published a Strategic Flood Risk Assessment, dated January 2010. In addition to this, WSSC has also published a Local Flood Risk Management Strategy (May 2014). Flood mapping and information obtained therein is consistent with other flood maps reviewed and detailed within this report. The site is not specifically referenced within the report, although the Lidsey Waste Water Catchment Area is referred to as part of the Surface Water Management Plan (SWMP).

2.4 Historic Flooding

- 2.4.1 The SFRA, Local Authorities & The Environment Agency have all confirmed that they are not aware of any historical flooding within the confines of the site. WSSC have advised, however that this may not mean that flooding has not occurred, simply it has not been reported to the LLFA. It has been confirmed that Lidsey Road has experienced instances of flooding historically, along with Oak Tree Lane, to the north-east of the site. The last reported incident was recorded in 2012, as detailed within the Lidsey SWMP (**Appendix D**).

2.5 Summary of Flood Risk

- 2.5.1 The potential sources of flooding are:

Source of Flooding	Level of Risk
Rivers and Watercourses	Low
The Sea	Low
Surface water	Low
Groundwater	Medium/High
Sewers (*)	High
Artificial Sources	None

3 PROPOSED DEVELOPMENT

3.1 Description of Development

3.1.1 The proposed development will involve the construction of 55 no. dwellings as demonstrated within **Appendix A**.

3.1.2 The type of development falls within the More Vulnerable classification (Flood Risk and Costal Change Table 2) and is compatible with Flood Zones 1 and 2 (Flood Risk and Costal Change Table 3).

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	x	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	x	x	x	✓*

3.1.3 The proposed development encompasses land which is currently an un-developed greenfield site with a low amount of existing impermeable areas (approximately 1,653m²/0.1Ha). The proposed development involves the creation of new impermeable areas and will therefore increase the rate or volume of run-off generated by the site. The post-development impermeable area(s) has been determined to be in the region of 11,325m² (1.13Ha).

3.1.4 The increase in impermeable area will result in an increase in surface water run-off, which will be mitigated through the use of SuDS methods and techniques (where conditions and constraints allow) within the bounds of the site. Subject to confirmation of infiltration testing, it is proposed to employ infiltration techniques to deal with the increase in surface water run-off. Further to this, additional surface water could be discharged to the existing watercourse(s) at a restricted rate as so not to exacerbate existing flow rates, to ensure that the development does not increase the risk of flooding both on and off of the site.

3.1.5 The proposed site layout is shown on drawing Site Plan_280917 (**Appendix A**) prepared by ADM Architects.

4 PROPOSED DRAINAGE STRATEGY

4.1 Surface Water

- 4.1.1 The SUDS manual and Building Regulations set out a hierarchy of drainage methods to ensure that developments maximise the use of sustainable drainage techniques. The hierarchy favours infiltration methods of disposal over other methods such as watercourse and sewers.

SUDS Technique	Suitable	Comments
Living Roof	Yes	No initial constraints but may not be suitable due to structural load and maintainability
Basins and Ponds		
- Constructed Wetlands	Yes	No current constraints exist limiting the use of such measures, although anticipated 'land take' should be considered.
- Balancing Ponds	Yes	
- Detention Basins	Yes	
- Retention Ponds	Yes	
Filter strips and swales	Yes	There are no current constraints which would limit the use of such techniques
Infiltration Devices		
- Soakaways	Yes	Infiltration rates have not yet been confirmed, however records held by the BGS along with JBA groundwater mapping suggest that infiltration may not be feasible
- Infiltration trenches and basins	Yes	
Permeable surfaces and filter drains		
- Gravelled areas	Yes	Infiltration rates have not yet been, however records held by the BGS along with JBA groundwater mapping suggests infiltration may not be feasible. Porous paving could be implemented however to provide unsaturated storage.
- Solid paving blocks	Yes	
Porous paviers	Yes	
Tanked systems		
Oversized pipes	Yes	These techniques could be utilised with an outfall to the existing watercourse.
Cellular tanks	Yes	

- 4.1.2 Owing to the fact a site-specific intrusive geotechnical investigation has not yet been undertaken, it has not been possible to confirm precise infiltration rates. Information obtained through the BGS suggests that underlying ground conditions may not be suited to utilising infiltration as a means of dealing with surface water run-off. This should be confirmed by an intrusive geotechnical investigation, however. JBA groundwater mapping also suggests that potentially high levels of groundwater may also dictate that infiltration techniques may not be feasible in terms of dealing with surface water run-off generated by the site.
- 4.1.3 As it has been established, there are no public surface water sewers located within the vicinity of the site to which a connection could be made in order to discharge surface water run-off to from the site.
- 4.1.4 In view of 4.1.2 and 4.1.3, it is proposed to use tanked permeable paving across the site, discharging to the watercourse(s) to the east of the site at a controlled rate of 5l/s to cater for an increase in surface water run-off following development. This will ensure that all surface water is drained via sustainable drainage methods outlined within the SuDS manual as well as Building Regulations, which both seek to maximise the use of sustainable drainage techniques.
- 4.1.5 The watercourses will be re-profiled and re-graded to provide an overall betterment in view of existing conditions.
- 4.1.6 The strategy above will ensure that there is no increase in the rate of run-off leaving the site, therefore no increase in the risk of flooding from this source.

4.2 Treatment

- 4.2.1 The use of permeable paving will ensure that the run-off from the road receives a level of treatment that meets the requirement of the SuDS Manual due to naturally occurring microbes digesting Hydrocarbons entering the system and the filtration effects of the aggregates and geotextiles.
- 4.2.2 Impermeable hard stand areas will be drained by trapped road gullies and/or channel with a sump providing a basic level of treatment by collecting silts and oil pollutants. Catchpits will also be provided to collect silts and oil pollutants.
- 4.2.3 It is also proposed to utilise swales across the site, which in turn will provide an additional level of treatment.
- 4.2.4 The CIRIA SuDS Manual C753 outlines three categories of pollution hazard identification for the various types of land use as follows:
- Total Suspended Solids (TSS).
 - Metals (M).
 - Hydrocarbons (H).
- 4.2.5 In accordance with C753 table 26.2 the proposed land uses at the site are categorised as follows:
- Residential Roofs - very low/TSS-0.2/M-0.2/H-0.05.
 - For other impermeable surfaces - low/TSS-0.5/M-0.4/H-0.4.

- 4.2.6 In accordance with C753 table 26.3 to establish whether a proposed surface water management technique can provide sufficient treatment for runoff, the values are compared. If the treatment score for each pollutant category is higher than the pollution score then the chosen technique is sufficient. If a single technique is not judged to provide enough treatment then other techniques can be added to the system.
- 4.2.7 The treatment afforded by the proposed outline surface water management strategy has been assessed based on the following components:

- Permeable pavement – TSS-0.7/M-0.6/H-0.7

- 4.2.8 In conclusion, permeable pavement can be considered to provide sufficient treatment.

4.3 Foul Water Drainage

- 4.3.1 It is proposed to connect the development to the existing foul water sewer(s) located within proximity of the site. Confirmation of levels will be required, as well as the ability for the existing foul sewers to cope with the increased capacity.
- 4.3.2 In view of the number of units proposed as per this development, a feasibility study has been instructed with Southern Water to establish the feasibility of connecting to the existing public foul water sewer network and whether sufficient capacity and capability is available.
- 4.3.3 Based on the residual design guidance provided in Sewers for Adoption, the proposed foul flow will be 2.55l/s (based on 4,000 l/day Sewers for Adoption 7th Edition), subject to confirmation by Southern Water, further to feasibility study.
- 4.3.4 As the site falls within the Lidsey Foul Water Treatment Catchment Area, as stated in 4.3.2, a feasibility study has been instructed with Southern Water to determine whether sufficient capacity is available within the existing public foul water sewerage network to support the development. Any obligations required either on or off site whereby improvements are required to facilitate the development will be adhered to. Surface water run-off will be stored within the confines of the site and released at a controlled rate to the existing watercourse(s), mitigating potential surface water ingress into the existing foul water sewers. In turn, this will offer an improvement to the current situation and circumstances, whilst safe-guarding the existing public foul water sewer(s).

4.4 Climate Change

- 4.4.1 NPPF sets out percentage increases to be applied to the peak rainfall intensity values used in the design of a surface water drainage system to allow for the effects of climate change.
- 4.4.2 In accordance with NPPF 'climate change allowances' update 12th April 2016, an increase of 20% should be applied for this development and a review should be undertaken to determine the impact of an increase of 40%.
- 4.4.3 The proposed development involves the creation of additional impermeable areas; therefore, rainfall increases need to be incorporated into the existing surface water drainage regime.
- 4.4.4 The available long-term flood maps suggest that the effects of climate change will not increase the 'predicted' fluvial flood zone expanse in the future. Whilst the extent of the site at risk of flooding is predicted to increase for 100 years lifetime, this is not as a result of the minor development proposals, i.e. this will occur to all properties in this location unless further mitigation works are implemented.

5 RESIDUAL RISK AND MITIGATION

5.1 Residual Risk

- 5.1.1 Residual risks have been identified in relation to the proposed development site in the form of the possible presence of high levels of groundwater, as well as potential flooding from sewers, as has been experienced in the past.

5.2 Mitigation

- 5.2.1 A site-specific geotechnical investigation should be conducted to ascertain accurate levels of groundwater.
- 5.2.2 Finished floor levels should be set at a level whereby the property is elevated above the level of supposed risk, if located within areas of a greater risk of flooding from any source. In addition to this, overland flow routes should be directed away from any proposed new dwellings to further mitigate any potential risk of flooding.
- 5.2.3 Although WSCC data advised potential groundwater emergence is high, there have been no historic occurrences which have directly affected the site. Finished floor levels and road corridor levels have been raised to mitigate potentially high levels of groundwater, whilst also providing an unsaturated zone for surface water storage.
- 5.2.4 The existing watercourse(s) could also be improved as part of the overall development of the site, with the possibility of re-profiling and re-grading the banks a realistic option and opportunity.

6 SEQUENTIAL AND EXCEPTION TESTS

6.1 Sequential Test

- 6.1.1 The site is in Flood Zone 1 and is at the lowest risk of flooding. In view of this, the application of the sequential test is not required.

6.2 Exception Test

- 6.2.1 Table 3 within Paragraph 067 of Flood Risk and Coastal Change confirms that developments classified as "More Vulnerable" are suitable for Zones 1 & 2. The proposed development is in flood zone 1 and therefore an exception test is not required.

7 FLOOD RISK MANAGEMENT

7.1 Safe Access and Egress

- 7.1.1 The proposed development falls entirely within Flood Zone 1 and is expected to remain in that zone throughout its design life.
- 7.1.2 The site is confirmed as being at low risk of surface water flooding and, in view of such, the risk of access and egress being affected by flooding is low.

7.2 Flood Warning

- 7.2.1 The site is at low risk of flooding therefore there is no requirement for a Flood Plan or warning system to be implemented.

7.3 Maintenance

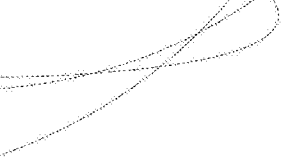
- 7.3.1 Maintenance plays an important part in the long-term performance of a surface water drainage system and will be required to ensure that it remains fully operational.
- 7.3.2 The traditional parts (inspection chambers, pipes, gullies etc.) of any proposed surface water drainage system will need a minimal amount of maintenance similar to other traditional systems.
- 7.3.3 Any SuDS devices employed will require slightly more maintenance focusing on reducing the amount of silt that is allowed to enter the system. Upstream catchpits and gully sumps will need to be regularly emptied of silt.
- 7.3.4 It is important to ensure that any porous paved areas are properly maintained in accordance with the manufacturers recommendations which may include:
- Periodic surface sweeping to reduce silt and debris accumulation.
 - Periodic silt removal from porous paved construction.
 - Redressing the joints on the block paved surface as required.
- 7.3.5 It is recommended that a simple maintenance strategy is prepared by monitoring the proposed drainage system over a specific duration to establish the rate at which silt builds up, which can then inform a programme of regular works.
- 7.3.6 If the site is to continue to rely on the existing watercourse network to convey surface water run-off it is important to remember that the riparian owner of a watercourse is responsible for its maintenance. This is likely to include ensuring all branches of the watercourse are free flowing and de-silted at periodic intervals. Failure to do so could result in an increased risk of flooding upstream and/or downstream of the site.

8 OFFSITE IMPACTS

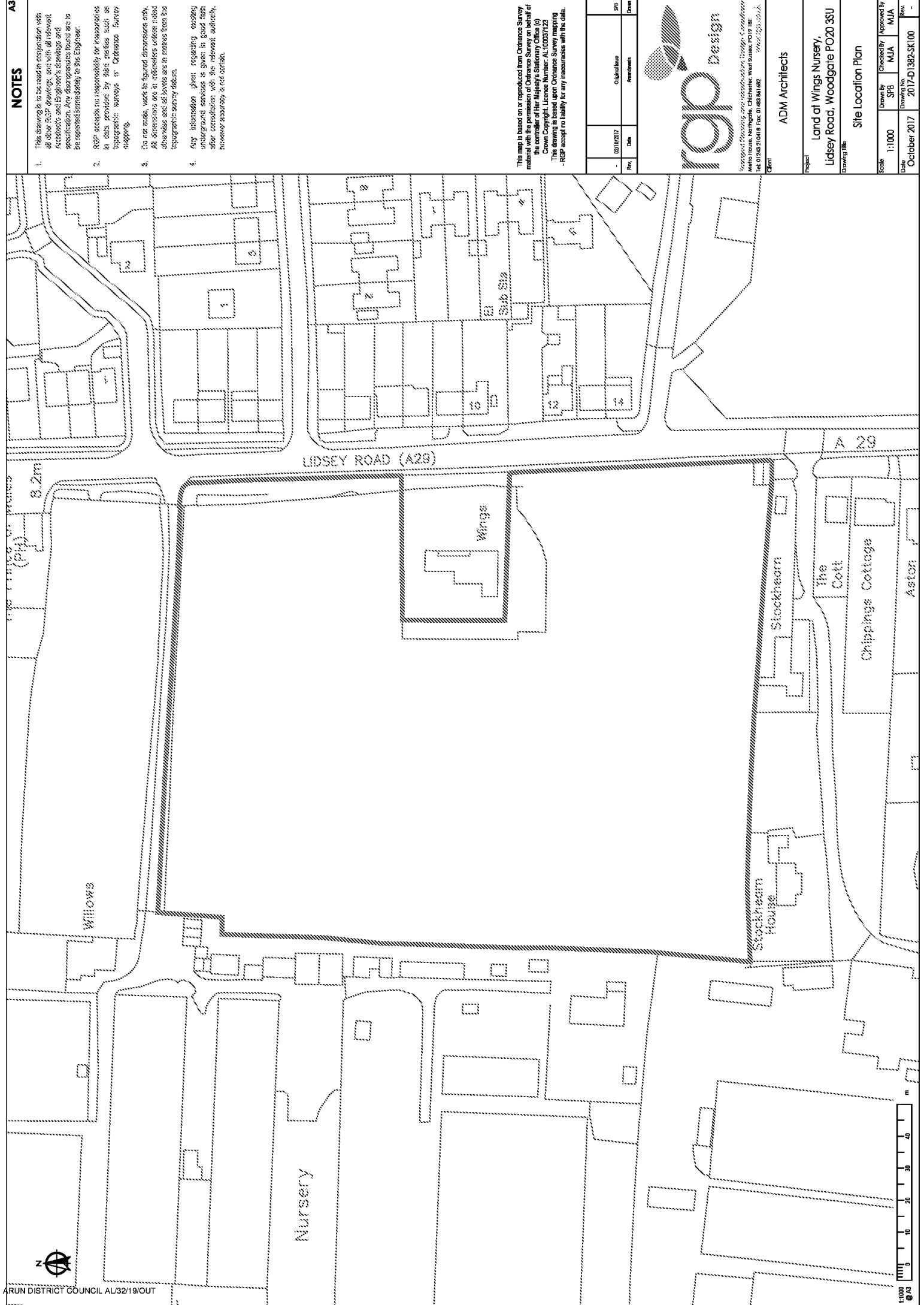
- 8.1.1 The proposed development will not have an impact on flooding issues off-site.
- 8.1.2 The effects of climate change should be considered in the design of the proposed surface water drainage system, to ensure there is no off-site impact.

9 SUMMARY

- 9.1.1 This site-specific flood risk assessment is based on Flood Maps, the Local Authority's Strategic Flood Risk Assessment and Public Sewer Records.
- 9.1.2 The site is currently an undeveloped greenfield site with existing hardstanding areas totalling in the region of 1,653m².
- 9.1.3 The site is located approximately 6.44km north of Bognor Regis, 10.94km east of Chichester, 26.07km west of Worthing and 40km east of Portsmouth. The site itself is currently largely an undeveloped greenfield location in a semi-rural/residential area. An area to the south-east of the site is currently occupied by a number of greenhouses with some areas of hardstanding
- 9.1.4 The development lies within Flood Zone 1 and it is expected to remain unchanged for the duration of the development's life expectancy.
- 9.1.5 The run-off from the site is believed to follow existing overland flow routes discharging to the existing watercourse located within the bounds of the site, as well as by infiltration.
- 9.1.6 Post-development surface water run-off will be managed through sustainable means; through the use of infiltration (porous paving) as well via controlled outfalls to the existing watercourses as so not to worsen the existing situation either on or off of the site.
- 9.1.7 The wastewater from the proposed development will outfall to the existing public foul water sewer located within close proximity of the site, subject to confirmation of available capacity.
- 9.1.8 The site falls within the bounds of the Lidsey Foul Water Treatment Catchment Area, as confirmed by ADC/WSCC. The proposed foul and surface water drainage strategies will bear no negative impact(s) upon this, instead offering improvement/betterment.
- 9.1.9 Following completion of the development the flood risk both on and off the site will remain unchanged.
- 9.1.10 The nature of the development does not permit the sequential test to be applied but this FRA shows that the elements of the Exception test can be passed.
- 9.1.11 In conclusion, from a flood risk point of view the proposed development is suitable.



DRAWINGS



NOTES

1. This drawing is to be read in conjunction with all other RSP drawings, and with all relevant Architect's and Engineer's drawings and specifications. Any discrepancies found are to be reported immediately to the Engineer.
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Rev.	Date	Original Issue	Revised	Drawn
1	02/10/2017			



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Client	ADM Architects
Project	Land at Wings Nursery, Lidsey Road, Woodgate PO20 3SU
Drawing title	Site Location Plan
Scale	1:1000
Drawn by	JFB
Checked by	MJA
Approved by	MJA
Date	October 2017
Drawing No.	2017-D-1392-SK100
Rev.	-

NOTES

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Rev	Date	Original Issue	Drawn
-	14/10/2017	Approved	Drawn



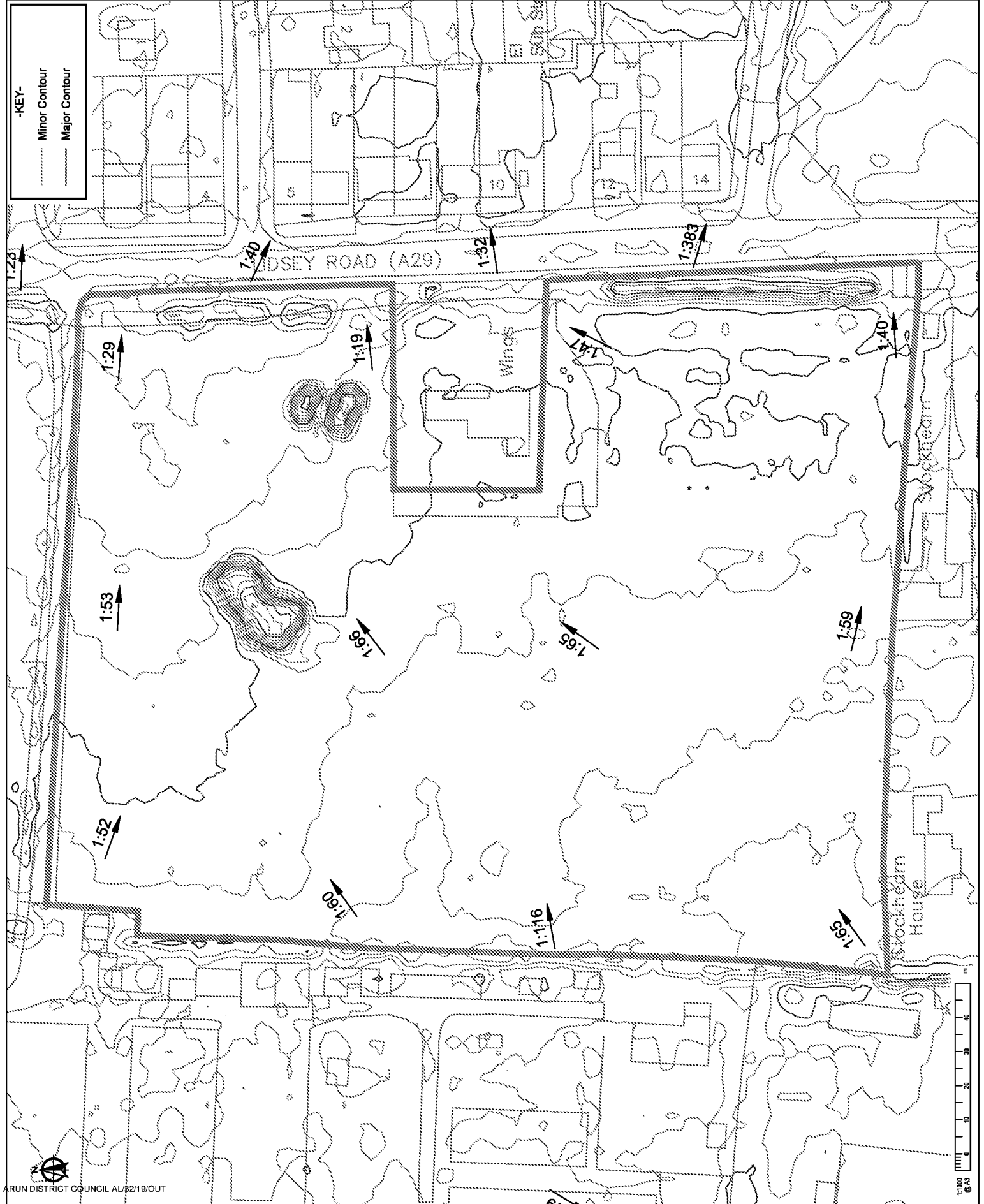
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Client

Project	ADM Architects
Land at Wings Nursery, Lidsey Road, Woodgate PO20 3SU	
Drawing title	Existing LIDAR Contours
Scale	1:750
Drawn by	JFB
Checked by	MJA
Approved by	MJA
Date	October 2017
Drawing No.	2017-01392-SK101
Rev.	-

-KEY-
Minor Contour
Major Contour



NOTES

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Rev	Date	Original Issue	Drawn
-	14/10/2017	As per drawings	ADM

Client

ADM Architects

Project

Land at Wings Nursery,
Lidsey Road, Woodgate PO20 3SU

Drawing title

Impermeable Areas Comparison

Scale 1:1000

Date October 2017

Rev -

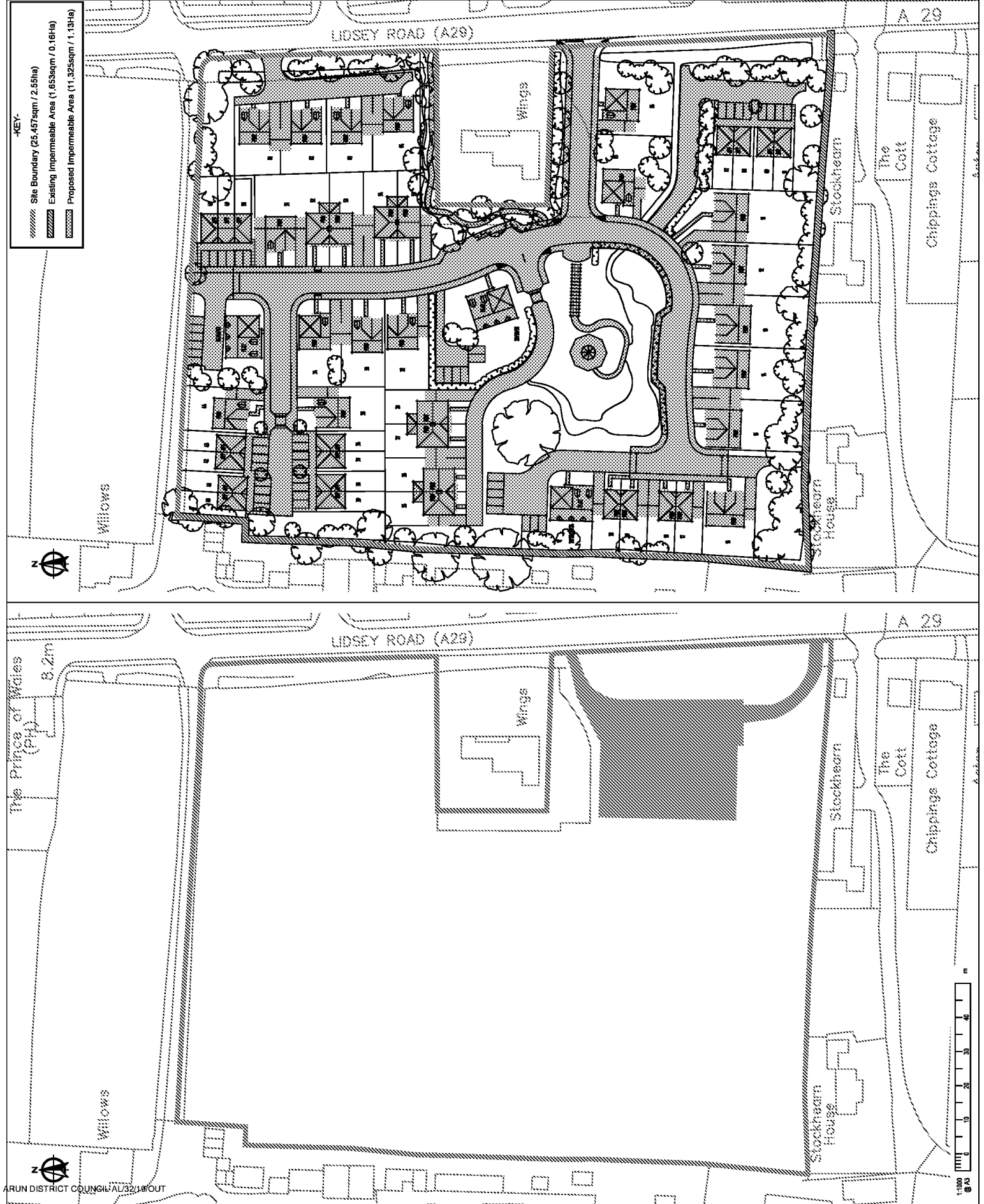
Drawn by JFB

Checked by MUA

Approved by MUA

Drawing No. 2017-01392-SK200

Rev -



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Rev	Date	Amendments	Drawn
A	22/11/2017	Requirements relating to buffer zone updated	SP
B	23/10/2017	Original base	SP

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Client	ADM Architects
Project	Land at Wings Nursery, Lidsey Road, Woodgate PO20 3SU
Drawing title	Drainage Strategy
Scale	1:750
Date	October 2017
Drawn by	SPB
Checked by	MJA
Approved by	MJA
Drawing No.	2017-D-382-SK300
Rev.	A

-DRAINAGE KEY-

- Existing Public Foul Water Sewer
- Existing Public Foul Water Manhole
- Existing Public Surface Water Sewer
- Existing Public Surface Water Manhole
- Proposed Public Foul Water Sewer
- Proposed Foul Water Manhole
- Proposed Public Surface Water Sewer
- Proposed Surface Water Manhole
- Proposed Foul Water Pump Station
- Proposed Tanked Porous Paving
- Existing Watercourse
- Existing Culvert
- Maximum 5m Watercourse Buffer Zone
- 3m Sewer Easement

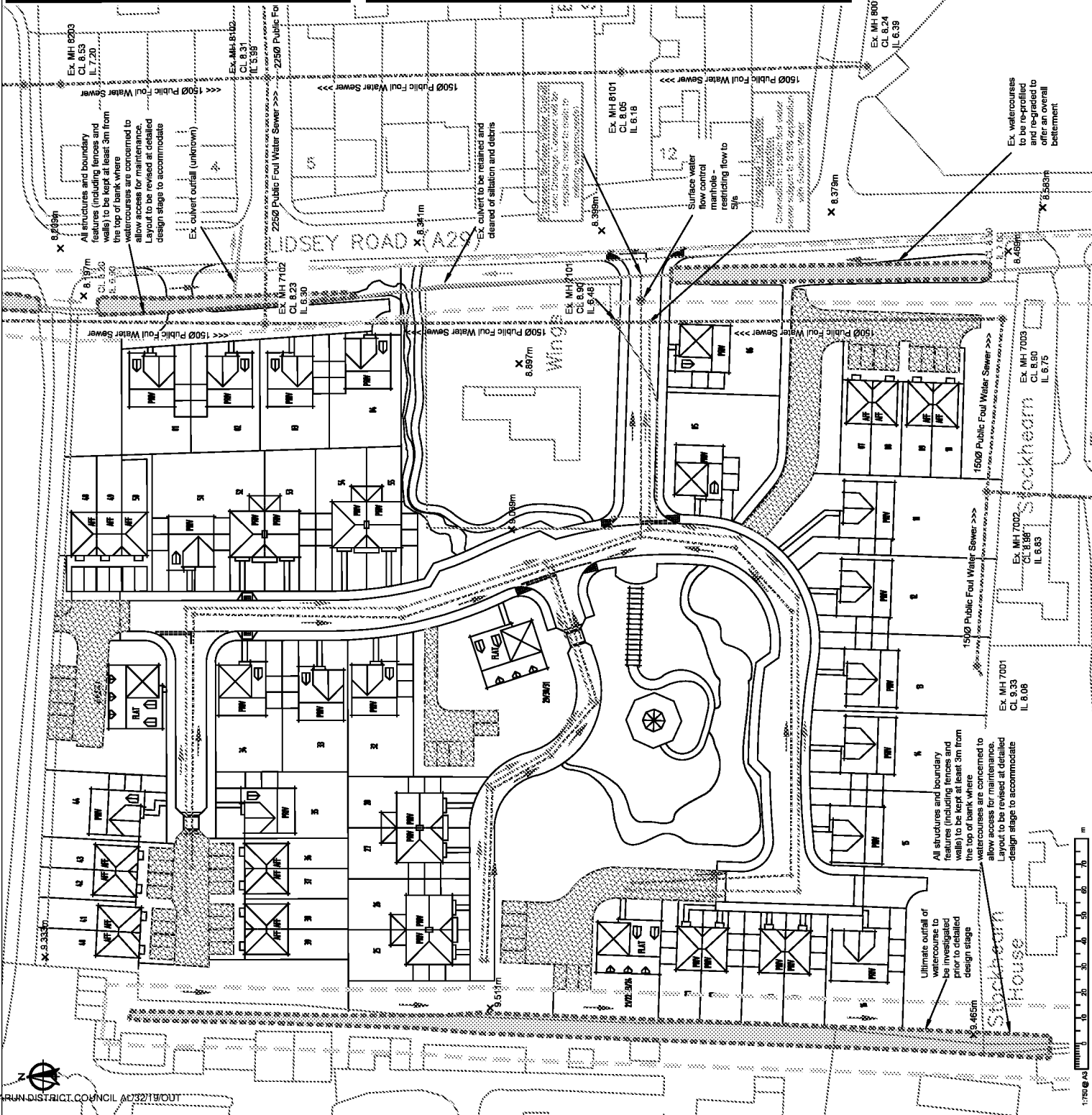
DRAINAGE STRATEGY

Surface Water

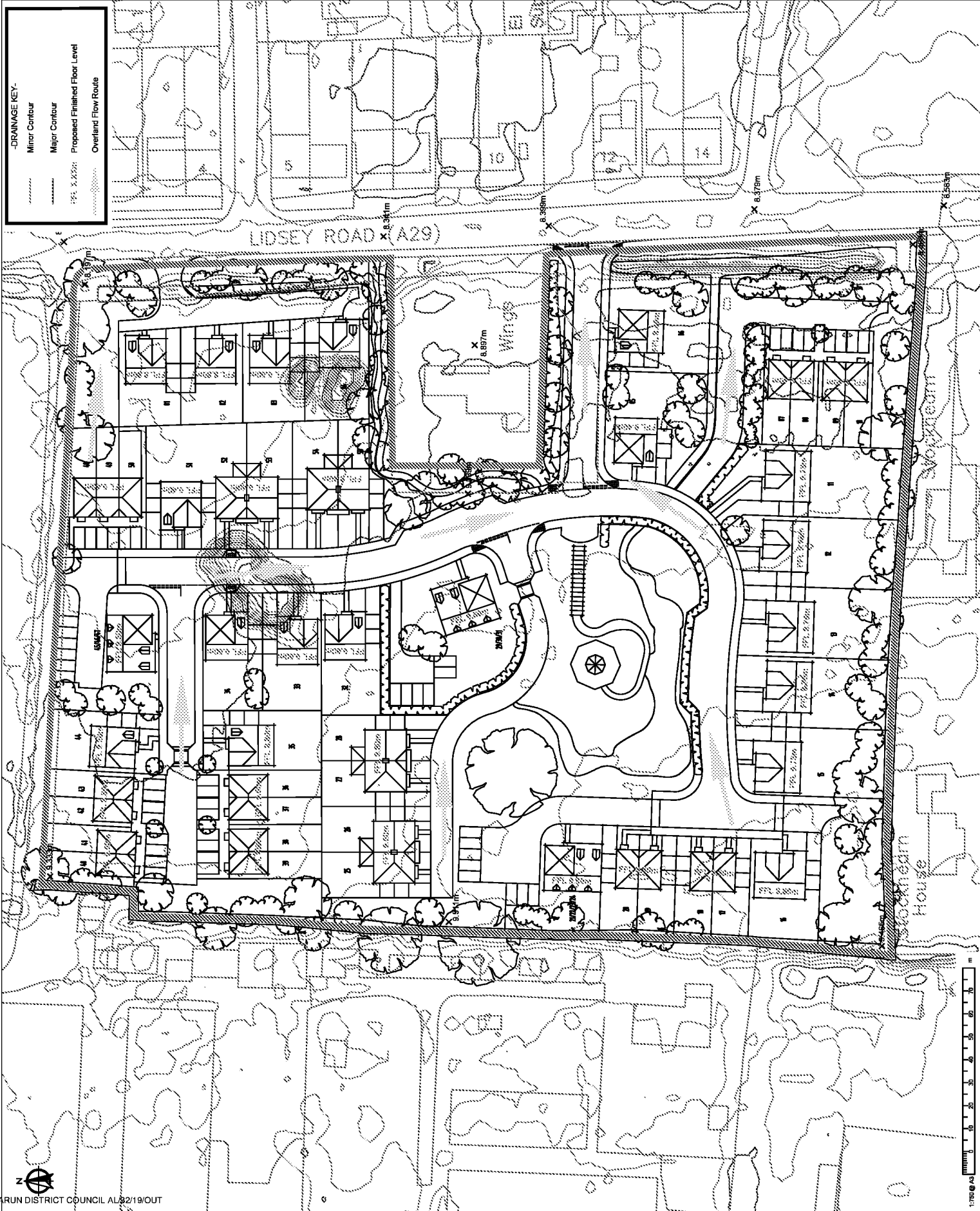
- Infiltration techniques do not appear to be achievable owing to the presence of high groundwater across the site as advised by ADC and WSCC. On-site geotechnical investigation to be conducted in order to confirm, prior to detailed design.
- Surface water run-off to be discharged to the existing watercourse(s) located to the east of the proposed development site, adjacent to Lidsey Road at a controlled rate of 5/s.
- Tanked porous paving will be employed across the site in order to provide storage.
- Land Drainage Consent will be required from ADC in order to discharge surface water run-off to the existing watercourse(s).
- Existing watercourse corridor(s) to be cleared of debris and vegetation as well as locally re-graded and re-profiled.

Foul Water

- Foul water will be disposed of via a new connection to the existing public foul water sewer located to the east of the development site.
- A Section 108 Application to connect to a public sewer will be required, in view of the Water Industry Act 1991.
- A foul water capacity check via Southern Water is required to ascertain whether the existing foul water sewer(s) will be able to support the development (Lidsey Foul Water Catchment Area Obligation).



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ADM Architects

Project: Land at Wings Nursery,
 Lidsey Road, Woodgate PO20 3SU

Drawing Title: Contours, Proposed Finished Floor Levels and Overland Flows

Scale	Drawn by	Checked by	Approved by
1:750	JFB	MJA	MJA
Date	October 2017	Drawing No.	2017-D-1392-SK301
Rev.	-	-	-

APPENDICIES