



70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

WSP RESPONSE TO LLFA COMMENTS

Introduction

This addendum has been prepared in response to comments raised in the objection submitted by West Sussex County Council Lead Local Flood Authority (LLFA) dated 3rd of April 2024 in relation to the Flood Risk Assessment and Drainage Strategy issued as part of the outline planning application AL/11/24/OUT - Land East of Westergate, Westergate.

LLFA comments & WSP Responses

The LLFA has confirmed that it will consider reviewing its objection if the following issues are adequately addressed:

1.Outline Drainage Modelling calculations should be resubmitted using a CV value of 1 for both summer and winter events.

WSP Response: The CV values used in the Outline Drainage Modelling calculations have been updated from 0.84 for Winter storms and 0.75 for Summer Storms to 1.00. An updated copy of the calculations is included in Appendix A.

2.Outline drainage modelling calculations should be resubmitted and demonstrate how 10% urban creep has been included in the volume of SuDS storage required.

WSP Response: Urban Creep has now been explicitly considered and allowed for in a review of the volume of SuDS attenuation storage required for the development. Our assessment is based on the review of the Non Statutory Technical Standards for Sustainable Drainage Practice Guide issued by the Local Authority SuDS Officer Organisation (LASOO). For reference, key extracts are included in Appendix B.

The LASOO report defines Urban Creep as *“the conversion of permeable surfaces to impermeable over time. E.g. impermeable surfacing of front gardens to provide additional parking spaces, extensions to existing buildings, creation of large patio areas. The consideration of urban creep (is best) assessed on a site by site basis but is limited to residential development only”*.

The report also notes that *“ It is important that the appropriate allowance of urban creep is included in the design of the drainage system over the lifetime of the proposed development. The allowances set out below are applied to the impermeable area within the property curtilage”*.

70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

Residential development density Dwellings per hectar	Change allowance % of impermeable area
≤ 25	10
30	8
35	6
45	4
≥ 50	2
Flats & apartments	0

Appropriate values for Urban Creep allowance should therefore be allocated depending on the proposed housing density and should be limited to the property curtilage only.

- Review of the dwelling density

Included in Appendix B is a copy of Thrive Architects Plan Ref DPDPP-01 showing the Development Parcels and Density Parameter Plan (dated 31.07.23) Rev A.

This plan shows that the 10% allowance is only valid for the low density category which represents only a small portion of the site.

Most of the site is identified for Mid Density (31-45 dph) where a 6% allowance would be more appropriate.

The proposals also include an area of mid to high density (45-50 dph) where the potential for urban creep is limited and a 2% to 4% allowance would be appropriate.

Based on the above, an average allowance of 6% has been used for the overall site at this stage of outline planning.

- Review of the property curtilage extent.

The LASOO Report confirms that the urban creep factor only applies to the property curtilage.

In order to make an assessment of the property curtilage and the relative split of permeable and impermeable areas in the proposed development, two areas of the illustrative layout have been sampled. This is summarised on WSP Sketch LAW-WSP-XX-XX-C-SK-004, included in Appendix B.

The assessment identifies that the hard standing associated with property curtilages (Proposed Hard Standing Area – Private) represent 38% to 41% of the samples taken in the mid and high dwelling density areas of the development. The higher value of 41% has been used in the subsequent assessments and calculations.

70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

A copy of the updated SuDS Storage Estimate which includes allowance for urban creep is included in Appendix A and is also summarised on drainage strategy drawing ref. LAW-WSP-XX-XX-C-DR-0500 updated to revision P03 and included in Appendix C.

3. Use up to date FEH2022 rainfall parameters in any modelling scenarios.

WSP Response: FEH2022 Rainfall data have now been used in conjunction with Infodrainage modelling software. A copy of the drainage calculation is included in Appendix A. The previous 5% allowance for the anticipated increase in volume between FEH2019 and FEH2022 rainfall data has therefore been removed.

WSP Note on Comment 1, 2 and 3: Storage Estimate calculations (for 100yr+45% critical Storm events) show that, with the exception of the northern catchment basin, Surface water attenuation cannot be entirely provided within the crest of the central and southern Basins and therefore the implementation of the drainage strategy relies on attenuation to be provided via the use of other SuDS features to be located upstream of the basins within the residential parcels

This requirement is the most pronounced for the central catchment. To verify the outline storage assessments, a simple Infodrainage model for the central catchment has been produced that includes a pipe network and basin profile equipped with a flow control to restrict flow to Qbar. Similar to the storage assessment calculations, this model allows for Percentage of Impermeable area of 60% for the Residential area and 80% for the main highway corridors; includes FEH 2022 rainfall data; and includes 6% urban creep allowance applied to the residential curtilage. To provide an initial assessment of the effective volume needed in addition to the basin, a storage tank has been modelled adjacent to the basin. This also indicates an effective volume of around 1,100m³ will be required to be provided via the upstream network in addition to the basin to attenuate the surface water runoff from the central catchment. This is intended to be provided within a combination of permeable paving in driveways and low traffic roads, raingardens, bioretention and where appropriate individual plot SuDS. Appendix A includes an extract of this model and simulation results.

4. For ordinary watercourses and SuDS features there should be a 3m easement on drawings and 8m for main rivers unless otherwise agreed with the EA who are responsible for main rivers.

WSP Response: These offsets have been added to drawing LAW-WSP- XX-XX-C-DR-0500 included in Appendix C.

Please note that the 3m offset shown around the Basins has been drawn from the base of the external raised embankment (where the basin is in fill) on the lower side and from the crest of the basin on the upper side (where the basin is in cut) basin embankment. The basins allow for a 1.5m maintenance track

70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

access on the top of the embankment. On the development parcel side of the central and southern catchment basins it is anticipated that maintenance access will be shared with residential streets.

The 3m offsets marginally encroach within the tree canopy area of some of the trees. Maintenance to the basins themselves can also be carried out via access into the base during dry periods.

A 8m offset is shown from the top of the river banks, identified from the topographical survey prepared for the site.

5.The impact of ground raising on surface water flow paths should be considered, to ensure surface water flood risk is not increased elsewhere.

WSP Response: Expected overland flow directions have been added to drawing LAW-WSP- XX-XX-C-DR-0500 included in Appendix C. Based on the understanding of the existing gradients on site and the strategic locations of the SuDS Basins, it is anticipated that levels on site will allow for overland flow to be directed toward the basins and river / watercourses. Levels are in general intended to follow existing topography with localised level increases to reduce gradients on the eastern edge of the parcels.



70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching



70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

Appendix A - Drainage Calculations



70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

Appendix B – Urban Creep Assessment



70013258 -FRA Addendum P01

DATE:	11 June 2024	CONFIDENTIALITY:	Public
SUBJECT:	WSP Response to LLFA comments		
PROJECT:	Land East of Westergate, Aldingbourne. Ref 70013258	AUTHOR:	Julien Blavignac
CHECKED:	Luke Beeching	APPROVED:	Luke Beeching

Appendix C – Drainage Strategy Layout