

## 10 Drainage and Flood Risk

---

### 10.1 Introduction

10.1.1 The drainage and flood risk issues are covered within Chapter 10, 'Drainage and Flood Risk', of the Environmental Statement (ES) dated September 2007.

10.1.2 There has since been a scheme change as reflected in the revised Parameter Plans contained within this Supplemental Environmental Statement (SES). This SES chapter assesses the impacts of the scheme changes and takes account of the relevant consultation responses that have been received and additional survey work that has been carried out since the submission of the application in September 2007 and the submission of the revised Parameter Plan No. 4A, 'Watercourses, diversions, culverting and drainage ponds' as part of the Regulation 19 submission made in October 2008.

10.1.3 This SES chapter is supplemental to Chapter 10 of the original ES and the two chapters should be read in conjunction except for the following paragraphs from Chapter 10 of the original ES which are superseded by this SES chapter and therefore no longer form part of the assessment

<i>Paragraph</i>	<i>10.4.10</i>
	<i>10.4.11</i>
	<i>10.4.13</i>
	<i>10.5.5</i>
	<i>10.5.11</i>
	<i>10.5.14</i>
	<i>10.5.15</i>
	<i>10.6.4</i>

10.1.4 This SES chapter should also be read in conjunction with the following documents appended to this supplement.

- Flood Risk Assessment (FRA) Addendum – *Appendix 10.1*
- Hydrogeological Impact Assessment (HIA) Addendum – *Appendix 10.2*
- Hydraulic Report – *Appendix 10.3*

- Parameter Plan No. 4B 'Watercourses, diversions, culverting and drainage ponds' – *Development Specification*
- Construction Method Statement (CMS) – *Development Specification*
- Agricultural Land Classification Report – *Further Information (FI) Document No. 4*

## 10.2 Policy and Standards

10.2.1 There are no amendments or additions to be made in respect of Policy and Standards section within the original ES chapter.

## 10.3 Baseline Conditions

### Water Resources and Hydrology

10.3.1 The three existing watercourses that cross the site are classified as 'ordinary watercourses'.

10.3.2 Since the submission of the original application, an Agricultural Land Classification Report has been undertaken by RPS. This survey confirms that approx. 65-70% of the site is directly underlain by Gault Clay.

10.3.3 Further details in this respect should be sort from the report itself which was submitted as FI Document No. 4 in October 2008.

## 10.4 Proposals

### Surface Water Drainage

10.4.1 The proposed surface water drainage strategy identified within the FRA Addendum is based on attenuation SUDS. It is proposed to provide five off line detention ponds, where the development layout and topography permit, and five off line underground cellular storage structures, as identified on the Parameter Plans.

10.4.2 It is intended that the detention ponds will incorporate some permanent water to form extensive water features.

10.4.3 It is intended that the size of the underground cellular storage structures will reduce at the detailed design stage by the introduction of additional SUDS techniques such as swales, pervious paving and infiltration trenches. The final selection of SUDS techniques and their respective locations will be dependent on the results of comprehensive percolation testing, to be carried out after the initial cut and fill operations have been completed, with due regard to groundwater quality and recharge.

### **Water Resources and Hydrology**

10.4.4 As a result of the proposed significant cut and fill operations and in order to accommodate the proposed layout, it will be necessary to divert and/or partly culvert the three existing watercourses that cross the site. The diversions and culverting are indicated on the Parameter Plan No. 4B and referred to more specifically within the FRA and HIA Addendums.

### **Flood Risk**

10.4.5 It is proposed to culvert the central watercourse (W2) where it will pass through the proposed inter-modal area with either pre-cast concrete circular pipework or box sections.

10.4.6 All proposed road crossings of watercourses will be achieved using open span structures.

## **10.5 Environmental Impact and Mitigation**

### **Water Resources and Hydrology**

10.5.1 A full assessment of the environmental impact associated with all temporary and permanent activities is provide within the HIA appended to the original ES and the HIA Addendum appended to this SES.

### **Flood Risk**

10.5.2 A full assessment of the impact and mitigation relating to flood risk is provided within the FRA appended to the original ES and the FRA Addendum appended to this SES.

10.5.3 The proposed surface water drainage strategy and design criteria indicated within the FRA Addendum take account of potential flooding issues, in accordance with PPS25 and EA policy. The proposed discharges to the existing watercourses will be restricted to existing average (QBAR) greenfield levels in lieu of the proposed development impermeable areas.

10.5.4 All proposed attenuation devices and other SUDS installations will be designed to accommodate the 1 in 100 year event plus a 20% allowance for climate change. The proposed detention ponds will also incorporate additional freeboard. The proposed on site traditional surface water drainage network will be designed not to flood in a similar design event.

10.5.5 The Hydraulic Report assesses both the pre and post development scenarios of each of the three watercourses. It confirms that the proposed watercourse diversions and culverting will not increase flood risk to the site or other areas.

## 10.6 Residual Effects During Operation

### Flood Risk

- 10.6.1 All proposed surface water discharges to the existing watercourses will be restricted to existing average (QBAR) greenfield equivalent run-off rates and the proposed surface water drainage system will be designed to accommodate the 1 in 100 year rainfall event, with appropriate allowances for climate change. This will ensure that the development itself will not be at risk of flooding and that flood risk to other property upstream or downstream is not increased.
- 10.6.2 A suitable number of access points will be provided within the inter-modal area along the proposed culverted length of watercourse W2 to facilitate maintenance and prevent blockages.