CHAPTER 7

Appendices (Volume 3 – Bound Separately)

7.0 SURFACE WATER AND FLOOD RISK

7.1 Introduction

7.1.1 This chapter addresses the following water related aspects:

- Surface water;
  - Watercourses (rivers and canals)
  - Reservoirs, lakes and ponds
  - Wetlands
- Groundwater;
- Flood risk management;
- Land drainage; and
- Wastewater treatment and sewerage.

7.1.2 An assessment of the baseline hydrological conditions has been undertaken. Informed by the baseline assessment, receptors of potential environmental effects associated with surface hydrology arising from the Proposed Development have been assessed, during both the construction and operational phases. Mitigation measures to reduce any adverse environmental effects are identified as appropriate, with residual effects subsequently evaluated.

7.1.3 A site specific Flood Risk Assessment (FRA) has been prepared and forms an appendix to this chapter (Appendix 7.1). The FRA should be read in conjunction with this chapter.

7.2 Methodology

Legislation and Guidance

7.2.1 In preparing this chapter of the ES due cognisance has been given to all relevant legislation, regulations, policies and guidelines. In particular reference will be made to:

- Water Framework Directive 2000/60/EC;
- The Groundwater Directive 80/68/EEC;
- EC Dangerous Substances Directive 2006/11/EC and daughter directives;
- Drinking Water Directive 98/83/EC;
- National Planning Policy Framework [the Framework] 2012;
- National Planning Practice Guidance 2014;

- Water Industry Act 1991;
- Water Act 2003 (as amended);
- Flood and Water Management Act 2010
- The Water Environment (Water Framework Directive) (England and Wales) Regulations;
- Control of Pollution (Oil Storage) (England) Regulations (2001);
- Surface Waters [Dangerous Substances (Classification)] Regulations 1998;
- Groundwater Protection 2017;
- Control of Substances Hazardous to Health (COSHH) Regulations (2002);
- Environment Act 1995 (as amended);
- Land Drainage Act 1991 (as amended);
- Sustainable Drainage Systems: Non-statutory Technical Standards for SuDS, DEFRA 2015
- House of Commons Written Statement on Sustainable Drainage Systems (HCWS161), Department for Communities and Local Government, 2014
- The Building Regulations - Drainage and Waste Disposal, Approved Document H HM Government, Published in 2010, Amended 2015;
- The SUDS Manual (C753), CIRIA, 2015;
- Sustainable Drainage Systems – Hydraulic, structural and water quality advice (C609), CIRIA, 2004;
- Control of Water Pollution from Construction Sites (C532), CIRIA, 2001
- Control of Pollution from Highway Drainage Discharges, Report 142, CIRIA, 1994
- CIRIA Designing for Exceedence in Urban Drainage - Good Practice;
- Sewers for Adoption, 6th and 7th Editions, A Design and Construction Guide for Developers
- Draft Policy CC1; Flood Risk and Sustainable Drainage, Harrogate Borough Council Draft Local Plan, October 2016
- Draft Policy CC2; Rivers, Harrogate Borough Council Draft Local Plan, October 2016
- Draft Policy NE2; Water Quality, Harrogate Borough Council Draft Local Plan, October 2016;
- Level 1 Strategic Flood Risk Assessment (SFRA), North West Yorkshire, July 2010;
- Preliminary Flood Risk Assessment (PFRA), North Yorkshire County Council, August 2011;

- Level 2 SFRA, Harrogate Borough Council, August 2013.

Assessment Methodology

7.2.2 This chapter has been prepared following a detailed review of the documents outlined above. The documents have been utilised in order to inform the baseline conditions at the Site and identify potential constraints or significant effects the Proposed Development may have on the water environment.

7.2.3 This chapter also reflects the findings of the FRA (Appendix 7.1), which has been produced in accordance with the Framework and National Planning Practice Guidance. This assesses the risk of flooding from all sources including fluvial flood risk, the risk of flooding from reservoirs, canals and other artificial sources, groundwater and surface water.

7.2.4 The FRA also outlines the strategy for the management of surface water flows arising as a result of the Proposed Development, taking account of the impact of climate change.

7.2.5 Consultation has been undertaken with the EA, North Yorkshire County Council (as Lead Local Flood Authority), Harrogate Borough Council and Yorkshire Water. Details of consultations are outlined within Section 4 of the FRA report (Appendix 7.1).

Assessment of Significance / Assessment Criteria

7.2.6 The criteria used to assess the significance of the Proposed Development in terms of the effects on the water environment are set out in Table 7.1 to Table 7.4.

7.2.7 In order to assess the potential significance of the effect of the Proposed Development on the identified receptors, the characteristics of each identified effect at the construction and operational stage has been considered.

7.2.8 Identified effects may be significant at the level of importance defined for the receptor, or at a lesser geographical scale. Thus, the level of effect has been determined from the importance of the receptor, the magnitude of the effect (taking into account the geographical scale of the receptor) and, where appropriate, the likelihood of the effect occurring.

7.2.9 Mitigation measures have been developed for identified effects using technical guidance, best practices and professional experience. Where the level of a potential effect (or effects) is assessed to be “negligible”, the receptor is screened out (i.e. no mitigation measures are considered to be necessary).

7.2.10 The level of potential effect following the application of the identified mitigation measures (i.e. the residual effect) has been assessed with reference to the extent, magnitude and duration of the effect and performance against environmental quality standards, again with reference to the criteria presented in Table 7.1 to Table 7.4. The level of the residual (i.e. post mitigation) effects have been assessed as described above.

Table 7.1 Estimating Receptor Importance

Importance	Criteria
Very High	Attribute has a high quality and rarity on a regional or national scale
High	Attribute has a high quality and rarity on a local scale
Medium	Attribute has a medium quality and rarity on local scale
Low	Attribute has a low quality and rarity on a local scale

Table 7.2 Estimating the Magnitude of an Impact on a Receptor

Magnitude	Descriptor
Major	A considerable effect (by extent, duration or magnitude) resulting in a complete loss of resource or receptor in terms of surface water, groundwater, flood risk management, land drainage and infrastructure (wastewater treatment and sewerage). If adverse, could result in a breach of legislation or exceedance of statutory objectives and planning policy.
Moderate	Limited effects which may affect the quality or integrity of surface water, groundwater, flood risk management, land drainage and infrastructure (wastewater treatment and sewerage) so that there may be a loss to part of the receptor.
Minor	Slight, very short or highly localised effects in terms surface water, groundwater, flood risk management, land drainage and infrastructure (wastewater treatment and sewerage) unlikely to affect the integrity of the resource.
Negligible	Effects that would have no meaningful impact in terms of surface water, groundwater, flood risk management, land drainage and infrastructure (wastewater treatment and sewerage).

Table 7.4 Estimating the Level of Potential Effects

		Magnitude of Impact			
		Major	Moderate	Minor	Negligible
Importance of Receptor	Very High	Severe	Major	Moderate	Negligible
	High	Major	Moderate	Minor	Negligible
	Medium	Moderate	Minor	Negligible	Negligible
	Low	Minor	Negligible	Negligible	Negligible

7.2.11 Effects that are moderate or worse are considered to be significant in EIA and planning terms.

7.3 Baseline

Surface Water

7.3.1 There are no designated main rivers within close proximity of the Site. There are also no Water Framework Directive (WFD) defined surface waterbodies located within the vicinity of the Proposed Development or upon which this would impact.

7.3.2 There is a small land drain (referred to as Drain A for the purposes of this chapter), running through the eastern section of the Site, which runs parallel to Lemming Lane (Track). Based on the topography of the surrounding area it is assumed that Drain A currently takes runoff from the adjoining road only.

7.3.3 There is another land drain (Drain B) located approximately 0.3 km west of the Site, adjacent to High Moor Road.

7.3.4 The locations of Drain A and Drain B are shown on Figure 1 of Appendix 7.1.

7.3.5 Drain A and Drain B are not located in the Swale and Ure Drainage Board district and as such these may each be designated as an 'ordinary watercourse'.

Groundwater

Ground Conditions and Hydrogeology

7.3.6 According to the Soilscapes Maps, produced by the National Soils Research Institute, soils conditions at the Site and within the surrounding area are described as *'freely draining slightly acid loamy* soils'.

7.3.7 British Geological Survey (BGS) geology records indicate that the superficial deposits at the Site generally comprise *Vale of York Foramtion – Clay, Sandy, Gravelly* or *Alluvium – Clay, Silt, Sand and Gravel*. The underlying bedrock is *Sherwood Sandstone Group – Sandstone*.

7.3.8 EA mapping also indicates that the superficial deposits at the Site are generally designated as secondary (undifferentiated), which identifies those areas where it has not been possible to attribute either category A (permeable layers) or B (lower permeability layers) to a rock type. The underlying bedrock is designated as a principal aquifer, which is defined as layers of rock or drift deposits that have high intergranular and/or fracture permeability; meaning they usually provide a high level of water storage. Such aquifers may support water supply and/or river base flow on a strategic scale.

Groundwater Quality

7.3.9 According to the Humber River Basin Management Plan (RBMP), the Site is underlain by the 'Swale, Ure, Nidd and Ouse (SUNO) Sherwood Sandstone' groundwater body; this has been assessed under the WFD (Waterbody ID: GB40401G702100).

7.3.10 The current WFD status of the waterbody is summarised below:

- The current overall status is 'poor'
- The current quantitative status is 'good'
- The current chemical status is 'poor'
- The target date for 'good' overall and chemical status is 2027. A 'good' quantitative status was achieved by the end of Cycle 2 in 2015 and the objective is to maintain this.

7.3.11 The waterbody is protected under the Drinking Water Directive and Nitrates Directive.

Groundwater Abstraction

7.3.12 EA mapping indicates that the Site is not located within a designated Groundwater Source Protection Zone.

7.3.13 EA mapping also indicates that there are no groundwater abstractions on or within the vicinity of the Site.

Flood Risk Management

Topography

7.3.14 Ground levels on the area of the Site to the west of the A1(M) are in the region of 34.0 to 49.1 metres Above Ordnance Datum (m AOD) and generally fall from north-west to south-east.

7.3.15 Ground levels on the area of the Site to the east of the A1(M) are in the region of 35.2 to 40.6 m AOD falling to the east and south-east.

Flood Zone Designation

7.3.16 According to the EA Flood Map for Planning (Rivers and Sea) (Figure 3 of the FRA, Appendix 7.1) the Site is located in Flood Zone 1, which is defined as having a 'low probability' of river or sea flooding.

7.3.17 Detailed Map 77 of the Harrogate Borough Council Level 2 SFRA reaffirms the Sites Flood Zone 1 designation.

Historical Flooding

7.3.18 Drawing G H2 of the North West Yorkshire SFRA indicates that there are no historical records of flooding at the Site.

7.3.19 No details are provided in the Harrogate Borough Council Level 2 SFRA with respect to historical flooding at the Site.

Fluvial Flood Risk

7.3.20 The Site is located approximately 2.0 km to the north of the River Ure and 4.8 km to the west of the River Swale. The EA Flood Map for Planning (Rivers and Sea) indicates that the Site is not at risk of flooding from either of these watercourses.

7.3.21 As detailed in paragraph 7.3.2, it is assumed that Drain A, which is located through the area of the Site to the east of the A1(M), takes runoff from Lemming Lane (Track). NextMap contours indicate that ground levels fall to the east of Drain A, away from the Site. As such this would not be expected to pose any significant risk of flooding to the Site itself.

7.3.22 Drain B is located 0.3 km to the south-west of the Site. NextMap contours indicate that ground levels within this area fall to the south/south-west rather than towards

the Site. Any floodwater from this source would therefore not be expected to pose a risk to the Proposed Development.

7.3.23 The Site is therefore not considered to be at a risk of flooding from fluvial sources.

Flood Risk from Reservoirs, Canals and Other Artificial Sources

7.3.24 According to EA Risk of Flooding from Reservoirs map the Site is not shown to be at risk of flooding from such sources.

7.3.25 There are no canals located within the immediate vicinity of the Site.

7.3.26 The Site is therefore not assessed to be at risk of flooding from reservoirs, canals or other artificial sources.

Flood Risk from Groundwater

7.3.27 The BGS Groundwater Flooding Hazard Map (Figure 4 of the FRA, Appendix 10-1) indicates that the susceptibility of the Site and surrounding area to groundwater flooding is low.

7.3.28 The North West Yorkshire Level 1 SFRA and North Yorkshire County Council PFRA state that there is no substantial evidence of direct groundwater flooding in the majority of the county and that the EA do not consider this to be a significant issue.

7.3.29 The risk of groundwater flooding at the Site is therefore assessed to be low.

Flood Risk from Surface Water

7.3.30 The EA Risk of Flooding from Surface Water map (Figure 5 of the FRA, Appendix 7.1) indicates that the majority of the Site is at a very low risk of surface water flooding. However, within the portion of land to the west of the A1(M) there is a small area in the south-east that is shown to be at a low, medium and high risk of flooding.

7.3.31 Potential depths and velocities for the low, medium and high risk surface water flooding events are available from the EA (Figure 6 of the FRA, Appendix 7.1). These indicate that the extent of flooding for the high and medium risk events is relatively limited with flood depths generally below 300 mm. During the low risk event flood depths are either below 300 mm or between 300 to 900 mm. Velocities for all events are typically less than 0.25 m/s.

7.3.32 The risk of pluvial flooding to the Site is therefore generally assessed to be low; however, there may be some propensity for surface water to accumulate in the south-east corner of the area of land to the west of the A1(M).

7.3.33 North Yorkshire County Council has advised that it does not have any records of flooding at the site, highway or otherwise.

Land Drainage

7.3.34 The Site currently comprises predominately permeable (greenfield) land, with the exception of Lemming Lane (A168) and Lemming Lane (Track), which are located in the portion of land to the east of the A1(M).

7.3.35 The topography of the Site suggests that surface water in the area of land to the west of the A1(M) would naturally drain to the south-east. With surface water in the area of land to the east of the A1(M) draining to the east.

7.3.36 Drain A in the eastern area of the Site may fall under the jurisdiction of the Lead Local Flood Authority (North Yorkshire County Council).

Wastewater Treatment and Sewerage

7.3.37 The Site is not served by an existing foul drainage network.

7.3.38 The Yorkshire Water public sewer record indicates that there are no public sewers within the immediate vicinity of the Site. However, the following foul drainage infrastructure is shown to be present within Kirby Hill to the south-east of the site:

- 150 mm public foul sewer in Lemming Lane/Church Lane
- Public foul pumping station adjacent to Church Lane
- 100 mm public foul rising main in Lemming Lane/Church Lane
- 150 mm public foul sewer in Lemming Lane

7.3.39 Foul sewage from Kirby Hill currently discharges to Boroughbridge Wastewater Treatment Works (WwTW).

7.3.40 Yorkshire Water has advised that there is sufficient treatment capacity at Boroughbridge WwTW to accommodate the Proposed Development.

Development Receptors

7.3.41 Table 7.5 lists the identified environmental receptors and their assessed importance/scale using the criteria presented in Table 7.1.

Table 7.5 Development Receptors

Receptor	Nature of Effect	Importance
Drain A	Pollution risk	Medium
Groundwater; Swale, Ure, Nidd and Ouse Sherwood Sandstone	Pollution risk.	Medium
Site workers and local residents (Construction phase only)	Risk of groundwater and surface water flooding	Very High
Site visitors and local residents (Operational phase only)	Risk of groundwater and surface water flooding	Very High
Foul sewerage infrastructure	Connections and increase in foul flows	High

7.4 Assessment of Effects

7.4.1 The following section assesses the potential effects of the Proposed Development on the water environment and the significance of these effects prior to implementation of mitigation measures. Mitigation measures are then outlined and the residual effects (post-mitigation) are set out in Table 7.8 and Table 7.9.

Construction Phase

Surface Water, Groundwater, Flood Risk Management and Land Drainage

7.4.2 During the construction phase there would be a number of activities which could reduce surface water quality with respect to physical contaminants. These include:

- Materials handling, storage, stockpiling, spillage and disposal;
- Earthworks involving manipulation of ground levels and re-engineering of existing ground;
- Excavation and foundation construction within the Site and site preparation;
- Installation of temporary and permanent infrastructure and roads;
- Construction of commercial units etc;
- Construction of drainage runs and utility duct runs;

- Formation of public spaces, public realm and associated restoration and landscaping; and
- Movement and use of static and mobile plant/construction vehicles.

7.4.3 The construction activities may lead to the disturbance and mobilisation of physical contaminants (i.e. dust, sediments and muds). During periods of heavy rainfall, vehicle movements resulting in damage to soil structure may generate increased sedimentation within surface water runoff. Whilst during periods of dry, windy weather, wind-blown dusts generated by the excavation of soils have the potential to directly reduce the quality of surface water features.

7.4.4 Contaminants, spilled contaminants and suspended sediments have the potential to affect surface and groundwater bodies via surface runoff, shallow interflow and infiltration. Construction activities such as piling and/or ground excavation may create new pollutant pathways from the surface to the underlying aquifer.

7.4.5 Off-site flood risk may increase due to increased runoff due to soil compaction on the Site.

Wastewater Treatment and Sewerage

7.4.6 There is a risk of pollution from foul water from temporary site worker accommodation and sanitary facilities.

7.4.7 The public sewerage system could also be affected during construction of the new foul sewer connections(s) from the Site.

Summary

7.4.8 The likely effects of the Proposed Development during the construction phase prior to the implementation of mitigation measures are summarised in Table 7.6.

Table 7.6 Effect Significance during Construction Phase (Pre-Mitigation)

Receptor	Importance	Potential Effect	Magnitude of Effect	Level of Effect
Drain A	Medium	Pollution risk	Minor adverse	Negligible
Groundwater; Swale, Ure, Nidd and Ouse Sherwood Sandstone	Medium	Pollution risk	Moderate adverse	Minor adverse

Receptor	Importance	Potential Effect	Magnitude of Effect	Level of Effect
Site workers and local residents	Very High	Risk of flooding	Moderate adverse	Major adverse
Foul sewerage infrastructure	High	Connections	Minor adverse	Minor adverse

Operational Phase

Surface Water, Groundwater and Flood Risk Management

7.4.9 The increase in impermeable area, increase in traffic volumes and activity, the fuel filling station (FFS) and the realignment of the A168 to the east of the A1(M) to accommodate the new junctions to the Site would increase the risk of contamination of surface water runoff. This could occur as a result of accidental spillage of contaminants and mobilisation of pollutants from the impermeable surfaces, particularly during the 'first flush' (initial surface water flow following the onset of rainfall). Contaminated surface runoff would subsequently be dispersed off the Site.

7.4.10 Groundwater quality may be affected through the infiltration of surface water runoff into the ground.

7.4.11 Any development or raising of ground levels within areas considered to be at risk of flooding from surface water and groundwater has the potential to increase flood risk to people, property and elsewhere.

Land Drainage

7.4.12 The extent of impermeable area at the Site will increase as a result of the Proposed Development leading to an increase in peak surface water runoff rates and total runoff volumes discharging from the Site.

Wastewater Treatment and Sewerage

7.4.13 The increase in the number of people on the Site as a result of the proposals will cause an increase in the foul water discharges from the Site.

Summary

7.4.14 The likely effects of the Proposed Development during the operational phase prior to the implementation of mitigation measures are summarised in Table 7.7.

Table 7.7 Effect Significance during Operational Phase (Pre-Mitigation)

Receptor	Importance	Potential Effect	Magnitude of Effect	Significance of Effect
Drain A	Medium	Pollution risk	Minor adverse	Negligible
Groundwater; Swale, Ure, Nidd and Ouse Sherwood Sandstone	Medium	Pollution risk	Major adverse	Moderate adverse
Site visitors and local residents	Very High	Risk of flooding	Moderate adverse	Major adverse
Foul sewerage infrastructure	High	Connections	Minor adverse	Minor adverse

7.5 Mitigation

Construction Phase

7.5.1 Potential impacts on the water environment through the construction phase would be managed by a range of operational, control and monitoring measures as set out below.

7.5.2 The following standard measures would be adopted as a matter of course:

- A Construction Environmental Management Plan (CEMP) or equivalent would be prepared and agreed with the local planning authority. The CEMP should set out the methods, including the minimum requirements as agreed between the construction contractor and the local planning authority, by which construction will be managed to avoid, minimise and mitigate any adverse effects on the water environment.
- All construction works will be designed in accordance with their latest relevant guidelines including the ADAS Technical Note on Workmanship and Materials for Drainage Schemes (1995).
- Contractors undertaking earthworks would develop risk assessments and method statements covering all aspects of their work that have the potential to cause physical damage to structures (e.g. water supply and sewerage infrastructure), mobilise large quantities of soil / sediment or block open watercourses. Earth moving operation would be undertaken in accordance with BS 6031:2009 Code of Practice for Earthworks.

- Works affecting soils would follow MAFF's Good Practice Guide for Handling Soils (2000) which provides comprehensive advice on soil handling including stripping, soil stockpiling and reinstatement.
- Works would comply with DEFRA guidance in the Construction Code of Practice for the Sustainable Use of Soils on Construction Site (2009) which provides guidance on the use, management and movement of soil on site. This action should prevent the mobilisation of sediment and prevent pollution of watercourses.
- Good practice guidance on erosion and pollution control would be followed, e.g. CIRIA Environmental Good Practice on Site (C692) and Control of Water Pollution from Construction Sites (C532).
- The principal contractor would avoid the storage of plant / machinery fuel or material (including soil stockpiles) alongside watercourses unless unavoidable. Construction works should be programmed as far as is practicable to minimise soil handling and temporary soil storage.
- The refuelling of plant / machinery, storage of fuels and chemicals and overnight storage of mobile plant would be within the designated contractors compound areas. The compounds would contain appropriate facilities for the storage of fuels and chemicals (i.e. bunded and locked storage containers), and would also be equipped with spill kits.

7.5.3 The adoption of best practice construction methods and construction management processes would mitigate many of the identified potential environmental effects of the construction phase of development.

7.5.4 The principal contractor may use alternative procedures compliant with their own Environmental Management System. However, the broad approach and content would as minimum be comparable.

7.5.5 If pile foundations are to be used on Site, contractors will be required to undertake a piling risk assessment, in line with the EA Report NCC/9973 to assess the potential risk of creating preferential pathways to the underlying superficial aquifer through the piling works. Unacceptable risks are to be mitigated by appropriate pile design.

7.5.6 Surface water runoff during the construction phase will be carefully controlled with temporary infrastructure established to allow it to drain as existing.

7.5.7 Any permanent or temporary works to or within close proximity of Drain A may require land drainage consent from the lead local flood authority. Prior to undertaking the construction works the applicant would seek the appropriate written consent, where required.

7.5.8 Foul water from temporary staff welfare facilities would be contained within sealed storage vessels and disposed of off-site to minimise the risk of surface or groundwater contamination.

Operational Phase

7.5.9 Finished floor levels would be set at a minimum of 0.15 m above adjacent ground levels in order to mitigate any residual flood risk from groundwater and surface water.

7.5.10 This would, in conjunction with the implementation of the appropriately designed surface water drainage scheme (outlined below), allow any potential surface water to be conveyed across the site without affecting property in accordance with the approach promoted within DEFRA's Making Space for Water (2005).

7.5.11 Surface water runoff from the Proposed Development would, insofar as is possible, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to development. An outline surface water drainage strategy is presented in Section 6 of the FRA (Appendix 10-1) the key aspects of which are summarised as follows:

- Eastwood and Partners have considered disposal of surface water via infiltration as a viable method due to anticipated favourable ground conditions. As such, disposal of surface water runoff from the Site via infiltration is the recommended method.
- The required storage volume has been estimated as part of the Eastwood and Partners Drainage Strategy Report and Proposals document. In accordance with the EA's climate change allowances, the system has been designed to cater for the 1 in 100 annual probability event including a 20% increase in rainfall intensity. A sensitivity analysis has also been undertaken using a 40% allowance for climate change, in order to safeguard the development over its lifetime.
- Sustainable Drainage Systems (SuDS) components will be used as part of the surface water drainage strategy in order to provide the necessary surface water

attenuation required to manage runoff from the proposed impermeable areas. This will include the provision of an infiltration basin and green roof. SuDS are designed both to manage the environmental risks resulting from urban runoff and to contribute wherever possible to environmental enhancement. Therefore, SuDS objectives are to minimise the effects from a development on the quantity and quality of runoff, and maximise amenity and biodiversity opportunities. The use of SuDS within the Proposed Development would reduce pollutant concentrations in stormwater, thus protecting the quality of the receiving waterbody and would also act as a direct buffer for accidental spills by preventing a direct discharge of high concentrations of pollutants to the receiving waterbody.

- It is envisaged that the pipe network would be built to Sewers for Adoption (7th Edition) standard. The SuDS features would be maintained by a management company.

7.5.12 Once the details of the FFS are confirmed a pollution mitigation strategy would be prepared for discussion with the local planning authority and EA. Fuel storage tanks and forecourt separators would comply with the relevant guidance which may include the Control of Pollution (Oil Storage) (England) Regulations 2001, the appropriate EA PPG's and the 'Design, Construction, Modification, Maintenance and Decommissioning of Filling Stations'.

7.6 Residual Effects and Conclusions

7.6.1 This chapter of the ES provides an assessment of the potential significant environmental effects associated with the Proposed Development in relation to surface water, groundwater, flood risk, land drainage and wastewater.

7.6.2 An assessment of the baseline hydrological conditions has been undertaken based upon information from a variety of sources. This includes a desktop study, a site specific FRA, a surface and foul water drainage scheme, and consultation with relevant bodies. From this, receptors of potential environmental effects from the Proposed Development have been identified, the effects of the development have been assessed and where required mitigation measures proposed and residual effects have been identified and evaluated.

7.6.3 Table 7.8 sets out a summary of the residual effects resulting from the construction of the Proposed Development following implementation of the mitigation measures outlined in the previous section.

Table 7.8 Post Mitigation (Residual) Effects – Construction Phase

Receptor	Importance	Potential Effect	Significance of Effect	Mitigation	Residual Significance of Effect
Drain A	Medium	Pollution risk	Negligible	Operational, control and monitoring measures	Negligible
Groundwater; Swale, Ure, Nidd and Ouse Sherwood Sandstone	Medium	Pollution risk	Moderate adverse	Operational, control and monitoring measures	Negligible
Site workers and local residents	Very High	Risk of flooding	Major adverse	Operational, control and monitoring measures	Negligible
Foul sewerage infrastructure	High	Connections	Minor adverse	Operational, control and monitoring measures	Negligible

7.6.4 Table 7.9 sets out a summary of the residual effects resulting from the operation of the Proposed Development following implementation of the mitigation measures outlined in the previous section.

Table 7.9 Post Mitigation (Residual) Effects – Operational Phase

Receptor	Importance	Potential Effect	Significance of Effect	Mitigation	Residual Significance of Effect
Drain A	Medium	Pollution risk	Negligible	Surface water drainage scheme; Operational maintenance	Negligible
Groundwater; Swale, Ure, Nidd and Ouse Sherwood Sandstone	Medium	Pollution risk	Moderate adverse	Surface water drainage scheme; Operational maintenance	Negligible
Site visitors	Very High	Risk of	Major	Surface	Negligible

Receptor	Importance	Potential Effect	Significance of Effect	Mitigation	Residual Significance of Effect
and local residents		flooding	adverse	water drainage scheme; Operational maintenance	
Foul sewerage infrastructure	High	Connections	Minor adverse	Consultation with Yorkshire Water	Negligible

7.6.5 The residual significance of environmental effects on the water environment is thus considered to be negligible. Therefore, with the implementation of the mitigation measures outlined in the chapter, the Proposed Development is not likely to have any significant effects on the environment from a surface water and flood risk perspective.