

## CONTENTS

INTRODUCTION .....	9-1
ASSESSMENT APPROACH.....	9-1
Overview .....	9-1
Baseline Assessment .....	9-1
Data Sources.....	9-2
Consultation .....	9-2
Significance Criteria.....	9-2
POLICY CONTEXT.....	9-4
European Legislation.....	9-4
National Legislation and Policy .....	9-4
Other Material Considerations .....	9-4
BASELINE CONDITIONS .....	9-5
Ground Water .....	9-5
Groundwater Abstractions, Use and Quality .....	9-7
Local Hydrology.....	9-7
Flooding and Flood Risk.....	9-8
ASSESSMENT OF POTENTIAL IMPACTS .....	9-9
Groundwater.....	9-9
Summary of Unmitigated Potential Impacts .....	9-12
PROPOSED MITIGATION MEASURES .....	9-14
Groundwater.....	9-14
Surface Water .....	9-15
Flood Risk .....	9-16
ASSESSMENT OF RESIDUAL IMPACTS .....	9-16
CONCLUSIONS.....	9-18+7

## INTRODUCTION

- 9.1 This Chapter details the hydrology of the application site and surrounding area and identifies potential impacts associated with the proposed development, details of which are provided in Chapter 3 of this Environmental Statement.
- 9.2 Appropriate mitigation measures have been considered and the residual impacts following mitigation have been assessed. The assessment is based on a baseline description of the local hydrological regimes.
- 9.3 A Flood Risk Assessment (FRA) has been prepared in accordance with the requirements of the National Planning Policy Framework (NPPF) and its associated Technical Guidance, and in line with methodologies set out within BS8533 (please refer to Technical Appendix 9 Volume 2B).

## ASSESSMENT APPROACH

### Overview

- 9.4 The assessment has involved the following:
- detailed desk studies and site visits to establish current geological, hydrological and hydrogeological conditions;
  - evaluation of the potential impacts of the Site and the effect that these could have on the current site conditions;
  - identification of possible measures to avoid and mitigate against any adverse impacts resulting from the proposed development; and
  - evaluation of the residual significance of these impacts by consideration of the sensitivity of the baseline features of the Site, potential magnitude of these impacts and the probability of these impacts occurring, following mitigation.

### Baseline Assessment

- 9.5 A desk top study to establish the baseline conditions within the immediate vicinity of the Site (the hydrological study area) was undertaken to:
- describe surface water hydrology, including watercourses and springs within and adjacent to the Site boundary;
  - identify private and licensed groundwater and surface water abstractions and discharges within 1km of the Site;
  - identify flooding risks;
  - collect geological and hydrogeological information;
  - confirm surface water catchment areas and watersheds; and
  - identify sensitive geological and hydrological features which may potentially be impacted by the proposed scheme.

- 9.6 The extent of the baseline survey was based on professional judgment, in addition to requirements specified within the consultee responses to the scoping opinion.

### Data Sources

- 9.7 The following sources of information have been consulted to characterise the geology, hydrogeology and hydrology of the area within and surrounding the Site:
- Centre of Ecology and Hydrology (CEH Wallingford), Flood Estimation Handbook CD ROM Ver. 3, 2009;
  - Environment Agency Website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)) for details of river quality, source protection zones, aquifer classification and flooding;
  - British Geological Survey, Solid and Drift Geology Map, Brighton and Worthing, England and Wales Sheet 318/333, 1:50,000 scale;
  - Institute of Geological Sciences and Southern Water Authority, Hydrogeological Map of the South Downs and Adjacent Parts of the Weald, 1:100,000 scale;
  - Environmental data licensed from the Environment Agency; and
  - Horsham District Council Strategic Flood Risk Assessment Level 1, April 2010.

### Consultation

- 9.8 At the time of writing the only regulatory consultation with respect to the water environment has been part of a Pre-Application Request to West Sussex County Council. Details relating to the Pre-Application Request are provided in Technical Appendix 2 Volume 2B.

### Significance Criteria

- 9.9 A qualitative risk assessment methodology has been used to assess the magnitude of the potential impacts associated with the proposed development. Two factors have been considered using this approach: the sensitivity of the receiving environment and the potential magnitude of impact, should that potential impact occur.
- 9.10 This approach provides a mechanism for identifying the areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the scheme. This approach also allows effort to be focused on reducing risk where the greatest benefit may result.
- 9.11 This approach allows effort to be focused on reducing risk where the greatest benefit may result. Mitigation is considered necessary where the significance of the impact is assessed as 'medium' or 'higher'. The assessment is outlined in Table 1 below.

## WATER ENVIRONMENT 9

Table 9-1 Matrix Used to identify the Significance of an Impact

Probability of Occurrence	Magnitude of Potential Impacts			
	Severe	Moderate	Mild	Negligible
High	High	High	Medium	Low
Medium	High	Medium	Low	Near Zero
Low	Medium	Low	Low	Near Zero
Negligible	Low	Near Zero	Near Zero	Near Zero

The definition of ‘degrees of magnitude’ for various examples of potential impacts, in terms of hydrology and hydrogeology is detailed in Table 9-2.

Table 9-2 Magnitude of Impact “Criteria and Definitions

Magnitude	Potential Impact
Negligible	<p>No impact of alteration to existing important geological environs;</p> <p>No alterations or very minor changes with no impact to watercourses, hydrology, hydrodynamics, erosion and sedimentation patterns;</p> <p>No alteration to groundwater recharge or flow mechanisms; and</p> <p>No pollution or change in water chemistry to either groundwater or surface water.</p>
Mild	<p>Some loss of soils with no long term impact;</p> <p>Minor or slight changes to the watercourse, hydrology or hydrodynamics;</p> <p>Changes to site resulting in slight increase in runoff well within the drainage system capacity;</p> <p>Minor changes to erosion and sedimentation patterns; and</p> <p>Minor changes to the water chemistry.</p>
Moderate	<p>Slope failure or instability which may cause foundation problems, loss of extensive areas of peat or agricultural soil, damage to important geological structures/features;</p> <p>Some fundamental changes to watercourses, hydrology or hydrodynamics;</p> <p>Changes to site resulting in an increase in runoff within system capacity;</p>

	Moderate changes to erosion and sedimentation patterns; and Moderate changes to the water chemistry of surface runoff and groundwater.
Severe	Slope failure or instability which causes loss of life, permanent degradation and loss of important geological feature; Wholesale changes to watercourse channel, route, hydrology or hydrodynamics; Changes to site resulting in an increase in runoff with flood potential and also significant changes to erosion and sedimentation patterns; and Major changes to the water chemistry or hydro-ecology.

## POLICY CONTEXT

### European Legislation

- 9.12 The key piece of European Legislation that protects the UK's water environment is the Water Framework Directive (2000/60/EC). This Directive protects all elements of the water cycle and enhances the quality of groundwaters, surface waters, estuaries and coastal waters.

### National Legislation and Policy

- 9.13 Key national legislation and policy relevant to this proposed development includes:
- Control of Pollution Act 1974;
  - Environmental Permitting (England and Wales) Regulations 2011;
  - Environment Act 1995;
  - the Environment Agency's (EA) statutory obligations over the management and control of pollution into water;
  - the Environment Agency's Groundwater Protection: Principles and Practice (GP3), EA, 2011;
  - EC Water Framework Directive (2000/60/EC);
  - Flood and Water Management Act, 2010;
  - National Planning Policy Framework, Published by Department for Communities and Local Government, March 2012; and
  - National Planning Policy Framework, Technical Guidance Note Published by Department for Communities and Local Government, March 2012.

### Other Material Considerations

- 9.14 The development of the application site would be undertaken with due regard to technical guidance, relevant Pollution Prevention Guidelines and other codes of best practice in order to limit the potential for contamination of ground and surface waters, the potential for flooding to be caused by the proposed development, and other potential impacts. The development of the application site would be in accordance with the following:

- The Environment Agency's statutory obligations over the management and control of pollution into water;
- Environment Agency – Pollution Prevention Guidelines;
- Code of Practice for Site Investigations, BS5930;
- Environmental Good Practice on Site C650 (CIRIA 2005).
- Environment Agency, Groundwater Protection: Policy and Practice
- National SUDS Working Group, Interim Code of Practice for Sustainable Drainage Systems, 2004;
- CIRIA 697, The SUDS Manual, 2007; and
- Control of Water Pollution from Linear Construction Projects – C648 (CIRIA, 2007);

9.15 The Pollution Prevention Guidelines identified below are the principal documents used for guidance on preventing water pollution and the erosion from construction activities and are jointly produced by the Environment Agency for England and Wales, Scottish Environmental Protection Agency and the Environment and Heritage Services in Northern Ireland. All are available via the Environment Agency's (EA) website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)):

- PPG1: General Guide to the Prevention of Pollution;
- Introducing Pollution Prevention : PPG1 (July 2013)
- PPG2: Above Ground Oil Storage Tanks;
- PPG3: Use and Design of Oil Separators in Surface Water Drainage Systems;
- PPG4: Disposal of Sewage where no Mains Drainage is Available;
- PPG5: Works in, Near, or Liable to Affect Watercourses;
- PPG6: Working at Construction and Demolition Sites;
- PPG8; Storage and disposal of Used Oils;
- PPG18; Managing Firewater and Major Spillages;
- PPG21; Pollution Incident Response Planning;
- PPG22; Dealing with Spillages on highways; and
- PPG23: Maintenance of Structures over Water.

### BASELINE CONDITIONS

9.16 The geological conditions and hydrogeological regime at the Site and the surrounding area are considered in the following sections of this Chapter:

- aquifer characteristics and recharge mechanisms;
- groundwater levels and flow; and
- groundwater abstractions, use and quality.

9.17 This is followed by a discussion of the local hydrology and flooding.

### Ground Water

#### *Aquifer Characteristics*

9.18 With reference to the British Geological Survey, Solid and Drift Geology Map, Brighton and Worthing, England and Wales Sheet 318/333, 1:50,000 scale,

the solid geology underlying the Site is the Folkestone Formation overlain within the northern and western area of the Site by Head. This Folkestone Formation is classified by the Environment Agency as a Principal aquifer defined as having 'high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.' The Site is located outside a Groundwater Source Protection Zone.

- 9.19 The Head deposit is classified by the Environment Agency as a Secondary (undifferentiated) defined as having 'previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.'

### *Recharge Mechanism*

- 9.20 The Institute of Hydrology FEH CD ROM 2009 reports that the average annual rainfall at the Site to be in the region of 936mm per annum.
- 9.21 Despite the presence of Head beneath areas of the site, the underlying Folkestone aquifer is recharged by infiltration of rainfall through the generally porous soils across the site and locale.

### *Groundwater Levels and Flow*

- 9.22 Hydrogeological gradients (indicated upon the Hydrogeological Map for South Downs and Adjacent Parts of the Weald) would suggest that groundwater flow beneath the application site would be towards the south.
- 9.23 The EA confirm that they do not monitor groundwater levels or quality within 4km of the application site. With reference to the geology of Britain viewer published on the British Geological Survey website, borehole TQ11SW98 is located within the Site. However, at the time of writing, information from this borehole was not available.
- 9.24 Notwithstanding the above, records from 3 boreholes within close proximity to the Site are summarised below.

## WATER ENVIRONMENT 9

Table 9-3 Borehole Record Summary

Borehole reference	Location	Record Year	Ground Level (m AOD)	Rest Water Level (m AOD)
TQ11SW7	North of the Site	1934	54.86	42.06
TQ11SW13	Adjacent to the Site – South of the A283 Washington Road	1893	59.37	39.32
TQ11SW14		1893		39.32
		1959	56.13	40.46

- 9.25 The above indicates a groundwater table varying between 12.8m and 20.05m below ground level (bgl).
- 9.26 However, knowledge of current operation of the Site and the adjoining CEMEX Quarry indicates that excavation is not carried out below 17m AOD. With ground levels across the Site varying from 58.00m to a surveyed water level of 30.15m AOD, current site operational constraints suggests a water table located some 13.15m below the lowest ‘dry’ area of the Site.
- 9.27 It is therefore likely that due to local abstraction of groundwater, the water table has been artificially lowered and it may rise to those recorded by the British Geological Survey following the restoration of the Site, without intervention, if pumping of the pond were to cease.

### Groundwater Abstractions, Use and Quality

- 9.28 Based upon the EA’s Groundwater Source Protection Zone mapping, the application site is located outside of all Groundwater Source Protection Zones.
- 9.29 There are large groundwater abstractions in the region for potable, industrial and agricultural purposes, including significant abstractions for mineral workings.
- 9.30 No specific groundwater quality data is available for the application site. However, with reference to the EA’s River Basin Management Plan, the underlying aquifer is shown to be of good quantitative and chemical quality.

### Local Hydrology

- 9.31 The Site lies adjacent to the South Downs National Park (SDNP) with the northern boundary of the Site defined by a tributary of the River Stour which flows in a general north westerly direction.



## WATER ENVIRONMENT 9

- 9.32 With reference to the 1:25,000 scale Ordnance Survey mapping, there are a number of ponds within close proximity of the Site. These appear to drain into the tributary.
- 9.33 No specific groundwater quality data is available for the application site and the quality of the tributary has not been assessed as part of the EA's River Basin Management Plan. However, the latter has identified the River Arun, into which the River Tor discharges, to have a moderate biological and physio-chemical quality.

### Flooding and Flood Risk

- 9.34 Flood Zone Maps published by the EA, show that the Site is entirely within 'low probability of occurrence' Flood Zone 1 (defined as land which could be at risk of flooding from fluvial or tidal flood events with less than 0.1% (1:1,000 year) annual probability of occurrence i.e. considered to be at 'low probability' of flooding).
- 9.35 All potential sources of flooding to the Site have been considered and assessed in detail within the FRA provided in the Technical Appendix 9 Volume 2B.
- 9.36 The primary flood risk to the proposed development is posed by potential overland flow, conveyed from the slightly higher ground adjacent to the east and south of the Site, and from 'rebound' of groundwater across land adjacent to the pond in the event that pumping were to cease.
- 9.37 A summary of the potential sources of flooding and a review of the potential risk posed by each source at the Site is presented in Table 9-4 below.

**Table 9-4 Potential Sources of Flood Risk**

Potential Source	Potential Flood Risk at the Site	Reason
Fluvial flooding	No	Site located within Flood Zone 1 and no watercourses within vicinity of Site.
Tidal flooding	No	Inland location.
Overland flow flooding	Yes	Potential higher ground adjacent to the east and south of the Site.
Flooding from rising / high groundwater	No	The Site lies outside the 'Groundwater Emergence Zone'.
Flooding from artificial drainage systems	No	Presence of sewer network unlikely due to former use of Site.

Flooding due to infrastructure failure

No

The Site is not reliant upon any flood defence infrastructure; therefore, no flood risk is posed by failure of infrastructure.

### ASSESSMENT OF POTENTIAL IMPACTS

- 9.38 This sub-section identifies the potential impacts of the revised restoration scheme and the processing/recycling of inert waste as part of the restoration on the hydrogeological and hydrological environments prior to mitigation. It also assesses the likelihood of occurrence of each identified impact.
- 9.39 The results of this assessment are summarised in Table 9-5. It should be noted that the significance of the impact has been assessed as described in Table 9-2.

### Groundwater

#### *Groundwater Quality*

- 9.40 Without the incorporation of mitigation measures the revised restoration scheme and the proposed processing/recycling of inert waste have the potential to impact groundwater quality. This would be from the risk of contaminated runoff being intercepted or generated from the following potential sources:
- accidental spillage of raw materials, fuels and lubricants, from the processing/recycling of the waste and from the vehicles moving around the Site, including the accidental spillage of potentially polluting liquids;
  - potential release of fire fighting water in the unlikely event of a fire at the Site;
  - the change in land use may result in contaminated runoff from the weighbridges and vehicle movement areas.; and
  - contaminated runoff from the management and handling of waste materials.
- 9.41 During the construction phase of the processing/recycling facility, the potential for pollution of any groundwater by raw materials, fuels, other liquids and runoff would be limited by best practice techniques and inherent compliance with 'COSHH' regulations.
- 9.42 The likelihood of groundwater contamination due to a leak or spill of pollutants during construction or contaminated runoff during operation of the site is therefore considered to be 'low' due to the short period during which there is a risk, the limited quantities of pollutants being handled or stored at any one time, and the significant vertical distance between site ground levels and the underlying groundwater table. The magnitude of the impact is

assessed as being 'severe'. The overall significance of impact is therefore considered to be 'medium'.

- 9.43 The potential for pollution of any groundwater by raw materials, fuels, other liquids and runoff from the operation of the processing/recycling facility would be limited by robust site practices. The likelihood of contaminated runoff during operation of the site is therefore considered to be 'medium' due to the significant vertical distance between site ground levels and the underlying groundwater table (12.8m to 20.05m bgl). The magnitude of the impact is assessed as being 'moderate'. The overall significance of impact is therefore considered to be 'medium' based upon the potential migration of contaminants to the underlying aquifer.
- 9.44 In the event of a fire at the operational site there is potential, without mitigation, for uncontrolled discharge of contaminated water from site which could infiltrate to groundwater. The likelihood of this occurring is 'low' due to the fire suppression measures inherent provided as part of the proposed scheme. The magnitude of impact is assessed as being 'moderate' to 'severe' with a 'low' to 'medium' level of overall significance to groundwater quality in the absence of mitigation.
- 9.45 During the operational phase, it is considered that the potential for occurrence of pollution of groundwater in the Folkestone Beds aquifer is 'medium'. Owing to the significant vertical distance between site ground levels and the underlying groundwater table, contaminants would tend to be hydraulically separated from the aquifer and the travel time through the intermediate geology would provide a degree of mitigation. The magnitude of impact would therefore be 'moderate' with a corresponding 'medium' level of overall significance.

### *Groundwater Levels and Flow*

- 9.46 During the operational phase, the likelihood of groundwater inundation into excavations is considered 'low' significant vertical distance between site ground levels and the underlying groundwater table. The magnitude of impact would be 'moderate' with a corresponding 'low' level of overall significance.
- 9.47 With reference to paragraph 9.25 above, following the restoration of the Site, groundwater may rise to those recorded by the British Geological Survey. However, it is understood that CEMEX will continue to pump water (as necessary) from the existing pond and discharge into the adjacent watercourse. Ingress of groundwater into surface water during the restored phase due to rising groundwater table is considered to have a 'high' likelihood of occurrence during the long term. However, the magnitude of impact would be 'negligible' due to the after use of the restored Site being handed back to the Country Park. The overall significance of impact is therefore considered to be 'low'.
- 9.48 The potential of the hardstanding involved with the restoration scheme impacting on the hydrogeological regime in terms of recharge is considered

to have a 'high' probability during the short and long term and a 'negligible' magnitude due to the small size of the area affected (surfaced) compared to the overall recharge area. Hence the risk is considered to be 'low'.

### *Surface Water*

#### Surface Water Quality

- 9.49 Without the incorporation of mitigation measures the revised restoration scheme and proposed processing/recycling facility and have the potential to impact on the quality of surface water. This would be from the risk of contaminated runoff being generated from the following potential sources:
- accidental spillage of raw materials, fuels and lubricants, from the processing/recycling of the waste and from the vehicles moving around the Site, including the accidental spillage of potentially polluting liquids;
  - potential release of fire fighting water in the unlikely event of a fire at the Site;
  - increase in suspended solids;
  - the change in land use may result in contaminated runoff from the weighbridges and vehicle movement areas.; and
  - contaminated runoff from the management and handling of waste materials.
- 9.50 During the construction phase of the processing/recycling facility, in the short term, hydrocarbon pollution from untreated runoff associated with roads and car parking areas could cause issues for surface water quality without suitable mitigation. The likelihood of this occurring is 'medium' due to ground disturbance associated with construction or hydrocarbon pollution from vehicles over a relatively short timeframe. Due to the proximity of the surface water receptor to the Site, the magnitude is assessed as 'moderate' with a 'medium' level of overall significance to surface water quality without the incorporation of suitable mitigation methods.
- 9.51 Accidental spillage of raw materials, fuels, other liquids and runoff from the operation of the processing/recycling facility has the potential to cause pollution of surface water. However, any pollution is likely to be localised and any pollution on a catchment scale would be expected to occur in the event of pumping of polluted water. Therefore, the likelihood of occurrence is 'low' during the short term and the magnitude of impact could be 'moderate' hence the overall risk is considered to be 'low'.
- 9.52 In the event of a fire at the operational site there is potential, without mitigation, for uncontrolled discharge of contaminated water from site which could pollute surface water. The likelihood of this occurring is 'low' due to the fire suppression measures inherent provided as part of the proposed scheme. The magnitude of impact is assessed as being 'moderate' to 'severe' with a 'low' to 'medium' level of overall significance to surface water quality in the absence of mitigation.

- 9.53 There is potential for surface water to become contaminated with suspended solids during construction and landscaping activities associated with the restoration scheme owing to surface runoff from working areas and soil stockpiles. The likelihood of this occurring is 'medium' during the short and the magnitude of impact could be 'mild' to 'moderate' with an overall 'low' to 'medium' significance.
- 9.54 During the operation of the Site hardstanding areas (especially roads and yards) have potential to cause pollution due to possible presence of hydrocarbons and silts in surface water runoff. Without mitigation, the likelihood of occurrence is 'medium' during the short and long term and the magnitude of impact could be 'moderate' hence the overall risk is considered to be 'medium'.

### *Flood Risk*

- 9.55 The development of the Site would not lead to an increase in population within a flood risk area during the operation and restored phases as the Site lies in 'low probability of occurrence' Flood Zone 1.
- 9.56 A detailed assessment of the flood risk to the site is presented in Appendix 9 Volume 2B. The restoration scheme will comprise the capping of inert waste fill thereby potentially increasing the rate and volume of surface water as a consequence of the proposed development.
- 9.57 It is envisaged that the proposed temporary mobile processing operation will have a limited impact on surface water runoff rate and volume due to provision of a screener as the only hardstanding area.
- 9.58 It is considered that there is a 'high' probability of an increased rate of runoff during the short, medium and long term which could cause a 'mild' impact on the site and adjacent land given the limited extent of development. The significance of this impact has the potential to be 'medium' in the absence of mitigation.

### **Summary of Unmitigated Potential Impacts**

- 9.59 Table 9-5 identifies the potential impacts of the proposed development and also identifies where mitigation measures are required to reduce these potential impacts to acceptable levels. Proposed mitigation measures, over and above those already identified and included in the scheme design, are identified below and for ease of reference are detailed in terms of water quality, hydrology and hydrogeology.

**Table 9-5 Summary of Unmitigated Potential Impacts**

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?
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## WATER ENVIRONMENT 9

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?
<b>Groundwater</b>					
Contaminated runoff including leakage of fuels entering groundwater during construction phase	Regional, Short Term (Adverse)	Low	Severe	Medium	Yes
Contaminated runoff including leakage of fuels entering groundwater during operational phase	Regional, Short and Long Term (Adverse)	Medium	Moderate	Medium	Yes
Uncontrolled discharge of fire fighting water into groundwater	Regional, Short and Long Term (Adverse)	Low	Moderate to Severe	Low to Medium	Yes
Contaminated runoff entering groundwater during operational phase	Regional, Short and Long Term (Adverse)	Medium	Moderate	Medium	Yes
Groundwater inundation during construction	Local, Short Term (Adverse)	Low	Moderate	Low	No
Reduction in groundwater recharge	Regional, Long Term (Adverse)	High	Negligible	Low	No
Ingress of groundwater into surface water following restoration	Local, Long Term (Adverse)	High	Negligible	Low	No
<b>Surface Water</b>					
Contaminated runoff entering surface waters during construction phase	Regional, Short and Long Term (Adverse)	Low	Moderate	Low	No
Contaminated runoff entering surface	Regional, Short and Long Term	Medium	Moderate	Medium	Yes

## WATER ENVIRONMENT 9

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?
waters during operational phase	(Adverse)				
Uncontrolled discharge of fire fighting water into groundwater	Regional, Short and Long Term (Adverse)	Low	Moderate to Severe	Low to Medium	Yes
Suspended solids entering surface water	Regional, Short and Long Term (Adverse)	Medium	Mild to Moderate	Low to Medium	Yes
Contaminated runoff entering surface waters	Regional, Short and Long Term (Adverse)	Medium	Moderate	Medium	Yes
<b>Flood Risk</b>					
Increased rate of runoff from site leading to flooding	Local, Short, Medium and Long Term (Adverse)	High	Mild	Medium	Yes
Potential flood risk to the site	Local, Short, Medium and Long Term (Adverse)	Medium	Mild	Low	No

### PROPOSED MITIGATION MEASURES

- 9.60 Mitigation measures to address the potential impacts detailed in Table 5 are described below. These measures either reduce the likelihood of an event occurring, or reduce the magnitude of the consequences if the event does occur. It should be noted that several of the mitigation measures proposed below would have a positive effect on more than one potential impact.
- 9.61 A number of operational mitigation measures and best available techniques have been incorporated into the scheme design, which would reduce the potential risk to ground and surface water.

#### Groundwater

- 9.62 Best practice techniques would be incorporated within the management procedures for construction and operation activities onsite in order to protect

## WATER ENVIRONMENT 9

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the water environment from pollution incidents. The mitigation measures can be summarised as follows:

- during construction there would be heavy plant and machinery required on site and as a result it is appropriate to adopt best working practices and measures to protect the water environment, including those set out in the Environment Agency's Pollution Prevention Guidance (PPG1);
- in accordance with PPG2 all above ground on-site fuel and chemical storage would be bunded;
- an emergency spill response kit would be maintained on site;
- a vehicle management system / road markings would be put in place wherever possible to reduce the potential conflicts between vehicles and thereby reduce the risk of collision; and
- a speed limit would be imposed on site to reduce the likelihood and significance of any collisions

9.63 The above measures would significantly reduce the likelihood of pollutants being discharged from the Site, such that the overall risk is reduced to 'low'.

9.64 The proposed processing/recycling and restoration scheme would also be subject to an Environmental Permit, the application for which would include appropriate measures to avoid unacceptable impact on the environment including water.

9.65 Furthermore, the site design and mitigation measures would ensure that there is a low or negligible risk of discharge of hazardous substances (e.g. mineral oil) to groundwater or that the proposed operations would cause pollution of groundwater as a result of discharge of non-hazardous substances.

### Surface Water

9.66 Sustainable drainage systems (SuDS) would be implemented across the Site in line with the requirements of the NPPF and best practice to satisfy surface water management and water quality criterion and objectives.

9.67 However, the north eastern area of the Site is currently underwater forming a water body extending onto the adjoining CEMEX UK site and currently used as part of their operations. It is our understanding that this pond will be retained as part of the restoration scheme with a pumped outfall into adjacent watercourse(s) to maintain a designed water level of 37.00m AOD.

9.68 It is proposed that the potential increase in rate and volume of runoff from the restored landform and proposed processing/recycling be negated through the use of the existing pond. It is understood that the Client has received confirmation from Wessex County Council that discharge into the existing pond would be deemed acceptable as CEMEX (a riparian owner of the Lake downstream of the Site) is responsible for accepting water from their upstream neighbour (the Site) and transferring this, along with any existing drainage from their own property.



## WATER ENVIRONMENT 9

- 9.69 As the pond will retain a pumped outfall, off site discharge will be controlled in line with the relevant discharge consent and Environmental Permit. The management of the pond, including discharge permit and operation, will continue to be the responsibility of CEMEX UK.
- 9.70 In addition to the above, it is proposed that a network of swales be provided within the design of the restoration scheme to provide surface water quality benefits in the form of pre-treatment. The proposal is to provide a series of swales to capture surface water runoff from the restored landform prior to its discharge into the existing pond.
- 9.71 The FRA (Technical Appendix 9/Volume 2B) provides details of the proposed surface water management.

### Flood Risk

- 9.72 No formal flood mitigation measures are necessary in order to adequately manage and reduce risks to an acceptable level for the lifetime of the proposed development.
- 9.73 Due to the low residual risk of flooding from an event exceeding the proposed design criteria no specific flood resilience measures are necessary. Moreover, as discussed at Section 8.2.1, the existing pond has sufficient capacity to allow for any uncertainties.

### ASSESSMENT OF RESIDUAL IMPACTS

- 9.74 The residual impacts following the implementation of the mitigation measures referred to above are summarised in Table 9-6.

**Table 9-6 Summary of Mitigated Residual Impacts**

Potential Impact	Proposed Mitigation Measures	Mitigated Probability of Occurrence	Mitigated Magnitude of Impact	Residual Significance of Impact
<b>Groundwater</b>				
Contaminated runoff including leakage of fuels entering groundwater during construction phase	<i>Site best practice (maintenance, traffic management, bunding, spill kits etc).</i>	Low	Mild	Low
Contaminated runoff including leakage of fuels entering groundwater during	<i>SuDS and appropriate pollution control measures. Robust site working practices.</i>	Low	Moderate	Low

## WATER ENVIRONMENT 9

Potential Impact	Proposed Mitigation Measures	Mitigated Probability of Occurrence	Mitigated Magnitude of Impact	Residual Significance of Impact
operational phase				
Uncontrolled discharge of fire fighting water into groundwater	<i>Appropriate PPG18 controls.</i>	Low	Moderate	Low
Contaminated runoff entering groundwater	<i>SuDS techniques for the treatment of surface water prior to off-site discharge.</i>	Low	Moderate	Low
Groundwater inundation during construction and operation	<i>Appropriate abstraction and treatment prior to discharge in accordance with relevant Environmental Permit</i>	Negligible	Mild	Near Zero
<b>Surface Water</b>				
Contaminated runoff including leakage of fuels entering surface waters during construction phase	<i>SuDS and appropriate pollution control measures. Robust site working practices.</i>	Low	Mild	Low
Contaminated runoff including leakage of fuels entering surface waters during operational phase	<i>Site best practice (maintenance, traffic management, bunding, spill kits etc).</i>	Low	Mild	Low
Uncontrolled discharge of fire fighting water into groundwater	<i>Appropriate PPG18 controls.</i>	Low	Moderate	Low
Contaminated runoff entering surface waters	<i>SuDS techniques for the treatment of surface water prior to off-site discharge.</i>	Low	Moderate	Low
<b>Flood Risk</b>				

## WATER ENVIRONMENT 9

Potential Impact	Proposed Mitigation Measures	Mitigated Probability of Occurrence	Mitigated Magnitude of Impact	Residual Significance of Impact
Increased rate of runoff from site leading to flooding	SuDS techniques for the attenuation of surface water.	Negligible	Moderate	Near Zero

### CONCLUSIONS

- 9.75 The potential impacts of the proposed processing/recycling and restoration scheme upon the baseline hydrological environment have been identified and assessed, and where appropriate, mitigation measures have been accommodated into the design of the proposal.
- 9.76 All aspects of the operation of the Site would be in accordance with best practice guidance.
- 9.77 A Flood Risk Assessment (FRA) has been undertaken for the proposed development. The FRA concluded that the application site is presented as being deliverable and highly sustainable in flood risk terms, and that key requirements set out within the NPPF and local planning policies may be adequately satisfied.
- 9.78 Appropriate SUDS measures would be incorporated into the scheme to ensure surface water runoff from the proposed development is managed in a robust and sustainable manner.
- 9.79 Thus, following review of the mitigation included in the site design and the specific mitigation measures identified in this chapter, the overall potential significance of impact to the water environment is assessed as acceptable and **'low'** to **'near zero'**.