

## **APPENDIX 11.3 – ASSESSMENT METHODOLOGY**

### **1 ASSESSMENT METHODOLOGY**

#### **1.1 Sensitivity**

1.1.1 The sensitivity of receptors to hydrological and hydrogeological impacts has been determined by reference to Table 1, which documents a hierarchy of factors relating to the water environment. Examples of the environmental criteria contained within Table 1 include international and national designations; the status of watercourses and waterbodies; and work undertaken by SEPA, along with the professional judgement of the assessment team. When a receptor meets multiple criteria or there is an absence of verified published data, the highest applicable sensitivity category is assigned to allow an assessment of the worst-case scenario.



**Table 1 Criteria for Determining Receptor Sensitivity**

Sensitivity	Criteria	Typical Examples			
		Groundwater	Surface Water	Abstractions	Hydro-ecological receptors
<b>Very High</b>	Receptor has a high quality and rarity on a national or regional scale and limited potential for substitution. Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long-term or not possible.			Abstractions for public water supply.	
<b>High</b>	Receptor has a high quality and rarity on a local scale and limited potential for substitution. Receptor is generally vulnerable to impacts that may arise from the project and recoverability is slow and/or costly.	Highly productive aquifer (according to British Geological Survey (BGS)). Groundwater providing a regionally important resource or supporting a site protected under EU and UK habitat legislation (e.g. water dependent ecological receptors (GWDTE)).	Protected under EU or UK habitat legislation (e.g. Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) or Ramsar Site). Designated Salmonid / Cyprinid Waters and/or fishery present. Surface water providing a regionally important resource or supporting a site protected under EU and UK habitat legislation (e.g. water dependent ecological receptors).	Abstractions for non-potable use >10m <sup>3</sup> /day (e.g. industry / process water, spray irrigation, river augmentation). Abstractions for private water supplies.	Nationally and internationally designated sites where hydrology/hydrogeology is a key factor in designation (e.g. Ramsar / SSSI / SAC / Special Protection Areas (SPA) sites).
<b>Medium</b>	Receptor has a medium quality and rarity, local scale and limited potential for substitution/replacement or receptor with a low quality and rarity, regional or national scale and limited potential for substitution. Receptor is somewhat vulnerable to	Moderately productive aquifers (according to BGS). Groundwater in peat deposits.	Watercourse with designated features. Large lakes and non-potable reservoirs.	Abstractions for non-potable use <10m <sup>3</sup> /day (e.g. industry / process water, spray irrigation, river augmentation).	Statutory designated sites where hydrology/hydrogeology is a key factor in designation (e.g. National Nature Reserves (NNR), Local Nature Reserves (LNR)).

**Table 1 Criteria for Determining Receptor Sensitivity**

Sensitivity	Criteria	Typical Examples			
		Groundwater	Surface Water	Abstractions	Hydro-ecological receptors
	impacts that may arise from the project and/or has moderate to high recoverability.				
<b>Low</b>	Receptor with a low quality and rarity, local scale and limited potential for substitution. Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability.	Low productivity aquifers (according to the BGS). Aquifers supporting potentially water dependent ecosystems e.g. Local Wildlife Sites (LWS)/ wetlands.	Watercourse with no designated features. Non-sensitive water resources (non WFD classified e.g. small lakes, ponds). Man-made feature not in hydraulic continuity (e.g. canal).	Abstractions for industrial use (e.g. dust suppression / washing machinery).	Non-statutory designated sites where hydrology / hydrogeology is a key factor in designation (e.g. Sites of Importance for Nature Conservation (SINC), LWS).
<b>Negligible</b>	Attribute has a very low environmental importance and/or rarity on local scale. Receptor is of negligible value, not vulnerable to impacts that may arise from the project and/or has high recoverability.		Man-made feature with no ecological importance (e.g. land drains).		
<b>Note</b> Professional judgement based on the baseline condition of the receptor should be used to determine a receptor's sensitivity.					

## 1.2 Magnitude of Change

1.2.1 **Table 2** describes the guideline criteria used to assess the magnitude of change from the baseline condition that may occur due to the Proposed Development.

Table 2 Guideline Criteria to Determine Magnitude of Change	
Magnitude of Change from Baseline Condition	Guideline Criteria
High	Total loss of, or alteration to, the baseline resource such that post-development characteristics or quality would be fundamentally and irreversibly changed.
Medium	Loss of, or alteration to, the baseline resource such that post-development characteristics or quality would be partially changed.
Low	Small changes to the baseline resource, which are detectable, but the underlying characteristics or quality of the baseline situation would be similar to pre-development conditions.
Negligible	A very slight change to the baseline conditions, which is barely distinguishable, and approximates to the 'no change' situation.

## 1.3 Scale of effect

1.3.1 The scale of effect is determined in relation to the sensitivity of the receptor and the potential magnitude of change from baseline conditions, using the matrix shown in **Table 3**. Effects can be:

- Either beneficial or adverse;
- Minor, Moderate or Major;
- Neutral/Negligible.

Table 3 Matrix for Determining Scale of Effect						
		Receptor Sensitivity				
		Very High	High	Medium	Low	Negligible
Magnitude of Change from Baseline Condition	High	Major	Major	Moderate	Moderate	Minor
	Medium	Major	Moderate	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

## 1.4 Assessment of cumulative effects

1.4.1 The assessment of cumulative effects on the water environment considers the combined potential effects of other developments, with the potential to affect the water environment, within the same catchment(s) as the Proposed Development. This included consideration of other developments currently in the planning process and within the same catchment(s) as the Proposed Development. **Table 1** to **Table 3** are also used to determine the scale of cumulative effects.

## 1.5 Statement of significance

1.5.1 Guideline criteria for categories of significant effect are included in **Table 4**. Effects and cumulative effects that have been determined to be major or moderate are considered to have a significant effect in terms of the EIA Regulations and require specific mitigation in addition to good design and measures in a Construction Environment Management Plan (CEMP) or equivalent to address them. Effects that are identified as minor or negligible are not considered to have a significant effect and no further mitigation is required.

<b>Table 4 Guideline criteria for categories of significant effect</b>			
<b>Scale of Effect</b>	<b>Significance</b>	<b>Definition</b>	<b>Guideline Criteria</b>
<b>Major</b>	Significant	A fundamental change to the environment	Changes in water quality or quantity affecting widespread catchment or groundwater reserves of strategic significance or changes resulting in substantial loss of conservation value to aquatic habitats and designations.
<b>Moderate</b>	Significant	A large, but non-fundamental change to the environment	Changes in water quality or quantity affecting part of a catchment or groundwaters of moderate vulnerability, or changes resulting in loss of conservation value to aquatic habitats or designated areas.
<b>Minor</b>	Not Significant	A small but detectable change to the environment	Localised changes in drainage patterns or groundwater flow, or changes resulting in minor and reversible effects on surface and groundwater quality or aquatic habitats.
<b>Negligible</b>	Not Significant	No detectable change to the environment	No impact on drainage patterns, surface and groundwater quality or aquatic habitat.