

Appendix 10.3– Assessment Methodology

Effect significance is determined as a function of the receptor's sensitivity (environmental value) and the magnitude of the impact (degree of change). The Environmental Statement (ES) determines effect significance through: Assigning receptor sensitivity; Assigning impact magnitude; Assigning effect significance.

Assigning Receptor Sensitivity

The typical descriptors and criteria for the sensitivity of a water environment receptor are listed below in Table 1 Definition of Sensitivity of the Receiving Environment.

In accordance with Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring (Revision 1 August 2020), Table 1 should be taken as examples of assigning sensitivity.

Table 1 – Definition of Sensitivity of the Receiving Environment (modified from Table 3.2N LA104 Rev 1 August 2020)

Value/Sensitivity of receptor/resource	Definition
Very High	Very High importance and rarity, international scale, and very limited potential for substitution/replacement. Surface water: WFD Current Overall Status of High. Flood risk: Land within Flood Zone 3 or more than one hundred residential properties protected from flooding by flood defence infrastructure or by natural floodplain storage. • Site of Special Scientific Interest (SSSI) or Special Area of Conservation (SAC) • Excellent water quality • Large scale industrial agricultural abstractions >1000m³/day in 2km downstream, or abstractions for public drinking water supply • Designated salmonid fishery and/or salmonid spawning grounds present • Watercourse widely used for recreation, directly related to watercourse quality (e.g. swimming, salmon fishery etc.) in 2km downstream • Conveyance of flow and material, main river >10m wide • Active floodplain area (important in relation to flood defence)

Value/Sensitivity of receptor/resource	Definition
High	High importance and rarity, national scale, and limited potential for substitution/replacement. Flood risk: Land within Flood Zone 3 and/or 2 or between one and one hundred residential properties or industrial premises protected from flooding by flood defence infrastructure or by natural floodplain storage. • Surface water: WFD Current Overall Status of Good. • Good water quality • Large scale industrial agricultural abstractions 500-1000m³/day in 2km downstream • Surface water abstractions for private water supply for more than 15 people • Designated salmonid fishery and/or cyprinid fishery • Watercourse used for recreation, directly related to watercourse quality (e.g. swimming, salmon fishery etc.) • Conveyance of flow and material, main river >10m wide • Active floodplain area (important in relation to flood defence)

Value/Sensitivity of receptor/resource	Definition
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution/replacement. Flood risk: Flood plain within Flood Zone 2 and/or 1 or limited constraints and a low probability of flooding of residential and industrial properties. • Surface water: WFD Current Overall Status of Moderate • Industrial/agricultural abstractions 50-499m³/day in 2km downstream • Designated cyprinid fishery or undesignated for fisheries - Occasional or local recreation (e.g., local angling clubs) • Conveyance of flow and material, main river <10m wide or ordinary watercourse 5m wide • Existing flood defences, may be subject to improvement plans • Groundwater abstractions 50-499m³/day - Private water supplies present • Designated cyprinid fishery, salmonid species may be present and catchment locally important for fisheries • Watercourse not widely used for recreation, or recreation use not directly related to watercourse quality
Low	Receptor is of low or medium importance, rarity, and local scale. Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability. Flood risk: Flood plain within Flood Zone 2 and/or 1 or limited constraints and a very low probability of flooding of residential and industrial properties. Environmental equilibrium stable and resilient to changes that are greater than natural fluctuations, without detriment to its present character. • Surface water: WFD Current Overall Status of Poor. • Industrial/agricultural abstractions < 50m³/day in 2km downstream • Fish sporadically present or restricted, no designated fisheries; not used for recreation • Watercourse < 5m wide • Area does not flood • Receptor heavily engineered or artificially modified and may dry up during summer months

Value/Sensitivity of receptor/resource	Definition
Negligible	Receptor is of very low importance, rarity, and local scale. Receptor is not vulnerable to impacts that may arise from the project and/or has high recoverability. Environmental equilibrium stable and resilient to changes that are greater than natural fluctuations, without detriment to its present character. • Flood risk: Area does not flood • Surface water: WFD Current Overall Status of Bad. • Industrial/agricultural abstractions < 50m³/day in 2km downstream • Fish sporadically present or restricted, no designated fisheries; not used for recreation • Watercourse < 5m wide • Receptor heavily engineered or artificially modified and may dry up during summer months

Assigning magnitude of impact

The magnitude of impacts on receptors shall be reported within environmental assessments. The descriptions for magnitude of impact (as outlined in Table 2) shall be applied by the project. *NOTE Where relevant, individual environmental factors can set out variations in magnitude description requirements.*

In accordance with Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring (Revision 1 August 2020), Table 2 should be taken as examples of assigning magnitude of impact.

Table 2 – Magnitude of Impact and typical descriptions (modified from Table 3.4N LA104 Rev 1 August 2020)

Magnitude of impact (change)		Description and Example
Major	Adverse	Total loss of ability to carry on activities. Impact is of extended temporal or physical extent and of long-term duration (i.e., up to 10 years duration). Significant observable degradation in water resource quality and/or increase in flood risk (i.e., up to 10 years duration). hydrology or water quality examples: • Loss of EC designated Salmonid fishery • Loss of designated species/habitats • Change in water quality status of river reach • Compromise employment source • Loss of flood storage/increased flood risk • Pollution of potable source of abstraction
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.

Magnitude of impact (change)		Description and Example
Moderate	Adverse	Loss of or alteration to significant portions of key components of current activity. Impact is of moderate temporal or physical extent and of medium-term duration (i.e., up to 5 years). Observable degradation in water resource quality and/or increase in flood risk (i.e., up to 5 years). • Loss in productivity of a fishery • Contribution of a significant proportion of effluent in the receiving water, but insufficient to change its water quality status • Reduction in the economic value of the feature
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Small reduction in baseline conditions, leading to a reduction in level of activity that may be undertaken. Impact is of limited temporal or physical extent and of short-term duration (i.e., up to 2 years). Degradation in water resource quality and/or slight increase in flood risk (i.e., up to 2 years). • Measurable change in attribute, but of limited size and/or proportion
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very small reduction in baseline condition. Physical extent of impact is negligible and of short-term duration (i.e., less than 1 year) No observable degradation in water resource quality and/or flood risk (i.e., less than 1 year). • Very minor changes in discharges to watercourse but no loss in quality, fishery productivity or biodiversity • Very minor effect on the economic value of the receptor • Marginal increase in flood risk
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change		No change from baseline conditions, no loss or alteration of characteristics, features or elements; no observable impact in either direction.

Assigning level of effect and significance

The level and significance of effects must be reported within an ES, in accordance with the EIA Directive 2014/52/EU [Ref 1.N].

The significance of effects shall be reported within non-statutory environmental assessment reports.

The descriptions for significance (as outlined in Table 3 ex Table3.7 of LA104 Rev 1 August 2020) shall be applied by the project.

Table 3- Descriptions for Significance (modified from Table 3.7 of LA104 Rev 1 August 2020)

Significance Category	Typical Description
Very large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors.
Slight	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

NOTE 1 Where relevant, individual environmental factors can set out variations in significance description requirements.

NOTE 2 The approach to assigning significance of effect relies on reasoned argument, the professional judgement of competent experts and using effective consultation to ensure the advice and views of relevant stakeholders are taken into account.

NOTE 3 Significant effects typically comprise effects that are within the moderate, large or very large categories.

Table 4 – Significance Criteria

Environmental value (sensitivity)	Magnitude of Impact- Degree of Change					
		No change	Negligible	Minor	Moderate	Major
	Very High	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral	Neutral or slight	Slight

The assessment of the significance of environmental effects shall cover the following factors:

- 1) the receptors/resources (natural and human) which would be affected and the pathways for such effects;
 - 2) the geographic importance, sensitivity or value of receptors/resources;
 - 3) the duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);
 - 4) reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
 - 5) environmental and health standards (e.g. local air quality standards) being threatened;
- and
- 6) feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment