

SLR Evaluation Criteria and Sub-Criteria

Walker Macy -- 8/30/2023

To prepare for sea level rise and flooding impacts in the South Park and Georgetown neighborhoods, the City of Seattle is considering conceptual alternatives to reimagine the Duwamish River shoreline. These seek to mitigate long-term coastal flooding that is worsened by sea level rise, while also providing other multiple benefits for the Duwamish Valley community.

To evaluate different design alternatives, the consultant team developed evaluation criteria with key partners to evaluate the proposed alternatives. Using the Duwamish Valley Resilience District Guiding Principles as a guide, we solicited ideas for SLR evaluation criteria from the Advisory Group. These initial lists were then vetted via a racial equity analysis by the Racial Equity consultant, which refined the initial set of evaluation criteria and identified additional criteria and sub-criteria. As part of the refinement process, we assessed each of the criteria based on the following considerations:

- Can the criteria be measured in an objective and defensible way?
- Do the criteria differ across alternatives in a way that meaningfully delineates them?

After assessing the criteria for how well they contrast the performance between alternatives, we proposed the following criteria and sub-criteria. The criteria will be used to evaluate the trade-offs between proposed alternatives and will be used to continuously refine proposed alternatives throughout this process.

We have also included our proposed measurement for each sub-criterion.

Summary Table

The table below provides an overview of the various criteria, their associated weights, and the number of sub-criteria within each criteria category. Criteria were weighted based on input from Advisory Group members about the relative importance of each criterion.

Criteria Category	Weighting	Number of Sub-criteria
Habitat and Ecology	0.157534247	2
Equity and Prosperity in Place	0.164383562	2
Economic Impact	0.123287671	2
Public Access and Co-Benefits	0.130136986	3
Adaptability and Effectiveness	0.143835616	3
Participation and Transparent Process	0.130136986	1
Feasibility	0.150684932	2
	Total	15

Evaluation Criteria and Sub-criteria

The table below provides in detail the criteria, sub-criteria, and proposed measurements for each sub-criterion. There are two primary means of sub-criteria measurement: categorical (high, medium, low) or scale (1 to 5). The type of measurement approach is defined by the question above: can the criteria be measured in an objective and defensible way? Additionally, since these criteria are used to evaluate trade-offs across proposed alternatives, they are evaluated in relation to each other – thus a low ranking doesn't necessarily mean that alternative performs poorly for that sub-criterion, rather that the alternative has relatively fewer benefits in relation to other alternatives.

Criteria Category	Sub-criteria	Proposed Measurement
Habitat and Ecology	1. What is the potential for this alternative to support improved habitat quantity and quality ?	Using categorical measurements, we will assess how each alternative can support habitat quantity and quality goals (e.g., relative amount of new habitat restored, connectivity of new habitat, etc.).
	2. How well does this alternative contribute to restoration tree canopy that supports improved ecological health ?	Using categorical measurement, we will assess each alternative's potential contribution to tree canopy restoration (e.g., proposed land usage, landscaped areas, etc.).
Equity & Prosperity in Place	1. How well does the alternative support anti-displacement and minimize harm to residents and businesses ?	Using categorical measurement, we will assess each alternative's ability to support anti-displacement and its ability to minimize harm to residents and businesses (e.g., cost of living and rent affordability, total area of property needed to implement alternative, number of individual property owners whose operations are affected during and after construction, potential for value capture and re-investment in residential communities, etc.).
	2. What is the potential for addition of local jobs/employment ?	Using categorical measurement, we will assess each alternatives potential for adding local jobs/ employment across a variety of sectors.
Economic Impact	1. What are the potential direct and indirect economic benefits of this alternative, and how are they distributed between residential and business communities?	Using categorical measurement, we will evaluate the potential direct and indirect economic benefits of each alternative, and how they are divided between residential and business communities.
	2. What are the relative direct and indirect economic costs of this alternative, and how are they distributed between residential and business communities and implementers?	Using categorical measurement, we will assess the direct and indirect costs of each alternative, and how they impact residential and business communities and public authorities building the infrastructure. Examples of costs include business disruption during construction or relative cost of construction.
Public Access & Co-Benefits	1. What is the relative quality and functionality of access to water and shoreline areas ?	Using categorical measurement, we will determine the relative quality and functionality of access to water and shoreline areas for the public.

Criteria Category	Sub-criteria	Proposed Measurement
	2. How well does it support improved health and wellness outcomes ?	Using categorical measurement, we will assess each alternative's ability to support improved health and wellness outcomes based on proposed land-usage, such as increased quantity and access to open space & green infrastructure.
	3. How well does this alternative contribute to the addition of green space ?	Using categorical measurement, we will evaluate each alternative's contribution to green space (e.g., proposed land use.).
Adaptability & Effectiveness	1. How fast can the alternative be implemented?	Using scale measurement, we will assess how quickly each alternative can be implemented.
	2. How effective is it to mitigate flooding issues?	Using scale measurement, we will assess each alternative's ability to mitigate flooding issues based on proposed land-usage and adaptation strategies.
	3. How effective is it to mitigate other types of extreme events ?	Using scale measurement, we will determine the effectiveness of each alternative at mitigating other types of extreme events (e.g., extreme heat, pollution, etc.).
Participation & Transparent Process	1. What level of community participation does this alternative allow throughout its design, permitting, and construction?	Using scale measurement, we will assess the level of community participation/involvement that is likely to be possible for each alternative throughout its design, permitting, and construction phases.
Feasibility	1. What is the level of effort needed to maintain the infrastructure over the long term?	Using scale measurement, we will evaluate the level of effort needed to maintain infrastructure over the long term for each alternative.
	2. What is the level of effort needed to implement this alternative over time?	Using scale measurement, we will evaluate the effort needed to implement each alternative over time.

General Benefits Across Alternatives

In addition to the evaluation criteria above, there are a variety of other required criteria that all objectives will need to meet. Some of these additional requirements of all alternatives are below.

- All alternatives **will mitigate future flooding risks** related to sea level rise and extreme precipitation.
- All alternatives will result in net ecological benefits, including **habitat quantity, habitat quality, and habitat connectivity**.
- All alternatives will offer opportunities for expression of **community identity, culture, and values** through design.

- All alternatives will be flexible in their design and **consider emerging technologies** that may allow the design to expand beyond its current scope.
- All alternatives will provide **meaningful economic benefits** compared to a no-action alternative.
- All alternatives will be rooted in **best available knowledge and science** – including local knowledges, lived experiences, and Indigenous knowledges.