

Design Guidelines for Engineered Placement of Wood



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EPW – Design Guidelines

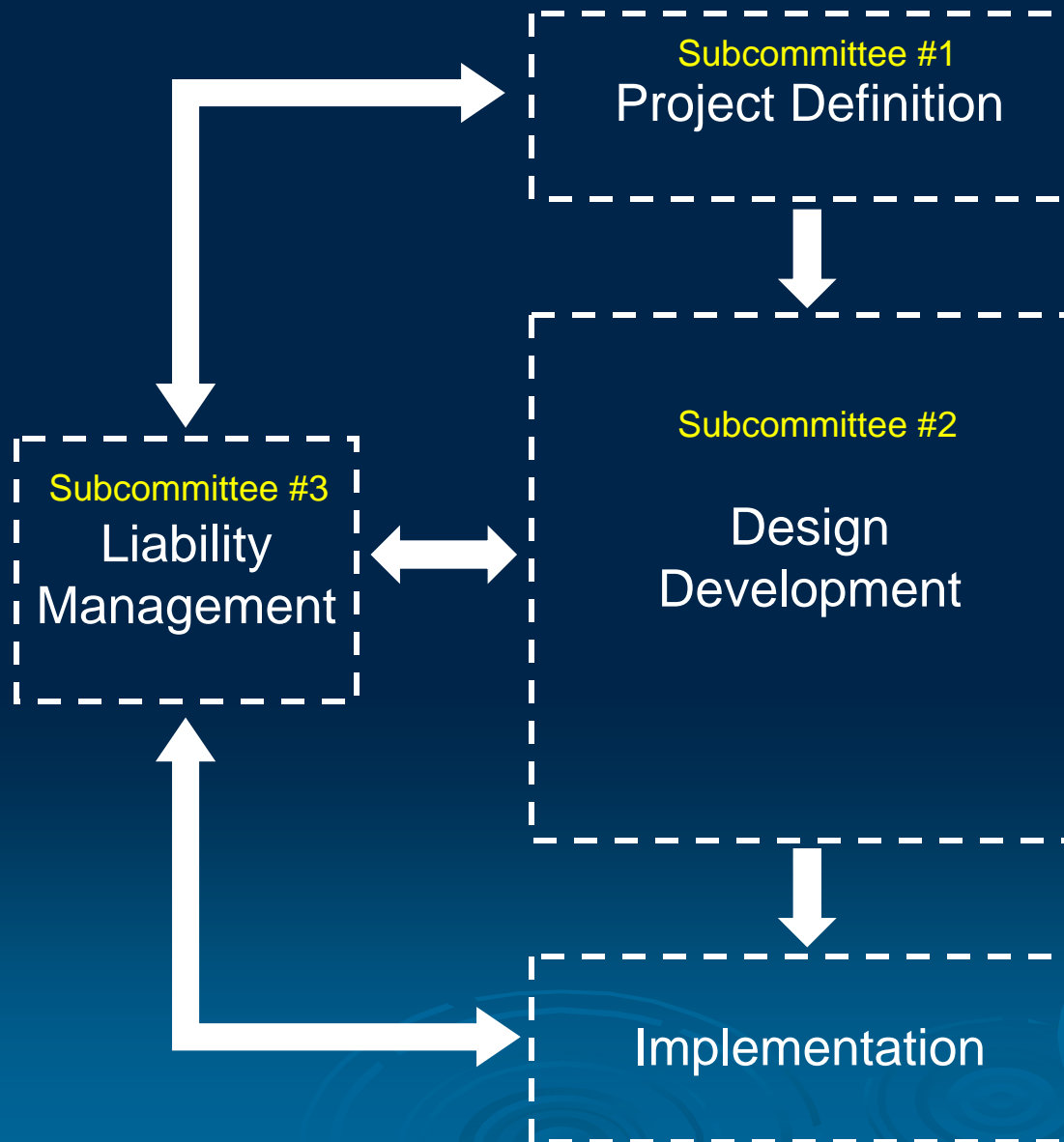
Why?

- Performance
- No established standard of practice
- Liability (infrastructure/public safety)

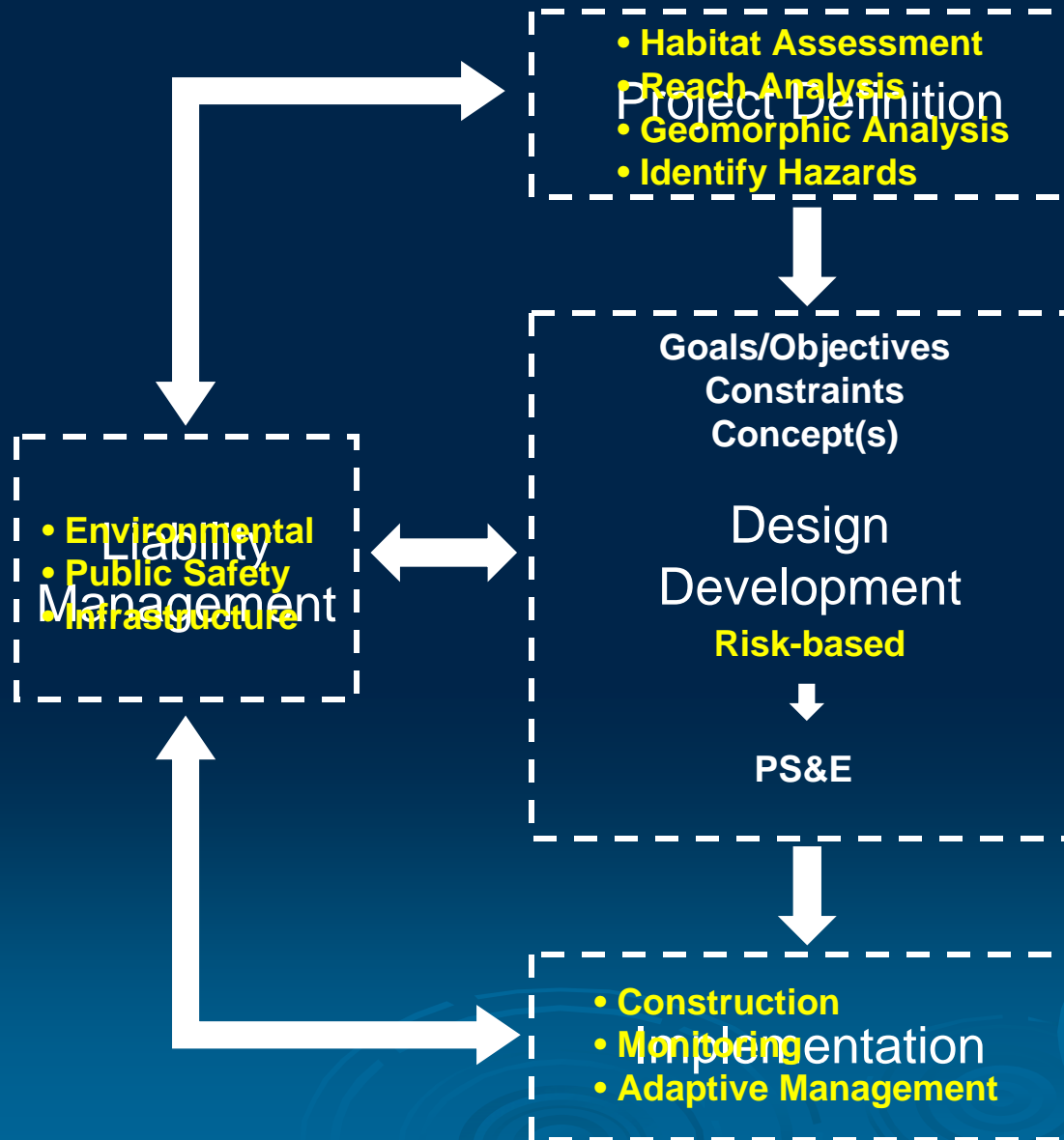
What?

- Process
- reference list
- checklist
- Identify appropriate technical and stakeholder involvement

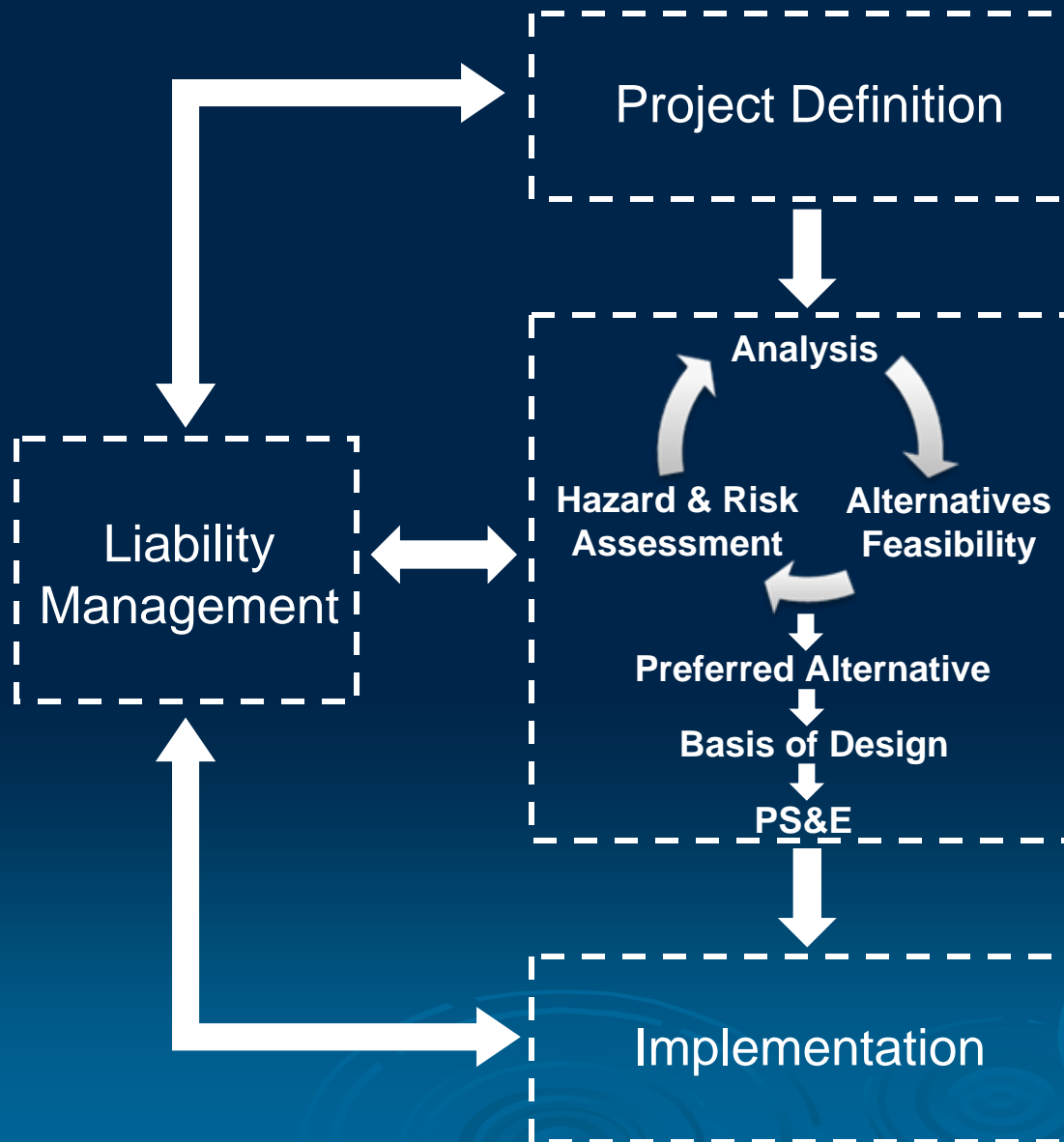
EPW – Design Guidelines



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- What is Risk?

- To expose to a chance of loss or damage; hazard **Hazard** is the potential to cause harm; **risk** on the other hand is the likelihood of harm

$$\text{Risk} = \text{Likelihood} \times \text{Consequence}$$

- Hazard & Risk Assessment



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- Hazard & Risk Assessment

- Identifying sources of potential harm**, assessing the likelihood that harm will occur, and the consequences if harm does occur.

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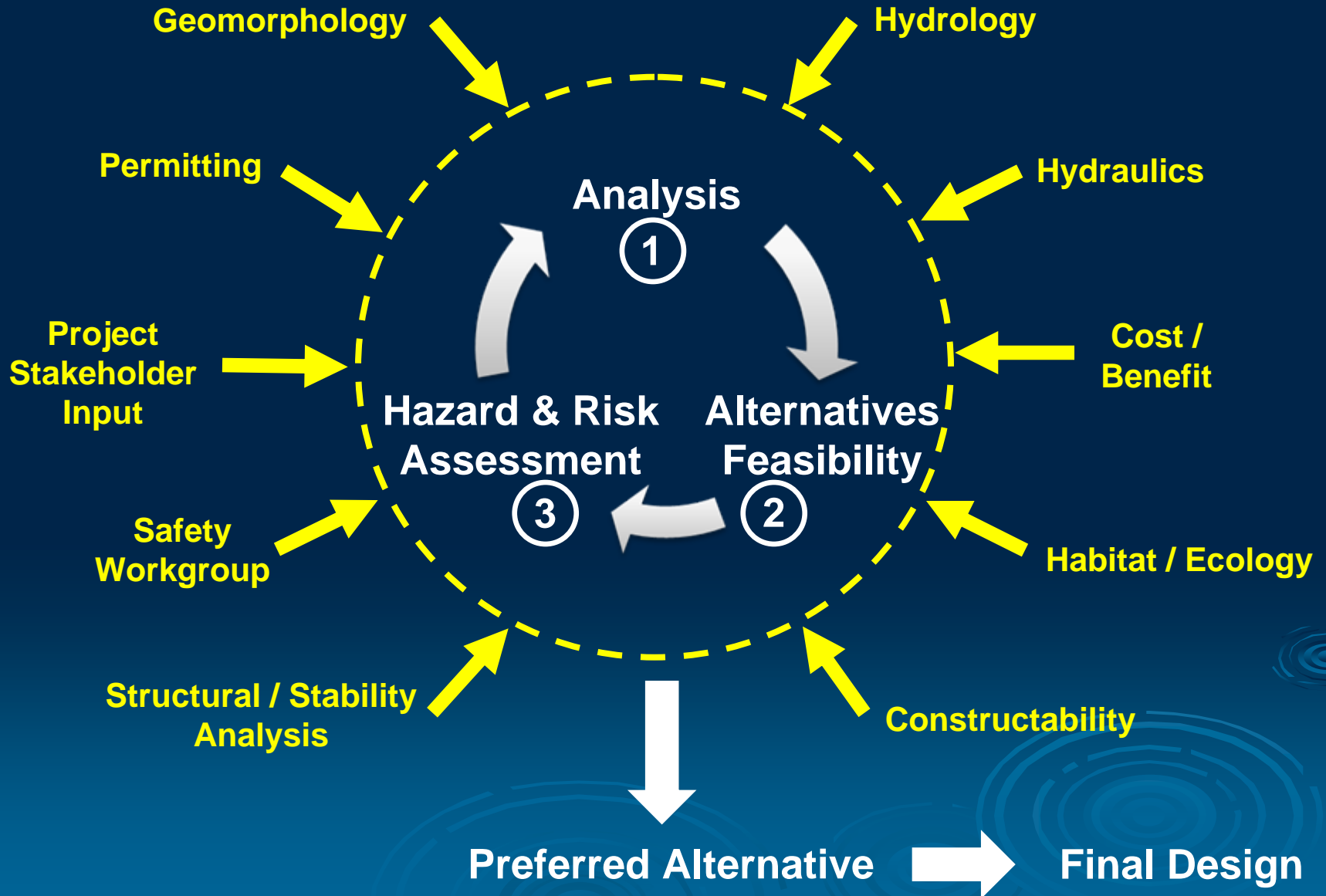
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1) Analysis

- Sediment Input
 - Transport Capacity (sediment and wood)
 - Hydrologic
 - Hydraulic
 - Erosion / Scour
 - Structural Stability
 - Life cycle / Decay
 - Ice or wood loading
 - Costing
- 

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2) Alternative Analysis

- Establish Criteria
 - Goals/objectives
 - Risks
 - Cost/Benefit
- Selection of concept
- Avoid optimism bias



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3) Hazard & Risk Assessment

- Hazard
 - Flooding
 - Erosion
 - Avulsion
 - Public Safety
 - Habitat
- Risk
 - Loss of Property
 - Loss of Life
 - Ecological Loss or Lost Opportunities



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Design

- Calculations

- Scour
- Static Force Balance
- Impact & Fatigue
- Aggradation
- Ice / Wood loading
- Individual log strength
- Life cycle / Decay

- Level of Design

- Factor of Safety
 - Sensitivity Analysis
 - Redundancy
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Conclusion:

- Risk-based process
- Reference tool
- Checklist(s)
- Keys on input from a broad range of disciplines
- Introducing wood is important, it's evolving rapidly, it's time.