

Mitigation hierarchy



Learning objectives

- Introduction to the application of the mitigation hierarchy through the use of a case study
- Application of mitigation hierarchy to occupational health and safety

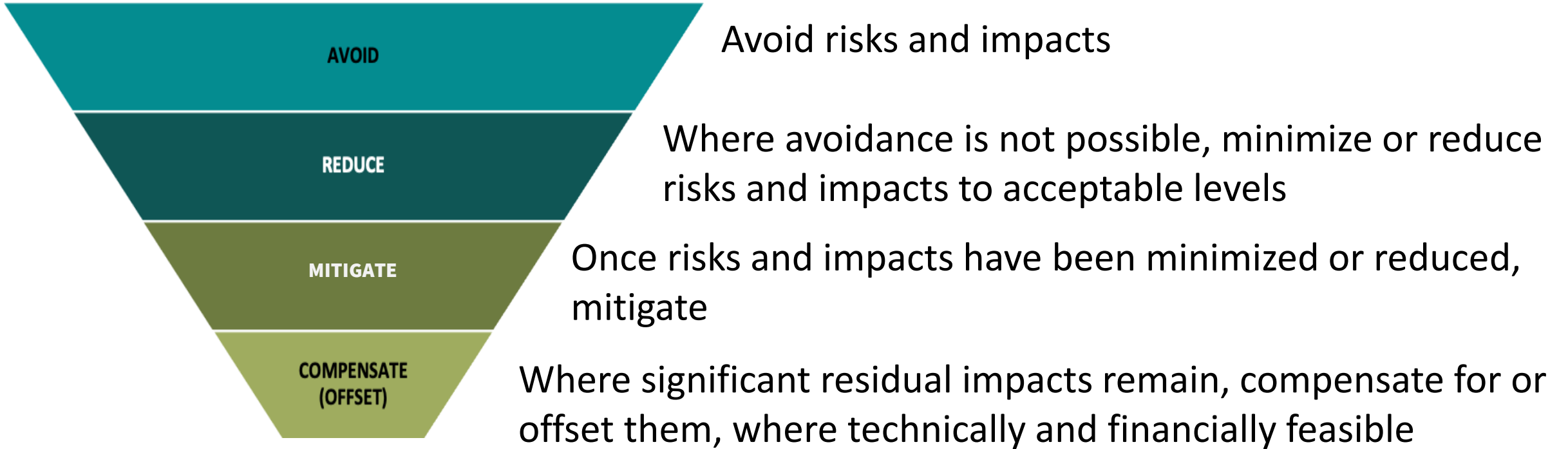
Agenda

- Overview of the mitigation hierarchy
- Theoretical case study: applying the mitigation hierarchy to a project
- Application of the mitigation hierarchy to OHS

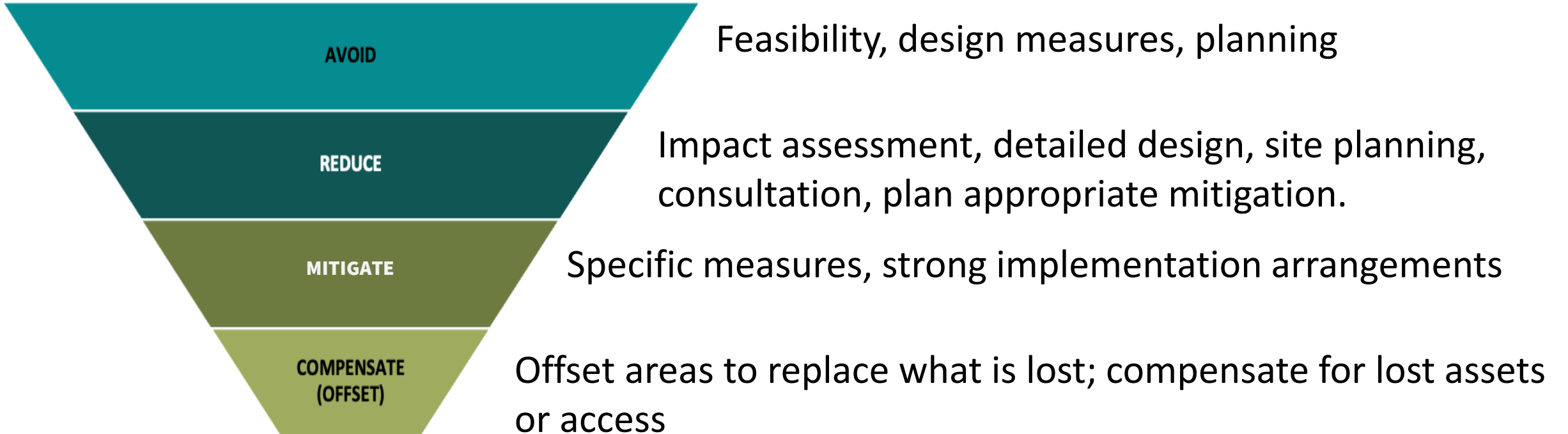
Mitigation hierarchy

- What is it? Approach and way of thinking rather than strict rules
- Referenced in World Bank and other lender policies-
 - World Bank. ESS1, Para 27. *The environmental and social assessment will apply a mitigation hierarchy, which will: (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; and (d) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.*
- Closely aligned with best practice and precautionary approach-inherent in many countries laws and regulation.
- Commonly associated with biodiversity, but applicable to all issues relevant to E&S risk management.
- Consider social and environmental issues.

Mitigation hierarchy



Mitigation hierarchy- key tools



Mitigation hierarchy- examples

Avoid: adjust site plan to avoid river users



Minimise: use of water cart to minimise dust

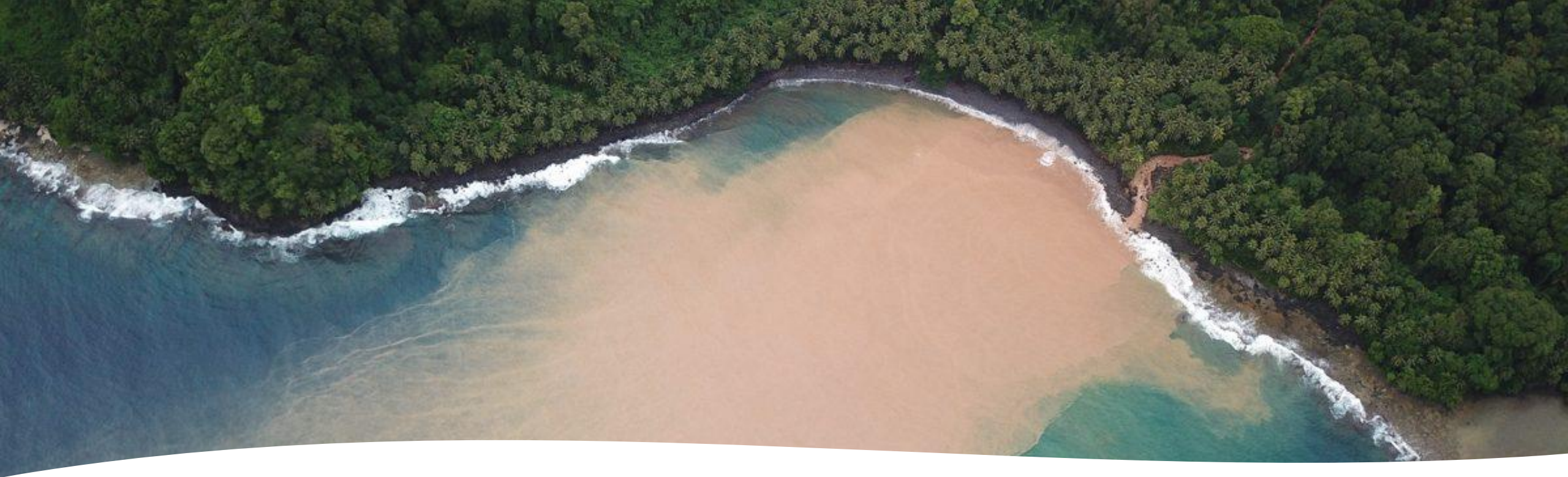


Mitigate: insulate houses to reduce noise



Offset: biodiversity offsets





Why use mitigation hierarchy

- Improved outcomes
- Linked with ESIA process
- Can guide design, planning and finalizing development or programs
- Can reduce time and cost; minimize delays
- Focus on avoiding impacts- makes things easier!
- Any good examples from you?

BOX 8 The impact mitigation hierarchy

Enhance – seek opportunities to or take measures that support the enhancement of positive impacts e.g. provide training courses for local community members to help them take on new job opportunities linked to the development project; remove invasive species from an area of protected habitat on the project site.

Avoid – take measures from the outset of development planning to avoid creating negative impacts e.g. refrain from building in areas that are ecologically or socially sensitive; ensure that the capture, storage and processing of a pollutant is incorporated in project design, rather than allow direct discharge of the pollutant to the environment.

Minimise – take measures to reduce the duration, intensity and/or extent of negative impacts, where they cannot be avoided e.g. decrease the seabed area that needs to be dredged for a new shipping channel; reduce the rate and overall amount of non-renewable resource extraction.

Rehabilitate – take measures to restore degraded ecological or social systems following exposure to negative impacts that cannot be avoided or minimised e.g. restock a fishery; replant cleared habitat; improve and resurface roads that will face increased traffic from a major development.

Offset (or compensate) – take measures to offset or compensate for negative impacts that cannot be avoided, minimised or rehabilitated e.g. implement habitat enhancement and ongoing conservation protection within a forest area that is larger than another forest area cleared for a new housing development; implement a resettlement plan and provide housing for villagers affected by a hydroelectric development.

Any offsets proposed by a proponent should be carefully evaluated by the EIA administrator, to avoid poor or undesirable environmental outcomes. Assistance with offsets evaluation can be sought from SPREP and other organisations that hold relevant technical expertise for assessing the scientific robustness, comprehensiveness and likely effectiveness of offsets proposals, and for evaluating whether the nature and scale of offsets is

¹⁹ de Jesus J. 2013. Mitigation in Impact Assessment. International Association for Impact Assessment. http://www.iaia.org/uploads/pdf/Fastips_6Mitigation.pdf. Accessed 16 March 2016.

5.5 Integration with the broader environmental governance context

The EIA process should not be implemented in isolation; it works best when it is applied with reference to the broader environmental governance context, which is comprised of international and regional MEAs; international, regional, national and sub-national policies, plans and programmes; and government legislation (Figure 6). The broader environmental governance context is useful for EIA because it specifies objectives, targets and obligations that need to be met for different environmental issues, and it provides guidance on how particular issues should be addressed (e.g. climate change, disaster risk management, biodiversity conservation, waste management, customary land tenure, healthcare, economic development, energy/water resource management). For example, in conducting an EIA for a new industrial development an EIA administrator can consider whether the development aligns with objectives under the government's land-use policy and national sustainable development strategy; with targets under the national climate change and disaster risk management policy; and with obligations under the Stockholm Convention and customary land tenure laws.

Appendix 2 lists different types of environmental governance instruments that may be relevant to the EIA process, especially during stages such as ToR development, EIA report review, approval decision-making, and the development of approval conditions.

'Mainstreaming' is a term related to environmental governance considerations; it refers to the integration of relevant policy and planning issues within the EIA process. Mainstreaming is about ensuring that relevant issues receive adequate attention and that new developments will not exacerbate current problems (e.g. coastal erosion), increase vulnerability to hazards (e.g. extreme weather events), or work in opposition to existing policy obligations (e.g. those outlined in MEAs). Box 9 focuses on mainstreaming climate change and disaster risk management considerations within EIA. Ideally, mainstreaming should commence at the start of the development planning and design process, even before a development proposal is submitted to government.

²⁰ Australian Government, Department of Sustainability, Environment, Water, Population and Communities. 2012.

Link to Bank policy, law and best practice

- ESS1 requirement as well as a requirement of other international lenders such as the ADB, IFC and EBRD.
- PIC laws through application of impact assessment process
- SPREP EIA guidelines, as well as specific guidance on biodiversity.
- Considered best practice

Application - a case study



- Digital cable project in the north Pacific.
- Significant improvement in access to internet.
- Whole of island will benefit but impacts will include construction nuisance, vegetation clearance, impacts to land/access.
- But where should the cable go to avoid impacts? Cost and technical constraints.

- Main cable needs to be installed; then it needs to be connected to each household.
- Road reservation is already owned by Government.
- Both options could impact land, assets and vegetation. Consider construction and operation phases.
- Visual impacts raised by community during consultation.

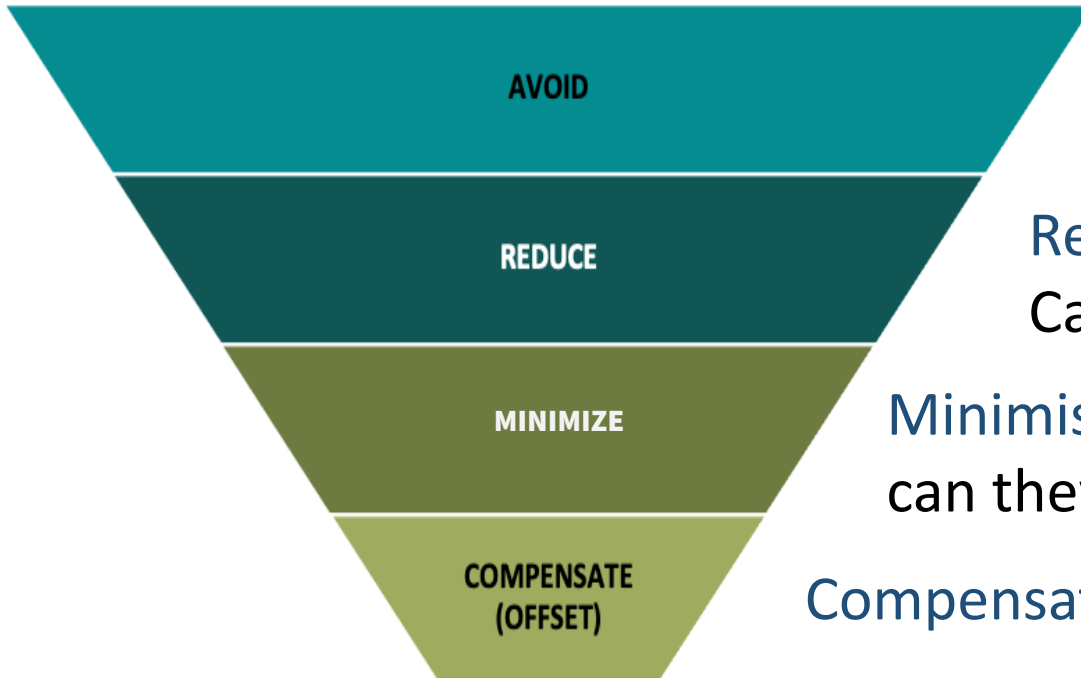
Option 2 includes underground cable. Needs special equipment to install, less maintenance and fewer impacts in implementation.



Option 1 include poles and above ground cable. Easier installation, causes visual impacts, more vulnerable to damage and climate impacts.



Use THE MITIGATION HIERARCHY

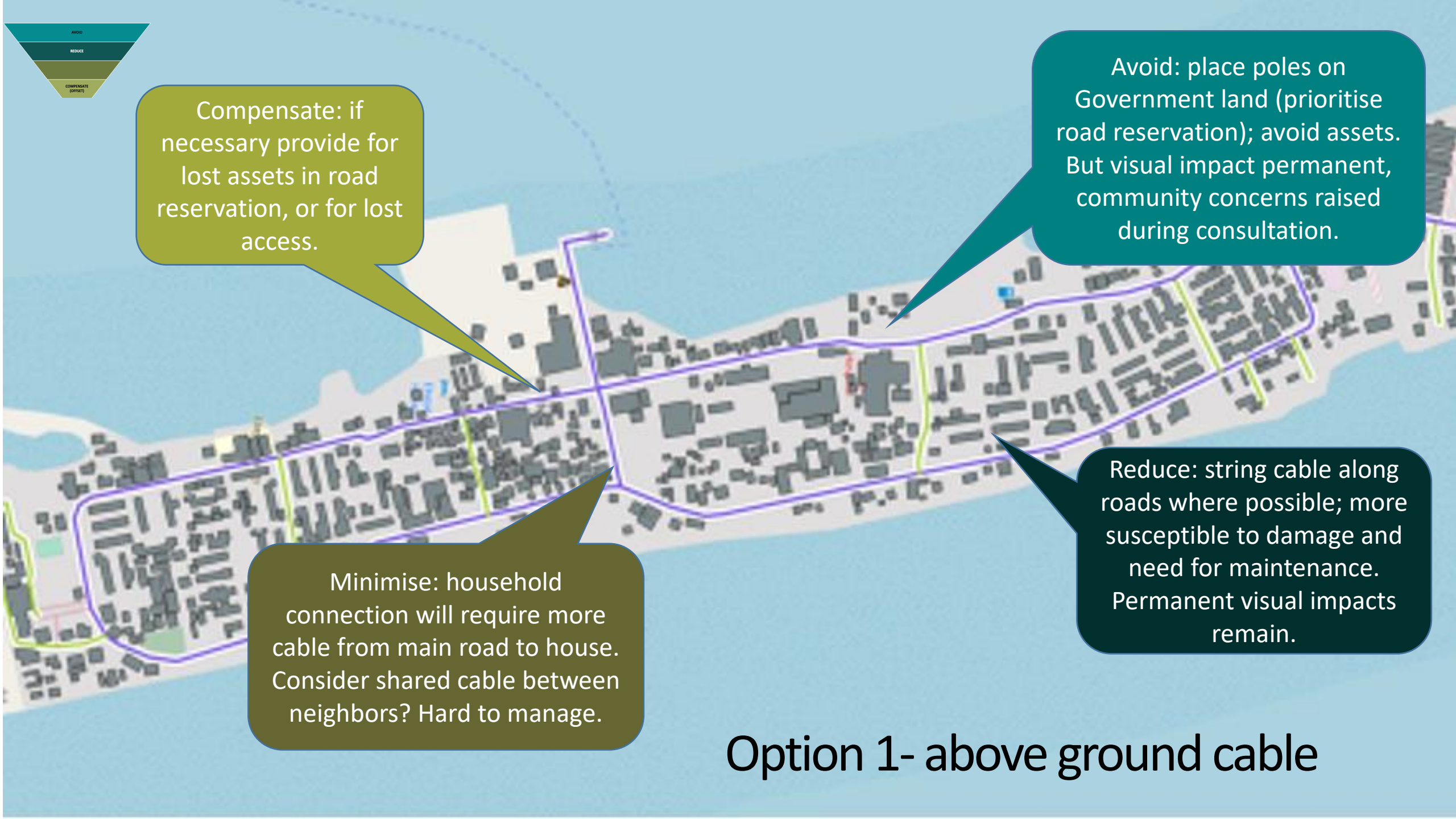


Avoid: How can design avoid impacts? How can up front planning ensure key issues are avoided?

Reduce: How can predicted impacts be reduced? Can they be contained to a smaller area?

Minimise and mitigate: can there be fewer impacts, or can they be less severe?

Compensate: compensate for lost assets or access



Compensate: if necessary provide for lost assets in road reservation, or for lost access.

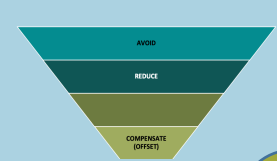
Avoid: place poles on Government land (prioritise road reservation); avoid assets. But visual impact permanent, community concerns raised during consultation.

Minimise: household connection will require more cable from main road to house. Consider shared cable between neighbors? Hard to manage.

Reduce: string cable along roads where possible; more susceptible to damage and need for maintenance. Permanent visual impacts remain.

Option 1- above ground cable





Underground cable

Compensate: if necessary provide for lost assets in road reservation, or for lost access.

Avoid: use road reservation to avoid impacts to private land and assets; design using micro-trench (smaller footprint, faster). Construction impacts but not permanent.

Minimise: ensure ongoing access to all property where possible. Consult with households so they know what to expect.

Reduce: avoid peak hours when laying cable. Fewer people affected by construction activities.

Option 2- underground cable



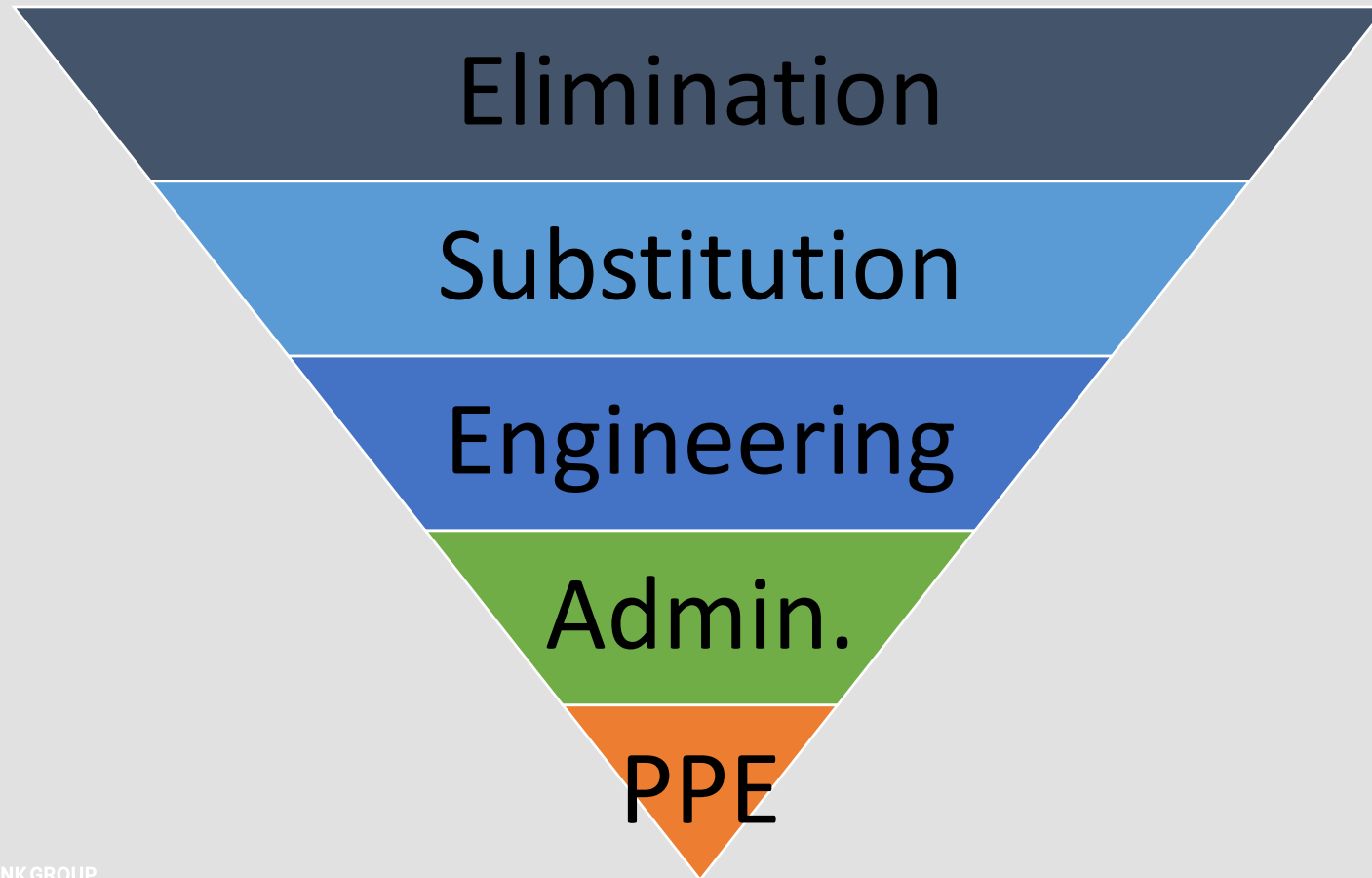
Digital cable project summary

- Underground cable more expensive upfront but less maintenance throughout the life of the project.
- Underground cable avoids impacts more than above ground.
 - *Avoiding impacts is the most important step in the mitigation hierarchy*
 - *Harder to minimize and mitigate if impacts could have been avoided.*
- Always consider temporary and permanent impacts
- Applying the hierarchy early avoids effort later in the project.
 - *Apply from the outset, consider E&S impacts as early as possible.*
- Can have competing issues in complex projects.
- Any questions?
- Any experiences to share where you have avoided major impacts?



The mitigation hierarchy on the work site – application to OHS

Risk Mitigation: Hierarchy of Controls



Risk Mitigation: Hierarchy of Controls

Elimination	Physically remove the hazard <i>E.g. filling in a dam or decommissioning an UG tank</i>
Substitution	Replace the hazard <i>E.g. use of a less toxic chemical</i>
Engineering	Isolate people from the hazard <i>E.g. mechanical lifting or conveyor guards</i>
Administrative	Change the way that people work <i>E.g. traffic management plan, training</i>
PPE	Protect the worker with PPE <i>E.g. hard hat, safety boots, face mask</i>

Risk Mitigation

The objective of risk mitigation is to reduce the probability and/or consequences of a risk event to an acceptable threshold and define appropriate response.



Hazard Identification

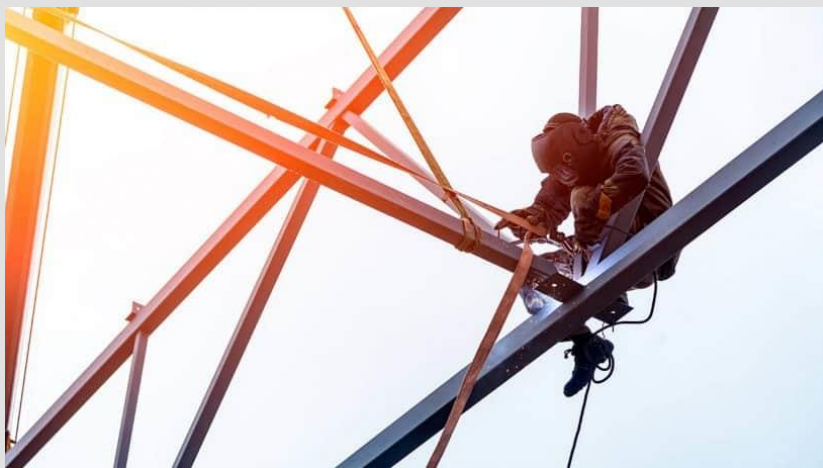
Does a particular situation, item, thing, etc. have the potential to cause harm?

How to identify hazards:

- Workshop
- Workplace inspections
- Employee & community engagement
- Incident investigation & analysis
- Equipment manuals and MSDSs
- What high hazard activities do you or your contractors undertake?

Example Hazards: High Hazard Activities

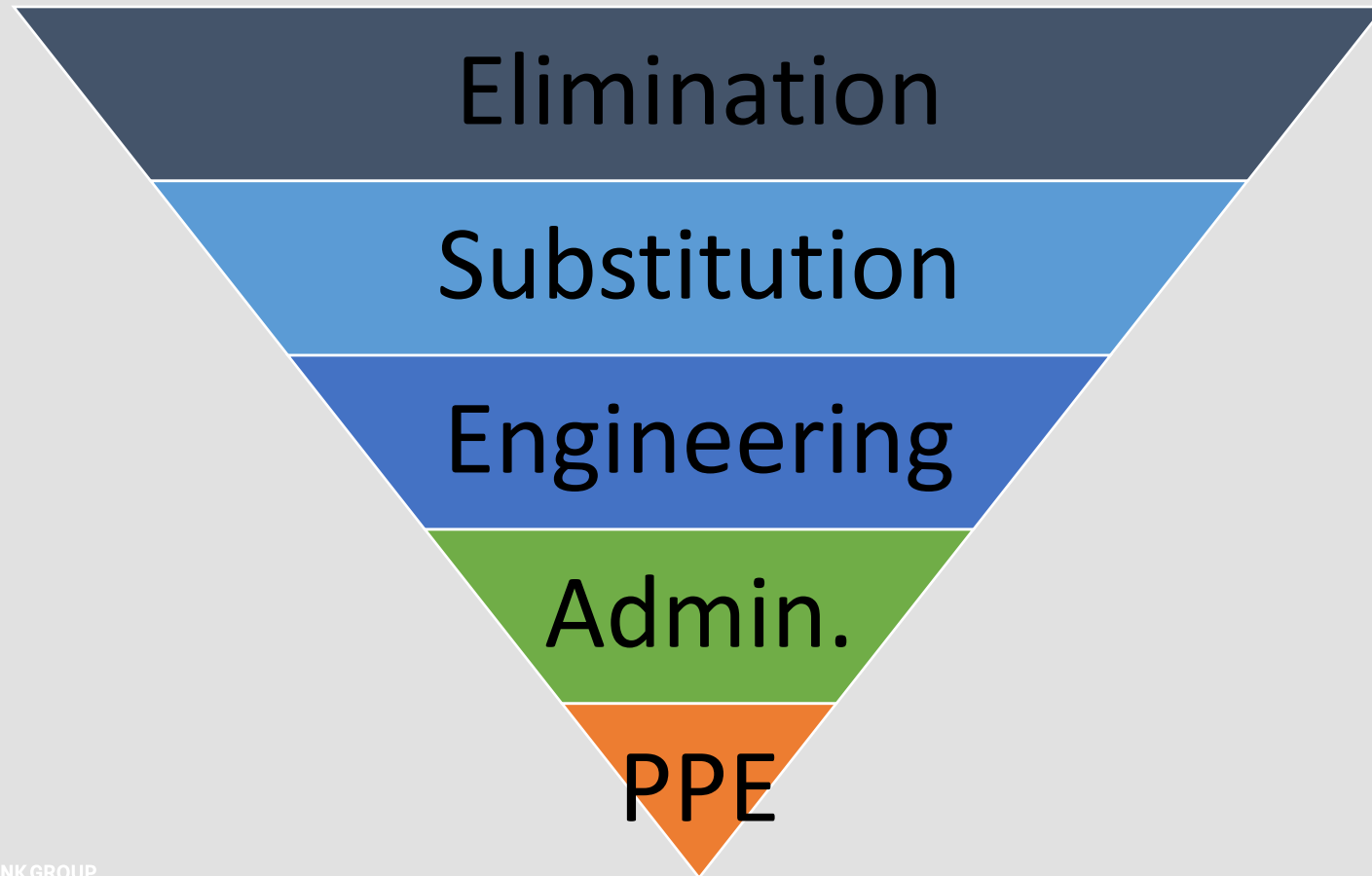
Could result in death or serious injury



Example Hazards: Hazards to the Community



Risk Mitigation: Hierarchy of Controls



Risk Mitigation: Hierarchy of Controls

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Hazard Identification: Exercise

What hazards do you see?



Risk Mitigation: Exercise

What controls would you implement?



Risk Assessment: Key Points

- Engage employees at all levels
- Engage community members
- Risk assessment should inform the development of management plans and procedures
- Consider the Hierarchy of Controls – PPE & admin. are least effective!



Recap...

- The mitigation hierarchy can be applied throughout all phases of a project
 - But need to consider avoiding impacts as early as possible
- Applicable to environmental, social and health & safety issues
 - Commonly applied to biodiversity particularly in relations to offsets.
- Strongly aligned with EIA process, lender requirements, PIC laws and guidance.
- Stakeholder engagement can be used to inform actions throughout the process.
- Different language for OHS- but same principles.

Questions?

Next session: tomorrow!
How to carry out a stakeholder mapping for
engagement planning 28 Oct 11am
Sydney/2pm Apia