



# ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

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A RISK-BASED APPROACH

# ISSUES

This presentation addresses two concerns with the EIA:

- Inconsistent scoping. Poor scoping is a common criticism of the EIS process\*.
- Lack of a meaningful scalar. The most common approach is to score against a base case with -4 for much worse, 0 for no change and +4 for much better. In some cases measurement by physical units is used. Neither approach gives a clear picture of the impact.



\*[The Global Development Research Centre](#)

# PERIOPTIAS SCOPING

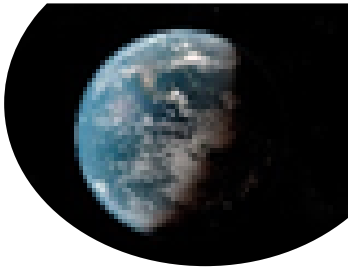
The Perioptias approach is to use a checklist that encompasses all possible impacts. The Perioptias checklist comprises eight categories of impact, each with at least seven criteria.



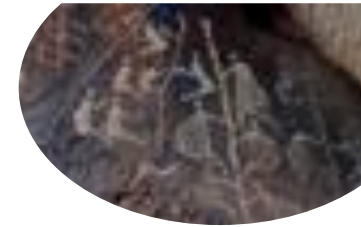
Climate  
Change



Soil Quality



Biosphere



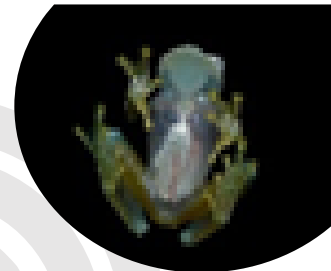
Cultural  
Heritage



Emissions



Landscape



Biodiversity



Human  
Communities

# MEASURING ENVIRONMENTAL IMPACTS

When criteria are defined, environmental impacts are evaluated using a variety of methods.



Workshops



Desktop research



Chemical analysis



Flora and fauna surveys



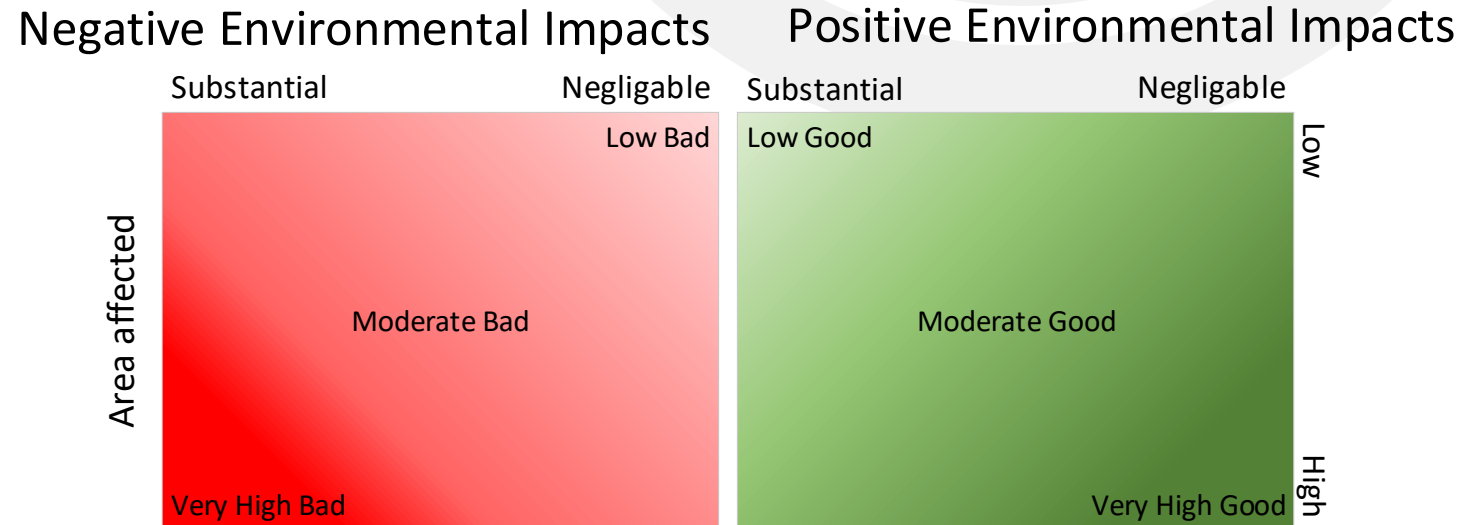
Predictive analysis

# PERIOPTIAS SCALAR

When the impacts are identified, the Perioptias scalar is used to generate an impact rating by:

- Assessing the proportion of the target area or region that is affected.
- Assessing the scale of the impact relative to the base case.
- Determining whether the impact is beneficial or deleterious.
- Using a risk rating system to generate an impact rating value

This provides a meaningful basis for comparing the environmental impacts of different project, policy or strategic options.





# THE PERIOPTIAS EIA APPROACH

- Define the region of concern.
- Scope the environmental impacts to be investigated using the Perioptias Scoping system.
- Measure current baseline and impacts of different strategies, policies or project options using appropriate methods.
- For each alternative, assess the likely area of impact as a proportion of the total area of concern and the consequence of any impacts.
- Produce radar charts showing impacts on various environmental impact categories.



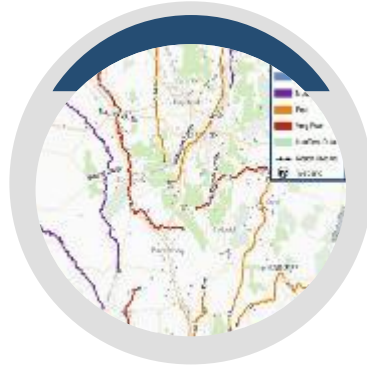
# SOME EXAMPLES

Relevant regions could be defined by geography, dissemination of impacts, catchment areas, basins or any other criterion relevant to an investment. Some examples of the populations of interest to projects undertaken by Perioptias include:



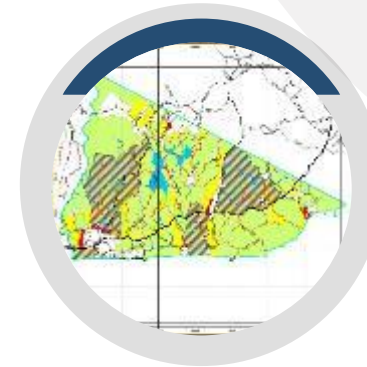
## SOUTH GIPPSLAND HIGHWAY REALIGNMENT

An area affected by construction activities along a five kilometre stretch of the highway.



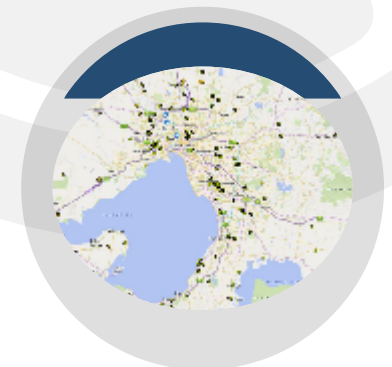
## MINE GROUNDWATER MANAGEMENT

The location and condition of surface waterways that might be impacted by improving groundwater management at the Central Deborah Gold Mine in Bendigo.



## IMPROVING ACCESS TO LAND FOR FIRE MANAGEMENT

Improving the safety of bridges enables access for heavy fire management equipment to specific areas. This reduces the impact of bushfires on people, vegetation and animals.



## MANAGING INDUSTRIAL WASTE

Location of landfill sites in metropolitan Melbourne. These could be impacted by improving management of industrial waste.

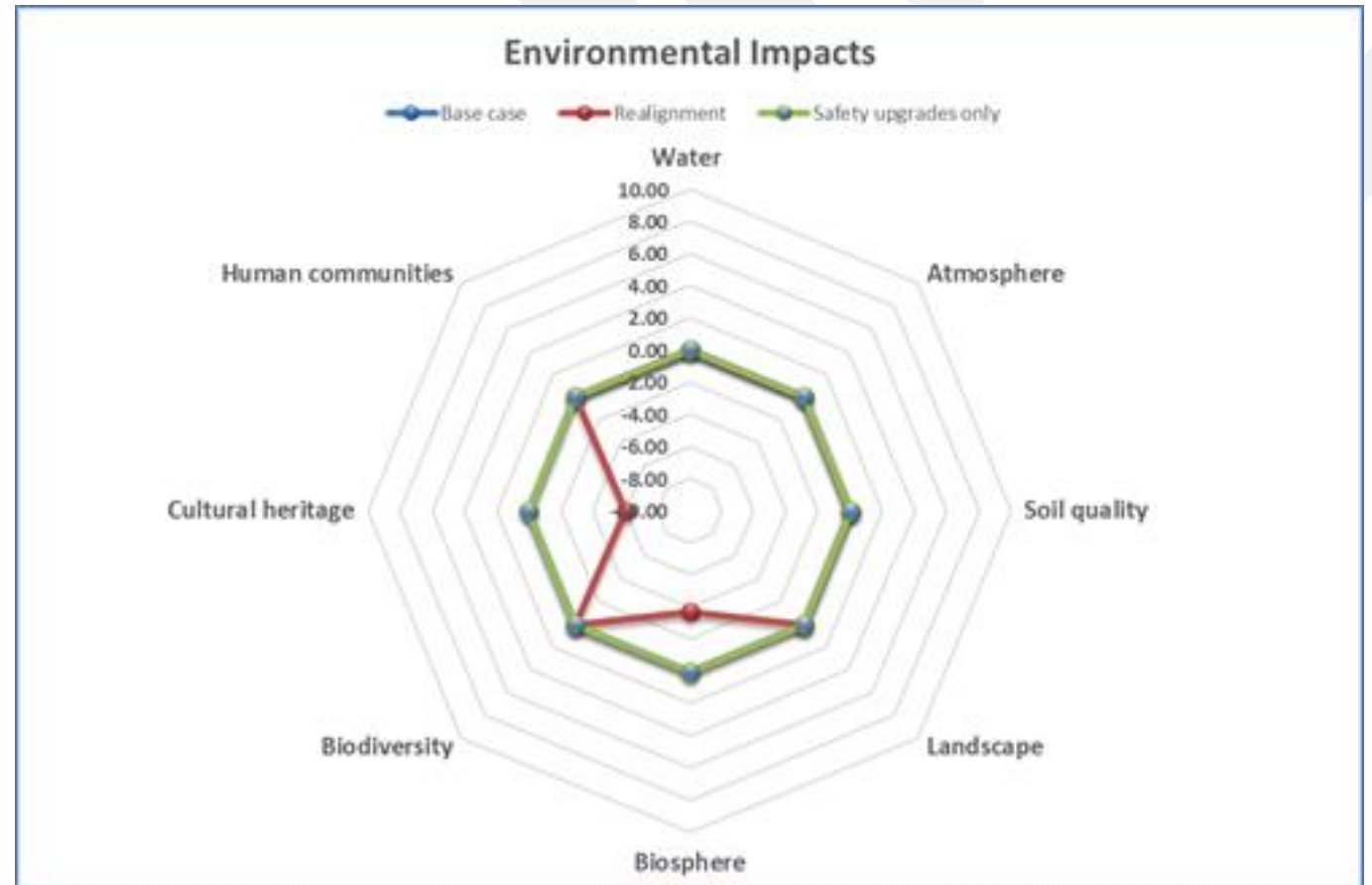
# CASE STUDY – HIGHWAY REALIGNMENT

## Safety upgrades only

- No issues

## Realignment

- Potential slight impact on Strzelecki gums
- Potential slight impact on Aboriginal heritage
- Potential slight impact on fossil sites





# CASE STUDY – IMPROVE BIODIVERSITY

## Nature festival

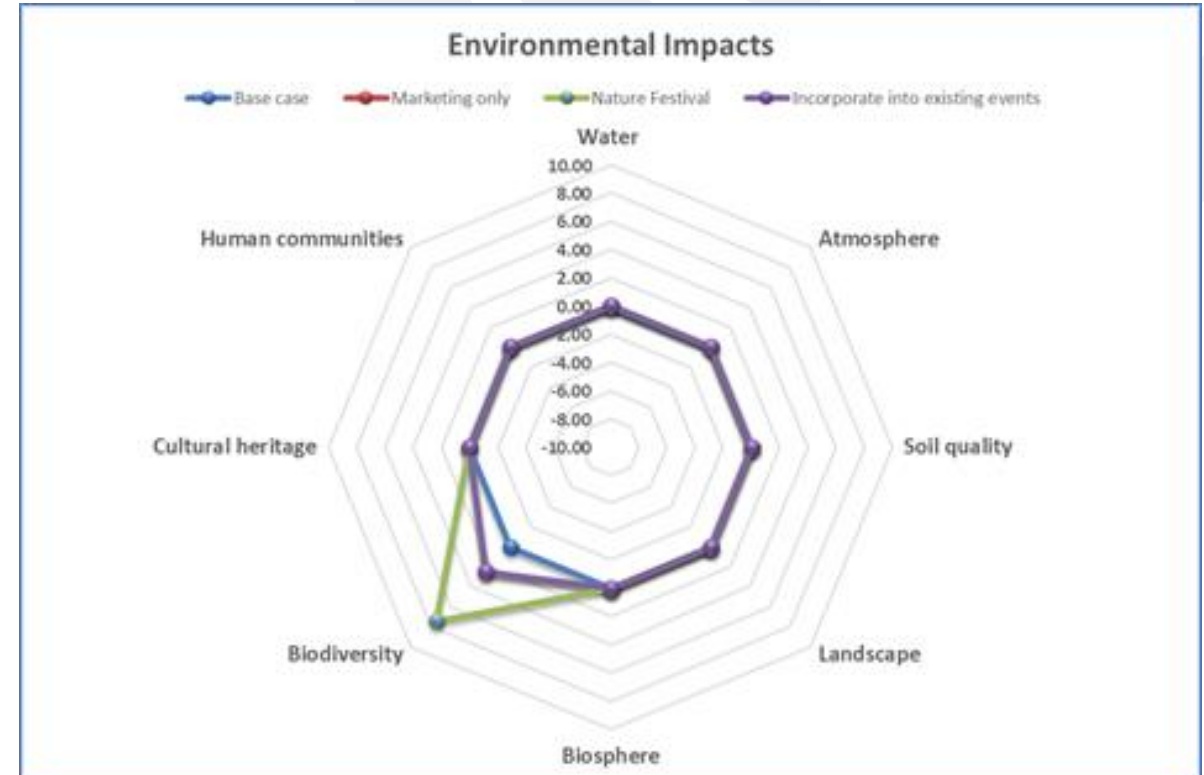
- Significant improvements in biodiversity protection and related, slighter improvements in the biosphere related to biodiversity actions.

## Marketing only

- Slight improvements in biodiversity protection and related, lesser improvements in the biosphere related to biodiversity actions

## Incorporate into existing events

- Slight improvements in biodiversity protection and related, lesser improvements in the biosphere related to biodiversity actions



# CASE STUDY – GAS EXPLORATION

## Conventional Gas Only

- Some loss of amenity near production sites

## Conventional and Unconventional Gas

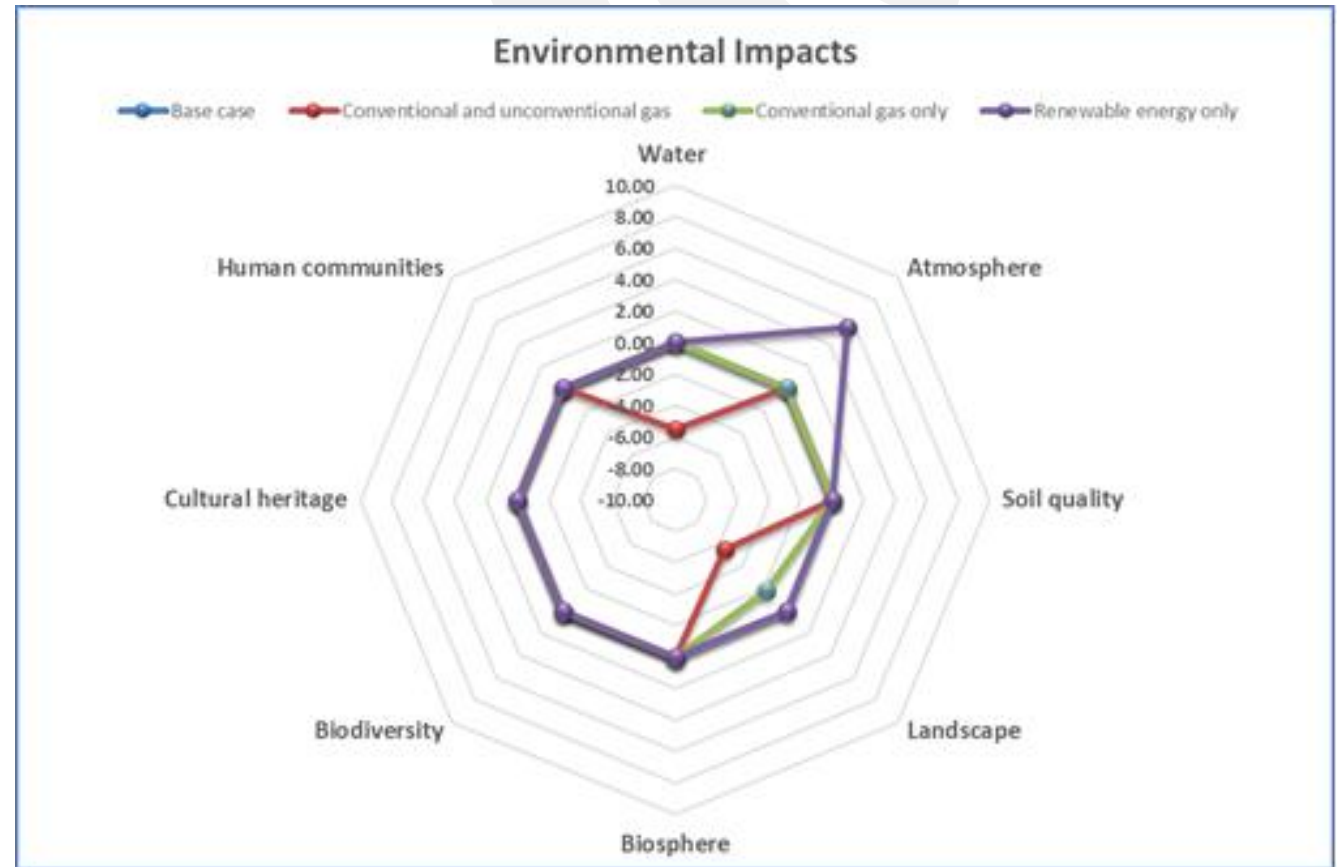
- Significant loss of amenity near production sites
- Significant impacts on groundwater contamination

## Renewable energy only

- Significant reduced greenhouse gases

## Conventional Gas and Renewable Mix

- Some reduction in greenhouse gases
- Some loss of amenity near production sites





# FOLLOW UP



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