

# Impact Assessment Database – A Case Study



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# Digital Environmental Assessment

A roadmap to  
digital environmental  
assessment



**IEMA** Transforming the world  
to sustainability

Digital environmental assessment is NOT just using a website to present information (although can be a valuable part)

Using and manage environmental assessment data through whole project lifecycle

Biggest change is to use a database

# How to improve the impact assessment information?

- Store impact assessment information in a structured way – an impact assessment database
- For an EIA include:
  - Receptors
  - Mitigation
  - Impact
  - Effects



# Why an impact assessment database?

Residual effect  
descriptors

Receptor -  
sensitivity

- The relationships between the different parts of the assessment are clear
- Know that all the required information is provided for each effect
- Keep a record of the changes between different stages of a project
- Know that the receptors and descriptors etc. are consistent

Secondary  
Mitigation

Embedded  
mitigation

Effect descriptors

Impact







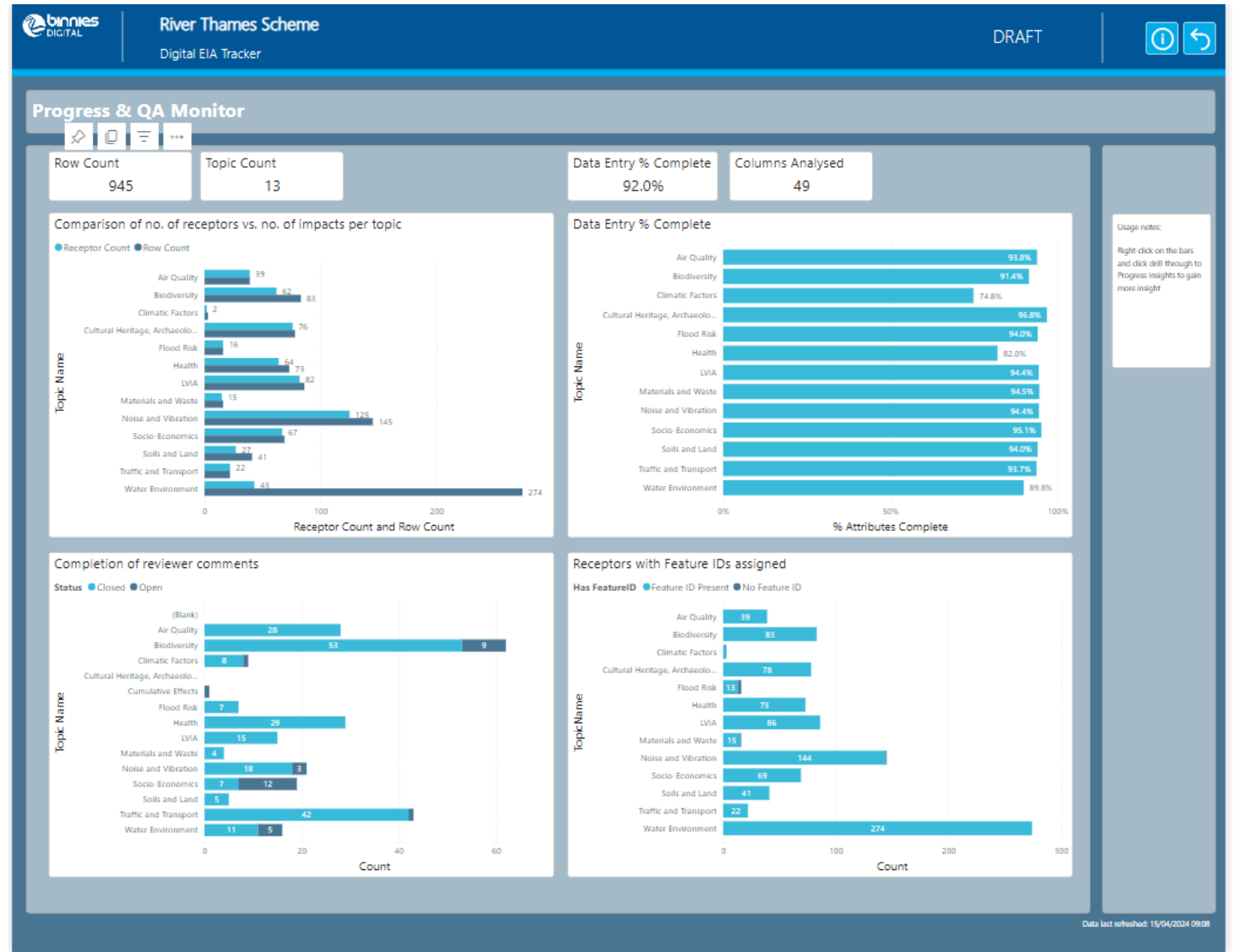
# Example outputs – from the River Thames Scheme Preliminary Environmental Information Report



<https://www.riverthamesscheme.org.uk/>

# Outputs from the spreadsheet

- Dashboard





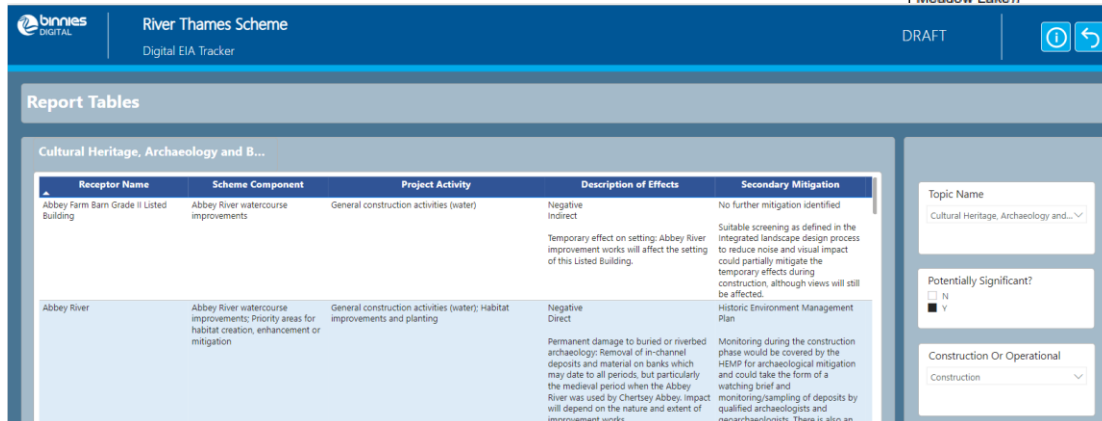
## Cultural Heritage, Archaeology and Built Heritage Summary Tables

### 1 Potential Likely Significant Construction Effects

Table 1: Potential Likely Significant Construction Effects

Receptor Name	Project Component	Project Activity	Description of Effects	Secondary Mitigation
Chertsey Abbey Scheduled Monument	Abbey River watercourse improvements; Priority areas for habitat creation, enhancement or mitigation	General construction activities (water); Habitat improvements and planting	Negative  Permanent damage to buried archaeology and palaeoenvironmental deposits. The Abbey River runs through part of the Chertsey Abbey Scheduled Monument (specifically the cemetery area identified to the north of the River) and improvement works in this section will directly affect the scheduled area. Improvements to the banks and adjacent land could also affect the scheduled area.	Historic Environment Management Plan (HEMP).  There is an opportunity to mitigate the potential effects from improvement works on the banks and adjacent land if the scheduled area was avoided through design. The improvement works due to take place in-channel should be subject to monitoring in the form of a watching brief by qualified geoarchaeologists. The small part of the scheduled area along the river could be avoided to reduce direct effects on the Scheduled Monument (SM).
Earthworks on Laleham Burway Scheduled Monument	Priority areas for habitat creation, enhancement or mitigation	Habitat improvements and planting	Negative  Permanent damage to buried archaeology: Habitat works on the former Laleham Golf Course will impact the Scheduled Monument, unless designed to avoid the area and a buffer around it.	Historic Environment Management Plan.  Evaluation works are due to take place to determine the date and character of the SM. The potential effect could be mitigated through design to avoid the SM. Suitable design may also confer a positive benefit on the setting of the asset, which is currently a modernised landscape that contributes very little to the significance of the SM. A worst-case scenario has been assumed until design is finalised.
Roman or early medieval fish weir (Ferry Lane Lake (also known as Ferris Meadow Lake))	Spelthorne Channel	Material excavation (natural ground)	Negative  Permanent damage to buried archaeology: Truncation and/or removal of the extant remains of the Roman or early medieval fish weir which may survive in the edge of the previously quarried area. A large portion of the feature has already been lost to prior extraction but the area is classed as an Area of High Archaeological Potential by Surrey County Council.	Historic Environment Management Plan.  Stage 2 trial trenching was not possible in this location due to water levels. The asset will be investigated during construction when its level can be reached. A programme of archaeological works will be conducted by qualified archaeologists in this part of the Spelthorne Channel and these will be defined in the HEMP for archaeological mitigation.

# Outputs from the spreadsheet - report



The screenshot shows the 'River Thames Scheme Digital EIA Tracker' interface. The 'Report Tables' section is active, displaying a table with the following data:

Receptor Name	Scheme Component	Project Activity	Description of Effects	Secondary Mitigation
Abbey Farm Barn Grade II Listed Building	Abbey River watercourse improvements	General construction activities (water)	Negative Indirect  Temporary effect on setting: Abbey River improvement works will affect the setting of this Listed Building.	No further mitigation identified  Suitable screening as defined in the integrated landscape design process to reduce noise and visual impact could partially mitigate the temporary effects during construction, although views will still be affected.
Abbey River	Abbey River watercourse improvements; Priority areas for habitat creation, enhancement or mitigation	General construction activities (water); Habitat improvements and planting	Negative Direct  Permanent damage to buried or riverbed archaeology: Removal of in-channel deposits and material on banks which may date to all periods, but particularly the medieval period when the Abbey River was used by Chertsey Abbey, impact will depend on the nature and extent of improvement works.	Historic Environment Management Plan  Monitoring during the construction phase would be covered by the HEMP for archaeological mitigation and could take the form of a watching brief and monitoring/sampling of deposits by qualified archaeologists and geoarchaeologists. There is also an

Additional interface elements include a 'Topic Name' dropdown set to 'Cultural Heritage, Archaeology and...', a 'Potentially Significant?' section with 'N' selected, and a 'Construction Or Operational' dropdown set to 'Construction'.

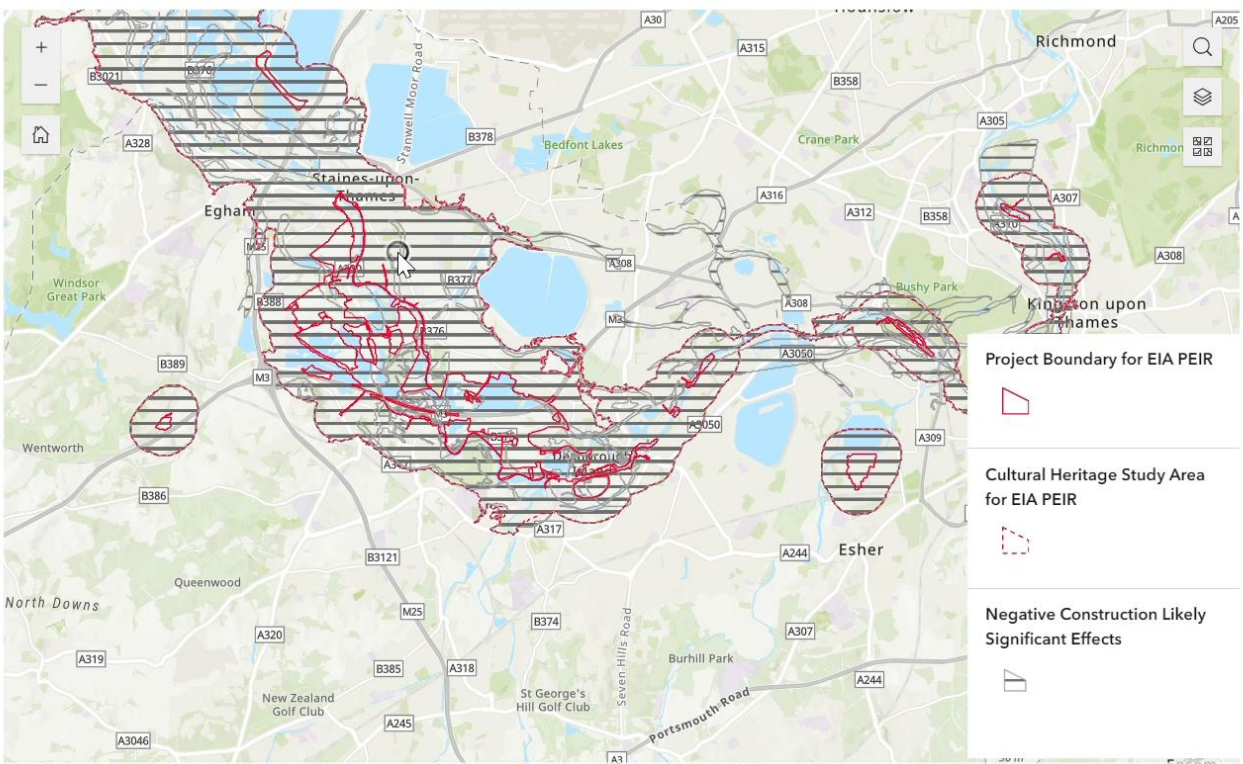
# Outputs from the spreadsheet -website



## Preliminary Environmental Information Report Summary



### Preliminary Assessment of Likely Significant Effects

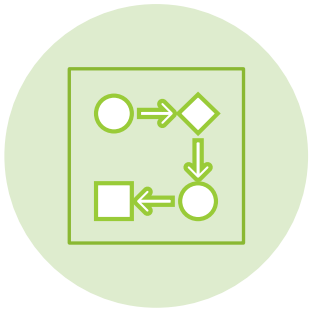


Esri, Intermap, NASA, NGA, USGS | Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

- [Negative Construction Likely Significant Effects](#)
- [Negative Operation Likely Significant Effects](#)
- [Positive Operation Likely Significant Effects](#)



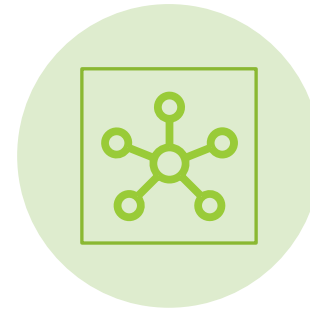
# Benefits



Relationships were clear



Time saved on consistency – e.g. project descriptions



Output in multiple ways from single source



Enabled collaboration



# Challenges



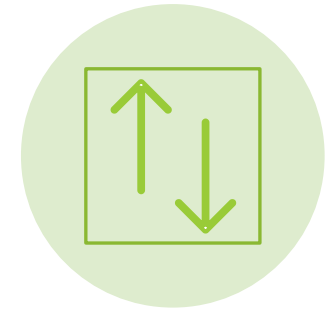
Not current practice so required a mental shift



Initially more time consuming when undertaking the assessment



Adaptability – ensure tools cover all topics and allow enough information to be provided



Sequencing – how to complete reviews and avoid working in two places



# What about using an application?

	Pros	Cons
Spreadsheet software	<ul style="list-style-type: none"><li>Familiar to a wide range of people</li><li>Adaptable by coordinators to suit topic/stage</li><li>No additional software fees</li></ul>	<ul style="list-style-type: none"><li>Difficult to ensure that editing rights are limited</li><li>Risk of losing information</li><li>More complex to link through to other software, e.g. Power BI, GIS mapping</li></ul>
Bespoke database	<ul style="list-style-type: none"><li>The user interface can be designed to help people complete their assessment</li><li>Limited risk of data loss, or incorrect data being entered</li><li>Can easily link to other software</li></ul>	<ul style="list-style-type: none"><li>May be additional fees</li><li>More complex to adapt for different projects, particularly once in use</li></ul>

# How else could an impact assessment database be used?

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- Early project stages – constraints, screening, scoping
- Cumulative effects assessment
- Compliance post consent
- Monitoring of mitigation

# Database – in early project stages

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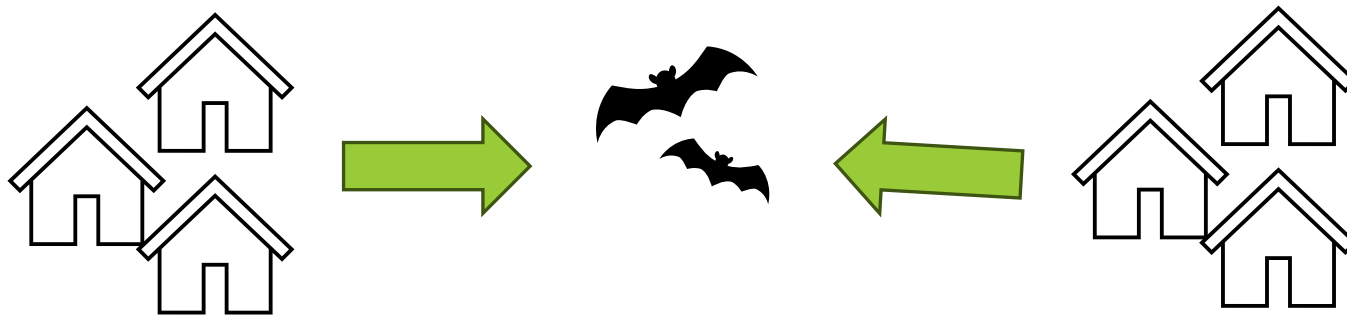
- Complexity of the database should reflect the scale of the project – so in early stages may be a lot more simple

<b>Topic</b>	<b>Receptor/ Constraints</b>	<b>Potential Impacts</b>	<b>Mitigation</b>	<b>Likely significant effects</b>
Cultural heritage	No Scheduled Monuments.  Three listed buildings within site boundary.	Direct impacts to the listed buildings are possible.  Impacts to setting of listed buildings.	Design to avoid direct impacts to listed buildings, and implementation of recommendations within a setting study, to be secured through the planning application.	No likely significant effects expected.

# Database – and cumulative effects assessment

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- Receptors are clearly identified – including spatially
- Relationship between receptors and impacts clearly defined
- If databases were submitted for other projects, this information would be available in a standard format for your project and others

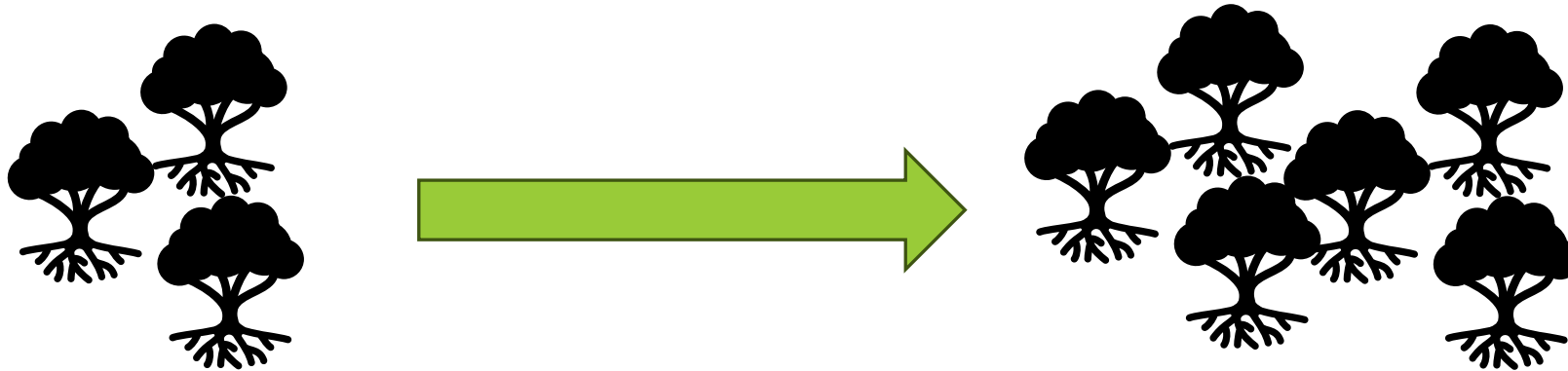




# Database – and compliance post consent

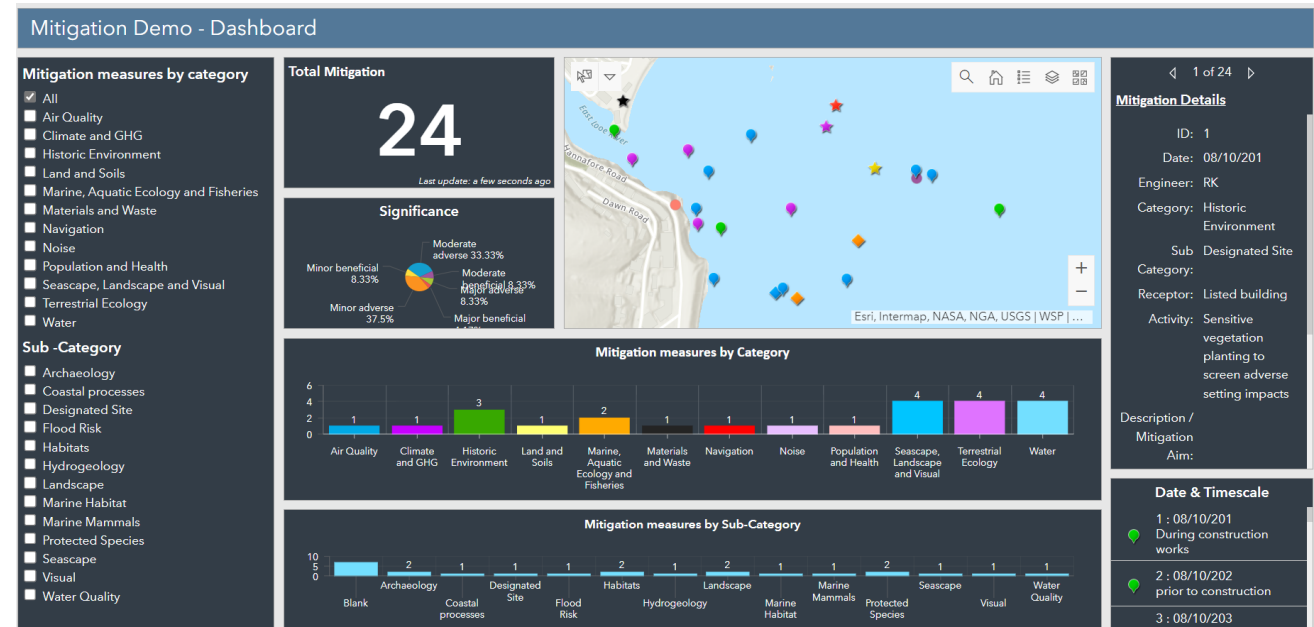
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- Clearly understand what assessments were based on and therefore able to measure change



# Database – and mitigation monitoring

- Develop the database to fully understand the mitigation relied on
- Does it need to be changed?
- Does it deliver the expected mitigation?



# Discussion points

- Could you or do you already use a database approach in your work?
- What would be the problems with adopting this approach in your field?
- What would be the benefits with adopting this approach in your field?

