

**DIG DEEPER**  
*Webinars*



# OPPORTUNITIES FOR SHARED ENVIRONMENTAL DATA

BOWEN BASIN CASE STUDY | CHRIS GENTLE | 28<sup>TH</sup> JULY 2022

# The Team

## Project Team

**Dr Claire Côte**

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**Chris Gentle**

We wish to thank the steering committee for their enthusiasm, support, and the time they have dedicated to this study, reflecting the level of interest in improving data collection and access.

We also would like to thank the anonymous stakeholders from the private and public sector, who volunteered time to provide feedback and domain expert knowledge. Their contributions are gratefully acknowledged.

## Partners

**WABSI**

**University of Queensland**

**Qld DES**

**Commonwealth DAWE**

**Queensland Resources Council  
and Members**

# Acknowledgement of Country

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WABSI wish to acknowledge the Nyoongar Whadjuk people - traditional custodians of this land.

We wish to acknowledge the strength of their continuing culture and offer our respects to Elders past and present.





## The ~~Problem~~: *Opportunity*

1. Our focus since 2017 has been to progress our “Understanding of the cumulative impacts, of an action, on a region over time” while “streamlining environmental assessment and approvals”.
2. **This requires high volumes of quality data that can be shared, a place to put it, work-flow tools to enable process efficiencies and analytic tools for decision support and forecasting.**

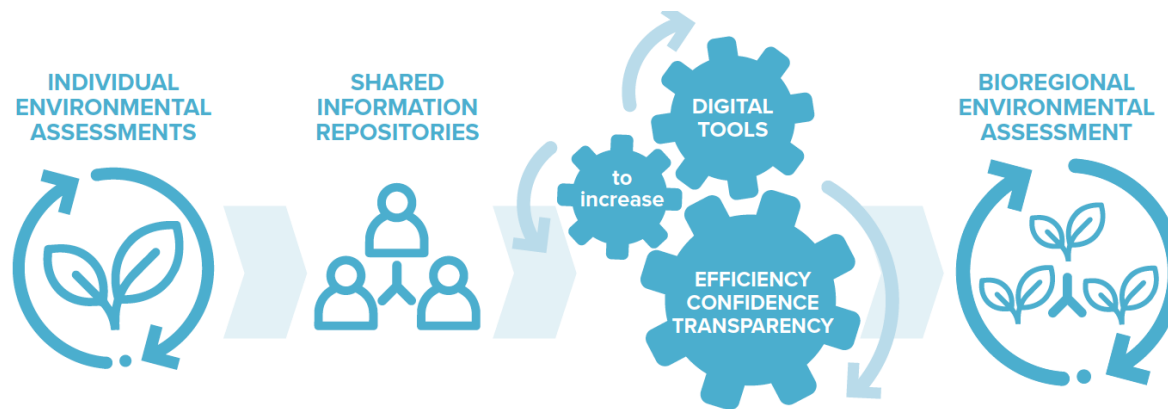
# Opportunity

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1. That can be leveraged by State and Commonwealth regulators, proponents and the community, which will:
2. Improve the efficiency for environmental assessments from project inception to final decision, for both the proponent and regulator
3. Improve the confidence of the regulator that they have made the correct decision at both the project level and at a landscape cumulative impact scale
4. Improve public trust in EIA decisions through transparency and visibility of data and methods underpinning decisions
5. Provide assurance that commitments to Ministerial conditions are proceeding as planned through continuous monitoring and assessment

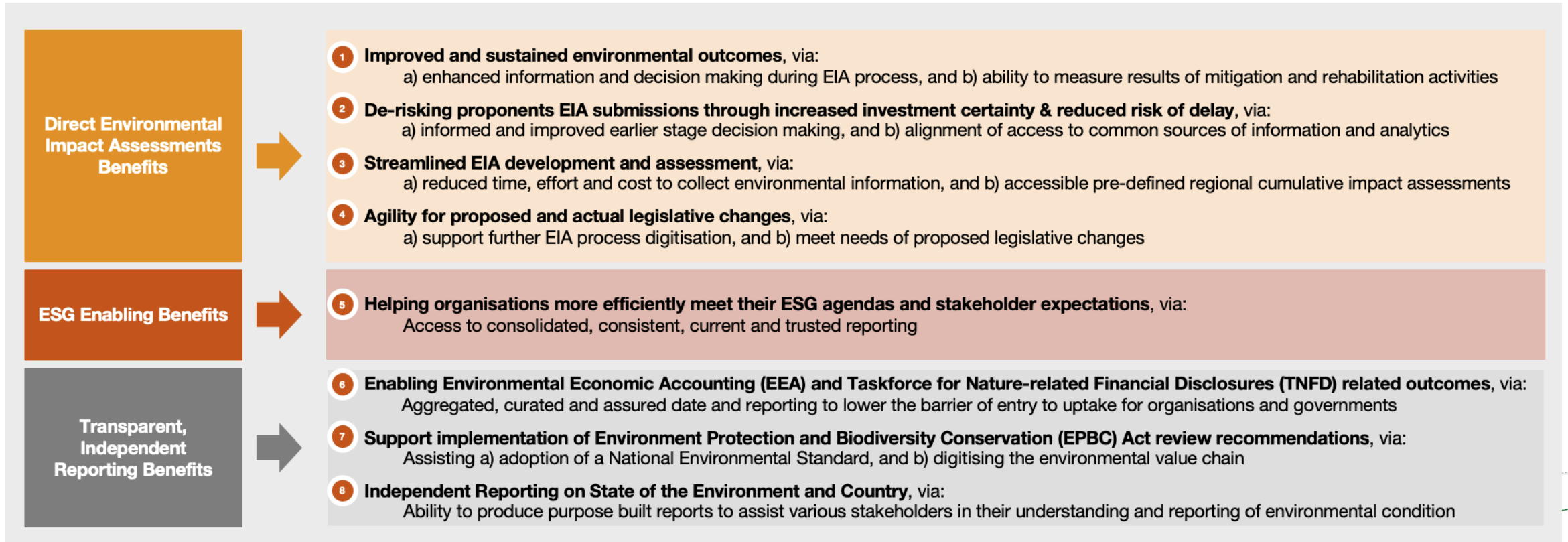
# Disruption, objectives and drivers

1. Three disruptions – Data, Digital and Decision Support >> Cumulative
2. Three objectives – Robust, Repeatable and Sustainable
3. Three drivers – Efficiency for proponents, Confidence for Regulators, transparency / clarity for community >> improved environmental and economic outcomes





# Why is this important? Transition from efficiency, to effective to cumulative. *Minesite >> London Stock Exchange...*



# 2022 State of Environment Report – nine days ago...

<https://soe.dcceew.gov.au/overview/management/management-pressures#environmental-impacts>

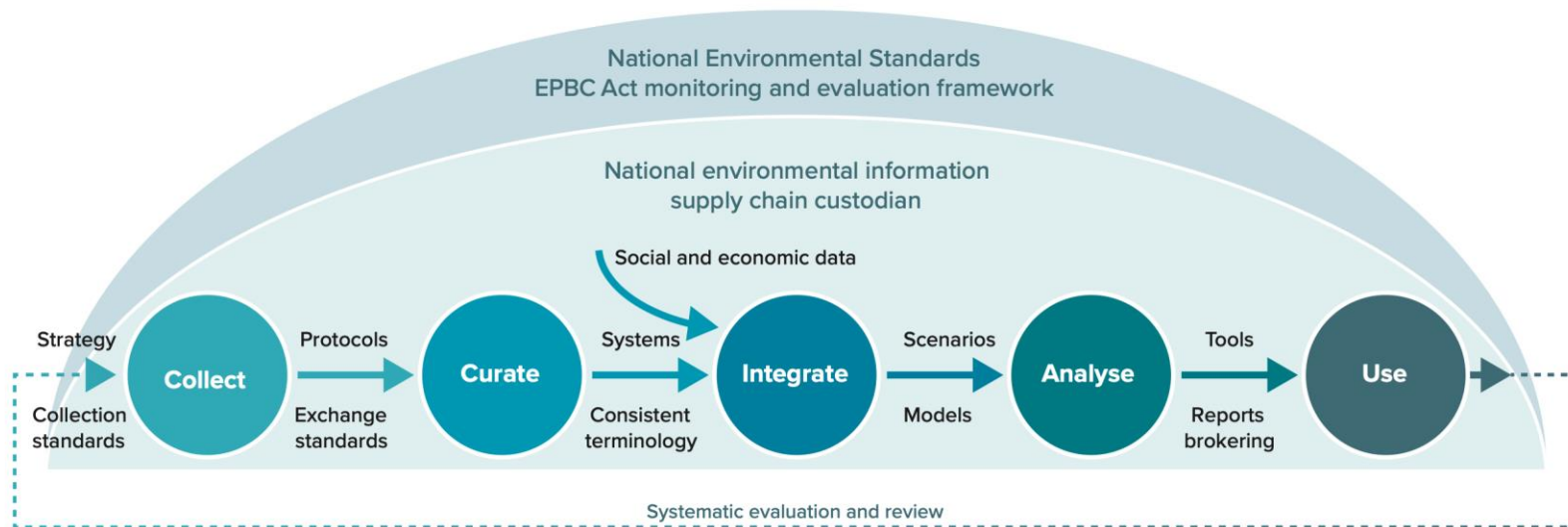
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- **New approaches for environmental impact assessment**
- To move from unsustainable to sustainable development, a major transformation in environmental planning, assessment and reporting in Australia is required.
- The current approach to environmental impact assessment across Australia is not meeting expectations in protecting the environment, including cultural heritage ([ANAO 2020, Samuel 2020](#)). The current process, where each proposal is developed and assessed individually, does not address cumulative impacts and does not adequately present a complete picture of the state of the environment. The process is also often criticised for lack of repeatability and appropriate transparency. The environmental approval process requires significant improvement to provide confidence that it is protecting the environment according to agreed environmental standards.
- In 2020, the Western Australian and Australian governments began work on developing a shared environmental analytics facility that brings together environmental data, information and models to provide efficient, robust, repeatable and transparent environmental information and analysis to underpin regional environmental assessment, planning, assurance and reporting ([WABSI & WAMSI 2019](#)). The objective is to reduce timeframes for assessment, increase consistency in objectives and standards, and provide more robust and consistent consideration of cumulative impacts.



# National Environmental Data Value Chain – EPBC Review 2020

- So how can shared data, data science and digital transformation assist EIA practitioners, Commonwealth regulators, State Regulators, proponents, community and traditional owners to address these challenges? Through a Shared Analytic Framework for the Environment (SAFE).



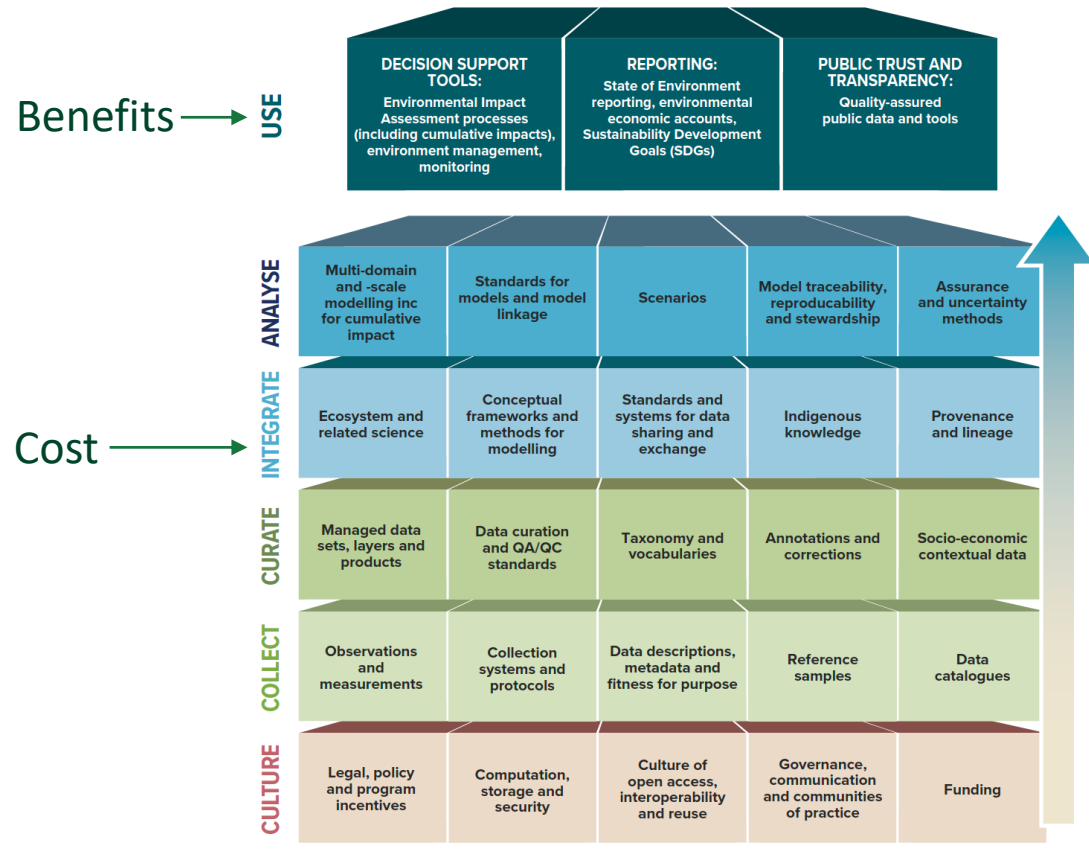
- Lower capture and processing costs
- Timely automated data update
- Improved baseline knowledge

- Information is easy to find and understand
- Reuse saves money and resources
- Tools improve efficiency and consistency

- Expert support improves uptake
- Confidence in information
- Improved public trust
- Decreased challenges and requests for information

# Vision >> Shared Analytics Framework

## Vision >> Shared Analytics Framework (2)



### With thanks to GBIF

Delivering Biodiversity Knowledge in the Information Age - <https://doi.org/10.15468/6jxa-yb44>

The principles underlying the framework, shown in the diagram below which shows the tiers and the capabilities within each tier, are:

1. Environmental data and analytics should be open and shared
2. Build upon the knowledge and capabilities of existing programs and organisations operating to deliver environmental information
3. Collaborative with research partners to identify and meet the priority knowledge needs of industry and government.
4. Maintain the integrity and pedigree of its data and analytics
5. Remain responsive to the environmental analytics needs of stakeholders.

A GUIDE TO A SHARED ANALYTIC FRAMEWORK FOR THE ENVIRONMENT

# Bowen Basin Case Study (1)

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This project concerns a case study undertaken in the Bowen Basin to determine the gaps and opportunities related to the implementation of SAFE in Queensland. It was developed in collaboration with the SAFE project team, representatives from the Queensland Department of Environment and Science (DES) and representatives from industry (Queensland Resource Council and resource sector companies). The objectives were to:

- Document the status of current processes for data submission to the Queensland government, outlining types, formats, storage locations and access protocols;
- Document the status of data submission to Queensland government data repositories by resource companies and identify gaps or items for improvement;
- Identify challenges faced by resource companies with respect to data submission;
- Propose a pathway for incremental improvements that can be implemented by resource companies; and
- Develop a plan for improving data coherence at Queensland State and Commonwealth levels that will support data access by a range of stakeholders, from regional to national level.

# Bowen Basin Case Study (2)

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The main findings from this study are:

- The existing Queensland data systems are equipped to accept data collected as part of EIS, but integrating this data into the existing infrastructure requires data models that specify minimum requirements for the data, data format, data validation and metadata capture.
- There are opportunities to collect additional data for most biophysical aspects, including air quality data, but the greatest opportunities are related to acquisition of water-related data.
- Submission of water-related data might require an update to legal obligations. Feedback received from industry representatives was that data submission would need to become a compliance requirement.
- The pathways for submitting data are well identified but the lines of responsibilities for managing the corresponding databases are not always clear and are in general complex. There is an opportunity to reconsider the structure for the governance of data systems.
- Finally, for each biophysical aspect (biodiversity, surface water, groundwater, air quality), guidance is provided to guide data integration in the Queensland data systems, which will contribute to achieving the objectives of SAFE.



# Status of SAFE tiers Culture, Collect and Curation in the context of the three major biophysical aspects

	Biodiversity	Surface Water	Groundwater
CURATE	<p>Plethora of reporting and mapping tools available in the WildNet Ecosystem QA/QC well implemented in the WildNet data ecosystem</p>	<p>Limited data available via WMIP, opportunity to publish data via a public version of RiVERS. QA/QC benefitting from existing data models in WaTERS DBS</p>	<p>Data available via WMIP, GeoResGlobe, QLD Globe and BoM groundwater explorer. Opportunity to enhance data querying and extraction capabilities</p>
COLLECT	<p>Data ecosystem around WildNet is fit for purpose to ingest EIS data. Modification of collection systems and protocols, as well as data descriptions and metadata required for EIS data</p>	<p>Data ecosystem around WaTERS generally fit for purpose to ingest EIS data. Modification of collection systems and protocols, as well as data descriptions and metadata required for EIS data</p>	<p>Groundwater DBS well integrated in state and federal data ecosystems. Modification of collection systems and protocols, as well as data descriptions and metadata required for EIS data</p>
CULTURE	<p>Well established culture around open access and communities of practice. Minor updates to legal requirements might be required</p>	<p>Very limited culture of accessing data in public domain Updates to legal obligations will be required</p>	<p>Limited culture of open access and interoperability of data in the public domain Updates to legal obligations will be required</p>

# Bowen Basin Case Study (3)

TOPIC	COST (LOWER ESTIMATE)	COST (LOWER ESTIMATE) AS % TOTAL	COST (HIGHER ESTIMATE)	COST (HIGHER ESTIMATE) AS % TOTAL
Air	\$50k	3%	50k\$	2%
Flora	\$250k	15%	\$500k	23%
Fauna	\$250k	15%	\$500k	23%
Groundwater	\$1000k	61%	\$1000k	48%
Surface water	\$60k	4%	\$60k	3%
Soil	\$30k	2%	\$30k	1%
Total	\$1640k		\$2140k	

## Data value:

- Over the last 20 years, the average number of submitted EIS was 6 per year. It can be assumed that in the future, this submission rate will be similar and that the cost of data collection, as part of EIS preparation and submission, will be in the range of \$10-13 million per year.
- Cumulatively, the value of EIS data generated in Queensland in the last 20 years is estimated at around a quarter of a billion dollars, excluding data modelling and reporting.
- DES publishes statistics related to EIS submissions. This shows that EIS assessments have an average processing timeframe of 2.5 years, with nearly 70% of this time used by the proponents and service providers to generate data, models and reports. If data were collected in central repositories, proponents might be able to reduce this timeframe.

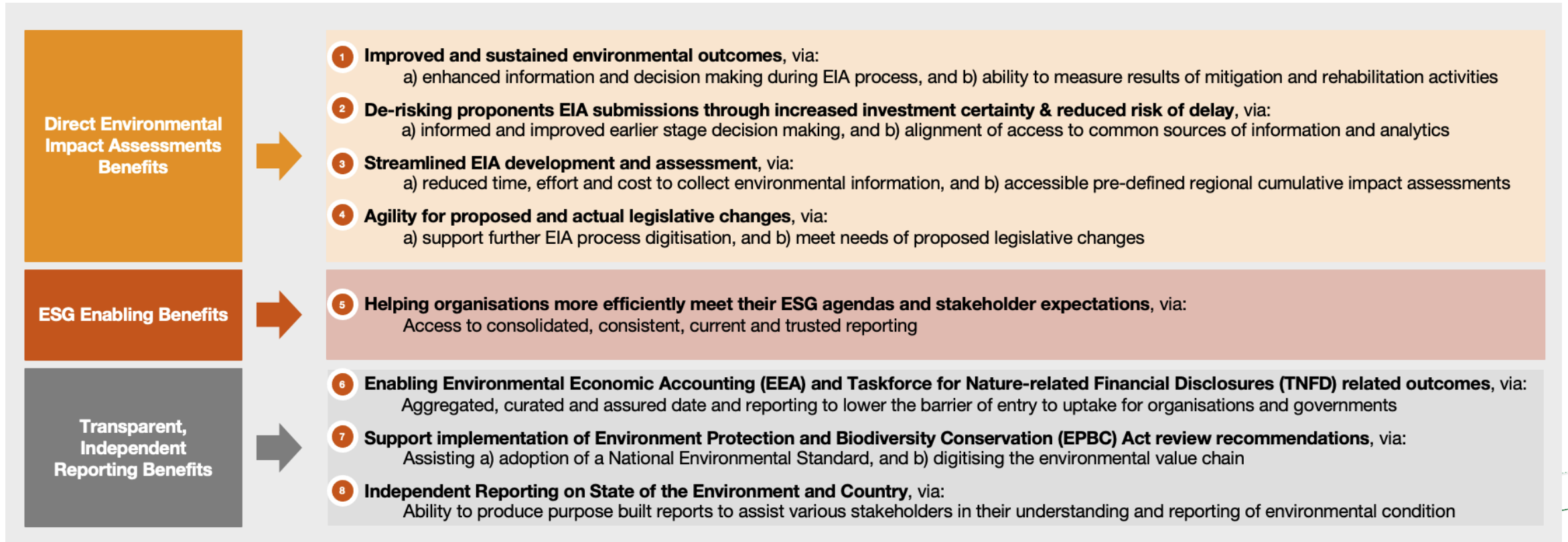
# Challenges

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Whilst this study has focused on articulating the benefits of data sharing, there will be significant challenges to address, including agreement on data models. Detailed analysis of all potential barriers was not part of this project's scope, but it is worth outlining risks associated with:

- Level of available resourcing and funding to support the required improvements and ability for updated systems to adapt to changes in technology.
- Time intervals between data submission and data availability in Queensland systems.
- Lack of supporting contextual information to accompany industry data, which could lead to misinterpretation or misuse.
- Data confidentiality and/or intellectual property conditions.
- Circumstances where it will be difficult to align legal requirements from various jurisdictions.

# Why is this important? Transition from efficiency, to effective to cumulative. *Minesite >> London Stock Exchange...*







# THANK YOU

Thank you to our partners and advisors. Claire, Pascal and Chris.

[www.crctime.com.au](http://www.crctime.com.au)