Future proofing ‘digital’ environmental impact assessment with data science

ECA Forum, November 7th 2018

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE

The Western Australian Biodiversity SCIENCE INSTITUTE

WABSI information management challenge…

…is to use data and data science to “improve our understanding of the cumulative environmental effects of an action, on a region, over time, and ensure that these impacts can be transparently communicated to *policy makers, regulators and the community*.”

Who are the policy makers, regulators and the community?

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What is IBSA?

- "If you do nothing else capture & manage the survey data collected as part of the environmental approvals process and make it accessible" – 2017

- In May 2018 DWER launched the Index of Biodiversity Surveys for Assessments (IBSA). The Index captures and consolidates data contained in more than 500 biodiversity surveys conducted each year in support of assessments considered under the EP Act 86

- Copyright, Creative Commons @ ~65%, potential for Data Sharing Act,

- IBSA Impact – collecting a data asset for the state at $38m per annum

- 2030 >> IBSA plus Mining Act Surveys = One *Billion* Dollar biodiversity information asset

- Qualitative benefits are derived from having access to a significant increase in the volume of biodiversity data available to support local, regional & strategic planning, cumulative impact assessment, conservation planning and policy >> all of which are **'evidence based, but with imperfect knowledge**

IBSA Site https://www.dwer.wa.gov.au/programs/ibsa

What IBSA isn't.

- IBSA enables the opportunity for curation and analysis of biodiversity data to deliver specialised information products and on-line services to support industry, government, and community groups.

- We have been working with State Government, Commonwealth, Industry and Research Partners to determine the *viability of a Biodiversity Information Office (BIO)* that could be established to be the custodian and asset manager of the biodiversity data collected and used by the extended Western Australian biodiversity community. It would mirror many of the functions and objectives of the Geological Survey.

- The benefits of efficiently enabling this understanding for EIA proponents are estimated at $39m per year.

- What about Marine? State waters v Commonwealth waters

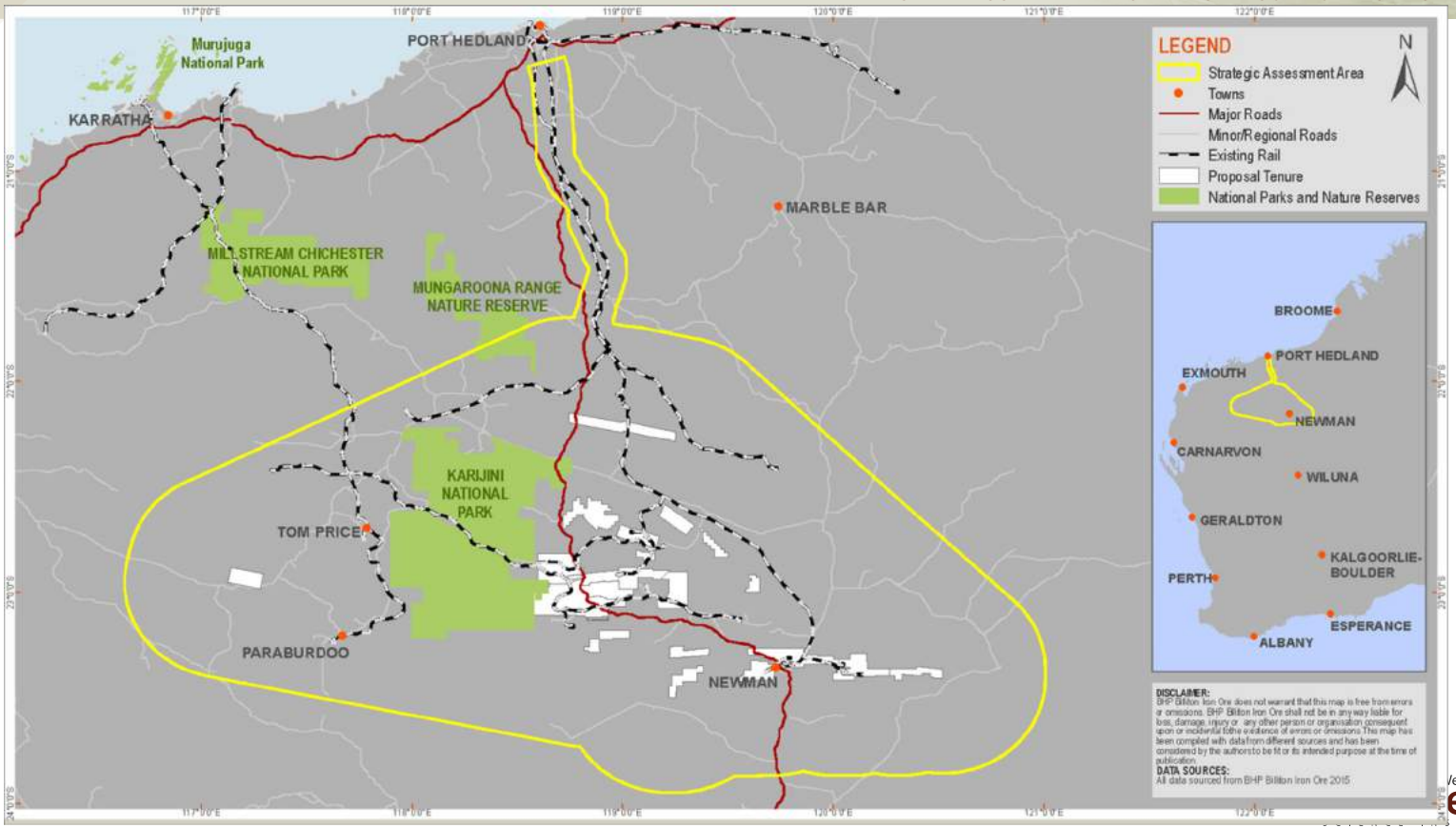
What might this enable for our community in 2020? 2025? 2030?

IBSA Marine Case Study

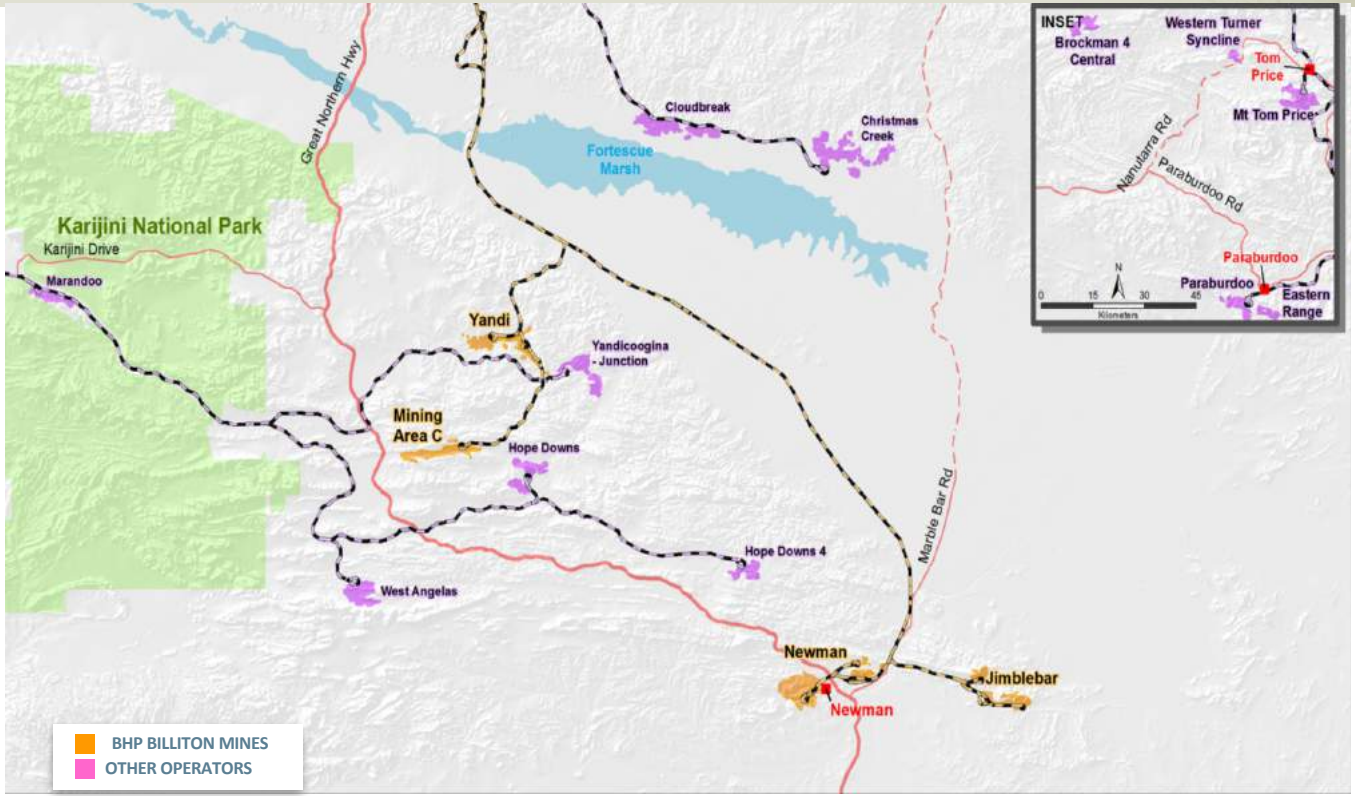
1. Marine data is expensive and challenging to collect, proportional to distance from shore
2. Industry data collection is restricted in volume and is (generally) compliance driven
3. The objective of IBSA is to capture and consolidate data contained in biodiversity survey reports to support assessments and compliance under the Environmental Protection Act 1986 and to provide a platform to make the information publicly available.
4. WA EPA Chair in consultation with the Director-General of DWER would like WAMSI to develop an approach and benefits study over the next 6 months to extend the IBSA concept to the marine information collected for the purposes of environmental impact assessment in State waters. Anticipated benefits arising from extending the IBSA program in to WA State waters include:
    1. more efficient marine assessments for proponents
    2. data to support a broader decision-making base for regulators
    3. an expanded knowledge base of WA's marine flora and fauna to support conservation management
    4. improved availability of marine environmental information for the community
5. NOPSEMA has agreed to partner with WAMSI to develop data sharing case studies in support of their 'Transparency Taskforce'. Resources Data Initiative > COAG Energy group.

Utilise IBSA policy change to collect, discover and make accessible marine EIA data > WAMSI opportunity to assist and coordinate. Gorgon as case study. Browse as case study. Westport as Case Study.

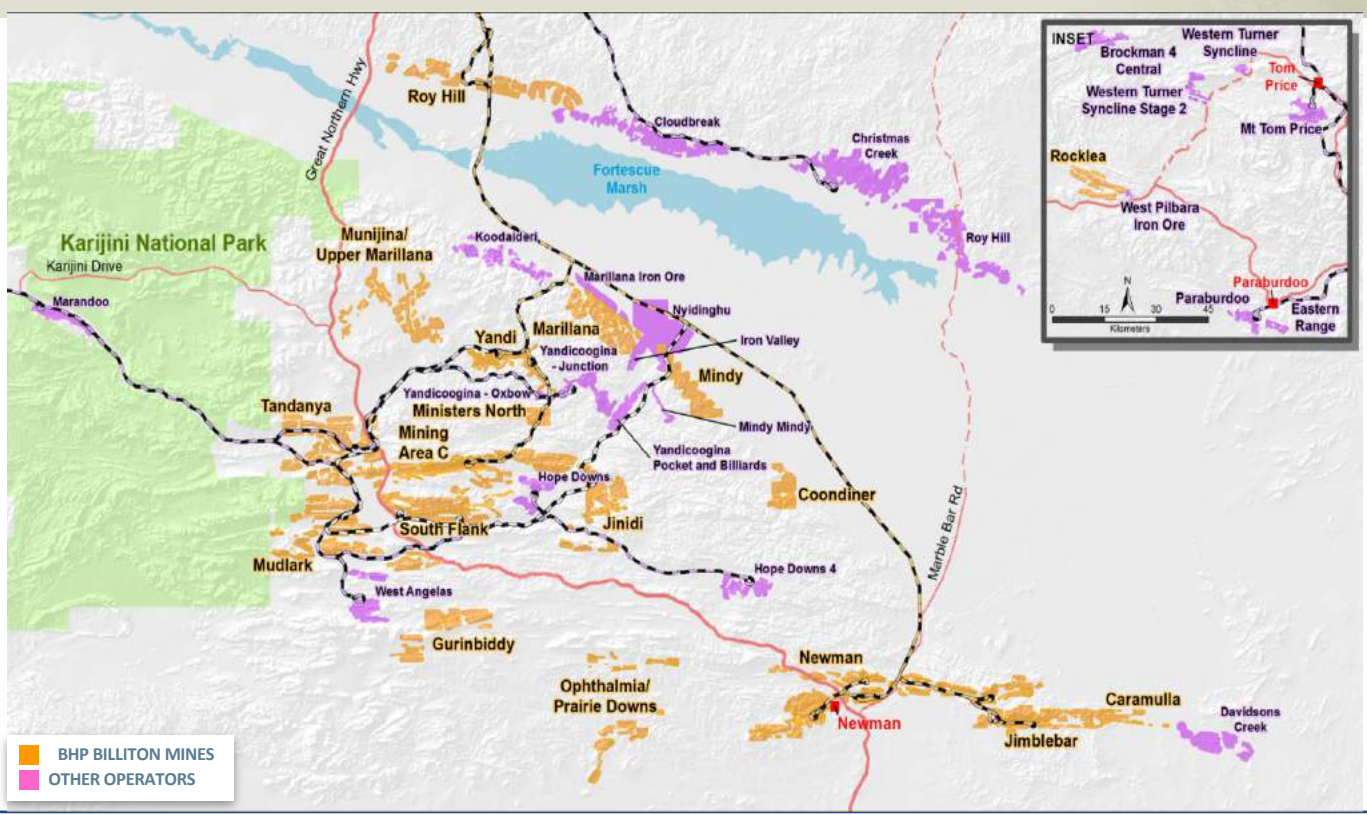
Shifting from local to regional thinking



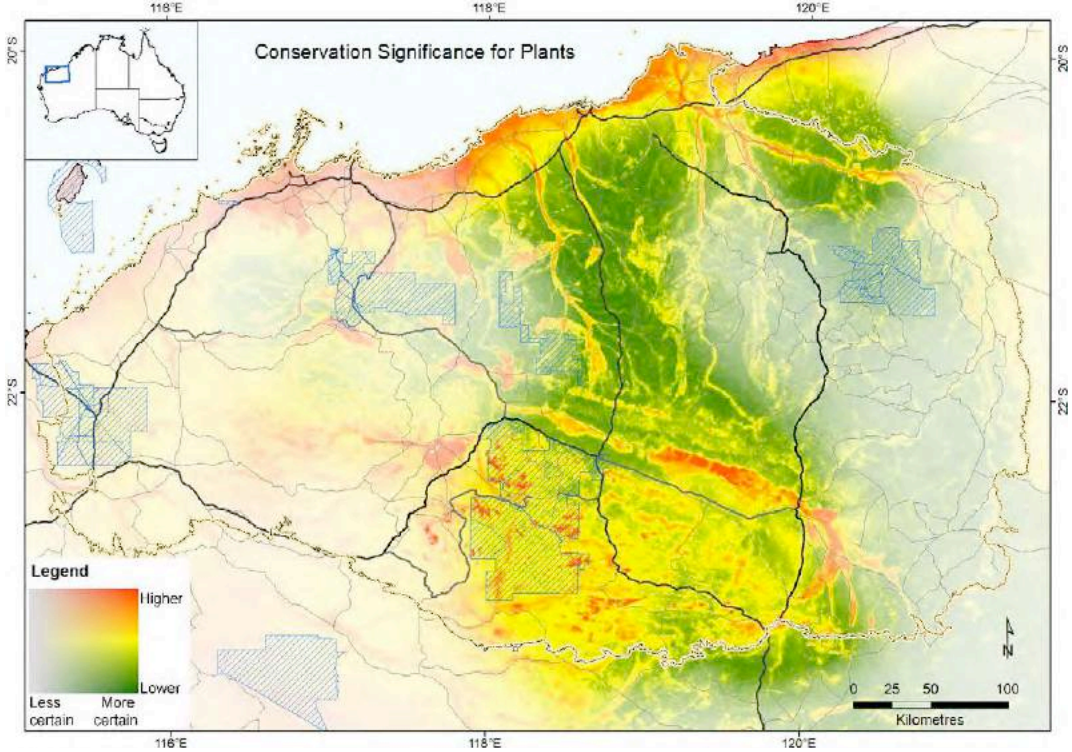
2015 Pilbara operations



Cumulative development in the Pilbara



In 2018 this is a specialist task. What if in 2025 it wasn't?



"The spatial bias resulted in high confidence in model outputs surrounding BHPBIO's mining tenements, but less confidence in predictions in distinct environments with limited survey coverage."

Remove the digital divide and every assessment becomes (increasingly) strategic.

How to remove the EIA 'Digital Divide'?

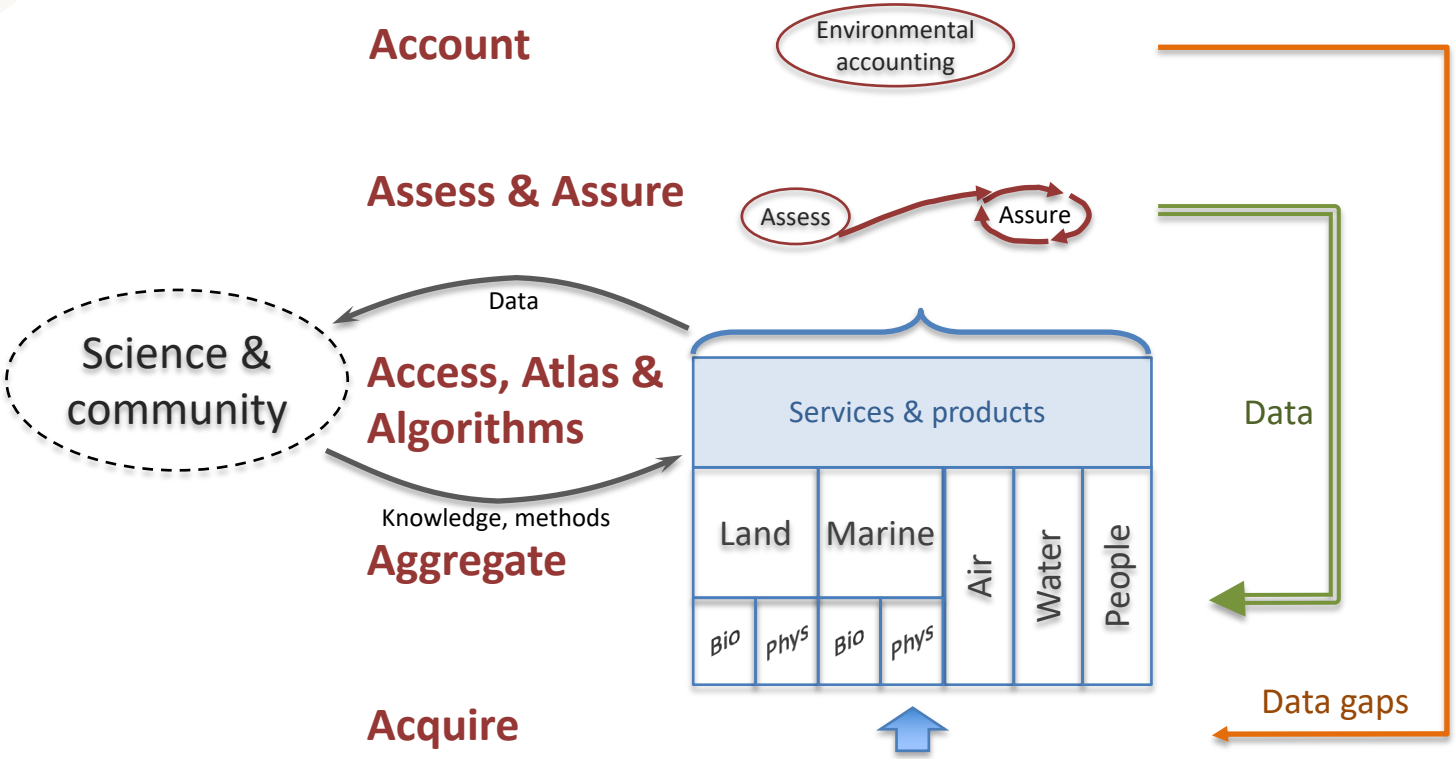
1. Create and lead a culture of shared expertise, common data standards, policies and incentives for data sharing and support a system for persistent storage and archiving of data

2. Mobilise biodiversity data from all available sources (EIA, Government Departments, NRM Groups, Research Community, Community Groups etc.) to make the data promptly and routinely available to the entire biodiversity community.

3. Curate and manage surveys into data layers that give individual surveys context and meaning, enabling this data to be used as evidence.

4. Deliver (or enable) informed, trusted analytical and assurance outcomes using shared solutions and technologies – repeatable, verifiable, accepted

…or be the biodiversity data asset manager for Western Australia.



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Client Samples

1. Resources 2030 Report September 2018 - https://www.industry.gov.au/data-and-publications/resources-2030-taskforce-report

   Recommendation 23 - Governments and industry should establish a national repository for the storage, management and distribution of environmental, biodiversity and heritage data.

   Recommendation 24 - Governments, industry and other stakeholders should develop holistic approaches to basin and landscape planning and project approvals, to consider cumulative impacts and promote mutually beneficial outcomes on shared resources such as water and land

2. Equator Principles http://equator-principles.com – Project Finance, 94 members, 37 countries, Majority of Global Financiers –proposed as at November 2018 - *We support conservation by encouraging our clients to share the biodiversity data they obtain with national and global data repositories, with the aim of enhancing the evidence base for research and decisions relating to biodiversity, and improving the transparency of impact assessment.*

3. The Proteus Partnership is a forum of 14 of the most forward thinking companies in the extractives sector who partner with UNEP's specialist biodiversity assessment arm: UNEP-WCMC http://www.proteuspartners.org/system/resources/W1siZiIsIjIwMTQvMTEvMTAvMTIvMzYvMjMvNzcxL1Byb3RldXNfYnJvY2h1cmVfMjAxMy5wZGYiXV0/Proteus-brochure-2013.pdf - What value a local public/private Proteus?

‘Digital’ Environmental Impact Assessment – 2019 challenges

- How repurposing of environmental data collected for the purpose of environmental impact assessment can most effectively and efficiently be achieved.
- How gaps in science and data science that may inhibit cumulative and strategic environmental impact assessment can be addressed >> trust
- The risks and impediments that may exist to implementing a state / national approach to D-EIA.
- The value of developing a shared technology and data storage infrastructure to operationalise ‘digital’ EIA.