



#BioSym2019



Barrow Island and beyond – industry-led biosecurity innovation in pursuit of excellence

Chair: Costa Georgiadis

Keynote speaker: Julia Martin





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Barrow Island and beyond - industry-led biosecurity innovation in pursuit of excellence

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June 2019

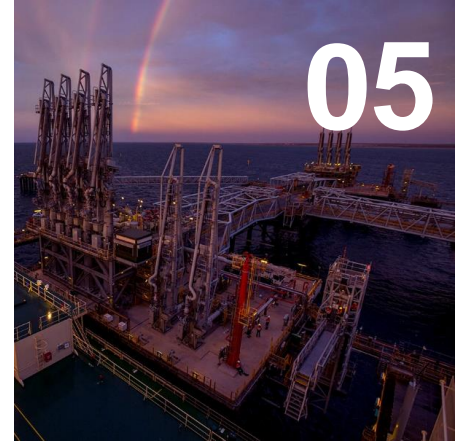
Overview



Assessing and managing risk



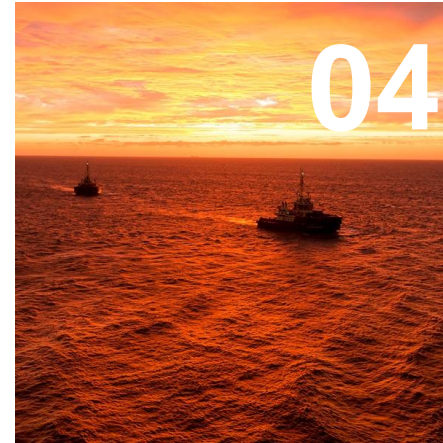
Future-proofing quarantine



The Chevron Way



People, partnership and performance



Continual improvement



Who is Chevron

For 140 years, Chevron has delivered the energy which **powers the world forward** through our global portfolio of upstream, downstream and midstream organisations

In Australia, our Gorgon and Wheatstone LNG assets play a key role in meeting the Asia-Pacific region's demand for **affordable, reliable and ever-cleaner energy**

The Chevron Way is our commitment to operate responsibly. Our values are who we are:

- **Diversity and inclusion**
- **High performance**
- **Integrity and trust**
- **Partnership**
- **Protecting people and the environment**



The Chevron Way

people, partnership and performance



protect people and the environment

We place the highest priority on the health and safety of our workforce and protection of our assets, communities and the environment. We deliver world-class performance with a focus on preventing high-consequence incidents.



partnership

We build trusting and mutually beneficial relationships by collaborating with our communities, governments, customers, suppliers and other business partners. We are most successful when our partners succeed with us.

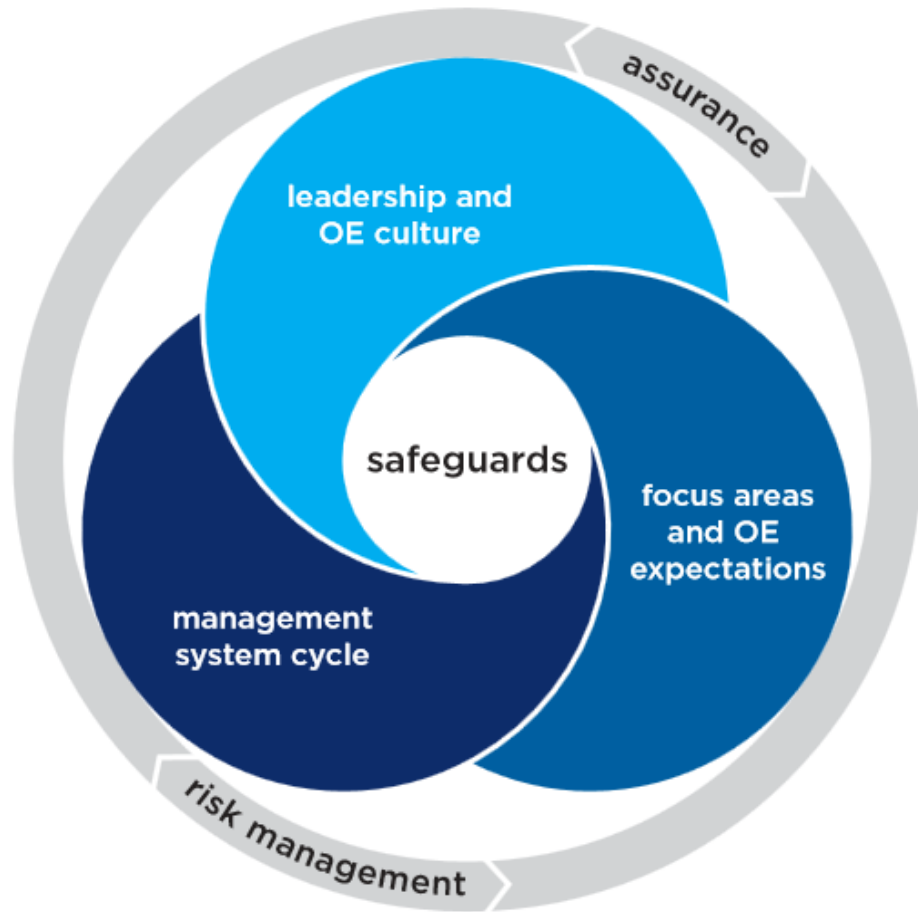


high performance

We are passionate about delivering results, and strive to continually improve. We hold ourselves accountable for our actions and outcomes. We apply proven processes in a fit-for-purpose manner and always look for innovative and agile solutions.



A culture of Operational Excellence



We instil a culture of **operational excellence** that places the highest priority on **the safety and health of our workforce** and on the **protection of communities, the environment and our assets**

Our **Operational Excellence Management System (OEMS)** puts into action our Chevron Way value to **protect people and the environment**

Four **environmental principles** define our commitment to doing business in an environmentally responsible manner:

1. **Include the environment in decision making**
2. **Reduce our environmental footprint**
3. **Operate responsibly**
4. **Steward our sites**



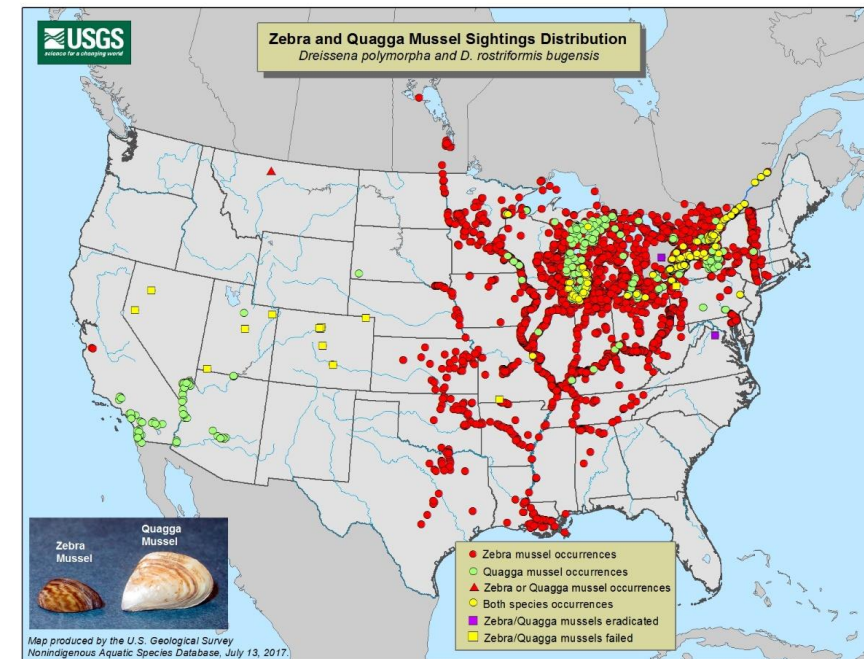
Assessing and managing risk

Understanding biosecurity challenges

Safety is embedded in everything we do.
We do it safely or not at all, and there is always time to do it right.

We focus on preventing high-consequence incidents and impacts by understanding and mitigating risks and maintaining and assuring safeguards.

Chevron recognises the importance of biodiversity conservation globally, and understands the long-term and high-consequence risks associated with biosecurity.



Protecting Barrow Island

Class A Nature reserve

Barrow Island is a Class A Nature Reserve and home to **24 species and subspecies found nowhere else on earth** and home to the Chevron-operated **Gorgon LNG Facility and WA Oil oilfield** operations

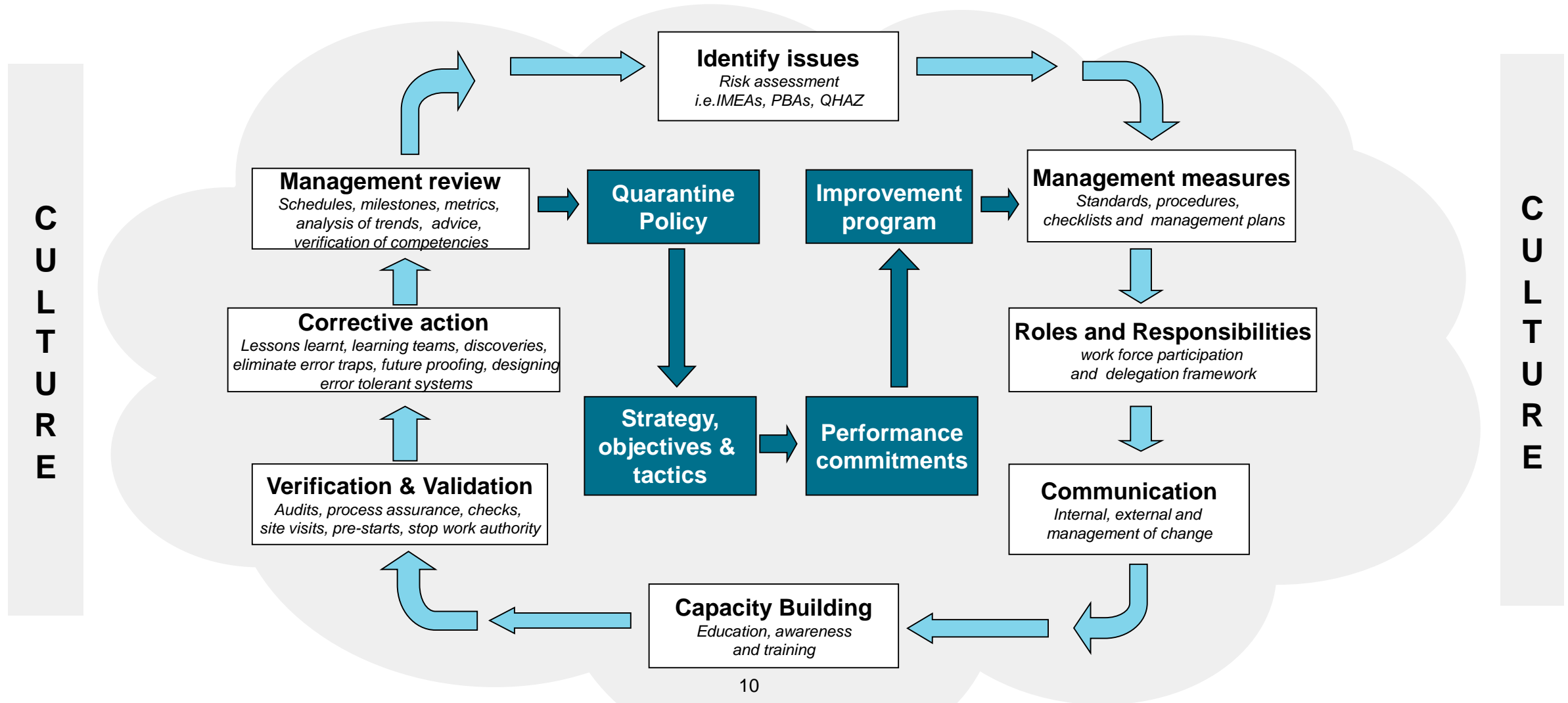
Our key objective is to protect the conservation values and maintain the biodiversity of Barrow Island and its surrounding waters

Barrow Island **Quarantine Management System (QMS)** is the world's largest non-government quarantine initiative, recognised globally as 'best practice'

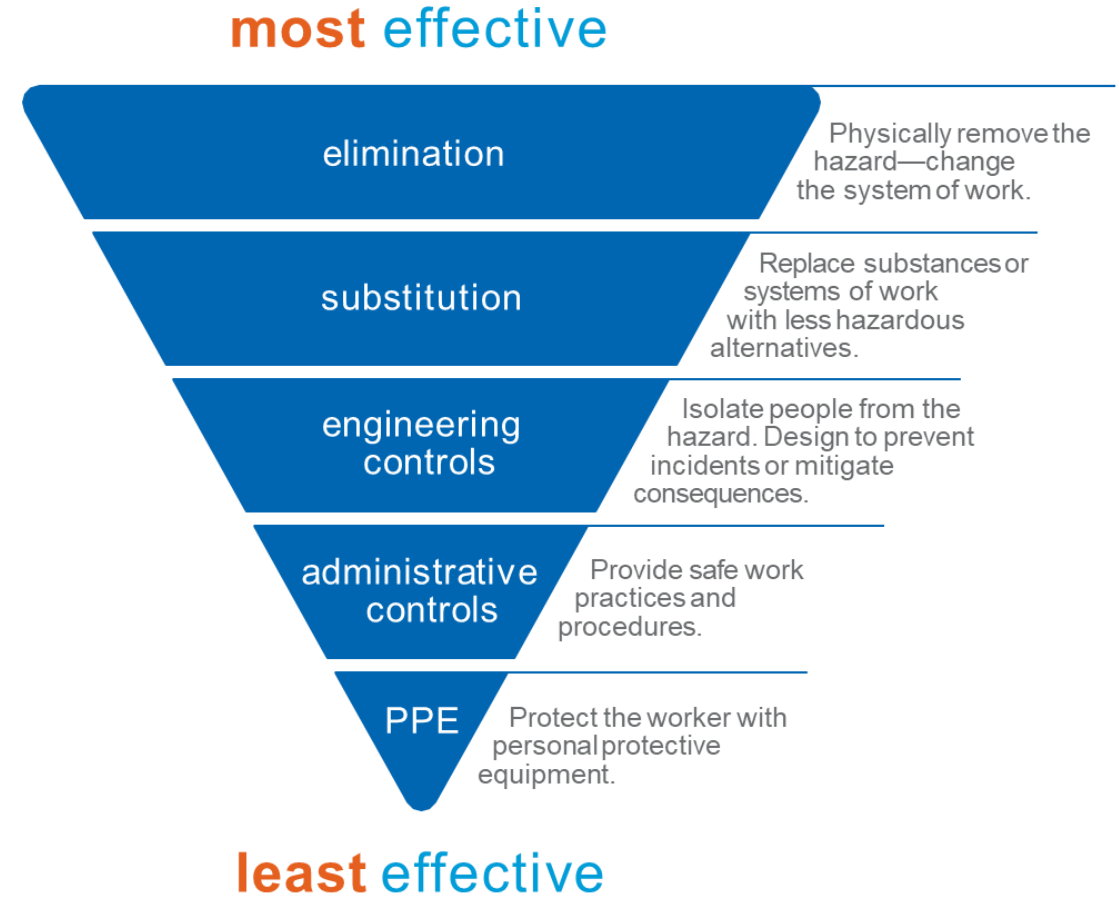
Critical to our successful environmental management has been **workforce education and culture, rehabilitation** and a **rigorous quarantine management system**



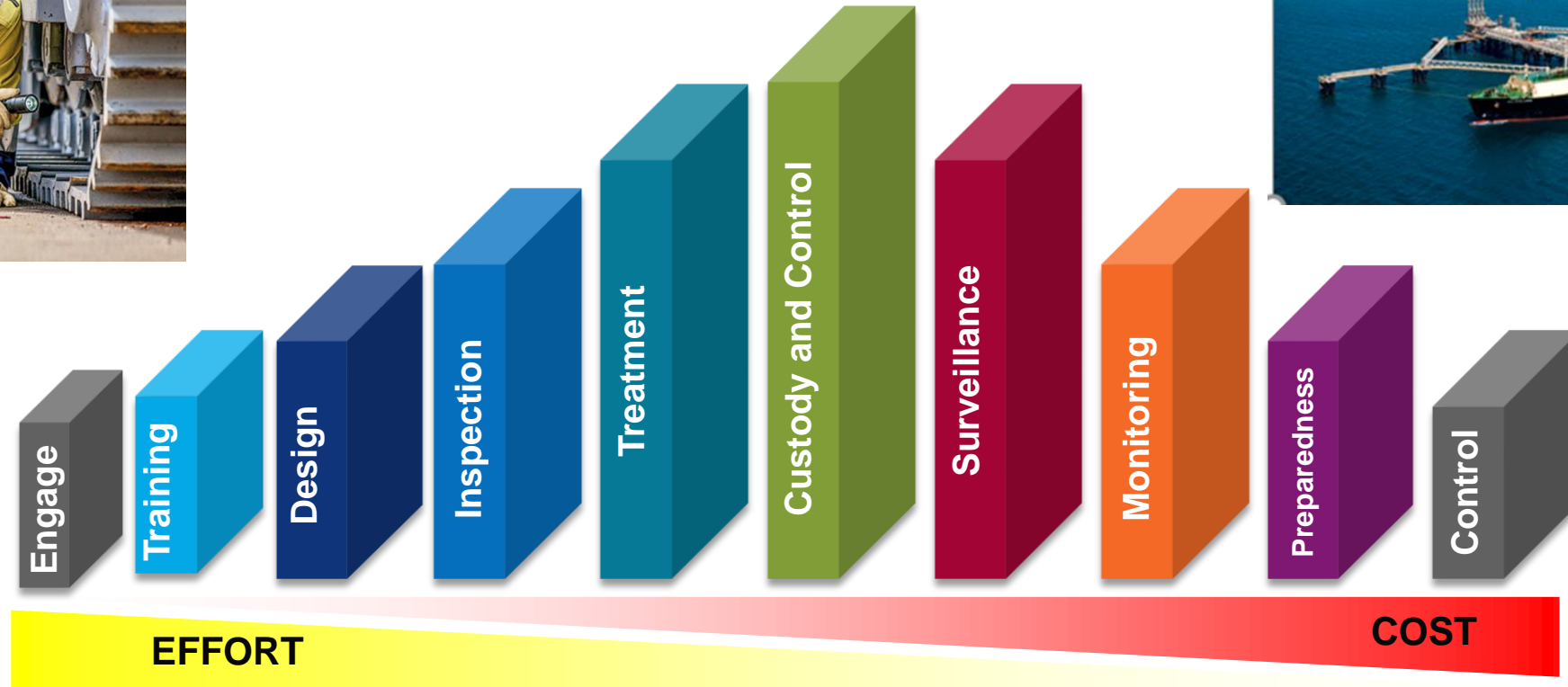
Quarantine Management System (QMS)



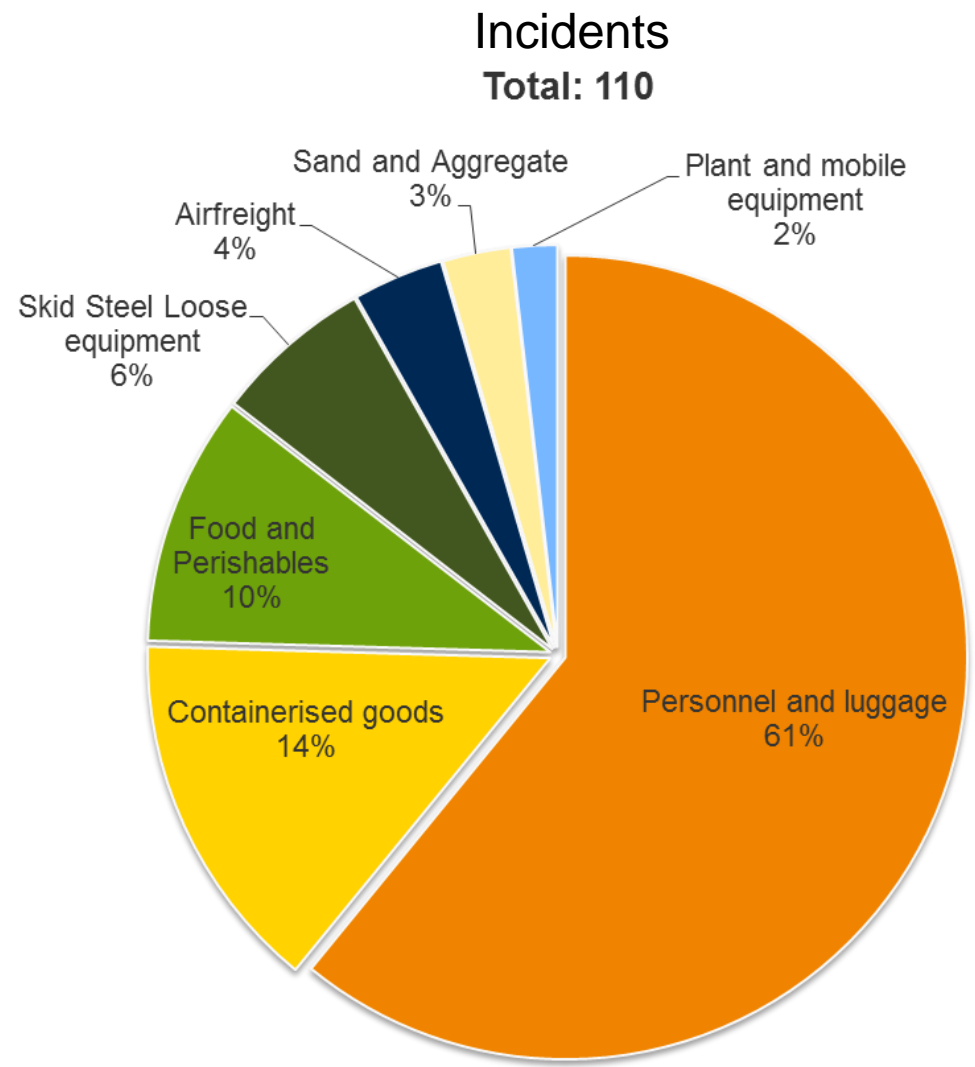
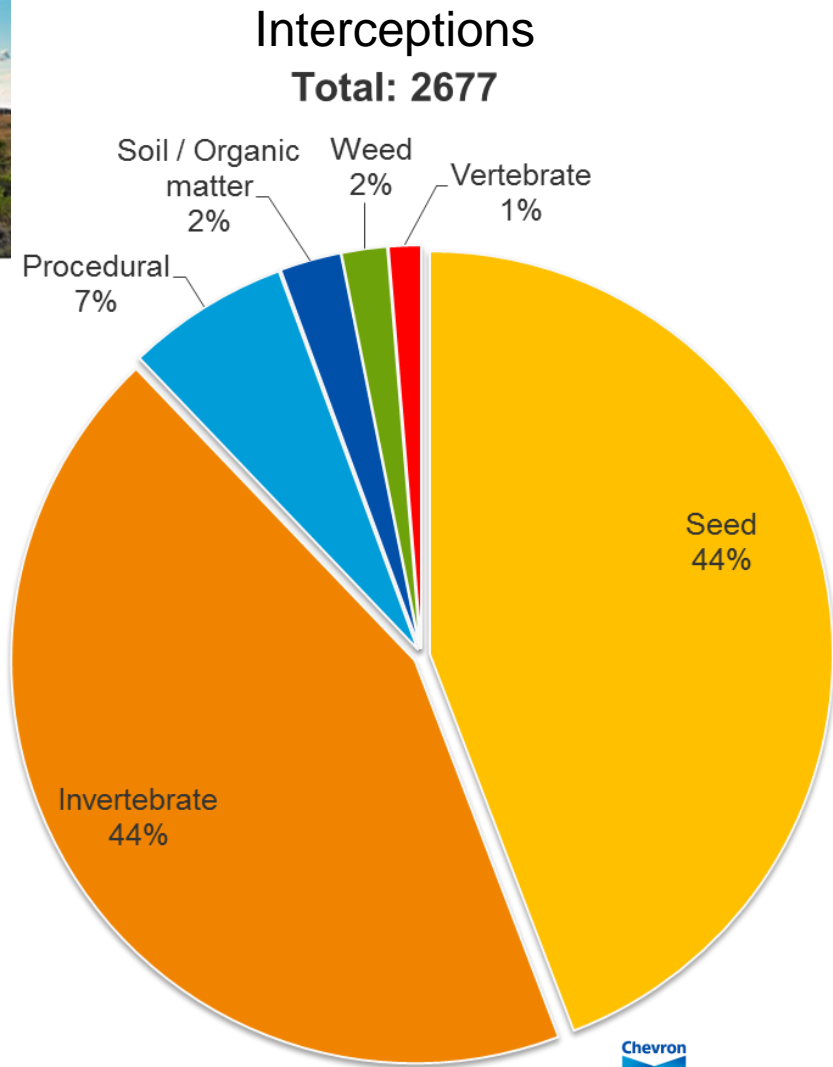
Understanding and managing our risks



Components of the QMS



Performance results (2009-2018): zero introductions of non-indigenous species to Barrow Island



Is the approach scalable?



Chevron-operated oil and gas facilities in Kazakhstan, adjacent to Caspian Sea



Future-proofing quarantine

improving systems to improve outcomes

Our success to date reflects our **people, partnerships and performance focus**

We work closely with government, researchers, communities, regulators and other industry partners to seek visible solutions that meet **the highest standards of environmental stewardship**

We never assume that we have resolved the challenges – we maintain our sense of vulnerability and continually search for ways to innovate and improve

Our continual improvement focus incorporates **human performance** principles and concepts to build and maintain error-tolerant systems that decrease reliance on people as safeguards and reduce the risk of error

Human Performance connects these components to proactively reduce human failure and its outcomes.



human performance makes it easier to get it right and harder to get it wrong

Technology enablers

Loop Mediated Isothermal Amplification (LAMP)



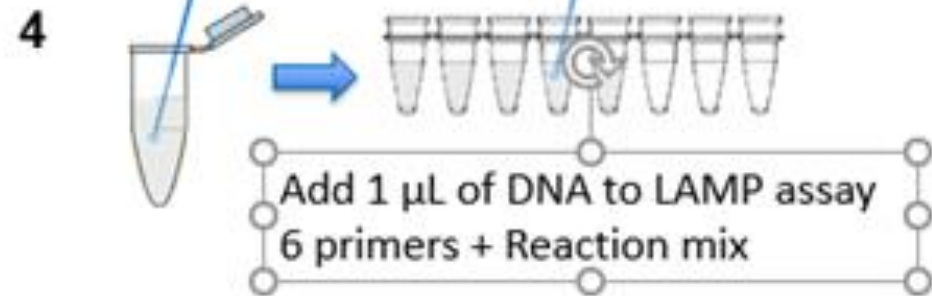
Collect the specimens



Preparation: Add samples to DNA QuickExtract buffer with a single use pin



DNA Extraction:
Incubate on the LAMP machine
- 5-10 mins



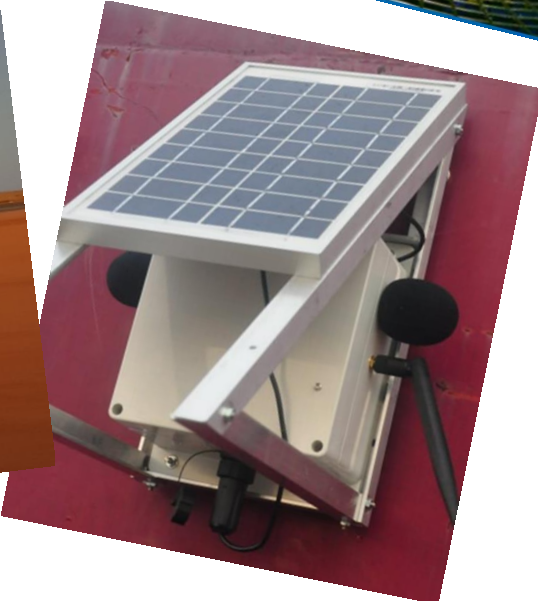
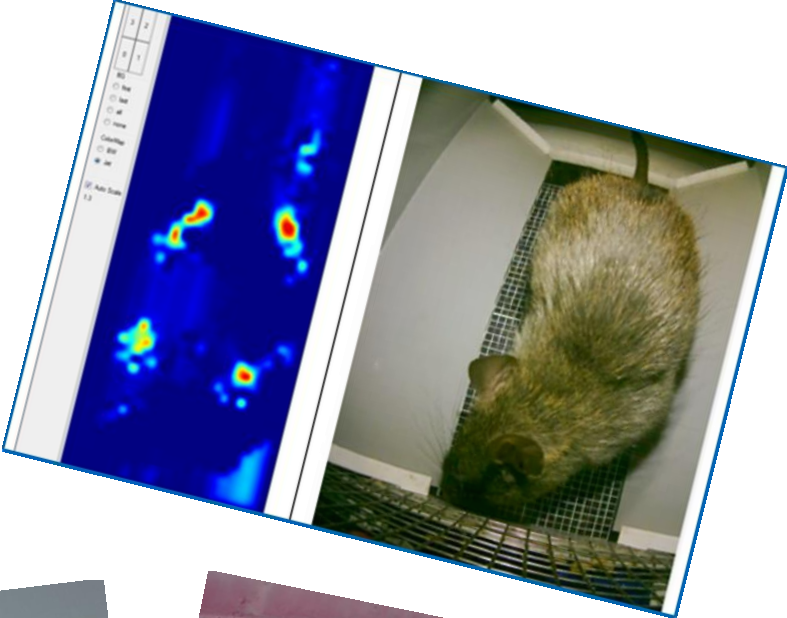
Start
reaction



**Amplification
and results**
- 15 to 30 mins

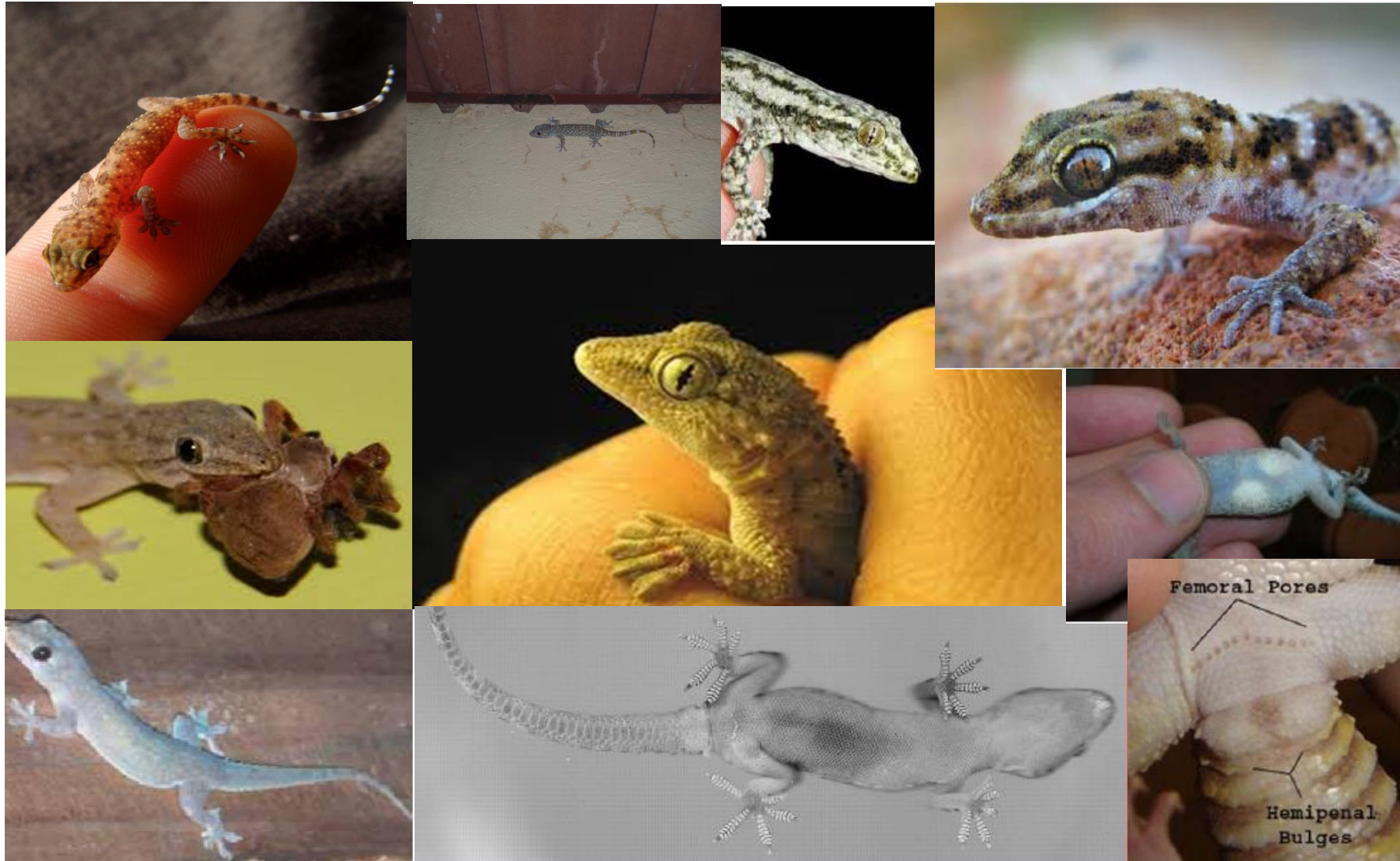
Technology enablers

SMArT quarantine science



Technology enablers

Using AI to recognise vertebrates



Where to from here - continual improvement

OEMS common expectation: Apply human performance principles and concepts to build and maintain error-tolerant systems that decrease reliance on people as safeguards and reduce the risk of error.

it operates on seven guiding principles:

- 1** People will make mistakes
- 2** We can predict, manage and prevent error-likely situations
- 3** Organizations influence individual behavior
- 4** Understanding how and why mistakes occur and applying lessons learned can reduce incidents
- 5** The majority of incidents stem from latent conditions triggered by active errors
- 6** Violations (of rules and procedures) are rarely malicious, but are well-meaning behaviors intended to get the job done
- 7** How leaders respond to failure matters

we use these principles to:

- Improve the interaction between individuals and critical systems
- Recognize error-likely situations and apply tools to reduce error

human performance helps us reduce failures by:

- Redefining safety as the presence of safeguards and capacity, not the absence of incidents
- Expanding our thinking from "why" to include "how"
- Building error-tolerant defenses and systems
- Using OE to target serious incident reduction and fatality prevention



Questions

