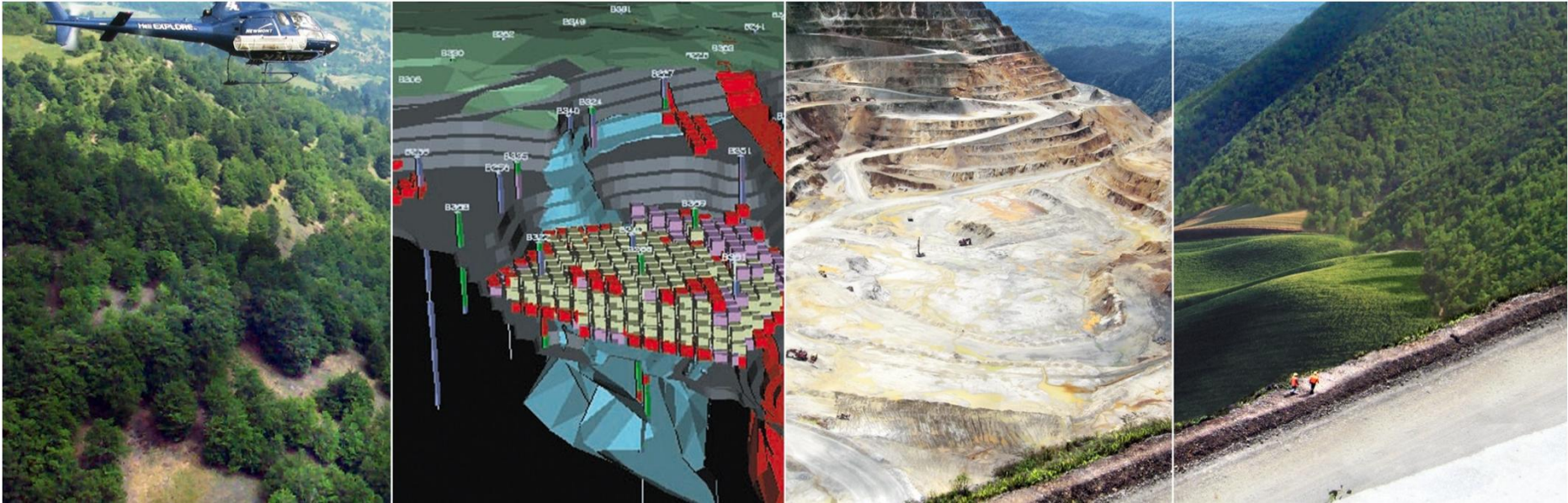


Mine Closure Planning and Costing



By: Fiona Cessford, Corporate Consultant and Director, SRK UK

Content

- **Why plan for closure**
- **Closure planning process**
- **Types of closure costs and when to use them**



What do we see in reality?

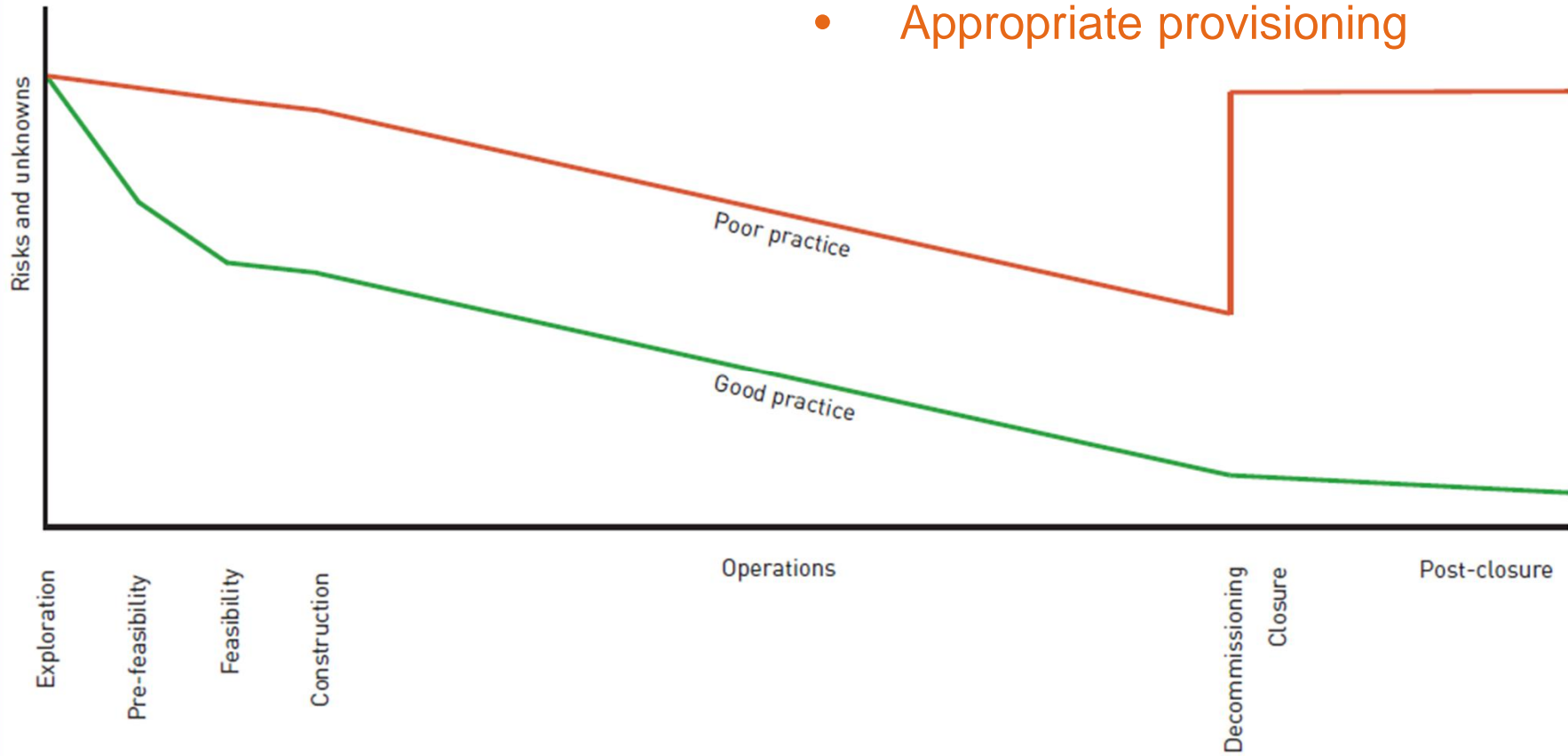
- Massive variation in approaches to closure planning and costing
- Costs frequently underestimated
- Limited stakeholder involvement (government, local communities, post-closure land users, NGOs etc)
- Insufficient coverage of social closure and links to delivery of positive legacy

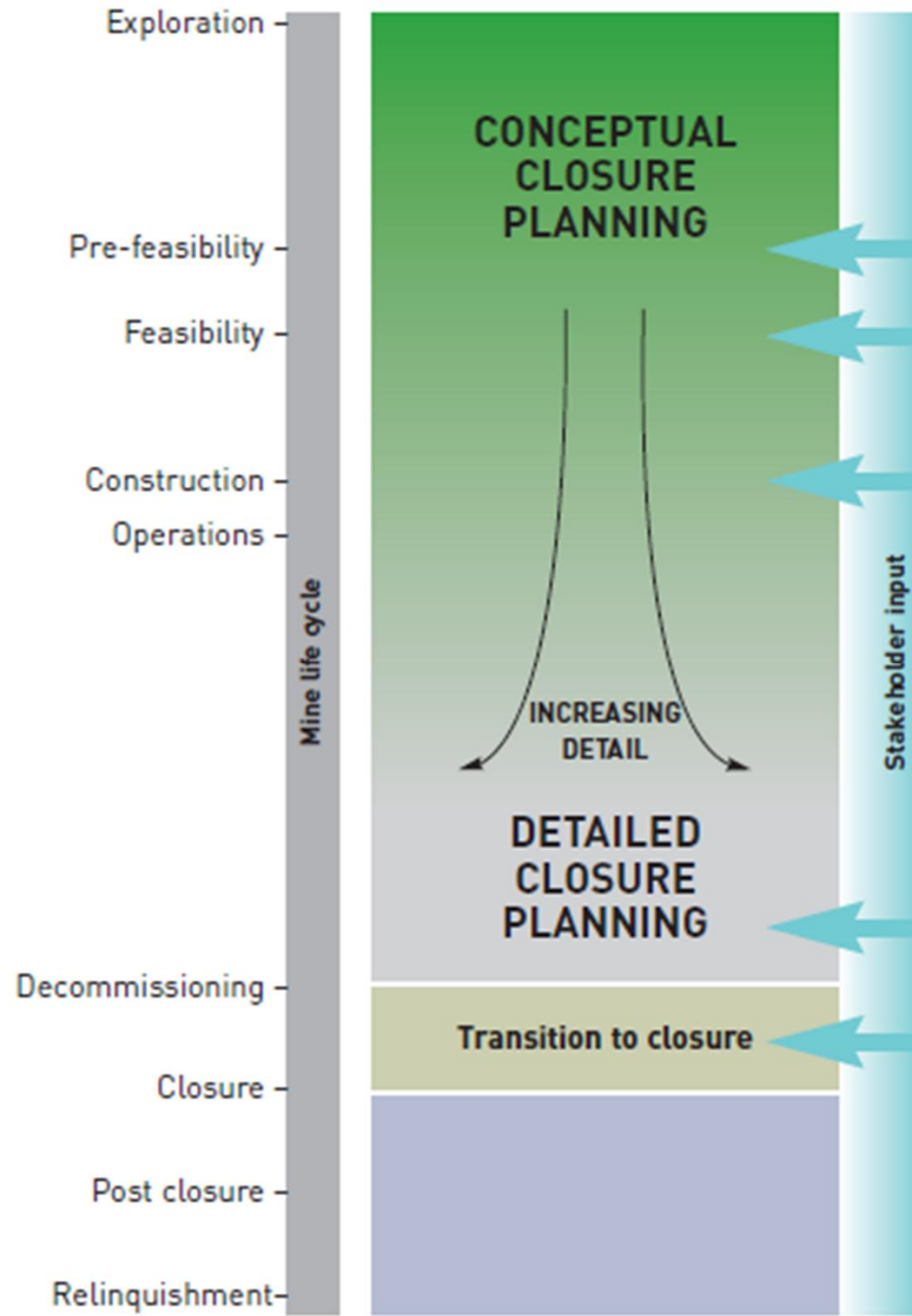
Risks from poor closure planning include:

- Costly remediation of hazardous or polluting areas
- Inadequate financial provisioning
- Lack of acceptance of proposed closure actions by stakeholders

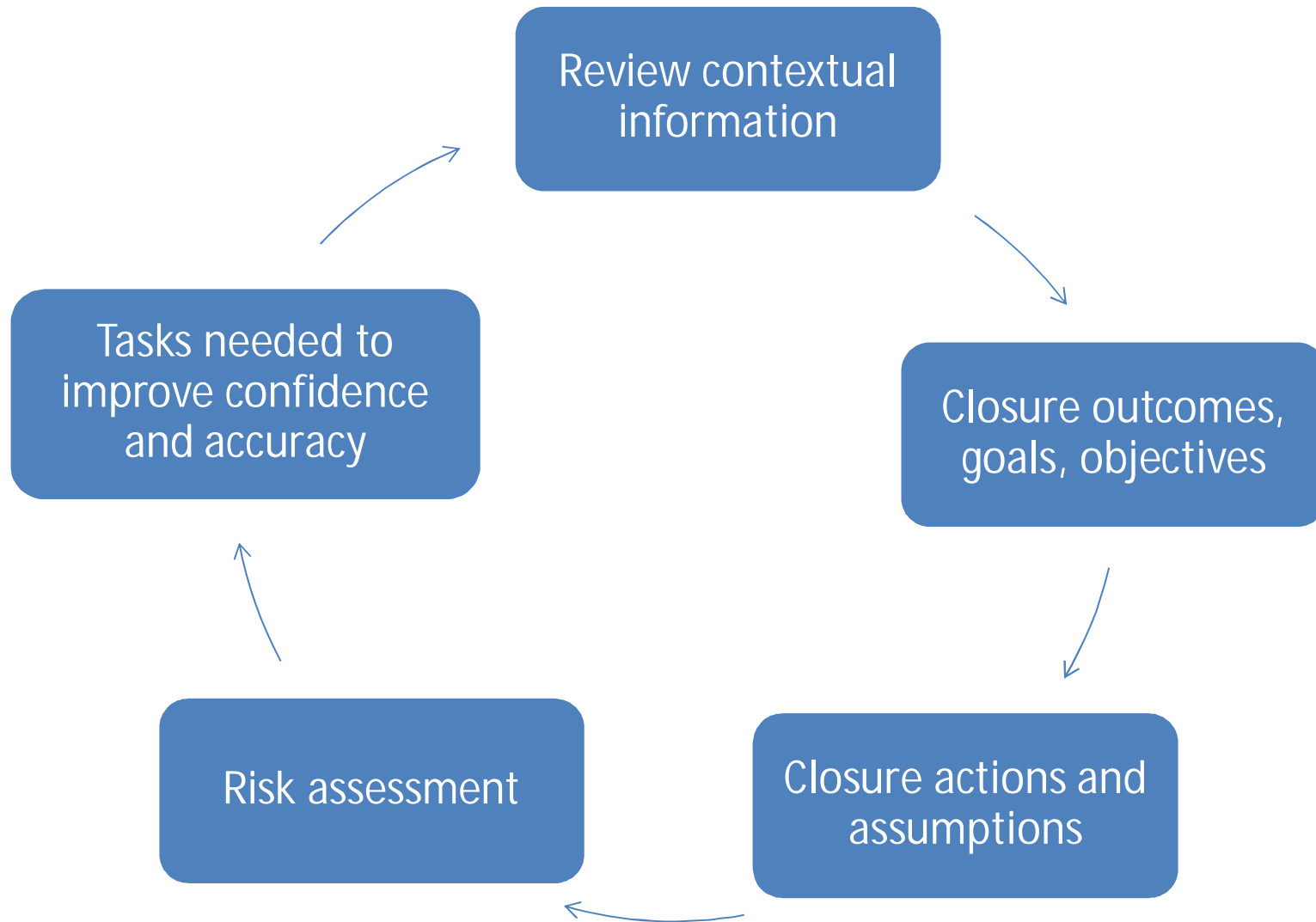
Why plan for closure?

- Identification of issues and risks in advance
- Potential liabilities progressively reduced
- Increased efficiency (avoid double handling)
- Effective participation of stakeholders
- Risk of non-compliance reduced
- Increased accuracy of closure cost estimates
- Appropriate provisioning



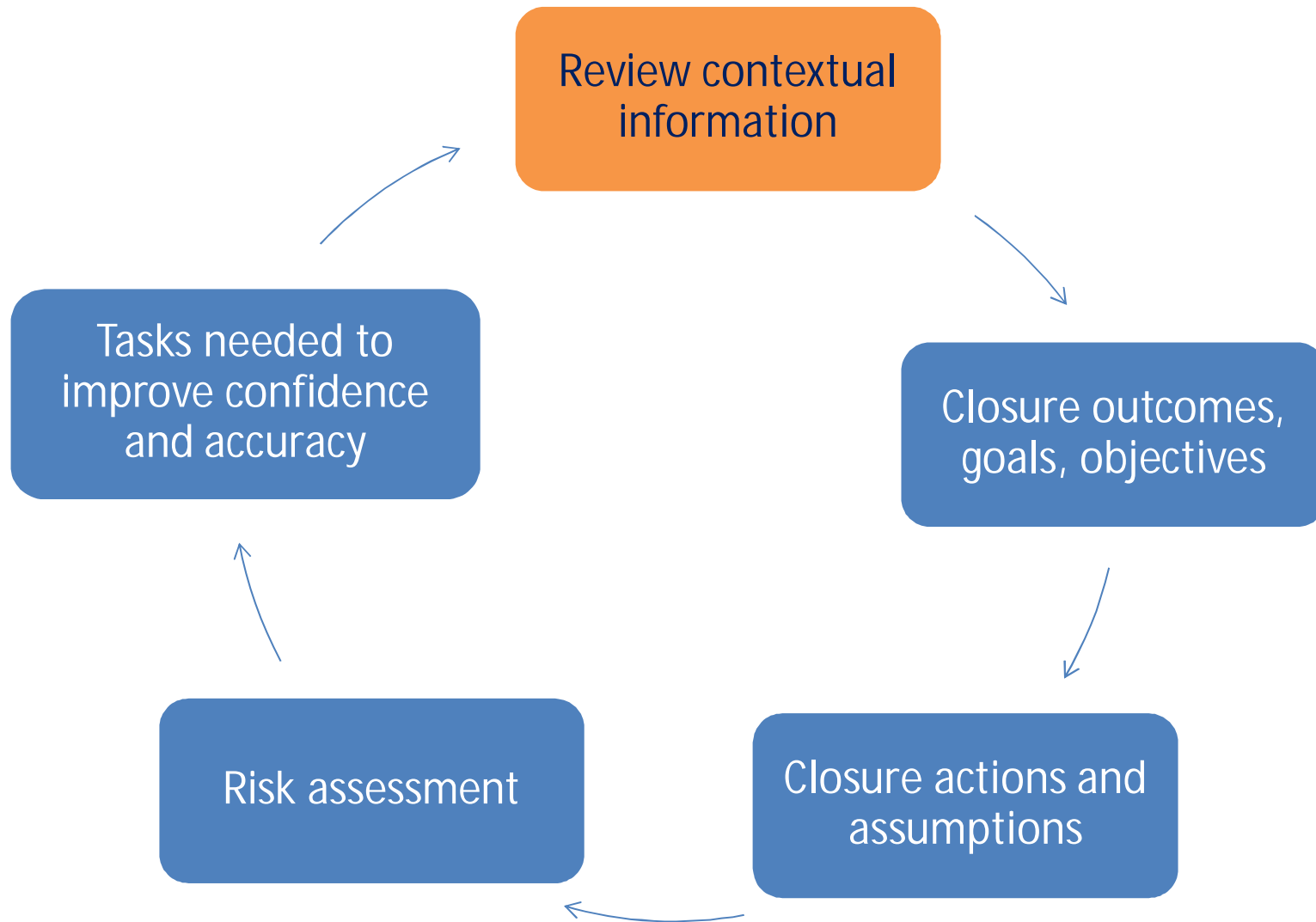


Iterative closure planning



Starts early in the process with increasing detail needed as move toward final closure

Iterative closure planning

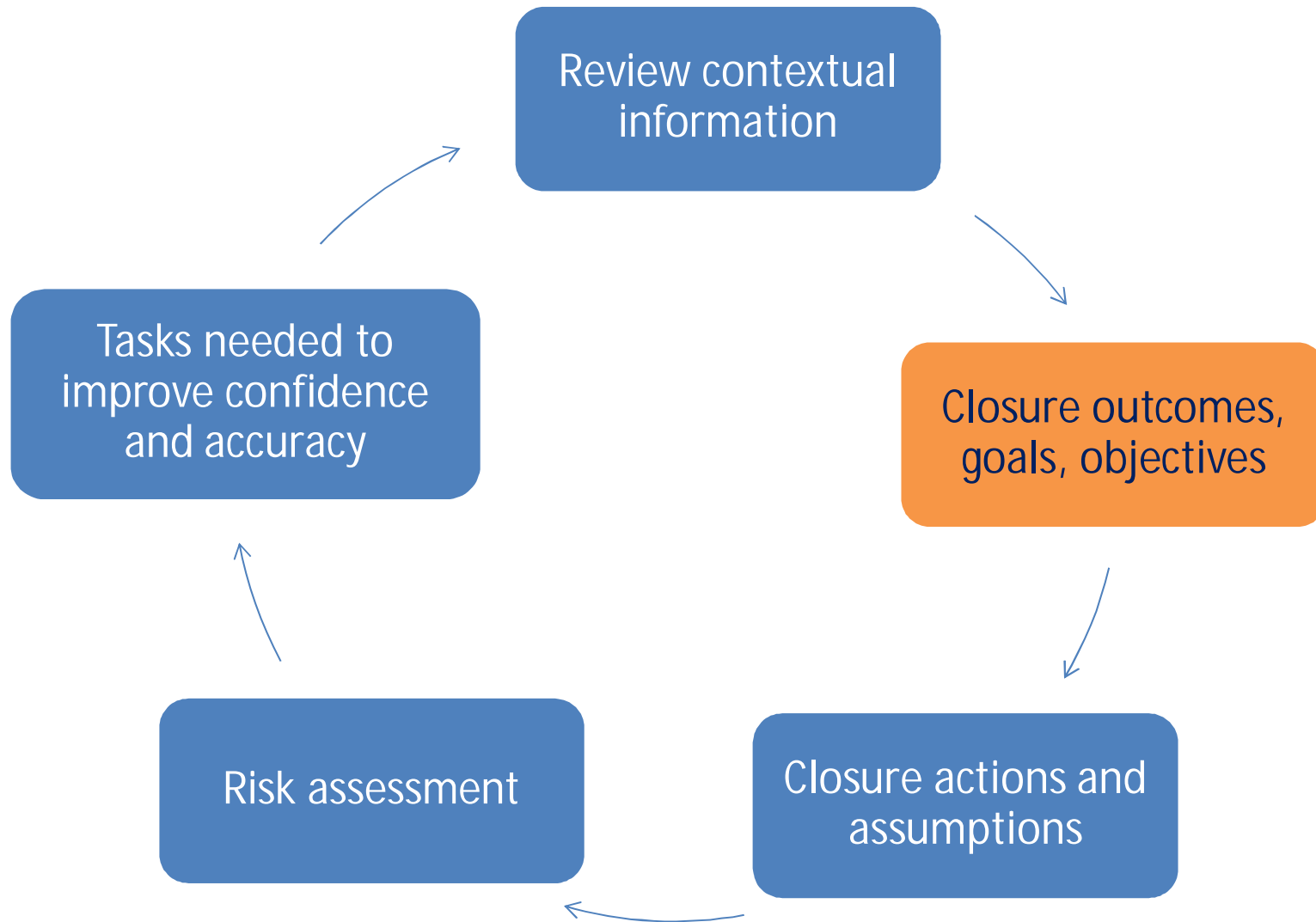


Contextual information

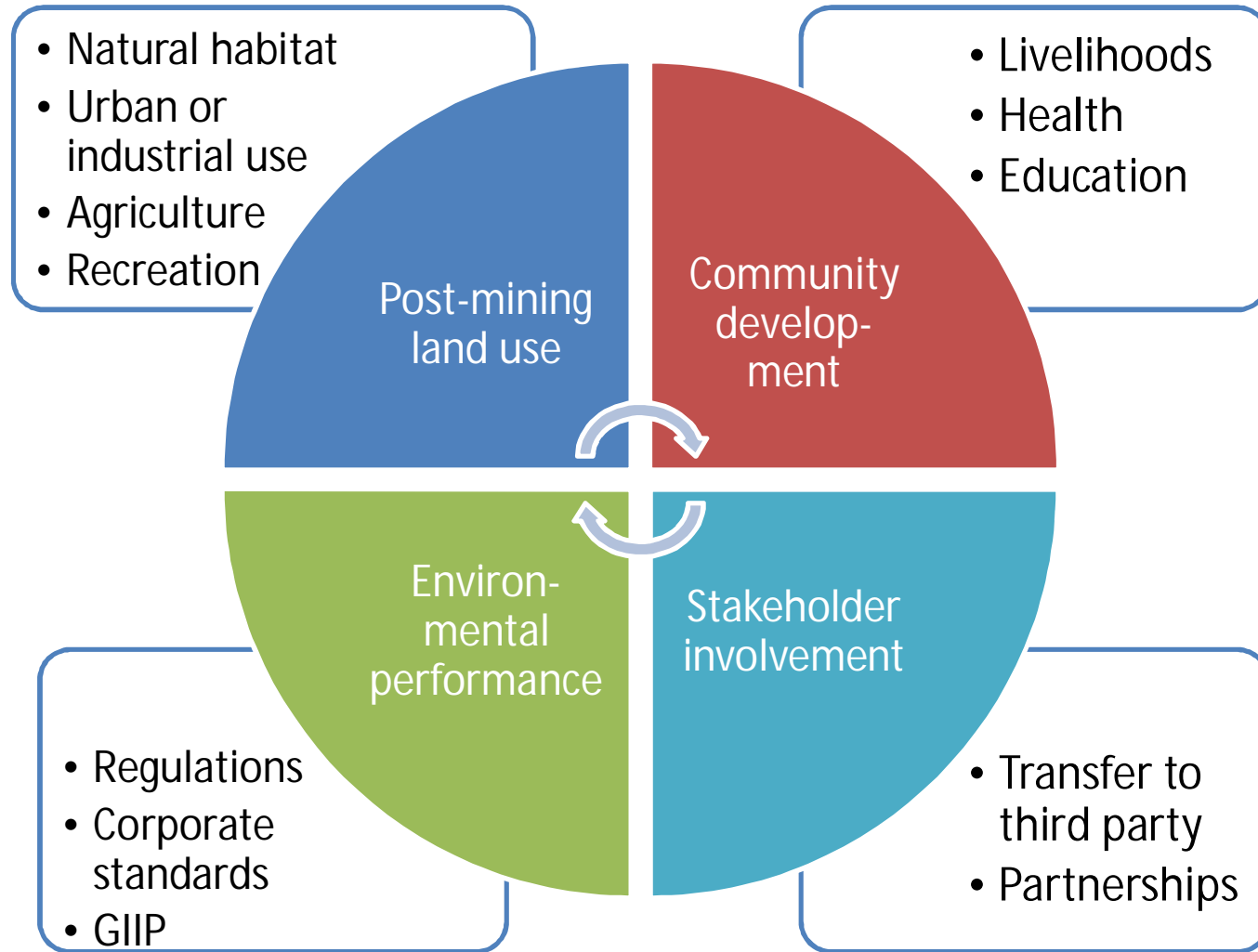
Closure obligations	Other considerations
<ul style="list-style-type: none"> • Legal and regulatory requirements • International standards • Corporate standards • Stakeholder commitments 	<ul style="list-style-type: none"> • Environmental and social setting • Material characterisation • Design criteria • Expected post closure land use • Relinquishment options
<h2>Stakeholder expectations</h2>	

Starting point – what information is available to inform the closure plan and costing process

Iterative closure planning



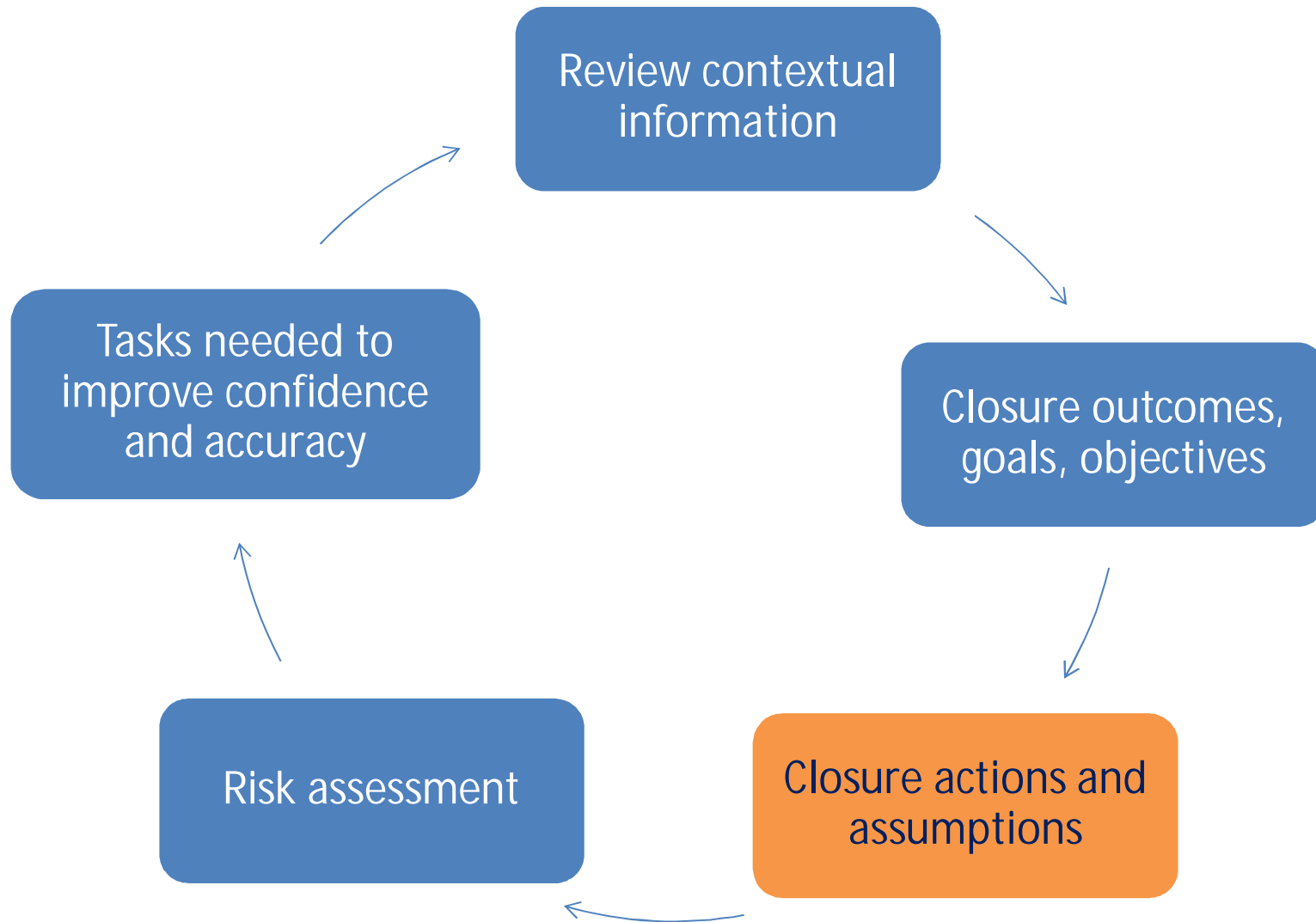
Closure outcomes and goals



Example objectives

- Maintain worker health and safety.
- Protect public health and safety.
 - Demonstrate chemical and physical stability.
 - Create self-sustaining ecosystem.
 - Minimise need for reclamation maintenance.
- Minimise negative impact on retrenched employees and local economy.
 - Maintain community relations.
 - Reduce closure liability during operations through a concurrent closure program.

Iterative closure planning

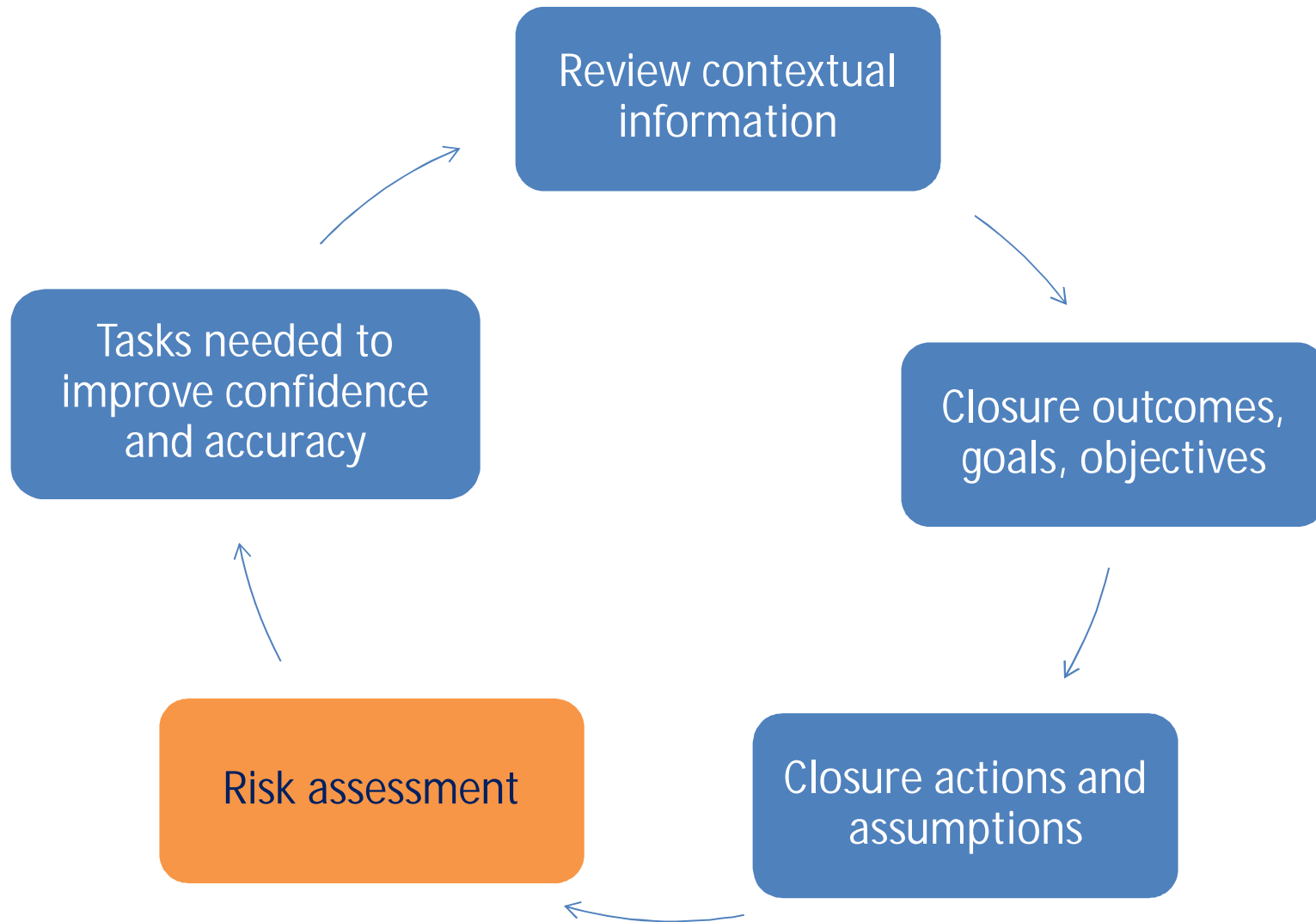


Closure alternatives and actions

- **Identify alternatives**
 - Realistic land uses or end points for each facility
 - “Out of the box” thinking if appropriate
 - Future opportunities
vs. basic assumptions
- **Develop actions for preferred alternative**
- **Agree on assumptions to be used**
- **Set evaluation criteria to determine success**
- **Identify post closure monitoring required to enable success against agreed criteria to be measured**



Iterative closure planning



Undertake a risk assessment

At start of closure
planning process:

At end of closure
planning process:

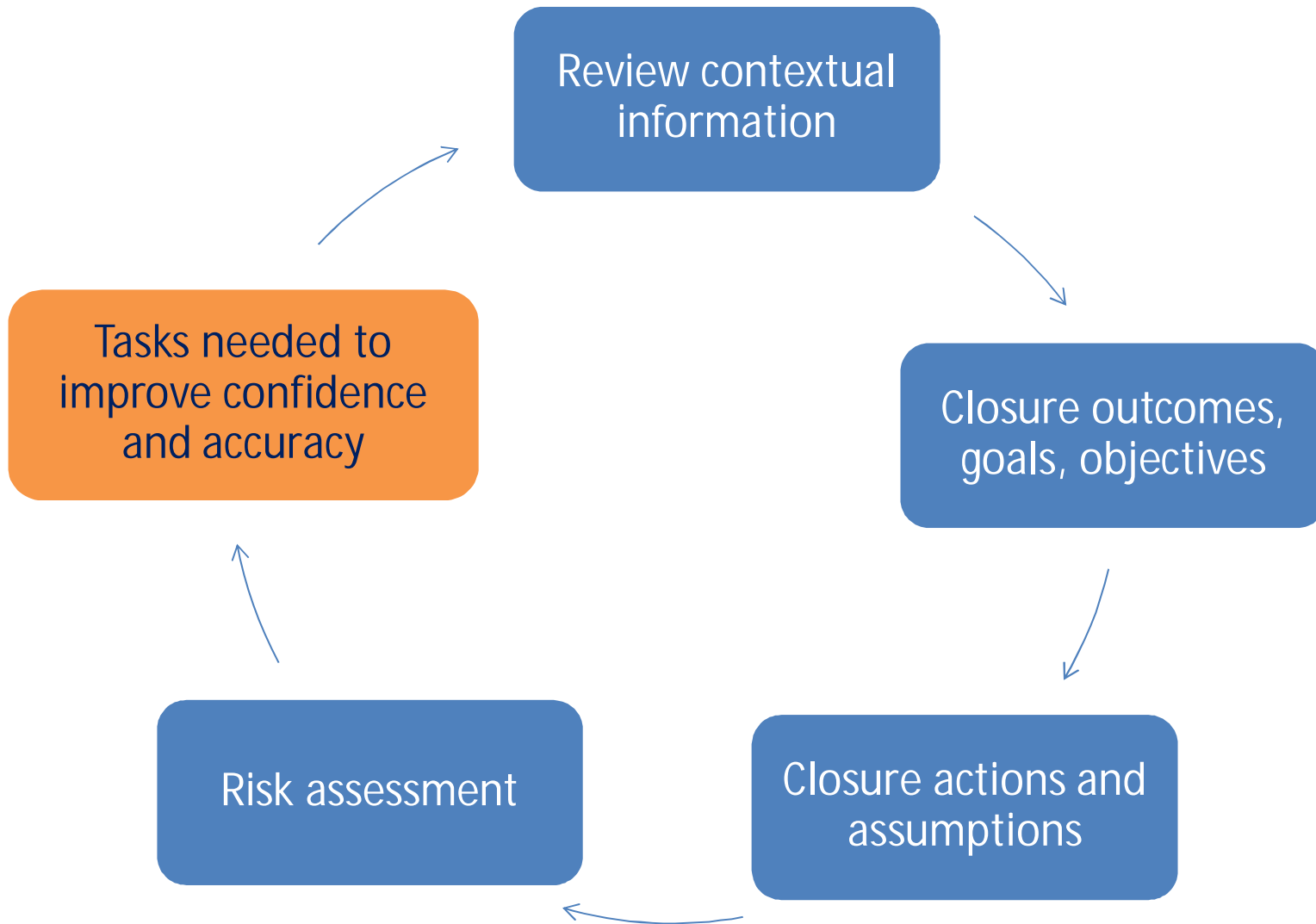


Evaluate likely
closure risks (H&S,
environmental,
social, reputational,
legal, financial)

Evaluate risks
remaining once plan
implemented e.g.
closure plan not
executed as planned
or goals not met

Risk assessments highlight areas requiring further attention to increase confidence in closure plan

Iterative closure planning



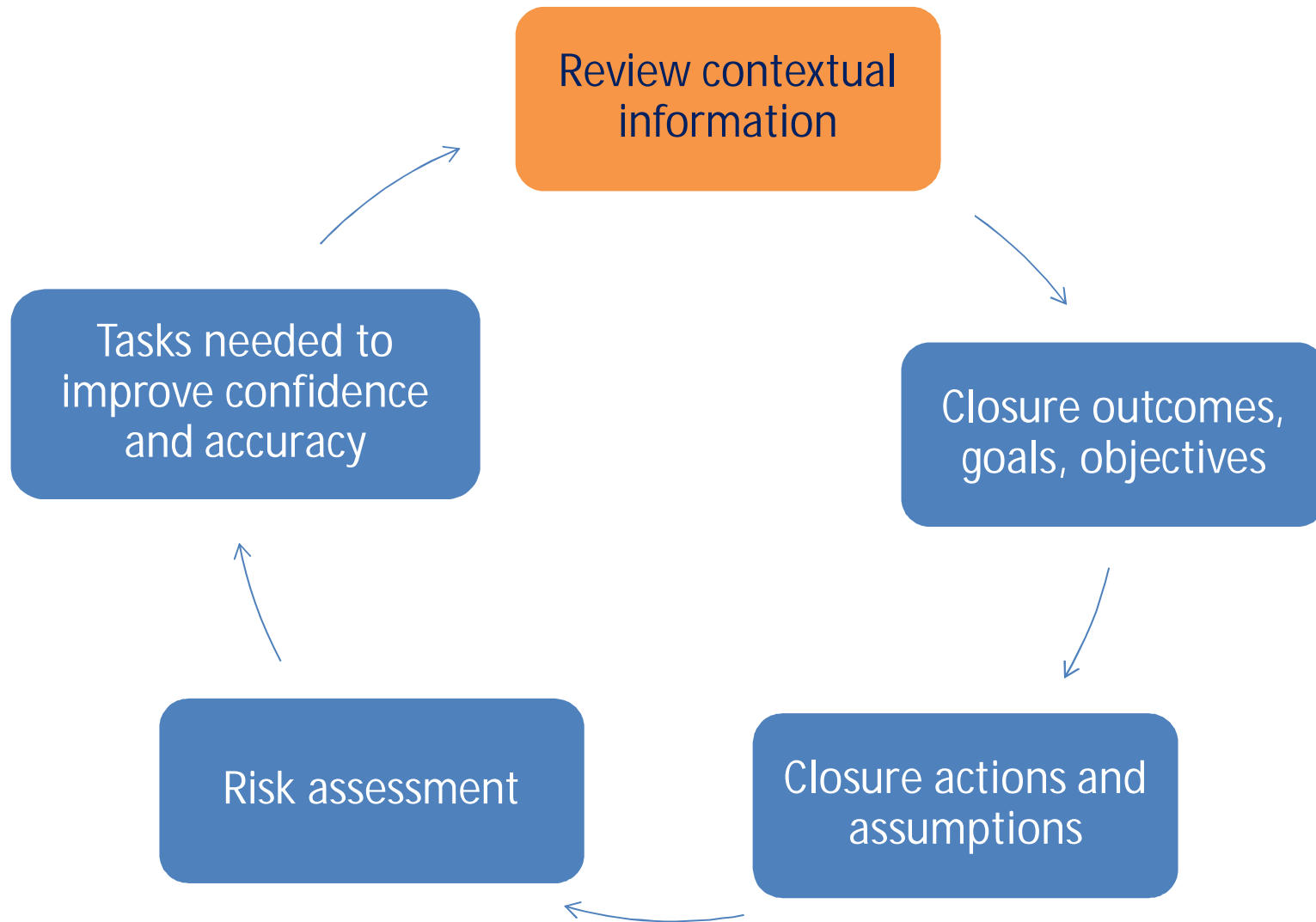
Improving confidence

Identify additional tasks needed to better understand context or enable refinement of proposed closure goals and actions, for example:

- Materials characterisation
- Environmental or social monitoring
- Stakeholder engagement
- Engineering design



Iterative closure planning – take two.....



Type of closure costs



Cost Estimate Types

Without clarification
or context, can be
confusing or
potentially misleading

Common Terminology

- Mine Closure Cost (MCC) – is a generic term!
- Financial Assurance Cost Estimate
- Life-of-Mine Closure Cost (LOM)
- Asset Retirement Obligation (ARO)

Financial Assurance Cost

- Estimated cost for responsible regulatory agency to perform approved closure actions
- Usually used to determine the amount of financial security required under governing regulations
 - Typically assumes third-party costs
 - May need to include stipulated indirect costs
 - Current or maximum near-term cost



Life-of-Mine (LOM) Cost

- Estimated cost for mine operator to perform approved closure actions
- Usually used for planning, budgeting and cost tracking, for example during:
 - Prefeasibility/feasibility
 - Due diligence
 - Accrual allocation
- Includes all planned development
- Cash flow basis

Asset Retirement Obligation (ARO)

Relevant financial standards applicable to AROs

- Financial Accounting Standards (FAS)
- International Accounting Standards (IAS)

What does ARO include:

- Fair value of abandonment costs associated with mining and mineral processing operations for financial reporting
- Amount company would pay a third party to assume responsibility (including a profit margin)
- Includes both Legal (and Constructive) Obligations
- Only includes cost to close operation as it exists in the stated reporting year
- Cash flow basis

Obligations for AROs

Legal obligation is: “ an obligation that a party is required to settle as a result of an existing or enacted law, statute, ordinance, or written or oral contract, or by legal construction of a contract under the doctrine of promissory estoppel.” Source: FASB Statement 143

Constructive obligation is: an obligation deriving from an entity's actions where:

- a) by an established pattern of past practice, published policies or a sufficiently specific current statement, the entity has indicated to other parties it will accept particular responsibilities; and
- b) as a result, the entity has created a valid expectation in those parties that they can reasonably rely on it to discharge those responsibilities. Source: IASB Meeting Minutes, May 2004

Closure Cost Types

	Financial Security	LOM	ARO
Use(s)	Financial security	Planning (PFS, FS), budgeting, etc.	Financial Reporting to Shareholders
Rate Basis	Third-party	Operator & Third-party	Third-party
Included Development	Maximum (near-term)	All Planned	Current Financial Year
Govt. Contracting Rules	Maybe	No	No
Cost Basis	Current Cash	Cash Flow	Cash Flow
Salvage Value	No (varies)	Yes*	No

* Providing sufficient evidential data available to support the practicality of salvage

Conclusion

- Closure planning makes good business sense – risk management tool!
- It is an iterative process, ideally starting early in mine life
- Plans and closure costs should be developed taking cognisance of the intended audience (government assurance, corporate planning or financial reporting)

Further guidance



Additional reading

Explanation of closure cost terms:

<http://www.na.srk.com/en/newsletter/closure-cost-confusion>

Explanation of differences in 'environmental damage' and associated liability between OECD countries and Eastern Europe, Caucasus and Central Asia (also available in Russian):

<http://www.oecd.org/env/outreach/50244626.pdf>

Good explanation of 'mining for closure' and good case studies:

http://www.unep.org/pdf/MiningBalkans_screen.pdf

UNEP guidance:

http://www.commddev.org/userfiles/files/1236_file_mining_for_closure_src.pdf

ICMM Planning for Integrated Mine Closure Toolkit:

<http://www.icmm.com/page/9566/icmm-publishes-closure-toolkit>

Australian guidelines:

<http://www.ret.gov.au/resources/Documents/LPSDP/LPSDP-MineClosureCompletionHandbook.pdf>

<http://www.ret.gov.au/resources/Documents/LPSDP/LPSDP-MineRehabilitationHandbook.pdf>