AURUS INSTITUTE FOR RESOURCE DEVELOPMENT

1

WHITE PAPER · NUMBER ONE

One Orebody, Many Codes

How JORC, the CIM Standards and NI 43-101 report the same ground, and where disclosure still diverges

TECHNICAL PAPER · EXPLORE

July 2026 · ~45-min read

Aurus Technical Committee

AURUS INSTITUTE FOR RESOURCE DEVELOPMENT

Evidence before assertion.

MINING · INFRASTRUCTURE · ENGINEERING · ENVIRONMENT

Contents

One deposit, one estimate, several disclosure worlds

A mineral deposit does not change when a company lists on a second exchange. The tonnes, the grade and the geological confidence are properties of the ground, not of the securities regulator that will read them. Yet the same deposit, reported to the same standard of care, arrives at investors dressed in different documents depending on where the shares trade: a Competent Person statement and a Table 1 checklist for an Australian listing, a Qualified Person certificate and a Form 43-101F1 technical report for a Canadian one. This paper is about why those documents differ, how far the estimates beneath them actually agree, and what a reporter who must satisfy both should build so that the answer is written once and disclosed many times.

The reassuring part of the answer is that the estimates agree by design. Almost every serious national code descends from a single parent template maintained by the Committee for Mineral Reserves International Reporting Standards, CRIRSCO, established in 1994. A Measured Resource, an Indicated Resource, a Proved Reserve (termed Proven in the Canadian standards): these terms carry the same defined meaning in the Australasian code as in the Canadian standards, because both were written against the CRIRSCO template. Harmonization, at the level of what the categories mean, is not an aspiration; it is already the fact on the ground.

The friction lives above the estimate, in the disclosure wrapper. Here a distinction runs through the whole paper and is worth stating once, plainly, because it is the single point most often blurred. The JORC Code is a reporting code: it defines the categories and requires a Competent Person to stand behind them. NI 43-101 is a disclosure instrument: a Canadian securities rule that adopts the CIM Definition Standards by reference, defines the Qualified Person, and prescribes when a report must be filed, in what form, and by whom. The reporting code and the disclosure instrument are different kinds of thing. The CIM Definition Standards are the Canadian member of the CRIRSCO family; NI 43-101 is the regulation that gives those standards legal force in Canadian markets. Treating NI 43-101 as though it were itself a CRIRSCO code, a common shorthand, mis-describes the system and hides exactly the differences that matter to a reporter.

The convergence is widening. In 2018 the United States Securities and Exchange Commission replaced its decades-old Industry Guide 7, which had allowed disclosure only of reserves and forbade the disclosure of resources, with a modernized regime under subpart 1300 of Regulation S-K, aligned with the CRIRSCO framework, complete with a qualified person and permission to report mineral resources; compliance was required from the first fiscal year beginning on or after 1 January 2021. The largest capital market that had stood outside the CRIRSCO consensus stepped inside it. The direction of travel across the codes is convergence, not divergence.

Recognition, not translation, is the bridge. NI 43-101 already lets a foreign issuer report under an acceptable foreign code such as JORC, and already recognises membership of specified overseas professional bodies as qualifying a person to act. A JORC Competent Person can, in defined circumstances, sign as a NI 43-101 Qualified Person. The codes were built to interoperate. What a cross-listed reporter manages is therefore not a translation problem but a documentation and governance one: the same numbers, certified twice, in two formats, under two accountability labels.

> REPORTING CODE VS DISCLOSURE INSTRUMENT · a reporting code (JORC, SAMREC, PERC, the CIM Definition Standards) defines the resource and reserve categories and the competence required to report them; a disclosure instrument (NI 43-101, SEC S-K 1300, a stock-exchange listing rule) is the law or rule that makes a code binding, sets the filing triggers and prescribes the document. The codes are the grammar; the instruments are the statute that compels its use.

What the record supports: five findings

- **The definitions already agree.** Measured, Indicated and Inferred Resources, and Proved and Probable Reserves (Proven, in the Canadian standards), mean the same thing across the CRIRSCO family, because every member code is written against one template. The hard interoperability, the meaning of the words, is solved.
- **NI 43-101 is a disclosure instrument, not a CRIRSCO code.** It incorporates the CIM Definition Standards and defines the Qualified Person; the CRIRSCO-family codes are JORC, SAMREC, PERC and the CIM Definition Standards. Keeping the two ideas separate is the whole key to reading the system correctly.
- **The friction is in the wrapper.** Competent Person against Qualified Person; Table 1 against Form 43-101F1; a listing rule against a securities instrument. The differences are real but they are procedural, and they sit above an estimate the codes already agree on.
- **Recognition makes people portable.** A Competent Person who is a member of an accepted professional association may qualify as a Qualified Person; a foreign issuer may use an acceptable foreign code. The bridge already exists in the instrument's own text.
- **The answer is architectural.** Build the estimate once, in a CRIRSCO-native data structure with a complete audit trail, and each disclosure regime becomes a reformatting exercise rather than a re-estimation. Chapters 7 and 8 set out that discipline.

Who should read this paper

Three audiences. **Explorers and developers** approaching their first resource statement will find in Chapters 2 through 5 the categories they are about to be held to, and the difference between an Exploration Target and a Mineral Resource that the codes police strictly. **Cross-listed issuers and their advisers** will find in Chapters 5 and 6 the point-by-point map of what changes, and what does not, when the same estimate crosses a border. **Lenders and technical reviewers** will find in Chapters 6 and 7 the governance test that separates a defensible dual-reported estimate from a fragile one.

The paper's method is deliberately conservative. Every provision it states is drawn from the published text of a code or a rule, cited by issuing body and edition, and recorded in the paper's evidence dossier. Where a figure is genuinely open, above all the exact size of CRIRSCO's membership and the precise contents of the accepted-foreign-association list, the paper says so and states the point qualitatively rather than inventing a number. The back-matter page Method and evidence records the discipline in full, including the one taxonomy the paper will not get wrong.

How to use this paper

Read **front to back** for the argument, from why the codes multiplied to how a single reporter satisfies them all. Read **Chapter 5 first** for the comparison, the category-by-category map of JORC against the Canadian system, then trace each row back into the chapters that build it. Or read **by exhibit**: the classification matrix in Chapter 2, the code-family map, the competence comparison and the dual-reporting workflow carry the paper's structure on their own, each with its source line burned in.

AT A GLANCE

Five things a cross-listed reporter needs to hold in mind

1994

CRIRSCO ESTABLISHED; ITS INTERNATIONAL REPORTING TEMPLATE IS THE PARENT OF THE NATIONAL CODES

CRIRSCO, International Reporting Template, 2019

3 + 2

THREE RESOURCE CATEGORIES (INFERRED, INDICATED, MEASURED) AND TWO RESERVE CATEGORIES (PROBABLE, PROVED; PROVEN IN CANADA), SHARED ACROSS THE FAMILY

CRIRSCO template, 2019

2012

THE JORC CODE EDITION IN FORCE; MANDATORY UNDER THE ASX AND NZX LISTING RULES

JORC Code, 2012 Edition

2011

NI 43-101 CONSOLIDATED FORM IN FORCE; IT INCORPORATES THE CIM DEFINITION STANDARDS AND DEFINES THE QUALIFIED PERSON

Canadian Securities Administrators, NI 43-101

2021

SEC S-K 1300 COMPLIANCE YEAR; THE US JOINED THE CRIRSCO-ALIGNED WORLD, RESOURCES NOW DISCLOSABLE

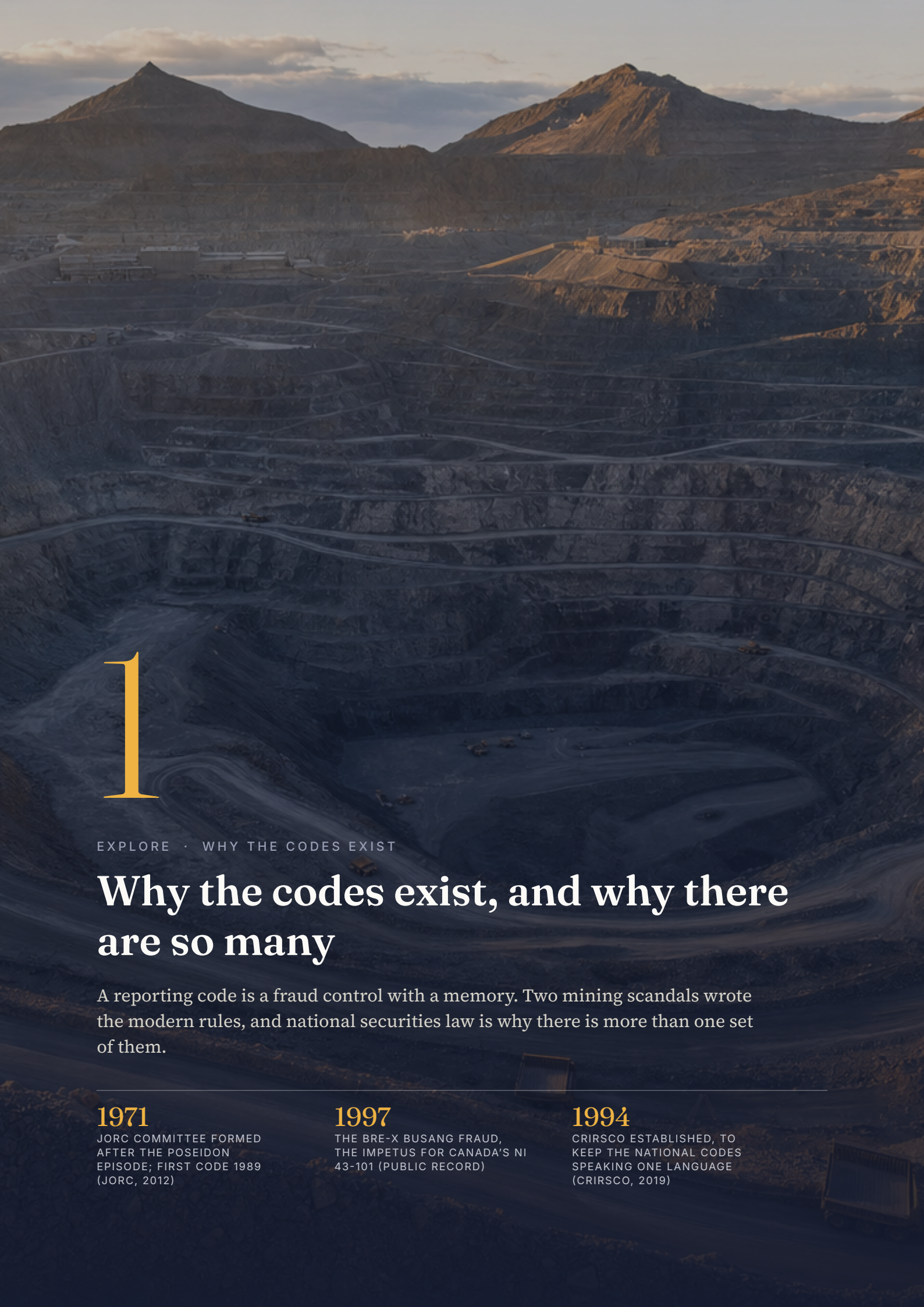
US SEC, Regulation S-K subpart 1300

HOW TO READ THIS SPREAD

Each figure is a stable provision transcribed from the code or rule named beneath it, not a market statistic. Dates are editions and compliance dates; the categories are defined terms. Every one recurs, in context, in the chapters that follow.

How this paper is organised

CHAPTER	THE QUESTION IT ANSWERS	ANCHOR EVIDENCE
1 · Why the codes exist	What are the codes protecting against, and why did each jurisdiction write its own?	JORC, 2012; CSA, 2011; SEC, 2018
2 · The CRIRSCO template	What architecture do all the serious codes share, and where did it come from?	CRIRSCO, 2019
3 · JORC and the Competent Person	How does the Australasian code work, and what does Table 1 demand?	JORC, 2012; ASX ch.5
4 · CIM and NI 43-101	What is a reporting code, what is a disclosure instrument, and who is the QP?	CIM, 2014; CSA, 2011
5 · Same ground, two vocabularies	Category by category, what actually differs between the two systems?	JORC, 2012; CIM, 2014; CSA, 2011
6 · Where harmonization bites	What is converging, what is recognised across borders, and what still is not?	SEC, 2018; CSA, 2011
7 · Reporting once, disclosing many	What data architecture lets one estimate serve every regulator?	CRIRSCO, 2019; Aurus practice
8 · Implications	What should each audience build or ask, and what is the Aurus view?	Chapters 1 through 7



1

EXPLORE · WHY THE CODES EXIST

Why the codes exist, and why there are so many

A reporting code is a fraud control with a memory. Two mining scandals wrote the modern rules, and national securities law is why there is more than one set of them.

1971
JORC COMMITTEE FORMED AFTER THE POSEIDON EPISODE; FIRST CODE 1989 (JORC, 2012)

1997
THE BRE-X BUSANG FRAUD, THE IMPETUS FOR CANADA'S NI 43-101 (PUBLIC RECORD)

1994
CRIRSCO ESTABLISHED, TO KEEP THE NATIONAL CODES SPEAKING ONE LANGUAGE (CRIRSCO, 2019)

A mineral resource statement is a promise about ground that almost no one who reads it will ever see. An investor in Toronto buys shares on the strength of tonnes and grades reported from a drill programme in West Africa; a lender in London commits against a reserve declared from a deposit in the Andes. The entire apparatus of reporting codes exists to make that promise trustworthy across the distance, by fixing what the words mean and by putting a named, accountable professional behind every number. The codes are, at bottom, a fraud control with a long memory, and the memory is made of specific disasters.

Two frauds that wrote the rules

The modern Australasian code has its origin in the Poseidon nickel bubble of 1969 and 1970, when a genuine discovery, amplified by unverifiable claims, drove a share price to extraordinary heights and then collapsed, taking many small investors with it. The Joint Ore Reserves Committee, JORC, was formed in 1971 in the aftermath; it published its first code in 1989, and the edition in force today dates from 2012. The lesson institutionalised was simple and durable: a public tonnage or grade figure must be the work of a qualified person who can be identified and held responsible.

Canada learned the same lesson from a larger catastrophe. In 1997 the Bre-X affair, a gold deposit at Busang in Indonesia whose spectacular assays turned out to have been salted, destroyed investor confidence and the credibility of an entire disclosure regime. The regulatory response, developed through the Canadian Securities Administrators, became National Instrument 43-101, whose consolidated form has been in force since 2011. Where JORC embedded competence and accountability inside a professional code, Canada built its answer inside securities law itself, with filing obligations, prescribed documents and independence requirements. That difference of instrument, a professional code in one case, a securities regulation in the other, is the root of almost every divergence this paper examines, and it is worth seeing at the origin rather than mistaking it later for a difference of substance.

> SALTING · the fraudulent addition of valuable mineral to samples so that assays overstate a deposit. The Bre-X samples were salted with gold; the fraud is the reason NI 43-101 requires sample security and data verification to be addressed by a Qualified Person.

Why national law means national codes

If every serious code protects against the same thing, a reasonable person asks why the world did not simply adopt one. The answer is that a reporting code only bites when a legal instrument compels its use, and legal instruments are national. Securities regulation is a matter of domestic law: the ASX enforces its listing rules under Australian corporations law, the Canadian Securities Administrators act under provincial securities acts, the SEC under United States federal law. Each jurisdiction can require a code, but each must enact its own instrument to do so, and each instrument carries the accumulated habits, drafting conventions and enforcement machinery of its own legal system. The plurality of codes is not a failure of coordination. It is the necessary consequence of the fact that the compulsion behind a code is always a local law.

What coordination could achieve, and did, was to stop the codes drifting apart in substance even as they multiplied in form. Exhibit 1 sets the sequence out: the national codes emerging from their national crises, and then, from 1994, a standing committee whose entire purpose was to keep them mutually intelligible.

EXHIBIT 1

National crises wrote national codes; one committee kept them speaking a common language

The evolution of the principal mineral-reporting codes and disclosure instruments, by year of the edition or rule in force

Source: JORC Code, 2012 Edition (committee history); CRIRSCO, International Reporting Template, 2019; Canadian Securities Administrators, NI 43-101 (in force 2011); CIM Definition Standards, 2014; SAMREC 2016; PERC 2021; US SEC, Regulation S-K subpart 1300 (2018, compliance 2021). The split above and below the axis is the paper's organising distinction: reporting codes define the categories; disclosure instruments compel their use.

The exhibit makes visible the claim that organises the rest of the paper. The items above the line, JORC, the CIM Definition Standards, SAMREC, PERC and the CRIRSCO template itself, are reporting codes: they say what a Measured Resource is and who may declare one. The items below the line, NI 43-101 and SEC S-K 1300, are disclosure instruments: securities rules that compel a code and prescribe the filing. NI 43-101 sits below the line because it is a rule, and it points up to the CIM Definition Standards, which it adopts. Chapter 4 returns to that arrow, because misreading it is the most common error in this field.

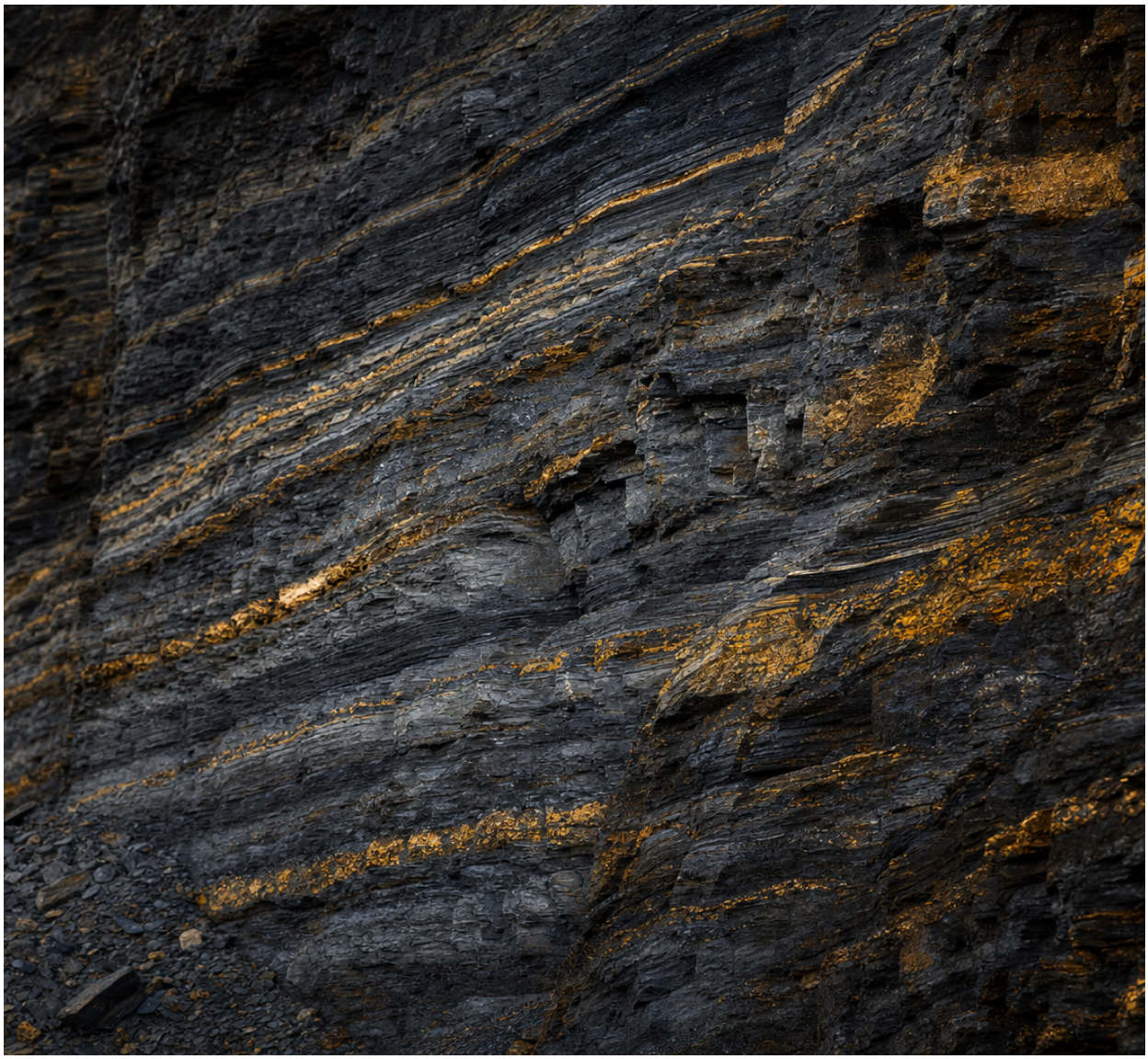
Who relies on a resource statement, and why it must travel

The reason the codes matter beyond compliance is the length of the chain of people who act on a single number. A drilled tonnage becomes a resource statement, which becomes a line in a prospectus, which becomes the basis on which an equity investor buys, a bank lends, an insurer underwrites, an offtaker contracts and a government assesses royalty. None of those parties can inspect the ground; each relies on the statement, and each relies on the next party in the chain having relied on it honestly. A reporting code is the instrument that lets a stranger at the end of that chain trust a number produced at the start of it, because the code fixes what the words mean and names the professional who stands behind them. When the same project raises capital in two markets, the statement must satisfy two such chains at once, which is why harmonization is not an academic tidiness but a practical necessity for anyone raising money across borders.

This is also why the codes are unusually stable. A standard that thousands of downstream decisions depend on cannot change often or lightly, and the CRIRSCO mechanism is designed to update the template deliberately, through the member organisations, rather than reactively. The result is a body of definition that a developer can build against for the life of a project, confident that a Measured Resource will still mean a Measured Resource when the mine is financed years after the drilling. Stability is a feature, not inertia: it is what makes a resource statement bankable.

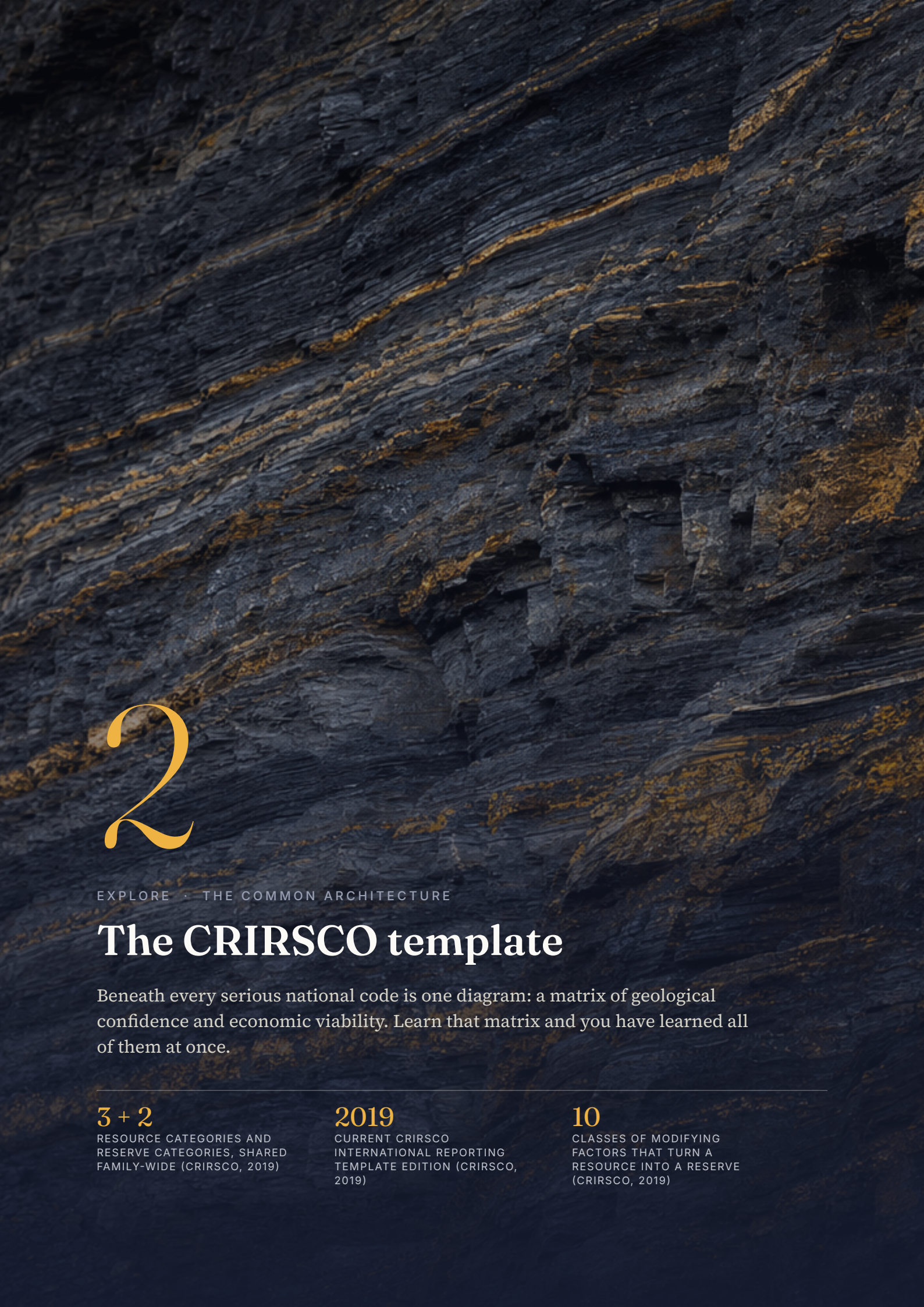
A reporting code only bites when a national law compels it. That is why the codes multiplied, and why they never drifted apart in substance.

THE ARGUMENT OF CHAPTER 1



The ground the codes describe. Banded mineralisation follows the bedding of a metamorphic sequence: one body, whose grade and confidence the reporting codes name in the same defined terms, whatever market reads the result.

ILLUSTRATIVE PLATE



2

EXPLORE · THE COMMON ARCHITECTURE

The CRIRSCO template

Beneath every serious national code is one diagram: a matrix of geological confidence and economic viability. Learn that matrix and you have learned all of them at once.

3 + 2
RESOURCE CATEGORIES AND RESERVE CATEGORIES, SHARED FAMILY-WIDE (CRIRSCO, 2019)

2019
CURRENT CRIRSCO INTERNATIONAL REPORTING TEMPLATE EDITION (CRIRSCO, 2019)

10
CLASSES OF MODIFYING FACTORS THAT TURN A RESOURCE INTO A RESERVE (CRIRSCO, 2019)

The reason a reader can move between codes with confidence is that all of them share a single underlying diagram. The Committee for Mineral Reserves International Reporting Standards maintains an International Reporting Template, whose current edition dates from 2019, and every member national code is written to be consistent with it. The template is not a bureaucratic nicety. It is the specific reason a Measured Resource declared in Perth means the same as one declared in Toronto, and the reason harmonization is a starting condition of this field rather than a goal still to be reached.

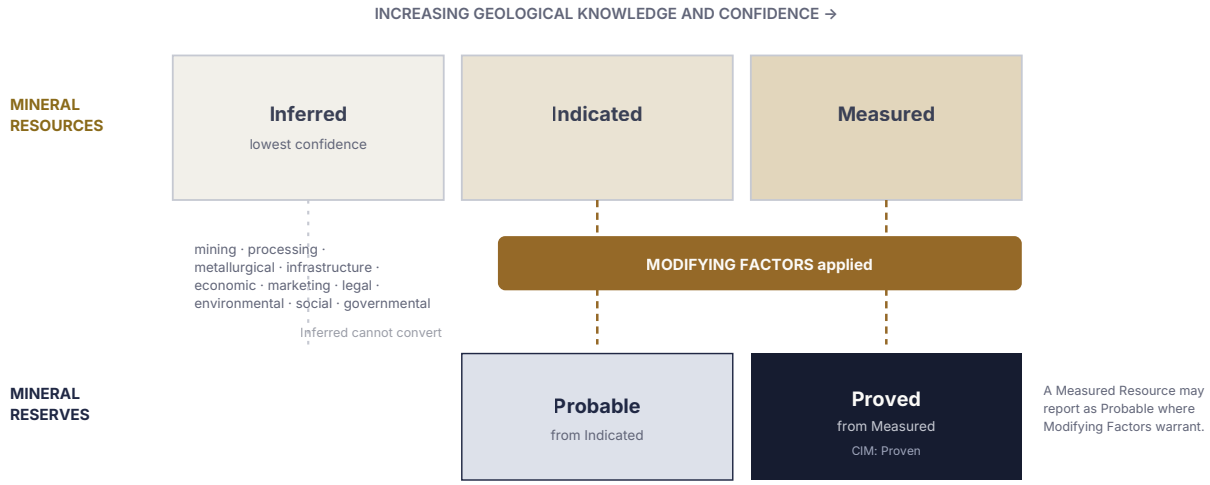
Two axes, five boxes

The template organises everything a resource statement must express onto two axes. The first axis is **geological confidence**: how well the quantity and quality of the mineralisation are known. It has three levels, in increasing order of confidence: Inferred, Indicated and Measured Mineral Resources. The second axis is **economic and technical viability**: whether, after everything that bears on actually mining and selling the material has been considered, the mineralisation can be reported as an economically extractable reserve. Applying that second axis converts an Indicated Resource into a Probable Reserve and a Measured Resource into a Proved Reserve, the category the Canadian standards spell Proven. Exhibit 2 is that matrix, and it is the single most useful diagram in the field.

EXHIBIT 2 · SIGNATURE EXHIBIT

The CRIRSCO classification matrix: geological confidence across, economic viability down

The shared architecture of every CRIRSCO-family code. Confidence increases left to right; Modifying Factors convert resources (upper band) into reserves (lower band)



The same five boxes appear in JORC, SAMREC, PERC and the CIM Definition Standards, with the same defined meanings.
JORC, SAMREC, PERC and the CRIRSCO template name the top reserve Proved; the CIM Definition Standards, Proven.

Source: CRIRSCO, International Reporting Template, 2019, reproduced in each member code (JORC 2012; CIM Definition Standards 2014; SAMREC 2016; PERC 2021). The horizontal axis is geological confidence; the vertical step is the application of the Modifying Factors; Inferred Resources may not be converted directly to reserves.

> MODIFYING FACTORS · the considerations, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental, that a Competent or Qualified Person applies to convert a Mineral Resource into a Mineral Reserve. A reserve is a resource that has survived every one of them.

What the matrix forbids

The discipline of the template is as much in what it prohibits as in what it defines. Three prohibitions matter most. First, an Inferred Resource, the lowest-confidence category, may never be converted directly into a reserve, because a reserve is a statement of economic extractability and there is not enough geological confidence in an Inferred Resource to support one. Second, a reserve is always a subset of, and de-

rived from, a resource; it is never an independent estimate, and reporting a reserve larger than the resource it comes from is a category error the codes are built to prevent. Third, and most often abused in promotional material, an Exploration Target is not a Mineral Resource at all. JORC 2012 devotes its clause 17 to the point: an Exploration Target must be expressed as a range, described as conceptual, and accompanied by a statement that the quantity of exploration is insufficient to estimate a Mineral Resource, so that no reader can mistake a hope for an estimate.

READING THE TEMPLATE

Why "resource" and "reserve" are not synonyms, and never interchangeable

In ordinary speech the two words blur together; in the codes they are as distinct as a survey and a sale. A **Mineral Resource** is a concentration of material of economic interest in such form, quantity and quality that there are reasonable prospects for eventual economic extraction. A **Mineral Reserve** is the part of that resource which, after a full study applies every Modifying Factor, can be reported as economically mineable at the time of reporting. The distance between the two words is a feasibility study, a mine plan and a set of legal and social permissions. A junior explorer speaking of its "reserves" before it has declared a resource has not been optimistic; it has misused a defined term, and under any code that is a reporting failure, not a rounding of language.

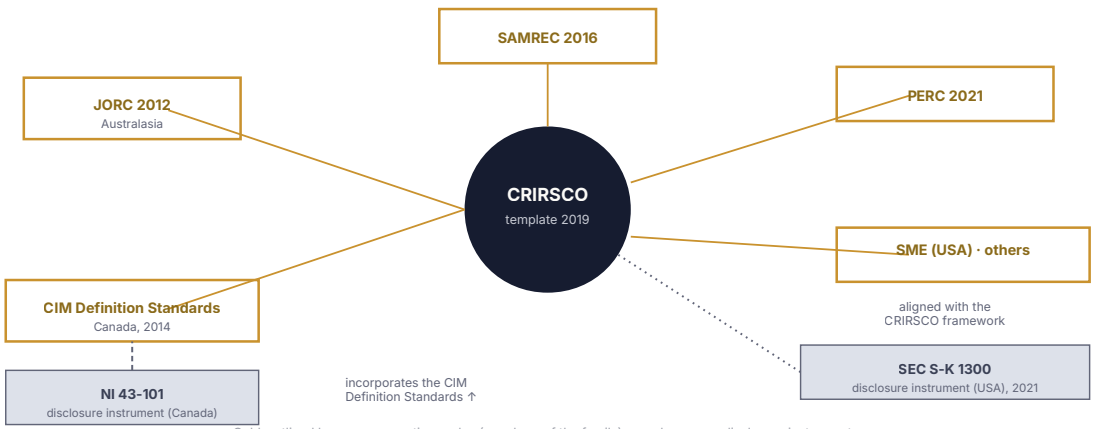
One template, many members

The template is maintained by a committee of national reporting organisations rather than imposed from above, and its authority comes from their adoption of it. The member organisations span the major mining jurisdictions, Australasia through JORC, Canada through the CIM Definition Standards, South Africa through SAMREC, Europe through PERC, and further members across the Americas and Asia. The precise size of that membership shifts over time as organisations join, and this paper deliberately does not pin it to a single number it would then have to defend; the point that matters is qualitative and stable, that the codes governing the large majority of the world's listed mineral reporting are written to one architecture. Exhibit 3 draws the family, and places NI 43-101 where it belongs.

EXHIBIT 3

The code family, drawn correctly: reporting codes are members; NI 43-101 and S-K 1300 are wrappers

CRIRSCO at the centre; national reporting codes as members; national disclosure instruments shown as wrappers, each either incorporating a member code by reference or aligned with the framework



Gold-outlined boxes are reporting codes (members of the family); grey boxes are disclosure instruments.
NI 43-101 incorporates the CIM Definition Standards by reference; S-K 1300 is aligned with the CRIRSCO framework, not a member code.

Source: CRIRSCO, International Reporting Template, 2019 (membership); CIM Definition Standards, 2014; NI 43-101 (Canadian Securities Administrators, in force 2011), which incorporates the CIM Definition Standards by reference; US SEC, Regulation S-K subpart 1300 (compliance 2021). NI 43-101 and S-K 1300 are drawn as wrappers, not as members, because they are securities rules, not reporting codes. Unlike NI 43-101, S-K 1300 adopts no member reporting code by reference; it is a self-contained, CRIRSCO-aligned regime, so it is linked to the framework rather than to any single code.

The test that guards the top of the matrix

One phrase does more work in the template than any other, and a reporter who understands it understands why a Mineral Resource is a serious statement rather than a hopeful one. To be reported as a resource at all, mineralisation must have reasonable prospects for eventual economic extraction. The phrase is deliberately demanding. It requires the reporting person to have considered, at least at a preliminary level, the assumptions about mining method, processing, costs and prices that would have to hold for the material to be mined one day, and to have concluded that those assumptions are reasonable. Material that fails the test is not a low-confidence resource; it is not a resource at all. The test is the gate at the top of the matrix, and it is the reason a resource statement carries weight with a market: someone has already asked, and answered, whether the ground could plausibly become a mine.

The same phrase explains a distinction that confuses newcomers, the difference between a resource and a reserve reported on the same project. A resource has passed the reasonable-prospects test; a reserve has passed a full study of every Modifying Factor and been found economically mineable now. The gap between them is not geology but the depth of the economic and technical work done. This is why a project can carry a large resource and a small reserve, or a resource and no reserve at all: the ground is known, but the study that would convert it has not yet been finished, or has been finished and found part of the resource uneconomic at current assumptions. None of that is a contradiction; it is the matrix working exactly as designed.

> **Reasonable prospects for eventual economic extraction** · the threshold test a body of mineralisation must pass to be reported as a Mineral Resource at all; it requires preliminary, reasonable assumptions about mining, processing, costs and prices. Failing it means there is no resource, not merely a low-confidence one.

Learn one CRIRSCO-family code well and you can read them all. The differences that remain are differences of paperwork and jurisdiction, not of meaning.

3

EXPLORE · JORC AND THE COMPETENT PERSON

JORC 2012 and the Competent Person

The Australasian code lives inside a stock-exchange listing rule and rests on one figure: a named professional who signs, and who can be disciplined for signing wrongly.

2012
THE EDITION IN FORCE, MANDATORY UNDER THE ASX AND NZX RULES (JORC, 2012)

5 yr
MINIMUM RELEVANT EXPERIENCE FOR A COMPETENT PERSON (JORC, 2012)

Table 1
THE "IF NOT, WHY NOT" CHECKLIST BEHIND EVERY JORC REPORT (JORC, 2012)

The JORC Code is short, principles-based, and enforced by a mechanism many readers overlook: it is not a statute in its own right but a document made mandatory by a stock-exchange listing rule. A company listed on the Australian Securities Exchange must, under chapter 5 of the ASX listing rules, report its exploration results, Mineral Resources and Ore Reserves in accordance with the JORC Code. The code supplies the definitions and the discipline; the listing rule supplies the compulsion. This is the cleanest example of the paper's central distinction between a reporting code and the instrument that gives it force.

The Competent Person carries the report

Everything in the JORC Code hangs from one role. A public report on exploration results, resources or reserves must be based on work that is the responsibility of a Competent Person, who must consent to the form and context in which the results appear. A Competent Person is defined as a member or fellow of a Recognised Professional Organisation, an organisation with an enforceable disciplinary process, who has a minimum of five years of experience relevant to the style of mineralisation, the type of deposit and the activity being undertaken. The two features that give the definition its teeth are the professional-body membership, which makes the person subject to discipline for a report that falls short, and the relevance test, which stops a career coal geologist from signing a diamond resource on seniority alone. The Competent Person is the human being the whole code is built to make accountable.

> **Competent Person (CP)** · under JORC, SAMREC and PERC, the named professional responsible for a public report, a member of a Recognised Professional Organisation with at least five years of relevant experience. The Canadian equivalent, defined instead in NI 43-101, is the Qualified Person.

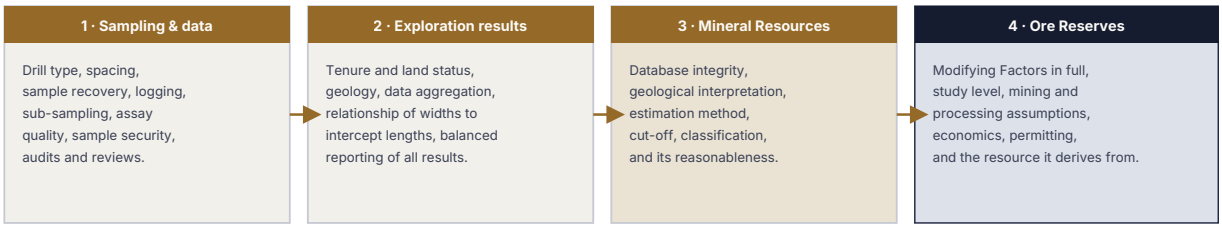
Table 1: the discipline of "if not, why not"

The 2012 edition's most consequential feature is Table 1, a checklist of assessment and reporting criteria that a Competent Person must address on an "if not, why not" basis: every criterion must either be reported, or its omission explained. Table 1 runs in four sections that mirror the workflow of an estimate: sampling techniques and data; reporting of exploration results; estimation and reporting of Mineral Resources; and estimation and reporting of Ore Reserves. Its effect is to convert a resource statement from a headline figure into an auditable account of how that figure was produced, from the drill spacing and the sample security to the estimation method and the cut-off assumptions. Exhibit 4 lays the four sections out and shows why the checklist, not the tonnage, is where a careful reader looks first.

EXHIBIT 4

JORC Table 1: four sections that make a resource statement auditable, not just assertable

The assessment and reporting criteria of the 2012 edition, applied on an "if not, why not" basis; each section builds on the one before



"If not, why not": every criterion is reported, or its omission is explained. Silence is not permitted.

Sections 3 and 4 build on 1 and 2; a reserve report must satisfy all four.

Source: JORC Code, 2012 Edition, Table 1. The four sections are cumulative: a Mineral Resource report addresses sections 1 to 3, an Ore Reserve report all four. The "if not, why not" principle is the mechanism that converts an assertion into an auditable account.

THE LINE THE CODE POLICES HARDEST

An Exploration Target is a hypothesis, not a number you can bank

Clause 17 of the JORC Code governs the most dangerous statement a junior explorer can make: an estimate of what might be found before there is enough drilling to declare a resource. The code permits it, but on strict terms. An Exploration Target must be expressed as a **range**, never a single figure; it must be described as **conceptual**; and it must carry a statement that the exploration to date is **insufficient to estimate a Mineral Resource** and that it is uncertain whether further exploration will result in one. Above all, no economic value, no net present value, no implied contained metal treated as recoverable, may be attached to it. The clause exists because the gap between "we hope to find" and "we have measured" is exactly the gap that both Poseidon and Bre-X exploited. Aurus treats the Exploration Target as the codes do: a disciplined hypothesis that guides the next drill programme, never a value that appears in a valuation.

The Recognised Professional Organisation, and what "public report" means

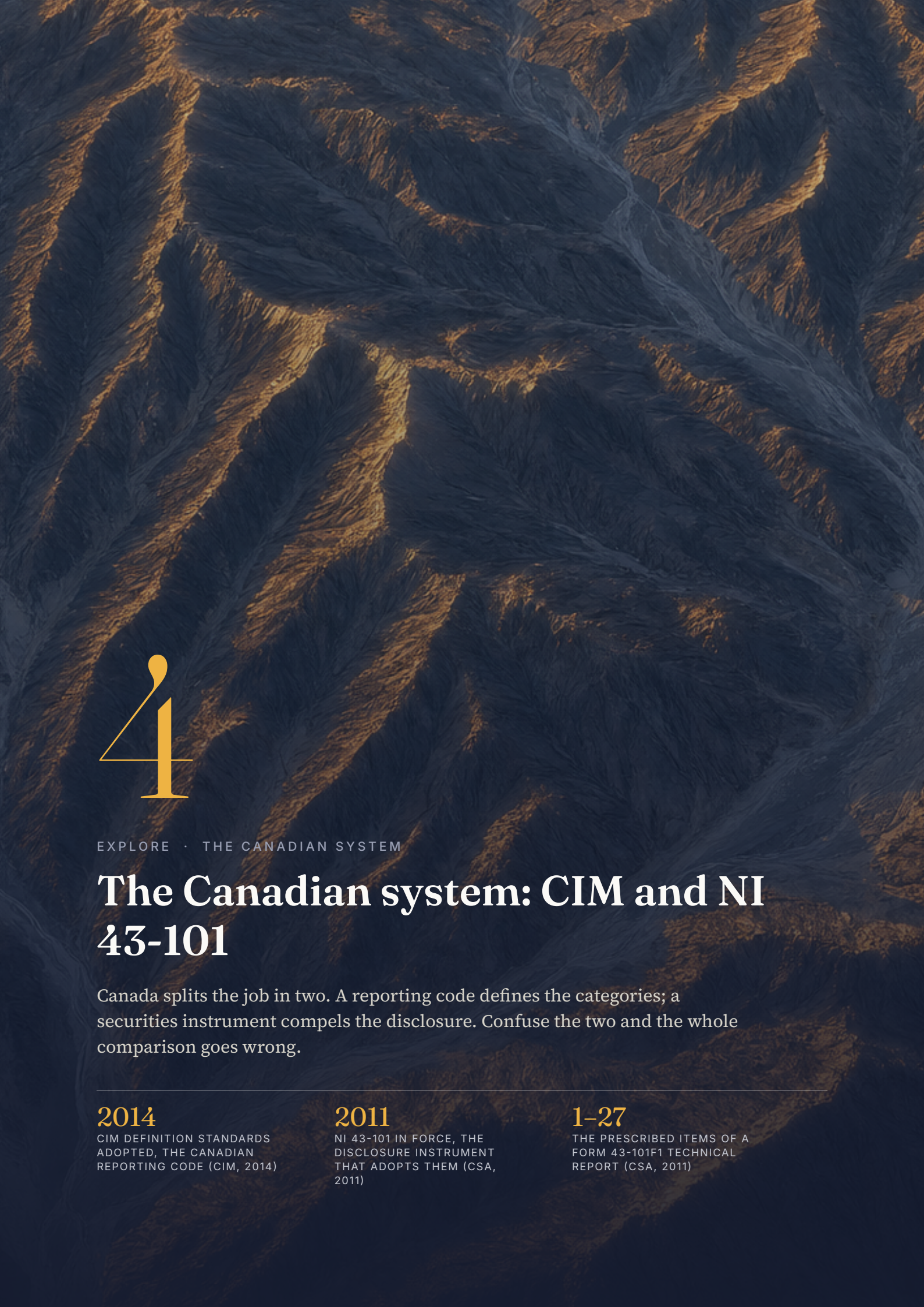
Two features of the JORC framework are easy to pass over and important to grasp. The first is the Recognised Professional Organisation. A Competent Person's authority does not come from a job title; it comes from membership of a body that appears on a published list of organisations with an enforceable code of ethics and a disciplinary process that can, in the last resort, expel a member for professional failure. That enforceability is the point: it means a Competent Person who signs a misleading report faces professional consequences beyond the commercial ones, and it is the mechanism by which the code borrows the credibility of the professions rather than trying to manufacture its own. The second is the breadth of what counts as a public report. The obligations attach to far more than a formal resource statement: they cover any public disclosure of exploration results, resources or reserves, including the market announcements and presentations through which most such information actually reaches investors. A Competent Person must consent to the form and context of that disclosure, which stops a company from quoting a favourable number out of the careful context the professional gave it.

These two features together answer a question a sceptic reasonably asks: if JORC is only a code made mandatory by a listing rule, what stops a company from stating a resource however it likes? The answer is that the number must be the work of a named person whose profession can discipline them, that the person must consent to how the number is presented, and that the exchange can suspend or delist a company that reports otherwise. The compulsion is layered, professional accountability, personal consent and exchange enforcement, and it is that layering, rather than any single sanction, that has made the Australasian model durable enough to serve as a template for others.

The JORC model, then, is a principles-based code with a professional at its centre and a checklist at its back, made mandatory by a listing rule. It is deliberately not a long prescriptive form. It trusts a named, disciplinable Competent Person to exercise judgement, and it makes that judgement auditable through Table 1. Chapter 4 turns to a system that reaches the same destination by a very different route, through a securities regulation that prescribes the document in detail.

The tonnes belong to the ground. The confidence belongs to the drilling. The accountability belongs to a named person. Everything else in a reporting code is machinery around those three facts.

THE PREMISE OF CHAPTERS 3 AND 4



4

EXPLORE · THE CANADIAN SYSTEM

The Canadian system: CIM and NI 43-101

Canada splits the job in two. A reporting code defines the categories; a securities instrument compels the disclosure. Confuse the two and the whole comparison goes wrong.

2014
CIM DEFINITION STANDARDS ADOPTED, THE CANADIAN REPORTING CODE (CIM, 2014)

2011
NI 43-101 IN FORCE, THE DISCLOSURE INSTRUMENT THAT ADOPTS THEM (CSA, 2011)

1–27
THE PRESCRIBED ITEMS OF A FORM 43-101F1 TECHNICAL REPORT (CSA, 2011)

Canada is where readers most often lose the thread, because Canada does explicitly what other jurisdictions do implicitly: it separates the reporting code from the disclosure instrument and gives each a different name. The reporting code is the CIM Definition Standards for Mineral Resources and Mineral Reserves, adopted by the Canadian Institute of Mining, Metallurgy and Petroleum in 2014, and supported by the CIM Estimation Best Practice Guidelines issued in 2019. The disclosure instrument is National Instrument 43-101, a securities rule of the Canadian Securities Administrators, in force since 2011, which adopts the CIM Definition Standards by reference and makes them binding on issuers in Canadian markets. The categories come from CIM; the legal force comes from NI 43-101. Holding those two apart is the single most important habit this chapter can leave a reader with.

The taxonomy, stated so it cannot be misread

Because the point is so easily blurred, it is worth stating in its exact form. The CRIRSCO-family reporting codes are JORC, SAMREC, PERC and the CIM Definition Standards. NI 43-101 is a disclosure instrument that incorporates the CIM Definition Standards and defines the Qualified Person; it is not itself a CRIRSCO reporting code. A widely used shorthand treats NI 43-101 as though it sat alongside JORC and SAMREC as a fourth reporting code, and it does not: its Canadian counterpart in that list is the CIM Definition Standards, and NI 43-101 is the regulation that gives those standards the force of securities law. The distinction is not pedantry. A reporter who believes NI 43-101 is a reporting code will look inside it for resource definitions, which live in the CIM Standards, and will miss what NI 43-101 actually adds, which is the machinery of filing, form and certification that Chapter 6 shows is the real locus of difference.

> **Incorporation by reference** · the drafting technique by which NI 43-101 makes the CIM Definition Standards binding without reprinting them: the instrument states that mineral resources and reserves must be classified according to the CIM Standards, so an update to those standards updates the rule's content. It is the hinge that connects the Canadian code to the Canadian law.

The Qualified Person

Where JORC has its Competent Person, NI 43-101 has its Qualified Person, and the two roles are close cousins built on the same idea of a named, disciplinable professional. A Qualified Person is an engineer or geoscientist with at least five years of experience relevant to the subject matter of the project and the technical report, who is in good standing with a professional association, and who, for certain reports, must be independent of the issuer. Two differences from the JORC test are worth noting now and will be developed in Chapter 5. First, the label and its legal home differ: the Competent Person is defined inside a professional code, the Qualified Person inside a securities instrument, so a failure of the Qualified Person is a securities-law matter as much as a professional one. Second, NI 43-101 attaches an explicit independence requirement to specified reports, a formal test that the JORC framework treats more as a matter of disclosure than of prohibition.

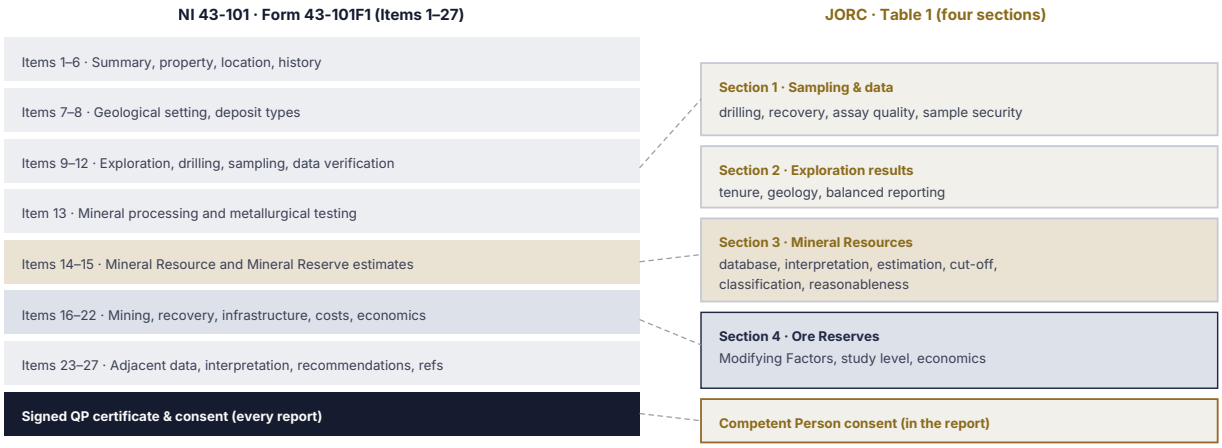
Form 43-101F1: the prescribed technical report

The most visible product of the Canadian system is the technical report itself, and here the contrast with JORC is sharpest. Where JORC trusts a Competent Person to exercise judgement against a checklist, NI 43-101 prescribes the document. Form 43-101F1 sets out a technical report in a fixed sequence of items, numbered from 1 to 27, running from the summary and property description through geology, drilling, sample preparation and data verification, into the resource and reserve estimates, the mining and processing methods, the economic analysis and the qualified person's interpretation and recommendations. Each report closes with a signed certificate from every Qualified Person responsible for it, and a written consent to its use. Exhibit 5 sets the item structure against the JORC Table 1 sections, so the reader can see that the two systems demand much the same content while packaging and certifying it very differently.

EXHIBIT 5

Same content, different container: Form 43-101F1 items against JORC Table 1 sections

The prescribed Canadian technical-report items (left) and the criteria the JORC checklist covers (right); the workflow they describe is nearly identical



Source: NI 43-101 and Form 43-101F1 (Canadian Securities Administrators, 2011); JORC Code, 2012 Edition, Table 1. The mapping is indicative, not clause-exact: the two frameworks require substantially the same technical content, but NI 43-101 prescribes a numbered document with signed certificates while JORC requires a Competent Person to address a checklist and consent within the report.

Independence, and why it is a securities idea

The independence requirement deserves a paragraph of its own, because it is the clearest illustration of what changes when competence is defined inside a securities instrument rather than a professional code. For specified technical reports, NI 43-101 requires that the author Qualified Person be independent of the issuer, applying a defined test of the relationships that would compromise objectivity. The logic is a securities-market logic: an investor relying on a first-time resource disclosure, or on an economic study that moves a share price, is entitled to an assessment from someone with no stake in the answer. The JORC framework shares the underlying concern but handles it differently, requiring the relationship between the Competent Person and the issuer to be disclosed rather than prohibiting the person from acting. Neither approach is lax; they reflect the different instruments. A code administered through a profession leans on professional discipline and transparency; a rule administered by a securities regulator leans on a bright-line independence test that a regulator can enforce.

The Companion Policy, and the preliminary economic assessment

Two further pieces complete the Canadian picture. The Companion Policy 43-101CP is the regulators' published guidance on how they interpret and apply the instrument; it does not add obligations of its own, but it is where a reporter learns how the rule is read in practice, and ignoring it is a frequent source of avoidable error. The preliminary economic assessment, meanwhile, is a Canadian innovation with real consequences: an early-stage economic study that may, uniquely among Canadian economic studies, incorporate Inferred Resources in its economic analysis, on the strict condition that the disclosure carries prominent cautionary statements that the assessment is preliminary, that Inferred Resources are too speculative to have economic considerations applied to them, and that there is no certainty the assessment will be realised. The device lets a developer show the early economic shape of a project without overstating its maturity, and its careful ring-fencing of Inferred material is a good example of a disclosure instrument doing what a reporting code alone cannot: governing not just the estimate but the way it may be used in a public economic claim.

When a report must be filed

The feature that has no real JORC analogue is the filing trigger. Because NI 43-101 is a securities instrument, it specifies the events on which an issuer must file a technical report: filing a prospectus, disclosing a Mineral Resource or Mineral Reserve on a property for the first time or announcing a material change to one, and other defined events. The preliminary economic assessment described above sits inside this same trigger machinery, since disclosing one is among the events that can oblige a filing. The trigger machinery means that in Canada the question is twofold: is this reported correctly, and does this disclosure oblige us to file a full technical report, signed and consented, within the prescribed time. That question, and the calendar and cost it carries, is a large part of what a cross-listed issuer is actually managing, and Chapter 6 returns to it.

The categories come from the code. The legal force comes from the instrument. Canada is the one jurisdiction honest enough to give each a separate name.

THE DISTINCTION AT THE CENTRE OF THE PAPER

5

EXPLORE · THE COMPARISON

Same ground, two vocabularies

Set JORC and the Canadian system side by side, category by category, and the pattern is consistent: the estimate agrees, the accountability label and the paperwork differ.

Agree

RESOURCE AND RESERVE CATEGORIES, DEFINED THE SAME WAY (CRIRSCO, 2019)

Differ

COMPETENT PERSON VS QUALIFIED PERSON; TABLE 1 VS FORM F1 (JORC 2012; CSA 2011)

Bridge

ACCEPTABLE FOREIGN CODES AND RECOGNISED ASSOCIATIONS (CSA, 2011)

This chapter is the one to read first if a reader wants only the practical answer. It sets the two systems against each other on the six dimensions a reporter actually has to manage, and on every one of them the finding is the same shape: at the level of the estimate, the two systems agree because both descend from the CRIRSCO template; above the estimate, in the accountability label and the disclosure paperwork, they differ. Exhibit 6 is the whole comparison on one page; the paragraphs that follow read down its rows.

EXHIBIT 6 · SIGNATURE EXHIBIT

JORC against the Canadian system, dimension by dimension: agreement below, divergence above the estimate

The comparison a cross-listed reporter needs. Green-toned rows agree by design; ochre-toned rows, whether they differ or bridge, are where the work of dual reporting actually sits

DIMENSION	JORC (AUSTRALASIA)	CIM / NI 43-101 (CANADA)	STATUS
Resource categories	Inferred, Indicated, Measured	Inferred, Indicated, Measured (identical definitions)	**Agree**
Reserve categories	Probable, Proved (Ore Reserves)	Probable, Proven (Mineral Reserves)	**Agree**
Conversion rule	Modifying Factors; Inferred cannot convert	Modifying Factors; Inferred cannot convert	**Agree**
Underlying template	CRIRSCO International Reporting Template	CRIRSCO International Reporting Template	**Agree**
Accountable professional	Competent Person, defined in the code	Qualified Person, defined in the instrument	**Differ**
Documentation	Table 1 checklist, "if not, why not"	Form 43-101F1, Items 1–27, signed certificate	**Differ**
Instrument that compels it	ASX / NZX listing rule (listing rule)	NI 43-101 (securities law)	**Differ**
Filing triggers	Continuous-disclosure driven; no set report form	Prescribed events; a filed technical report	**Differ**
Independence	Disclosed; not a general prohibition	Required for specified reports	**Differ**
Cross-border recognition	CP may qualify as a QP; JORC is an acceptable foreign code	Accepts acceptable foreign codes and listed associations	**Bridge**

Source: JORC Code, 2012 Edition; CIM Definition Standards, 2014; NI 43-101 and Form 43-101F1 (Canadian Securities Administrators, 2011); ASX Listing Rules chapter 5. "Agree" rows are defined identically because both systems adopt the CRIRSCO template; "Differ" rows are procedural; "Bridge" rows are the recognition mechanisms of Chapter 6.

The categories: identical by construction

The top four rows of the comparison are where a reporter can relax. Inferred, Indicated and Measured Mineral Resources are defined the same way in both systems, as are Probable and Proved Reserves (Proven, in the Canadian standards), and the rule that converts one into the other, the application of Modifying Factors, with Inferred Resources barred from direct conversion, is common to both. This is not a coincidence or a happy convergence that could reverse; it is a design property, because both the JORC Code and the CIM Definition Standards are written to be consistent with the CRIRSCO template. A resource estimate that is correct under one is, at the level of its categories, correct under the other. The tonnes do not need translating.

The professional: two labels for one idea, with a real difference underneath

The Competent Person and the Qualified Person are the same idea, a named, experienced, disciplinable professional who stands behind the numbers, and the five-year relevant-experience test is common to both. The differences are three, and they are consequential. The label differs. The legal home differs, professional code against securities instrument, which changes the character of a failure. And NI 43-101 imposes an explicit independence requirement on specified reports that has no exact JORC counterpart. For an individual, the practical question is whether their professional membership is recognised by both systems, and Chapter 6 shows that the recognition machinery usually makes the answer yes.

The paperwork: a checklist against a prescribed form

The documentation row is where a reporter spends real time and money. JORC requires a Competent Person to address Table 1 and to consent to the report; the form of the report itself is not prescribed. NI 43-101 requires a technical report in the Form 43-101F1 structure, Items 1 to 27, with a signed certificate and consent from every Qualified Person. The content the two demand is substantially the same, as Exhibit 5 showed; the container is not. A single estimate must therefore be dressed twice: once as a Table 1-supported JORC statement, once as a Form 43-101F1 technical report. That double dressing, not any disagreement about the ground, is the true cost of dual reporting, and it is precisely the cost that a code-agnostic data architecture is built to minimise.

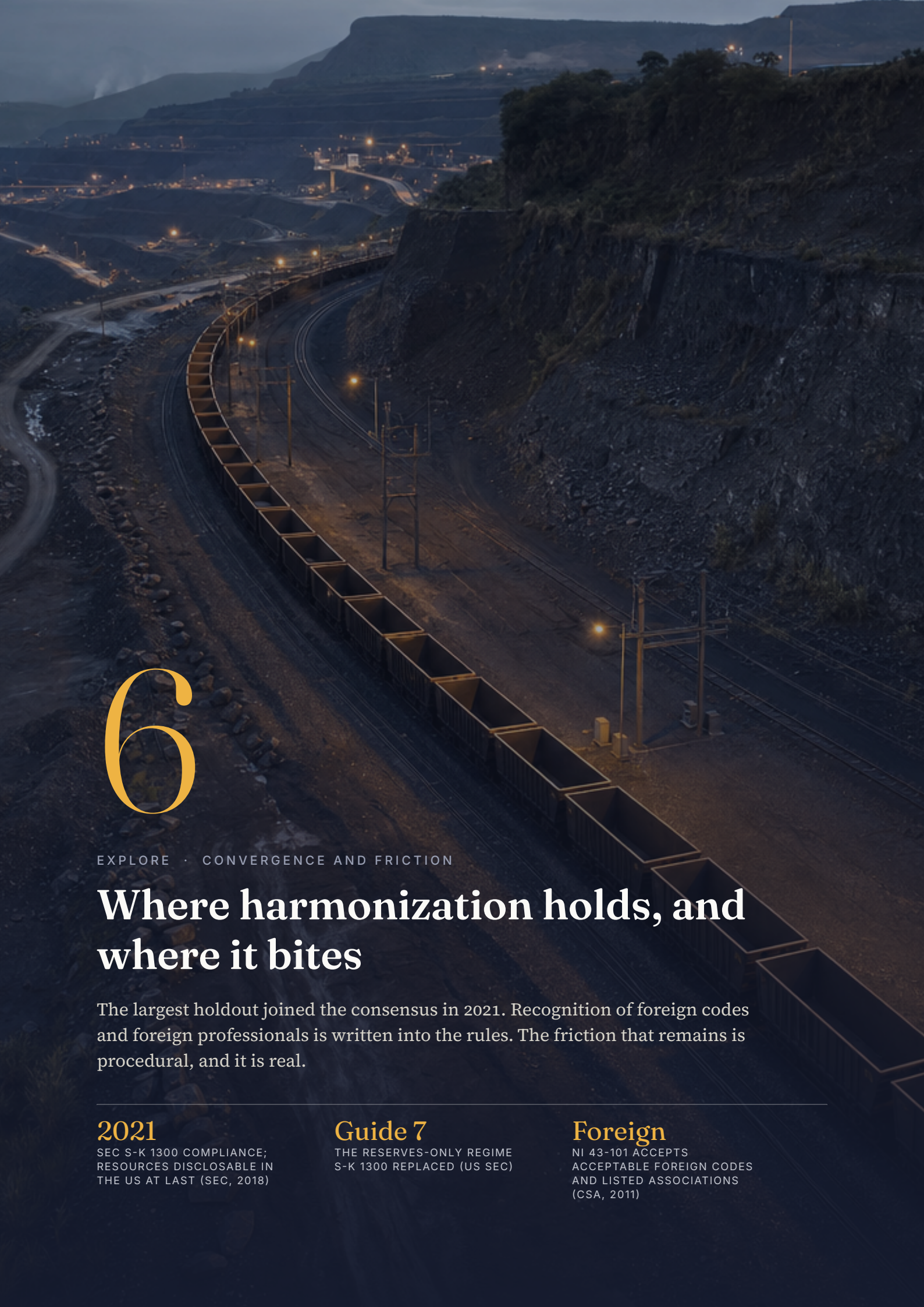
A WORKED CROSSING

One estimate, two disclosures: what actually changes

Picture a single Indicated Mineral Resource, correctly estimated and classified, on a project whose owner lists in both Sydney and Toronto. Nothing about the estimate changes as it crosses the Pacific: the category, the tonnes, the grade and the Modifying Factors carry over unaltered, because both destinations read the CRIRSCO template. What changes is the wrapper. For the ASX, a Competent Person consents to a JORC statement supported by Table 1. For the Canadian market, a Qualified Person, who may well be the same individual if their professional association is recognised, signs a Form 43-101F1 technical report and certificate, filed on the prescribed trigger and independent where the instrument requires it. Same ground, same numbers, two signatures, two documents, two filing calendars. A reporter who has built the estimate once, cleanly, is doing reformatting. A reporter who has not is doing it twice.

Read as a whole, the comparison is reassuring and clarifying in equal measure. It is reassuring because the hard part, agreeing on what the categories mean, is already done and is structurally stable. It is clarifying because it locates the remaining work exactly: in the accountability label, the document format and the filing machinery, none of which touches the estimate itself. Chapter 6 asks how far even those remaining differences are being closed, and where they still genuinely bite.

Six rows, one verdict: the ground is agreed, the paperwork is not. A reporter who builds the estimate once has only the wrappers left to manage.



6

EXPLORE · CONVERGENCE AND FRICTION

Where harmonization holds, and where it bites

The largest holdout joined the consensus in 2021. Recognition of foreign codes and foreign professionals is written into the rules. The friction that remains is procedural, and it is real.

2021
SEC S-K 1300 COMPLIANCE; RESOURCES DISCLOSABLE IN THE US AT LAST (SEC, 2018)

Guide 7
THE RESERVES-ONLY REGIME S-K 1300 REPLACED (US SEC)

Foreign
NI 43-101 ACCEPTS ACCEPTABLE FOREIGN CODES AND LISTED ASSOCIATIONS (CSA, 2011)

Harmonization is not a finished project, but its direction is unmistakable, and the most important evidence is recent. For decades the United States, the world's deepest capital market, stood outside the CRIRSCO consensus with a disclosure regime, Industry Guide 7, that permitted a registrant to report only mineral reserves and prohibited the disclosure of mineral resources altogether. A company that reported an Indicated Resource under JORC in Sydney could not disclose it to United States investors under the same word. That divergence, the single largest fracture in global mineral reporting, has now been closed.

The United States joins the family

In 2018 the Securities and Exchange Commission adopted a modernized regime for mining property disclosure under subpart 1300 of Regulation S-K, with compliance required from the first fiscal year beginning on or after 1 January 2021. The new rules are aligned with the CRIRSCO framework: they permit and govern the disclosure of mineral resources as well as reserves, they introduce a qualified person broadly equivalent to the CRIRSCO competence concept, and they require a technical report summary supporting the disclosed estimates. S-K 1300 also introduced an "initial assessment", an early-stage economic study broadly analogous to the preliminary economic assessment familiar from Canadian practice. With that reform, the three deepest pools of mining capital, Australia, Canada and the United States, now read resources through one architecture. The practical consequence for a reporter is large: the same CRIRSCO-aligned estimate can now support disclosure in all three, where a decade ago the United States would have refused half of it.

> Industry Guide 7 · the superseded SEC mining-disclosure regime that allowed only mineral reserves to be disclosed and barred mineral resources; its replacement by S-K 1300 is the largest single act of convergence in the modern history of the codes.

Recognition is the mechanism, not translation

The codes were designed to interoperate through recognition rather than translation, and the mechanisms are written into the instruments themselves. NI 43-101 permits a foreign issuer to prepare disclosure and technical reports under an "acceptable foreign code", a category the instrument fills by naming the JORC, PERC and SAMREC Codes, SEC Industry Guide 7 and the Chilean Certification Code, and then admitting any other code generally accepted in the reporter's home jurisdiction that defines mineral resources and mineral reserves in a manner consistent with the definitions and categories set out in sections 1.2 and 1.3 of the instrument, the provisions that carry the CIM categories; the American SME guide qualifies through that open clause rather than as one of the enumerated names. The same instrument recognises membership of specified foreign professional associations as satisfying the professional-association test for a Qualified Person, so that a JORC Competent Person who is a member of an accepted association may act as a Qualified Person where the other tests are met. Recognition runs the other way too, through the acceptance of qualified professionals across the CRIRSCO family. Exhibit 7 draws the bridge: the same estimate and, often, the same professional, crossing between disclosure regimes without re-estimation.

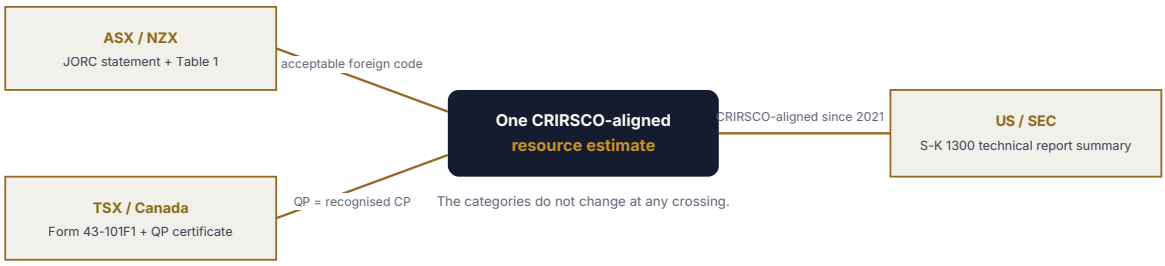
Recognition, not translation, is how the codes were built to cross borders: the categories travel unchanged, and often the very same professional signs on both sides.

THE MECHANISM OF CHAPTER 6

EXHIBIT 7

The recognition bridge: one estimate and one professional, accepted across three disclosure regimes

How a CRIRSCO-aligned estimate travels: the categories carry over unchanged; recognition, not translation, moves the professional and the code



What changes is the wrapper (statement, report, summary) and the certificate; the estimate is written once.
Recognition of foreign codes and foreign professional associations is the mechanism, and it is in the instruments' own text.

Source: NI 43-101 (acceptable foreign codes; recognised associations), Canadian Securities Administrators, 2011; US SEC, Regulation S-K subpart 1300 (2018, compliance 2021); ASX Listing Rules chapter 5. The bridge is drawn to the recognition provisions of the instruments; the crossings a given issuer may use depend on its listings and on satisfying each instrument's specific tests.

Where it still bites

None of this makes dual reporting free, and a paper that pretended otherwise would be selling a convenience the rules do not deliver. Four frictions remain. The first is the double document: the same estimate must still be packaged as a Table 1-supported JORC statement and as a Form 43-101F1 technical report, two formats, two consents, produced and maintained in parallel. The second is the filing calendar: because NI 43-101 is a securities instrument with prescribed triggers, a disclosure that is routine continuous disclosure on the ASX can oblige a full, signed, filed technical report in Canada, on a deadline. The third is professional recognition at the edges: the acceptance of foreign associations is a defined list rather than a blanket rule, so an individual's eligibility to sign in a given jurisdiction must be checked, not assumed. The fourth is independence: reports that NI 43-101 requires to be authored by an independent Qualified Person have no exact JORC equivalent, so a report acceptable in one system may need a different author in the other. These are procedural, but procedure with a deadline and a signature attached is precisely where cost and risk live.

A scorecard of the friction that remains

It helps to see the residual differences ranked by how much trouble they actually cause, rather than treated as a single undifferentiated obstacle. Two of the four frictions are structural and permanent, because they follow from the fact that NI 43-101 is a securities instrument and the JORC framework is a listing-rule code: the prescribed filing triggers and the formal independence requirement have no exact counterpart on the Australasian side, and never will, because the instruments are different kinds of law. The other two, the double document and the edge cases of professional recognition, are administrative: they cost time and care but they yield to good preparation and, above all, to a data architecture that produces both documents from one source. Exhibit 7b ranks them, so that a reporter spends worry where worry is warranted.

EXHIBIT 7B

Not all friction is equal: two structural differences, two administrative ones

The residual gaps between the JORC framework and the Canadian system, by nature and by the effort each demands of a dual reporter

FRICTION	WHY IT EXISTS	NATURE
Filing triggers	NI 43-101 is securities law with prescribed events; a routine ASX disclosure can compel a filed Canadian report on a deadline	Structural, permanent
Independence	NI 43-101 requires an independent Qualified Person for specified reports; JORC treats independence as a matter of disclosure	Structural, permanent
Double document	One estimate must be packaged as both a Table 1 statement and a Form 43-101F1 report	Administrative, solvable
Recognition edge cases	Acceptance of foreign associations is a defined list, so a signatory's eligibility must be checked per jurisdiction	Administrative, solvable

Source: NI 43-101 and Form 43-101F1 (Canadian Securities Administrators, 2011); JORC Code, 2012 Edition; ASX Listing Rules chapter 5. "Structural" frictions follow from the different legal character of the instruments and are managed rather than removed; "administrative" frictions are the ones a code-agnostic data architecture (Chapter 7) is built to minimise.

The scorecard carries a strategic message. Because the two administrative frictions are exactly the ones a reporter can engineer away, and the two structural ones are matters of calendar and personnel that a competent adviser can plan around, the total burden of dual reporting is far more tractable than its reputation suggests. It is not a translation between incompatible systems; it is the disciplined administration of one estimate across two well-mapped regimes. That is a management problem with a known solution, and the solution is the subject of the next chapter.

> The words already agree across the codes. The friction that remains is the friction of paperwork, calendars and signatures, and it is managed, not translated away.

The United States spent decades outside the consensus and then joined it in a single rule. The direction of travel across the codes is convergence. Nobody is drifting away.

THE LESSON OF S-K 1300, CHAPTER 6

7

EXPLORE · THE OPERATIONAL ANSWER

Reporting once, disclosing many times

If the friction is in the wrapper, the answer is to build the estimate so cleanly that any wrapper fits it. That is a data-architecture problem, and it is solvable.

One
ESTIMATE, BUILT CRIRSCO-NATIVE, FEEDING EVERY REGIME (CRIRSCO, 2019)

~5%
QA/QC INSERTION RATE IN A GOVERNED SAMPLING CHAIN (AURUS PRACTICE)

Audit
A TRAIL FROM FIELD RECORD TO SIGNED DISCLOSURE, UNBROKEN

The whole argument of this paper reduces to a practical instruction. Because the codes agree on the estimate and differ only on the wrapper, the reporter's objective is to build one estimate so clean, so completely documented and so faithfully traceable that producing a JORC statement, a Form 43-101F1 report or an S-K 1300 summary from it is a matter of formatting rather than re-work. That is not a drafting trick applied at the end; it is a discipline imposed at the beginning, on the data itself. A resource estimate is only ever as defensible as the sampling, the assay quality control and the chain of custody beneath it, and those are decided in the field, years before any Competent or Qualified Person signs.

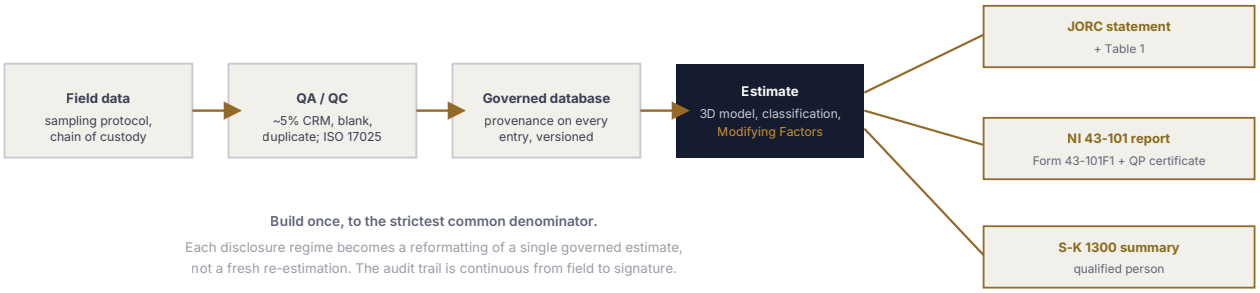
CRIRSCO-native from the first sample

The design principle is to engineer every datum, from the moment it is collected, to report under the CRIRSCO-family codes and the CIM Definition Standards that NI 43-101 incorporates, without later reprocessing. In practice that means a defined sampling protocol; the insertion of certified reference materials, blanks and duplicates at a governed rate, on the order of five per cent of samples, so that assay quality is measurable rather than assumed; an unbroken chain of custody from the drill collar to an accredited laboratory operating to ISO 17025; and a database whose every entry carries the provenance a Table 1 or a Form 43-101F1 will later demand. The estimate is then built in a modern geological modelling environment with versioning, so that a reviewer can reconstruct exactly which data supported which classification. Exhibit 8 sets out the pipeline as a single flow from field to disclosure.

EXHIBIT 8 · FRAMEWORK

A code-agnostic data pipeline: govern the data once, disclose it under any regime

The flow from field record to signed disclosure. A capability instrument; no project data



A capability instrument, not project data. The pipeline is drawn to the requirements the codes impose (JORC Table 1; NI 43-101 Form 43-101F1; SEC S-K 1300 technical report summary) and to established good practice in sampling quality control and chain of custody; the QA/QC insertion rate shown is a governed-practice figure, not a code-mandated constant.

AURUS PRACTICE NOTE

The discipline this chapter describes is one Aurus applies in the field. On one mandate the firm designed and executed a ground magnetic and radiometric reconnaissance campaign over a 24 km² grid of a manganese exploration permit in Central Africa, delivered under Competent-Person supervision to the CRIRSCO-family codes (JORC 2012, SAMREC) and the CIM Definition Standards incorporated by NI 43-101, with 100 per cent data-quality acceptance, delineating priority targets and defining the follow-up geochemistry and infill-geophysics programme.

The point for this paper is method, not magnitude: data acquired to the family codes from the first reading needs no retro-fitting when a disclosure regime later asks for its provenance. The campaign covered roughly a tenth of the intended area; it is reported here as a capability, not a whole-permit survey.

The professional layer, built in

A governed dataset still needs a professional to stand behind the estimate, and the recognition machinery of Chapter 6 makes it possible to resource that layer once for several regimes. Senior geologists experienced in reporting under NI 43-101 and the JORC Code, whose professional memberships are recognised across the relevant jurisdictions, can carry the same estimate into more than one disclosure world, subject always to the independence tests each report requires. The firm's model pairs that internationally credentialed competence with national geologists who know the ground, so that the person signing the classification has both the code standing and the field knowledge the codes assume. The label on the signature, Competent Person or Qualified Person, follows the destination; the competence behind it does not change.

Reproducibility is the point, not neatness

The reason to version the model and preserve provenance on every entry is not tidiness; it is reproducibility, and reproducibility is what turns a resource estimate from an assertion into evidence. A reviewer who can take the governed database, re-run the classification logic and arrive at the same categories has verified the estimate in the strongest sense available short of re-drilling. That capacity is also what makes cross-code reporting cheap: if the estimate is reproducible from a governed source, generating a Table 1 for the ASX and a Form 43-101F1 for Canada draws on the same audited foundation, and the two documents cannot silently diverge, because they are formatted from one dataset rather than assembled separately. The discipline that satisfies a hostile technical reviewer is the same discipline that makes multi-jurisdiction disclosure efficient. Rigour and economy point the same way.

There is a governance dividend as well. A dataset built to this standard survives the two events that most often expose a weak estimate: a change of the responsible professional, and a due-diligence review by an acquirer or a lender. When provenance travels with the data, a new Competent or Qualified Person can take responsibility without re-creating the record, and a reviewer can trace any figure to its field origin without the cooperation of the people who produced it. An estimate that depends on the memory of a particular geologist is fragile; an estimate that lives in a governed, versioned, provenance-complete database is durable, portable and defensible under exactly the scrutiny the codes were written to invite.

Built this way, dual and triple reporting stops being a duplication of effort and becomes what the harmonized codes always intended: one honest estimate, disclosed faithfully to whichever investors are being asked to trust it. Chapter 8 turns the discipline into specific guidance for each audience.

> Build the estimate to the shared codes from the first sample, and every later disclosure becomes a formatting task rather than a translation risk.

8

EXPLORE · IMPLICATIONS

Implications, and the Aurus view

The codes have done the hard work of agreeing. The reporter's job is to be ready for all of them at once, and readiness is decided in the data, not the drafting.

Explorers

RESPECT THE EXPLORATION TARGET LINE FROM DAY ONE (JORC, 2012)

Issuers

MANAGE THE WRAPPER AND THE FILING CALENDAR, NOT THE ESTIMATE (CSA, 2011)

Lenders

TEST THE AUDIT TRAIL, NOT JUST THE HEADLINE TONNES

The practical value of understanding the codes as one architecture with several wrappers is that it tells each participant precisely where to spend attention. The estimate is not where the differences live, so it is not where the anxiety should be; the differences live in competence recognition, documentation and filing, and those can be prepared for in advance rather than discovered under deadline. This closing chapter states the instruction for each audience and then the firm's own view.

For explorers and developers

The discipline begins long before a resource exists. The most common and most costly early error is to treat an Exploration Target as though it were a Mineral Resource, attaching tonnages, grades or, worst of all, economics to ground that has not been drilled enough to support them. Every serious code forbids it, and the habit of respecting the line, expressing a target as a conceptual range with the required cautionary statement, and never valuing it, is the clearest early signal that a developer understands the system it is entering. From the first drill programme, sampling protocol, quality control and chain of custody should be built to the family codes, because data collected loosely cannot be tightened retrospectively and a resource is only as good as the data beneath it.

For cross-listed issuers

The instruction is to manage the wrapper and the calendar, not to fear the estimate. A CRIRSCO-aligned estimate will satisfy JORC, NI 43-101 and S-K 1300 at the level of its categories, so the work is to maintain each disclosure format in parallel and, above all, to track the Canadian filing triggers, because a routine announcement elsewhere can compel a full signed technical report in Canada on a deadline. Confirm, in advance, that the intended signatory's professional membership is recognised in every jurisdiction of listing, and that independence is arranged where a report will require it. None of this is difficult; all of it is expensive to discover late.

For lenders and technical reviewers

The reviewer's edge is to read past the headline. Because the categories agree across codes, a tonnage figure alone says little about quality; what separates a defensible estimate from a fragile one is the audit trail beneath it, the sampling discipline, the quality-control data, the provenance of the database and the classification logic that a Competent or Qualified Person actually applied. A dual-reported estimate whose two documents rest on one clean, traceable dataset is far stronger than two separately assembled reports that happen to agree. The diligence question is not "what does it say" but "can I follow every number back to a governed field record", which is exactly the test Exhibit 9 frames.

A tonnage figure alone proves little. What separates a defensible estimate from a fragile one is an audit trail a reviewer can follow all the way back to the field.

THE LENDER'S TEST, CHAPTER 8

EXHIBIT 9 · FRAMEWORK

A ten-question readiness test for a cross-code resource estimate

The questions a developer, issuer or lender can ask of any estimate meant to travel across codes. A capability instrument, no project data

#	QUESTION	WHAT A GOOD ANSWER SHOWS
1	Is every reported category defined against the CRIRSCO template?	Portability across codes
2	Can each figure be traced to a governed field record?	A continuous audit trail
3	Is QA/QC data present, at a governed insertion rate?	Measured, not assumed, assay quality
4	Is the chain of custody unbroken to an accredited laboratory?	Sample integrity (the Bre-X test)
5	Are Inferred Resources kept out of the reserve conversion?	Correct use of the matrix
6	Are all Modifying Factors documented for any reserve?	A reserve that survived the study
7	Is any Exploration Target expressed as a conceptual range, without economics?	Clause-17 discipline
8	Is the signatory recognised in every jurisdiction of listing?	Portable competence
9	Is independence satisfied where a report requires it?	NI 43-101 compliance
10	Can one dataset produce all required disclosure formats?	Report once, disclose many

A capability instrument, not project data. The questions are drawn from the provisions cited throughout this paper (CRIRSCO 2019; JORC 2012; CIM Definition Standards 2014; NI 43-101 and Form 43-101F1, 2011; SEC S-K 1300, 2021) and from established sampling and data-governance good practice.

For regulators and exchanges

The bodies that administer the codes have their own instruction from the harmonization story, and it is a modest one: keep converging, and keep the recognition machinery current. The largest single gain of the past decade, the United States joining the CRIRSCO-aligned world through S-K 1300, came from a regulator choosing alignment over a bespoke national regime. The remaining friction that reporters feel most, the edge cases of professional recognition, sits largely within regulators' own gift: the accepted-foreign-association lists are administrative instruments that can be kept broad and current as professional bodies evolve. Nothing in this paper argues for a single world code, which the reality of national securities law makes impossible; it argues that the existing architecture of one template, many instruments and mutual recognition works, and that the marginal improvements available are recognition and convergence, not consolidation.

The Aurus view

Aurus reads the harmonization of the codes as settled at the level that matters and manageable at the level that remains. The categories are one language; the wrappers are several dialects; and the firm's discipline is to build resource data so that it is native to the shared language from the first sample, which turns each dialect into a formatting task rather than a translation risk. The firm's relevant work is data governance and technical reporting: data engineered to report under the CRIRSCO-family codes (JORC 2012, SAMREC, PERC) and the CIM Definition Standards incorporated by NI 43-101, with quality control, chain of custody and accredited laboratories built into the field method, not added at the report stage.

AURUS PRACTICE NOTE

Reporting architecture, designed to be code-native

The firm has designed a turnkey monthly technical-reporting programme for a twelve-permit exploration portfolio, an extensive private exploration portfolio in Central Africa: an eleven-module reporting architecture aligned to the CRIRSCO-family codes (JORC 2012, SAMREC, PERC) and the CIM Definition Standards incorporated by NI 43-101, with ISO 17025 laboratory chains, quality-control insertion, three-dimensional model versioning and legally opposable electronically signed deliverables. It is described here as designed, at the level of an architecture rather than a running operation, to illustrate the principle this paper argues: a reporting system built to the shared codes from the outset can serve any of the disclosure instruments that sit above them, because the estimate underneath is already written in the common language they all read.

What that discipline buys is a calmer obligation rather than a lighter one. The reporter who has built to the shared codes from the first sample still signs a Competent Person statement in Sydney and a Qualified Person certificate in Toronto, still files on the Canadian trigger, and still discloses independence where the instrument demands it. What changes is the risk carried between those filings. None of them reaches back into the estimate to reopen it, because the estimate was already correct in the language every one of them reads. The work moves from reconciliation to formatting, and formatting is a scheduling problem rather than a geological one, which is exactly the kind of problem a project can plan around.

The codes spent thirty years agreeing on what a resource is. The task that remains for everyone who reports one is smaller and more tractable than the anxiety around dual reporting suggests: build the estimate once, cleanly, in the language the codes share, keep the audit trail unbroken, and let each regulator read the same honest ground in the format it prefers. That is what harmonization has made possible, and it is the standard this paper holds itself, and its readers, to.

> The estimate is where the anxiety is spent and the differences are not. Move the attention to competence, documentation and filing, and the codes stop being a translation problem.

Build the estimate once, in the language the codes share. Keep the trail from the drill collar to the signature unbroken. Then let every regulator read the same honest ground.

THE AURUS VIEW, CHAPTER 8

References

Citation policy of this series: every provision and figure in this paper is transcribed from the published text of a mineral-reporting code or a securities disclosure instrument, and attributed by issuing body and edition, in the sentence, the exhibit source line or this list, and traces to a row in the paper's evidence dossier. This paper reports the codes; it does not originate any resource or reserve figure of its own, and it reports no data from any Aurus mandate. Where a figure is genuinely open, such as the exact size of CRIRSCO's membership or the precise contents of the accepted-foreign-association list, the paper states the point qualitatively rather than committing to a number it would then have to defend.

1. Joint Ore Reserves Committee, The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code), 2012 Edition, of the AusIMM, AIG and Minerals Council of Australia (primary source; committee history, Competent Person, Table 1, clause 17).
2. CIM (Canadian Institute of Mining, Metallurgy and Petroleum), CIM Definition Standards for Mineral Resources and Mineral Reserves (adopted 19 May 2014), and Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019).
3. Canadian Securities Administrators, National Instrument 43-101 Standards of Disclosure for Mineral Projects, its Form 43-101F1 and Companion Policy 43-101CP (consolidated in force 30 June 2011; incorporates the CIM Definition Standards; defines the Qualified Person).
4. CRIRSCO (Committee for Mineral Reserves International Reporting Standards), International Reporting Template, November 2019 edition (organisation established 1994; classification framework and Modifying Factors; membership).
5. SAMREC, The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The SAMREC Code), 2016 Edition.
6. PERC, The Pan-European Standard for Reporting of Exploration Results, Mineral Resources and Reserves (The PERC Reporting Standard), 2021.
7. United States Securities and Exchange Commission, Modernization of Property Disclosures for Mining Registrants, Regulation S-K subpart 1300 (adopting release, October 2018; compliance for the first fiscal year beginning on or after 1 January 2021; replaced Industry Guide 7).
8. ASX, ASX Listing Rules, Chapter 5 (Additional reporting on mining and exploration activities), the listing rule that makes the JORC Code mandatory for ASX-listed entities.

Exhibit source index

Each exhibit's primary sources, by reference number above. Framework exhibits (8 and 9) are capability instruments and carry no project data by design.

EXHIBIT	SUBJECT	REFERENCES
1	Evolution of the codes and instruments	1, 2, 3, 4, 5, 6, 7
2	The CRIRSCO classification matrix (signature)	4 (in 1, 2, 5, 6)
3	The code family, drawn correctly	2, 3, 4, 7
4	JORC Table 1, four sections	1
5	Form 43-101F1 items against Table 1	1, 3
6	JORC vs the Canadian system (signature)	1, 2, 3, 8
7	The recognition bridge	3, 7, 8
8	Code-agnostic data pipeline	1, 3, 7 (framework)
9	Ten-question readiness test	1, 3, 4, 7 (framework)

Citing this paper

Cite as: Aurus Technical Committee, One Orebody, Many Codes: How JORC, the CIM Standards and NI 43-101 Report the Same Ground, Aurus Institute for Resource Development, Technical Paper WP-01, July 2026. Any provision quoted from this paper should carry its original code or instrument as the primary attribution, as listed above, rather than this paper; this paper transcribes and compares, it does not originate.

Exhibit conventions. Across all exhibits: gold marks the load-bearing element, the shared architecture, the point of agreement or the recognition bridge; grey and ink mark disclosure instruments and context; outlined gold boxes mark reporting codes in the family diagrams; and framework exhibits carry no project data by design and say so in their source lines.

Freshness. Code editions are stable but not permanent: the CRIRSCO template, the CIM Standards and the national codes are revised periodically, and the accepted-foreign-association list within NI 43-101 is updated from time to time. Readers should treat the editions cited here, current at press time in July 2026, as a snapshot and confirm the operative edition before relying on any provision for a live filing.

Where to confirm each edition before you rely on it

The Freshness note is operational, not decorative. Each code and instrument in this paper is maintained by a standing body that publishes the operative text; before a provision is used in a live filing, its current edition should be confirmed at that source. The table records who maintains each one, and the edition this paper worked from.

CODE OR INSTRUMENT	MAINTAINED AND PUBLISHED BY	EDITION CITED HERE
JORC Code	Joint Ore Reserves Committee (AusIMM, AIG, Minerals Council of Australia)	2012 Edition
CIM Definition Standards	Canadian Institute of Mining, Metallurgy and Petroleum	Adopted 2014
NI 43-101, Form 43-101F1, Companion Policy	Canadian Securities Administrators	In force 2011
CRIRSCO International Reporting Template	Committee for Mineral Reserves International Reporting Standards	November 2019
SAMREC Code	SAMCODES committee (GSSA and SAIMM); enforced through the JSE	2016 Edition
PERC Reporting Standard	PERC, the Pan-European reporting standard body	2021
Regulation S-K subpart 1300	United States Securities and Exchange Commission	2018; compliance 2021
ASX Listing Rules, chapter 5	Australian Securities Exchange	Operative edition

Every figure in these pages was transcribed from a published code, then traced to its dossier row before it was allowed to appear. The authority stays with the source; this paper only sets the codes side by side.

Method and evidence

Every provision in this paper was transcribed from a published code or rule, recorded in the evidence dossier, and checked against one taxonomy the paper refuses to get wrong. This page records the method, so that a reader, or a lender's technical adviser, can test the paper the way it asks reporters to test an estimate.

The evidence chain

Each figure and provision traces through three layers. First, a **source line** in the sentence or exhibit where it appears, naming the issuing body and edition. Second, a row in the paper's **evidence dossier**, which transcribes the provision in its published form and records every correction made during review. Third, an **archived artifact**: the eight source documents are the published texts of the codes and rules themselves (the JORC Code 2012, the CIM Definition Standards 2014, NI 43-101 and its Form 43-101F1, the CRIRSCO template 2019, SAMREC 2016, PERC 2021, SEC S-K 1300 and ASX chapter 5). All eight are now captured as primary PDFs in the dossier's source folder and verified as valid files, page counts confirmed and content spot-checked; the CRIRSCO November 2019 template, the last to be archived, was taken from the identical text mirrored by a member national reporting organisation. Every figure in the paper therefore traces both to a dossier row and to the published source itself, and no claim of archiving is made ahead of the file.

The one taxonomy this paper will not get wrong

The single most common error in this field, and the one this paper is built to avoid, is to treat NI 43-101 as though it were a CRIRSCO reporting code. It is not. The CRIRSCO-family reporting codes are JORC, SAMREC, PERC and the CIM Definition Standards; NI 43-101 is a Canadian securities disclosure instrument that incorporates the CIM Definition Standards by reference and defines the Qualified Person. The retired shorthand that lists NI 43-101 alongside the reporting codes as though it were one of them is precisely the mis-description the paper corrects, and it appears nowhere in the text by design. Verbs matter too: the paper speaks throughout of data reported under, and delivered to, the codes, and never of a code as something a firm has conquered or owns, because a code is a standard one applies, not a possession one acquires.

Open parameters and gaps, named

Where the record is genuinely open, the paper states the silence rather than filling it. As of this edition the open set is two items: the exact size of CRIRSCO's membership and the share of world listed mineral capitalisation its codes cover, stated qualitatively rather than as a fragile point figure; and the precise, evolving contents of the accepted-foreign-association list inside the NI 43-101 Qualified Person definition, named as a mechanism with representative members rather than a closed enumeration. The primary-PDF archive of all eight source documents, once the third open item, is now complete on disk and verified. None of the remaining silences is bridged by estimation.

VALUE CLASS	TREATMENT	WHERE
Code editions and compliance dates (2012, 2011, 2014, 2019, 2021)	Used as published, exact	Throughout; At a glance
Defined categories and counts (3 resources, 2 reserves, 10 Modifying Factors)	Used as defined in the template	Chapters 2, 5
Form 43-101F1 item span (Items 1–27)	Used as prescribed in the form	Chapters 4, 5
CRIRSCO membership size; foreign-association list	Stated qualitatively; gap register B.1, B.2	Chapters 2, 6

VALUE CLASS	TREATMENT	WHERE
QA/QC insertion rate (~5%)	Governed-practice figure, not a code constant	Chapter 7 (labelled)

What this paper never does

No provision is remembered rather than transcribed, and no resource or reserve figure of any Aurus mandate is reported, because none is disclosed here. The two Aurus practice notes are capability statements: one describes a field campaign delivered under Competent-Person supervision to the family codes, reported as method rather than as a whole-permit survey; the other describes a reporting architecture that was designed, at the level of an architecture rather than a running operation, and is presented as such. The Qualified Person and Competent Person are discussed as the roles the codes define; the firm's own competence is stated at the level of senior geologists experienced in reporting under NI 43-101 and the JORC Code, and no professional credential is asserted on the byline.

How a reader can test this paper

The discipline above is meant to be checked, not taken on trust, and the check is quick. Take any figure or provision in these pages: a category definition, an edition date, a Form 43-101F1 item span, a filing trigger. Read the sentence or the exhibit source line that carries it, which names the issuing body and edition. Turn to the row it cites in the evidence dossier, where the provision is transcribed in the words of the code itself. Then open the code and confirm the transcription against the published text. A provision that survives those three steps is one a lender's technical adviser can carry into a report of their own; a provision that does not survive them should never have been in the paper, and the method is built so that none is.

The same three steps expose the two things this paper refuses to do. It never turns a named silence into a number, so where the record is genuinely open, the gap register says so and the sentence stays qualitative rather than inventing a figure it would then have to defend. And it never lets a code become a possession rather than a standard, so the verbs stay at "reported under" and "delivered to". A reader who runs the check and finds a fabricated figure, a filled silence or a code described as owned has found a defect this paper treats as disqualifying, not cosmetic.

The dossier also keeps the paper honest over time. Every correction made during review is recorded against the row it touched, so a later reader can see what the paper says now, what it once said, and why it changed. A claim that was tightened, a magnitude that was struck, an enumeration corrected to match the instrument word for word: each leaves a trace in the row rather than disappearing into a clean final draft. That record is why the paper can state its silences plainly, because it has already been read by people whose task was to find the number that would not survive its own source and to remove it before print.

> A reporting code is a standard one applies, never a possession one acquires. Report the ground, name the source, and show the working: that is the whole of the method this paper asks of itself.

Glossary of reporting-code terms

The vocabulary used in this paper, stated precisely. Terms marked with a chapter number also appear as margin definitions at first use.

Competent Person (CP) · under JORC, SAMREC and PERC, the named professional responsible for a public report; a member of a Recognised Professional Organisation with at least five years of relevant experience. (Ch. 3, 5)

CRIRSCO · the Committee for Mineral Reserves International Reporting Standards, established 1994; it maintains the International Reporting Template that the national codes are written against. (Ch. 1, 2)

CIM Definition Standards · the Canadian reporting code, adopted by CIM in 2014, incorporated into NI 43-101 by reference; the Canadian member of the CRIRSCO family. (Ch. 4)

Disclosure instrument · a law or rule (NI 43-101, SEC S-K 1300, a listing rule) that makes a reporting code binding, sets filing triggers and prescribes the document. (Exec.; Ch. 1, 4)

Exploration Target · a conceptual estimate of potential mineralisation that is not a Mineral Resource; JORC clause 17 requires it be a range, described as conceptual, with no economics attached. (Ch. 2, 3, 8)

Form 43-101F1 · the prescribed Canadian technical-report format, Items 1 to 27, with a signed Qualified Person certificate and consent. (Ch. 4, 5)

Indicated Mineral Resource · a resource estimated with a confidence sufficient to allow appropriate application of Modifying Factors to support mine planning; converts to a Probable Reserve. (Ch. 2, 5)

Inferred Mineral Resource · the lowest-confidence resource category; may not be converted directly into a Mineral Reserve. (Ch. 2, 5)

JORC Code · the Australasian reporting code, 2012 Edition, made mandatory by the ASX and NZX listing rules; uses the Competent Person and Table 1. (Ch. 3)

Measured Mineral Resource · the highest-confidence resource category; converts to a Proved Reserve (Proven, in the Canadian standards), or to Probable where Modifying Factors warrant. (Ch. 2, 5)

Mineral Reserve · the economically mineable part of a Measured or Indicated Resource, after all Modifying Factors; reported as Proved or Probable (Proven, in the Canadian standards). (Ch. 2)

Mineral Resource · a concentration of material of economic interest with reasonable prospects for eventual economic extraction; reported as Inferred, Indicated or Measured. (Ch. 2)

Modifying Factors · the mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental considerations that convert a resource into a reserve. (Ch. 2, 5)

NI 43-101 · the Canadian securities disclosure instrument, in force 2011, that incorporates the CIM Definition Standards and defines the Qualified Person; not itself a CRIRSCO code. (Ch. 4)

Qualified Person (QP) · under NI 43-101, the engineer or geoscientist, with at least five years of relevant experience and in good standing with a professional association, responsible for a technical report; independent for specified reports. (Ch. 4, 5)

Reporting code · a code (JORC, SAMREC, PERC, the CIM Definition Standards) that defines the resource and reserve categories and the competence required to report them. (Exec.; Ch. 1)

S-K 1300 · the SEC's modernized US mining-disclosure regime, compliance from 2021, aligned with CRIRSCO; replaced Industry Guide 7 and permits disclosure of resources. (Ch. 6)

Table 1 · the JORC checklist of assessment and reporting criteria, applied "if not, why not", in four cumulative sections from sampling to reserves. (Ch. 3, 5)

Technical report · under NI 43-101, the filed document (Form 43-101F1) supporting disclosed scientific and technical information, signed and consented by every Qualified Person. (Ch. 4)

AURUS INSTITUTE FOR RESOURCE DEVELOPMENT

One Orebody, Many Codes: How JORC, the CIM Standards and NI 43-101 Report the Same Ground
A Technical Paper in the Aurus white paper library, on the Explore pillar. Prepared by the Aurus Technical Committee, July 2026.

Every provision in this paper traces to the cited public codes and disclosure instruments listed in the References. This paper reports the codes; it originates no resource or reserve figure, and it discloses no data from any Aurus mandate. The two Aurus practice notes are capability statements, one delivered under Competent-Person supervision, one designed, presented as method rather than magnitude.

Set in Fraunces (display), Source Serif 4 (text) and Inter (captions and data).
Exhibits designed and art-directed in-house.

Working draft 1: wave-1 Technical Paper; adversarial certification pending.

MINING · INFRASTRUCTURE · ENGINEERING · ENVIRONMENT