Risk Allocation of Subsurface Conditions

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Australian Construction Industry Forum

Australasian Procurement and Construction Council

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The Australasian Procurement and Construction Council Inc (APCC) consists of Australian and New Zealand government agencies with responsibility for the disciplines of procurement, construction, asset management, and property management policy and practice.

As the peak public sector procurement and construction council, the collective members create a unique central repository of knowledge and expertise to support improved delivery of services.

Through leadership and collaboration, the APCC is a national centre of excellence on policy, principles, and best practice and fosters working relationships that optimise government procurement and construction outcomes.

The APCC encourages innovative solutions in procurement and construction and is responsive to the changing needs of government. It is at the forefront of developing strategies that balance complex and divergent procurement and construction imperatives, such as value-for-money, risk, sustainability, competition, and whole-of-life considerations. The important role that APCC members play; by sharing their learnings and by leveraging and adding value to what and how governments buy and build; has never been more significant due to the need for every dollar spent through government procurement to achieve social, environmental, and economic outcomes.

The APCC exposes its members beyond their jurisdiction to a broader pool of experience and expertise. The APCC members champion innovation and capture the benefits of nationally consistent approaches, leading to efficiency gains and added value for government, industry, and Australian and New Zealand communities.

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1. Introduction

1.1. Purpose

This practice note seeks to:

- Provide guidance on the allocation of risks associated with subsurface conditions.
- Present approaches to managing the likelihood of a potential latent condition.
- Propose principles for the assessment and subsequent contractual treatment of the latent conditions.
- Discuss the pros and cons of the above items and management options.

2. Background

2.1. Subsurface conditions

Subsurface conditions cover a range of manifestations, including:

- Contamination (potentially or actually).
- Geotechnical conditions:
  - Rock (by type, structure, etc.)
  - Soil (by type – clays, silt, sand, loam, etc.)
  - Groundwater including aquifers, underground creeks, and other sub-surface hydrological occurrences.
- Extant structures (e.g., previous buildings including heritage foundations, underground tanks, mine shafts, and any other engineered assets).
- Subsurface archaeological and cultural artefacts.

Latent subsurface conditions are part of a broader range of latent condition types. For the purposes of this practice note, subsurface conditions are the primary focus.

2.2. Scope

The scope of this practice note excludes consideration the following two areas:

- Utilities, while potentially subsurface, and utilities coordination, are not considered in this practice note.
- Known site conditions, including physical conditions, are typically excluded from the definition of latent conditions, and are also not considered in this practice note.

2.3. Terms

The following terms are adopted in this practice note:

- Contractor refers to all Contractor firms who participate in the tender process (tenderers), as well as for the successful Contractor engaged.
- Principal refers to the client or Project Sponsor responsible for delivering a project or program of work.
- Project Sponsor refers to the client, financiers, and end users who, individually or jointly, determine the risk allocations and terms of the head contract offered to the head Contractor.
- Superintendent refers to the appointed person engaged by the Principal to administer the contract. The Superintendent may have a dual role: to issue directions to the Contractor on behalf of the Principal and to carry out certification tasks as a party independent of the Principal.

2.3.1. Definition of latent conditions

The definition of latent conditions, which typically includes unknown subsurface conditions, varies between contracts and jurisdictions (refer to Appendix A for example definitions). According to AS4300-1995 Clause 12.1, latent conditions are defined as:

a) Physical conditions on the site or its surroundings, including artificial things, but excluding weather conditions, which differ materially from the physical conditions that the Contractor should have reasonably anticipated at the time of the tender if the Contractor had:
   i) Examined all information available in writing by the Principal to the Contractor for the purpose of tendering.
   ii) Examined all information relevant to the risks, contingencies and other circumstances having an effect on the tender and obtainable by making of reasonable enquiries.
   iii) Inspected the site and its surroundings.

b) Any other conditions which the contract specifies to be latent conditions.

3. Key Issues for Risk Allocation

3.1. Key issues

The Subsurface Conditions Working Group (Working Group) has identified three key issues to be considered:

- How to allocate the risk.
- How to manage the likelihood of a potential latent condition.
- How to assess and manage the contractual treatment of the latent conditions.

3.2. Allocating risk

Broadly speaking, risk allocation of subsurface conditions depends on whether the pre-existing condition is or should have been known (patent or obvious) or is unknown (latent or unseen).

The Contractor takes the risk for patent conditions. However, evaluating if the risk can be sufficiently or reasonably understood, priced, and programmed accordingly at the time of tender is essential. For the Contractor to reasonably take on the risk, it must not be reliant (or conditional) on qualifications, which, inter alia, may present difficulties for tender assessment by the Principal.

The Principal is responsible for the site and its inherent issues and conditions. Therefore, it is in the Principal's best interest to undertake due diligence and provide as much subsurface information as economically practical to Contractors. This approach will reduce unknown risks and potential claims for latent conditions, leading to more accurate tender pricing by Contractors.

In some instances, a more collaborative approach may be reasonable and advantageous, where the party more able to identify and deal with the risk assumes the risk.

Qualifications in tenders should be treated as non-conforming as they make comparison of tenders inequitable. Contractors should raise clarifications during the tender period, and should any relevant additional information be supplied to the Contractor, then it should be submitted to all Contractors prior to the closing of tenders as an addendum to ensure probity. In addition, while challenging in a competitive and largely 'price only' tendering arrangement, Contractors should be encouraged to raise potential qualifications early.

In situations where the Principal perceives a political imperative and/or preference for fixed lump sum price, Target Outturn Cost (TOC) or Guaranteed Maximum Price (GMP) contracts, careful and reasonable risk allocation must be considered and negotiated.

A possibly contentious consideration may be to develop a matrix for known and potentially unknown risks and which party is responsible for each risk. This approach would assist the Contractor to articulate in a timely manner which risks they are unwilling to accept and, where applicable, what additional work and information would be required for the Contractor to accept the risk.

3.3. Managing the likelihood of latent conditions

The first step in analysing whether a condition is latent is to anticipate what could reasonably have been expected. Subsurface conditions are, by their very nature, hidden and, in some instances, require extensive exploration to be accurately and comprehensively identified.

Fully discovering and disclosing this information before tender could be time and cost prohibitive for many projects, though greater exploration before tender can minimise potential latent conditions. Therefore, it is necessary to appropriately consider the risks to decide whether the subsurface conditions could reasonably have been anticipated based on the information available to the tenderer during the tender phase.

3.3.1. Green field sites: subsurface conditions

Projects on greenfield sites need to consider the potential for latent subsurface conditions. An appropriate level of investigation should be carried out consistent with the anticipated risks. For projects on large greenfield sites, extensive exploration to fully mitigate subsurface conditions may not be feasible. For example, a road or a building complex would require many core samples and exploration pits. Even on small sites, an unknown floating rock, rock seam, and/or water cavity will not always be readily identified through early exploration.

These latent conditions will often lead to further subbase or foundation re-design, which may take time and may lead to more complicated design and increased construction costs. Unfavourable scenarios can include expensive and time-consuming rock excavation or the need for a foundation bridging a rock shelf. Further, the discovery of historical artefacts, particularly those of Indigenous significance, may lead to project delays or even relocation.

3.3.2. Brown field sites: subsurface conditions

Subsurface conditions on brownfield sites present similar challenges as those on greenfield sites, especially if the previous asset on the site did not have deep foundations, such as an industrial warehouse or a rail yard. Even with a complete history of the site use, it can be challenging to accurately foresee what the earthwork fill may contain (e.g., a car body or dumped asbestos), nor is it possible to anticipate what has been carried in natural aquifers and groundwater from kilometres away. While other subsurface conditions can be reduced through carrying out appropriate levels of investigation, these types cannot be reasonably foreseen and should be treated as latent conditions unless they were disclosed as part of the tender documentation.

3.3.3. Weather conditions

While the definition of latent conditions varies slightly across contracts and jurisdictions, they typically exclude weather conditions, climatic conditions, and conditions arising from or in connection with weather or climatic conditions. These conditions may differ materially from the physical conditions, which should be reasonably anticipated by an experienced and competent Contractor at the time of their tender. Such relies on the Contractor having inspected and investigated the land and fully informed itself as to the site conditions and the nature of the works required (See Clause 10, AS-VicRoads 4300).

However, the exclusion of climate conditions and conditions resulting from climate conditions can sometimes create disagreement between Project Sponsors and Contractors. For example, the Sponsor can consider water on a site a weather condition, while the Contractor may consider it underground water or an aquifer.

Even with a reasonable investigation by the Principal or Contractor, some subsurface conditions cannot be anticipated. For example, soil that is workable in dry weather can become unworkable after heavy rain, requiring removal and replacement or lime stabilisation. In such cases, competent and experienced Contractors can identify this issue and build wet weather into a contract program. However, full anticipation by either party is not realistic. While the Principal should provide the Contractor with reasonable (per contract) profits to offset the cost of remedying these subsurface conditions, the Contractor should be able to recover a time extension and costs necessarily incurred.

Sometimes, the tender may include a Provisional Quantity for removing and replacing unsuitable material based on the contract-defined base or sub-base material and the minimum class of material required for replacement. The inclusion of a Provisional Quantity enables the Contractor to submit an appropriate costing for this process, included as part of the tender assessment. Additionally, by incorporating a schedule of rates as outlined in Section 5, the quantity and unit rates can be evaluated during the tender phase and validated independently by a Quantity Surveyor. This serves as a 'check mechanism' to assess whether Contractors are loading the schedule for financial advantage.

3.3.4. Extent and level of focus

How much and where should the focus be to minimise the likelihood of latent conditions? As previously suggested, the time and cost associated with full exploration and discovery of subsurface conditions can be prohibitive in most cases. Therefore, an appropriate level of focus on the likelihood and severity of latent conditions needs to be conducted, and consideration should be given to the following examples of information exchanged during the tender process:

- Was the information provided as part of the tender documents current (or is it too historical) and with a sufficient minimum time period for all Contractors to review? Of particular concern is the late issue of addendum(s). Time extensions to the tender close date should be commensurate with the complexity and quantum of addendum material.
- What was the basis of the information provided? For instance, does the information contain disclaimers? What is the level of analysis/interpretation? Are the results in detail (analysed or in raw format, for example, geotechnical site records)?
- What is the quality and sufficiency of the information, particularly in regard to geotechnical data? What is the level of accuracy and currency of the information provided as part of the tender documents?
- What degree of inspection can the Contractor do pre-award (i.e., expected or permitted to do, and has been provided access to conduct the inspection and undertake investigations)? For example, in a road project where access is not possible, can Contractors expect that the Project Sponsor does further geotechnical investigations?
- Can the Contractors ask for further information if they believe more is needed for their bid and at whose cost? If more investigation is conducted or more information is provided by the Principal to the Contractor, it should be shared with all tenderers. The provision of additional information will be made on a case-by-case basis considering project complexity, procurement model, level of detail at the time of tender, and time constraints.
- Should the Contractors engage their own exploratory team, such as the geotechnical engineers? If it does, how does the identification of new subsurface risks affect the tender price in a competitive bid?

- Who pays for exploratory work, and if paid by the Principal, do all parties/tenderers have equal access?
- Is there value in pre-tender briefings? Open discussions with all the proposed Contractors as a group may disclose additional investigations and needs that the Principal should undertake in order to reduce variations.
- Alternatively, individual pre-tender briefings may be held and attended by a probity auditor to ensure that each Contractor has the same information. Where additional information is disclosed at an individual briefing, that information should be issued to all Contractors via a Tender Addendum unless commercial-in-confidence requirements prevent otherwise.

3.4. Assessing and managing the contractual treatment of latent conditions

If an issue arises during construction, how is it assessed as to whether it is a latent condition? If so, what is required to manage it appropriately?

3.4.1. Identifying latent conditions

Regardless of the level of investigation and exploration carried out prior to construction commencing, sometimes it becomes clear that a latent condition exists, such as an underground petrol tank or unexpected rock. We can inspect, identify, and verify its existence.

On some occasions, it is not immediately evident that there is a latent condition. This could include a delay in recognising or agreeing that a latent condition exists, such as when a Contractor takes time to excavate rock before realising that the quantity is greater than allowed in their tender. Therefore, an inspection cannot take place to identify a latent condition at the outset. Similarly, in such a case, the Superintendent takes time to assess the claim for latent conditions.

Similarly, the same time-loss can occur with groundwater issues or excessive wet and unsuitable material.

This can be influenced by the preceding seasonal conditions in which the Superintendent claims the excessive unsuitable material is “an effect of the climactic conditions”, whereas the Contractor may claim that it is caused by groundwater not shown on the Subsurface Condition Investigation (SCI). In such cases, it may take months and various studies by experts from both parties to assess whether a latent condition existed and resolve the issue.

These are examples where significant time is lost in arguments as to whether latent conditions exist or not, leading to large delay costs being claimed and/or paid. Potentially, the delay costs can exceed the direct costs. Sometimes the Contractor can be requested to provide a quote or rate for the works, and the Superintendent will give the Contractor a directive to begin works while the claim is assessed. Potential delay costs may be converted into liquidated damages if the basis of the latent conditions is rejected.

Better site investigation and more extensive geotechnical testing are the answers to these issues, and regrettably, this is where projects can be impacted. Both time and costs are involved in obtaining enough core samples. Additionally, political pressure to get a contract awarded can exacerbate the shortfall in geotechnical information.

3.4.2. Managing claims for latent conditions

When latent conditions are claimed, the best path forward is, where possible, for the Superintendent to decide whether latent conditions exist, and agree to:

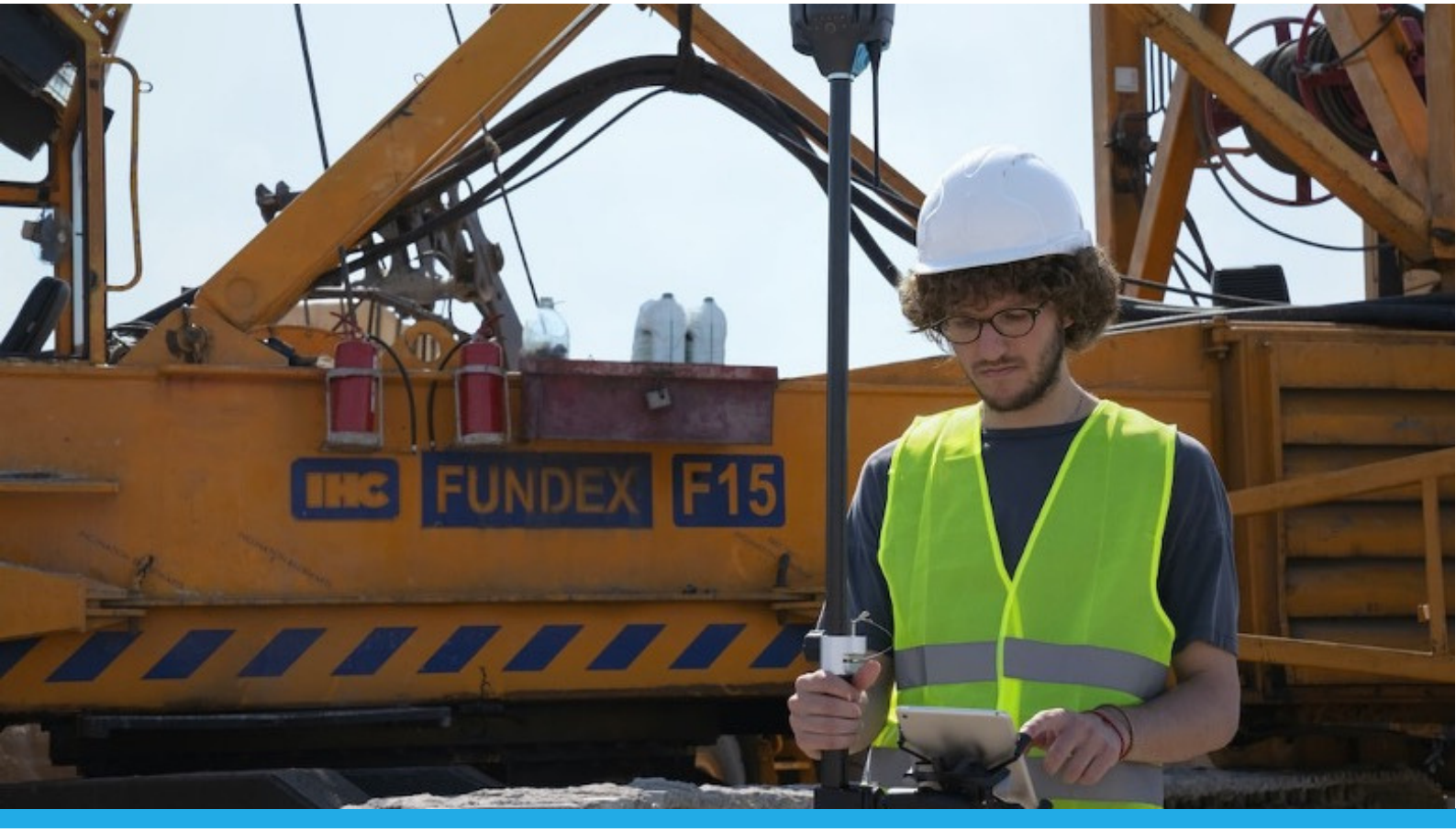
- Keep records, including plans and hours, as well as any relevant information related to the claimed latent condition. This includes quantities, test results, survey depths, measurements, and more. These records should be monitored and agreed upon with the Contractor daily, and tests and measurements taken in a consistent manner.
- Conduct a program analysis to assess the time impacts of the latent condition particularly in relation to any critical path activities.
- Assess or consider whether the proposed work processes by the Contractor are the most effective.
- Advise the Contractor in writing where the Superintendent considers that the solution is not the best or most efficient process (noting if latent conditions are accepted, that those additional costs would not be paid). In the scenario where the latent condition is not accepted, inefficient work processes are not relevant. Good record keeping is important for potential litigation, even if the Superintended does not consider it to be a latent condition.

4. Gathering Information on Subsurface Conditions

4.1. Information on subsurface conditions

Project Sponsors, including Government clients, seek to minimise the financial, and social costs of the asset, including avoidance of maintenance or rectification works due to mishandling of subsurface conditions.

Subsurface conditions are inherent in the lands owned by the Project Sponsor, and are not readily known to the Contractor. Identification and costing of the risks relating to subsurface conditions depend on access to information. The more that the Project Sponsors provide relevant information to all Contractors, the closer Contractors' prices should be with one another and the final price. Contractors remain responsible for their interpretation of the information provided.



4.2. Local council mapping

When horizontal infrastructure extends for long distances, it is common for subsurface conditions to vary significantly. In urban areas, geological exploration can be impractical due to factors such as limited access to sites and the high cost of drilling. However, local government knowledge can help mitigate the risks associated with such uncertainties. Local councils and government agencies can provide valuable information, though they typically avoid carrying any risk associated with it. Therefore, it is advisable to encourage them to develop and maintain a mapping system for core samples (with a state-wide taxonomy) and historical land use. In rural areas, it is usually possible to take geological core samples on or near the proposed infrastructure site. However, this requires additional drilling, which can increase both the project duration and cost.

4.3. Increased information at tender

The nature of road construction makes it impractical to separate the vertical construction phases into separate contracts. True and complete subsurface conditions will only be known when exposed, and when tests such as California Bearing Ratio (CBR) tests have been conducted. Though, some aspects, such as basaltic or rock underlays, can be identified from surrounding sites. The Contractor should be responsible for their decisions based on the supplied test data and the necessary inquiries of the site and surroundings. However, all other significant subsurface conditions, including subsurface waterways, which cannot be readily identified (by an experienced and competent Contractor conducting investigations of the site and tender documentation supplied), should be treated as latent conditions.

For building projects on confined land, much of the subsurface conditions can be exposed by on-site core samples and site history. Early subsurface exploration by the Principal can result in more appropriate tender fees and fewer delays during construction. Latent conditions affecting time and cost would include historical or Indigenous artifacts.

The greatest obstacle for Government in providing information is the cost of frequent coring, and some Project Sponsors concerns regarding their liability for the information supplied and how the information is interpreted. This issue requires further exploration to prevent Government from being reticent in providing information.

5. Improving the Management of Latent Conditions

5.1. Original documentation

- The quality of documentation provided during the tender period is crucial.
- Potential latent condition types need to be identified and defined in the Contract, avoiding ambiguous descriptions.
- If a latent condition is likely to occur, it is best for Principals to complete investigations as early as possible to limit its impact and provide Contractors with more opportunities to improve the project outcome.
- Sufficient time and resources should be allocated to assess each of the subsurface conditions to reduce risks for the project.
- An agreed mechanism to deal with latent conditions should be adopted to ensure all parties are tendering on the scope of work and expediting the evaluation process.

5.2. Contract – schedule of values

- Each subsurface condition should be addressed as part of the bidding process to account for both known and unknown factors.
- The schedule should provide a cap on the Contractor's liabilities for cost and time.
- Quantum, unit rates, and productivity should be clearly set out in the schedule of values.
- The schedule of values should be used during the tender phase to ensure competitive tension, provide transparency, and limit the Contractor's ability to take advantage by loading the schedule of values.

5.3. Assessors

- The Principal should have pre-appointed experts to address each subsurface component for expediency and to avoid delay.
- Consultants who prepared the original tender documentation should be used first as they are familiar with the project.
- In the case of dispute, a third party should be engaged as an independent consultant.

5.4. Timing

- Notification of latent condition should occur as soon as possible and giving consideration to any contractual time notification requirements.
- Options to address latent conditions should be devised as soon as possible.
- Acceptance of the approach to address latent conditions should occur as soon as possible.

5.5. Other considerations

There are several basic considerations to ensure the reasonable and ethical management of the issue of latent subsurface conditions, including:

- Implementation of best practices pre-award to identify and define potential latent conditions in the contract documentation.
- Notification of latent conditions during the contract period, followed by a prompt assessment and formulation of a plan at the Contractor's cost. If more than one site is involved, the project manager should be notified.
- Contingency planning to be responsive to plausible site conditions.
- Pay claims as entitled.
- Contractual and clear separation of above-ground and below-groundwork, including a split contract value for building projects.
- Standardisation of building clauses.
- Reinforcement of the expectation that the Superintendent impartially and effectively administers the Contract, including relief for latent conditions.
- Evaluation of the Superintendent's experience, ensuring that they are relevant, recent, and competent.
- Maintaining information, such as a database of soil reports, knowledge bank, and digital assets (BIM), to increase information sharing and collaboration opportunities.

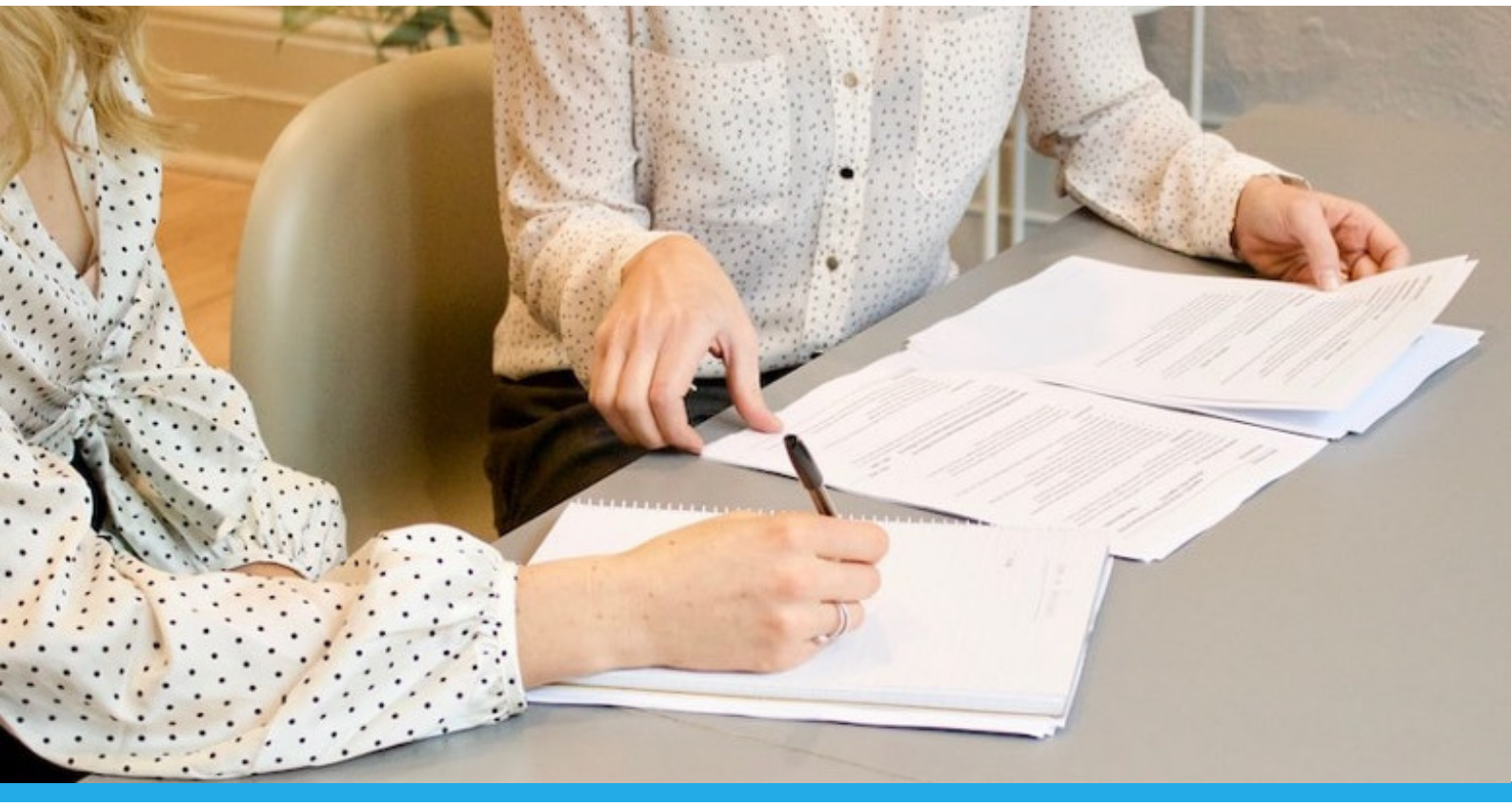
6. Managing Risks through Contracting

6.1. Considerations for contracts

After consideration of the issues raised in this paper, it is proposed that the following actions be considered when developing and/or preparing contracts to better manage the issue of risks associated with subsurface conditions.

- Define latent conditions as per NCW4 as "physical conditions on or below the site and its near surrounds including artificial things (though excluding weather conditions or physical conditions which are a consequence of weather conditions), which differ materially from the physical conditions which should reasonably have been anticipated by a competent Contractor, at the time of the Contractor's tender had a competent Contractor inspected:
  - All written information made available by the Principal to the Contractor for the purpose of tendering;
  - All information influencing the risk allocation in the Contractor's tender and reasonably obtainable by the making of reasonable enquiries; and
  - The site and its near surrounds, made available prior to, or at, the time of tender".
- Require the Principal to undertake due diligence and provide appropriate subsurface information to Contractors to manage and control risks. This should include an appropriate investigation of subsurface conditions (a guide to what would be an appropriate level of investigation, e.g., the number of boreholes by project type, needs to be established) and align with standards such as AS1726.
- If site access for investigation of latent conditions is not possible (e.g., due to an existing structure covering most or all of the site, which is common in urban environments), the Principal should engage an independent geotechnical engineering firm to conduct a single site investigation, with the results made available to all Contractors. Site investigations where an existing structure is in place may be limited to the boundary of the site or information from adjoining sites where possible.

- The site investigation and condition information should be included in the Site Information section of the Contract (Site Information section forms part of the Contract), and:
  - All parties recognise that the information is not complete, though is relied on for the purposes of tendering.
  - The Principal accepts responsibility for the accuracy of the supplied information, but not its interpretation.
  - The Contractor, as part of their submission, provides a Schedule of Values for common latent conditions. These could be common latent conditions across 80 per cent of past projects provided by the Principal.
- That the Departments of planning or local councils be encouraged to develop and maintain a mapping of core samples and historical mapping of land use, and make this information publicly available.
- That in the circumstance where no site subsurface investigation is possible, the Contract should reflect a compensation event (where the Contractor encounters subsurface physical conditions that could not have reasonably been identified at the contract date) like that specified in NEC4.
- That for building works, the civil site works are separated from the building works.



Appendix A - Definition of Latent Conditions by Forms of Contract

National Capital Works 4 (NCW4) - General Conditions of Contract

Austroads and the Australasian Procurement and Construction Council (APCC) released NCW4 on 19 June 2019. NCW4 has been developed in consultation with Austroads and APCC members, who comprise State and Territory Governments. NCW4 is a Construct-Only contract designed for projects where the Principal is a government or semi-government agency.

Item	Clause #	Clause
Definition	-	Latent conditions mean physical conditions on or below the site and its near surrounds, including artificial things (but excluding weather conditions or physical conditions which are a consequence of weather conditions), which differ materially from the physical conditions which should reasonably have been anticipated by a competent Contractor (having regard to the warranty in clause 3), at the time of the Contractor's tender had a competent Contractor inspected: all written information made available by the Principal to the Contractor for the purpose of tendering; all information influencing the risk allocation in the Contractor's tender and reasonably obtainable by the making of reasonable enquiries; and the site and its near surrounds, made available prior to, or at, the time of tender.
General	12.1	a) *Reliance information* and *non-reliance information* comprise of those documents listed in *Item*s 9 and 10 respectively. b) With respect to reliance information: i) the *Contractor* may rely on the factual accuracy of *reliance information*, but ii) the Principal does not warrant or make any representation with respect to the completeness of the reliance information. c) With respect to non-reliance information: iii) if the Contractor relies on non-reliance information, it does so at its own risk; iv) the Principal does not warrant or make any representation with respect to the accuracy, quality or completeness of the non-reliance information; and v) the Principal is not liable to the Contractor for any claim arising out of, or in relation to, non-reliance information. d) Notwithstanding clause 12.1 a), any interpretations, deductions, opinions or conclusions set out in any document provided by the *Principal* in connection with *site* conditions are deemed to be *non-reliance information* and the use of such information is entirely at the *Contractor*'s risk. e) The *Contractor* is solely responsible for dealing with any *latent condition* so as to minimise delay and to minimise increased costs.

Item	Clause #	Clause
Notification of a latent condition	12.2	a) If the Contractor: vi) becomes aware of a possible latent condition; and *vii)* either intends to make a claim or believes that it has an entitlement to make a claim for an extension of time or additional costs, the *Contractor* must notify the *Superintendent* of the existence of the possible *latent condition.* b) The notice of the possible latent condition must: viii) be identified as 'Early Warning Under clause 12.2'; ix) be given as soon as possible (and in any event not more than 1 business day of the Contractor becoming aware of the potential latent condition); and x) where possible, be given before the latent condition is disturbed. c) If required by the Superintendent (acting as a certifier), the Contractor must promptly provide to the Superintendent a statement specifying: i) the conditions on the site that the Contractor claims to be latent conditions; ii) the manner in which the Contractor contends they differ materially from the conditions on the site the Contractor should reasonably have expected at close of tenders, including any information supporting this contention; iii) the effect on the work under the Contract; iv) the effect on the Contract program; v) the additional work and resources involved and the Contractor's estimate of its entitlement to any adjustment to the contract sum; vi) any other matters the Contractor considers relevant; and *vii)* any other details reasonably requested by the *Superintendent*.

Valuation is provided in Clause 12.3 and Extension of time in Clause 12.4

Australian Standards: AS2124 – 1992 General Conditions of Contract

AS2124 uses the term "latent conditions" to describe adverse Site conditions. The definition and clauses are provided below.

Item	Clause #	Clause
Definition	12.1(a) 12.1(b)	Latent Conditions are - physical conditions on the Site or its surroundings, including artificial things but excluding weather conditions which differ materially from the physical conditions, which should reasonably have been anticipated by the Contractor at the time of the Contractor's tender if the Contractor had -: (i) examined all information made available in writing by the Principal to the Contractor for the purpose of tendering; and (ii) examined all information relevant to the risks, contingencies and other circumstances having an effect on the tender and obtainable by the making of reasonable enquiries; and (iii) inspected the Site and its surroundings; and Any other conditions which the Contract specifies to be Latent Conditions.
Notification What happens if the Contractor encounters a Latent Condition?	12.2	If, during the execution of the work under the Contract, the Contractor becomes aware of a Latent Condition, the Contractor shall forthwith and where possible before the Latent Condition is disturbed, give written notice to the Superintendent. If required by the Superintendent, the Contractor shall provide to the Superintendent a written statement specifying – (a) the Latent Conditions and in what respect it differs materially; (b) the additional work and additional resources which the Contractor estimates to be necessary to deal with the Latent Condition; (c) the time the Contractor anticipates will be required to deal with the Latent Condition and the expected delay in achieving Practical Completion; (d) the Contractor's estimate of the cost of the measures necessary to deal with the Latent Condition; and (e) other details reasonably required by the Superintendent.
Extension of Time and Cost	12.3	Delay caused by a Latent Condition may justify an extension of time under Clause 35.5. If a Latent Condition caused the Contractor to- (a) carry out additional work; (b) Use additional Construction Plant; or (c) Incur extra cost (including but not limited to the cost of delay or disruption) Which the Contractor could not reasonably have anticipated at the time of tendering, a valuation shall be made under Clause 40.5.

Physical conditions specific to the project that are to be at the Contractor's risk (and priced into the tender accordingly), can be excluded from the definition of Latent Conditions by listing them in Annexure Part A. For example, the presence of rock (which is known) is often excluded. If no Latent Conditions are specifically identified as excluded from the Contract, all Latent Conditions are at the Principal's risk.

Clause 12.3 provides that delay caused by a latent condition may justify an Extension of Time (EoT) under Clause 35.5 (extension of time to Practical Completion. Clause 40.5 provides that the Superintendent ascertains the valuation.

Clause 12.4 imposes a time bar on making a claim for Latent Conditions. It bars the value of work carried out or additional plant used, or extra cost incurred more than 28 days before the date on which the Contractor gives the written notice required under Clause 12.2. The time bar does not prevent a late claim for an EoT for delay to the program, but then that extension comes without any additional costs.

Where urgent action is necessary to protect the work under the Contract, other property or people as a result of a Latent Condition, then Clause 39 provides that the Contractor shall carry out such action without delay.

Australian Standards: AS4300-1995 General Conditions of Contract

Latent conditions are covered in Clause 12 (and sub-clauses) of AS4300 and are identical to AS2124.

Australian Standard: 4902 - 2000 General Conditions of Contract

AS4902 uses the term "latent conditions" to describe adverse Site conditions. The definition and clauses are provided below.

Item	Clause #	Clause
Scope	25.1	*Latent conditions* are physical conditions on the *site* and its near surrounds, including artificial things but excluding weather conditions which differ materially from the physical conditions which should reasonably have been anticipated by a competent contractor at the time of the *Contractor's* tender if the *Contractor* had inspected: (i) all information made available by the *Principal* to the *Contractor* for the purpose of tendering; (ii) all information influencing the risk allocation in the *Contractor's* tender and reasonably obtainable by the making of reasonable enquiries; and (iii) the *site* and its near surrounds
Notification	25.2	The *Contractor,* upon becoming aware of a *latent condition* while carrying out *WUC*, shall promptly, and where possible before the *latent condition* is disturbed, give the *Superintendent* written notice of the general nature thereof. If required by the *Superintendent* promptly after receiving that notice, the *Contractor* shall, as soon as practicable, give the *Superintendent* a written statement of: (a) the *latent condition* encountered and the respects in which it differs materially; (b) the additional *work*, resources, time and cost which the *Contractor* estimates to be necessary to deal with the *latent condition*; and (c) other details reasonably required by the *Superintendent*.
Deemed variation	25.3	The effect of the *latent condition* shall be a deemed *variation*, priced having no regard to additional cost incurred more than 28 days before the date on which the *Contractor* gave the notice required by the first paragraph of subclause 25.2 but so as to include the *Contractor's* other costs for each compliance with subclause 25.2.

PC - 1 – 1998

PC - 1 states in Cl. 7.3 that latent conditions clauses 7.3 and 7.4 apply unless the Contract Particulars state otherwise (i.e., the right to claim for latent conditions can be deleted).

In contrast to AS2124, PC - 1-1998 (standard form contract issued by the Property Council of Australia) and HC - 1 2003 (issued by the Department of Defence) both limit the definition to 'ground conditions', excluding ground conditions resulting from inclement weather.

Anything that is not a 'ground condition' cannot be claimed as a latent condition. PC - 1 states that latent conditions are any ground conditions at the Site, excluding ground conditions resulting from inclement weather wherever occurring, which differ materially from those which should have been anticipated by a prudent, competent and experienced Contractor if it had done those things which the Contractor is deemed to have done under clause 7.1.

Clause 7.1 requires the Contractor to warrant that it has done everything that would be expected of a prudent, competent and experienced Contractor in: (a) assessing the risks it assumes under the Contract; and (b) including in the Contract Price its margins should such risks eventuate.

In Clause 7.2 the Owner warrants that it has made available to the Contractor, before award, the information, data and documents obtained by the Owner for the purposes of the Works from investigations it carried out as to the conditions on, in, under or in the vicinity of the Site. But in 7.2 (b) the Owner does not warrant, guarantee or make any representation about the accuracy or adequacy of any such information, data and documents made available to the Contractor; and the Contractor acknowledges that Clause 7.7 applies to the data provided by the Owner. Under Clause 7.7 the Contractor warrants that it did not rely on the data supplied by the Owner except to the extent that such information or data forms part of the Contract, and that it has entered into the contract relying on upon its own information and data.

In the PC-1 the process of dealing with latent conditions is similar to the Australian Standards. If the Contract includes latent conditions claim rights, the Contractor must give immediate written notice of encountering a latent condition to the Contract Administrator. Within 21 days of receipt of such notice, the Contract Administrator must determine:

- whether or not a latent condition has been found, and
- communicate this to both the Contractor and the Owner.

Clause 7.4 If the Contract Administrator determines that a latent condition has been found, the Contractor is entitled to (a) an EoT to the Date of Completion as per Cl 10.7 and (b) any extra costs reasonably incurred by the Contractor after giving the notice of latent conditions. To the extent permitted by law, the Contractor's entitlement under Cl 7.4 will be its only right to make a claim arising out of or in any way connected with the Latent Condition. (i.e., attempts to limit misrepresentation claims for errors in the owner's data).

Note: the latent condition clause refers to Clause 10.7. Clause 10 deals with time, and Cl 10.7 sets out Conditions Precedent for any extension of time.

GC21 Edition 2 – General conditions of contract (NSW Government)

This Contract does not use the term “Latent Conditions”; rather, it uses “adverse Site Conditions”. The definition and clauses are provided below.

Item	Clause #	Clause
Definition	-	Any physical conditions of the Site (including subsurface conditions, but excluding weather conditions or physical conditions which are a consequence of weather conditions) encountered in carrying out work in connection with the Contract.
Site conditions	37	.1 The Contractor is solely responsible for dealing with any adverse *Site Conditions*: .1 so as to minimise delay; .2 so as to minimise increased costs; and .3 without awaiting any instruction from the Principal, but must comply with any instruction given by the Principal .2 Clauses 37.3 to 37.8 do not apply if it is stated in Contract Information item 37 that the Contractor is to bear the risk of adverse *Site Conditions.* .3 If the Contractor becomes aware of adverse *Site Conditions* that differ materially from those it should reasonably have expected at close of tenders, the Contractor must notify the Principal in writing as soon as possible and in any event within 7 days after becoming aware of those *Site Conditions*. Where practicable, the notification should be given before the *Site Conditions* are disturbed. The notification must include details of: .1 the *Site Conditions* the Contractor claims are adverse; .2 the manner in which the Contractor contends they differ materially from the *Site Conditions* the Contractor should reasonably have expected at close of tenders (having regard to the warranty in clause 36.2), including any information supporting this contention; .3 the effect on the Works; .4 the effect on achieving *Completion*; .5 the additional work and resources involved and the Contractor’s estimate of its entitlement to any adjustment to the *Contract Price*; and .6 any other matters the Contractor considers relevant. .4 The Principal may request the Contractor to provide further information about the matters notified under clause 37.3. .5 After considering the Contractor’s notification under clause 37.3, the Principal must notify the Contractor whether it agrees with the Contractor’s contentions under clause 37.3.1. and 37.3.2 as to the nature of the conditions encountered and whether or not the Contractor should reasonably have expected them. .6 If the Principal agrees that there are adverse *Site Conditions* that differ materially from those the Contractor should reasonably have expected at the close of tenders and the Contractor has given the notice required by clause 37.3 then: .1 the parties may agree in writing on the effects of the unexpected adverse *Site Conditions* (including any *Variation* instructed by the Principal), and any affected

Item	Clause #	Clause
		Contractual Completion Dates and the *Contract Price* must be adjusted as agreed; or .2 if the parties have not agreed as to the effects of the unexpected adverse *Site Conditions*: .1 if the Principal instructs a *Variation* in connection with the adverse *Site Condition*, in addition to the entitlements the Contractor has under clause 48, the Contractor may also make a *Claim* for: .1 an extension of time in accordance with clause 50 and delay costs in accordance with clause 51, for any delay incurred by it as a result of the unexpected adverse *Site Conditions* that has not been taken into account in any extension of time granted as a result of the *Variation*; and .2 an increase in the *Contract Price* to be valued in accordance with clause 47, for any unavoidable additional costs incurred by the Contractor as a result of the unexpected adverse *Site Conditions*, but excluding any costs included in the valuation of the *Variation*; or .2 if no *Variation* in connection with the adverse *Site Condition* is instructed, the Contractor may make a *Claim* for: .1 an extension of time in accordance with clause 50 and delay costs in accordance with clause 51, subject to the requirements of those clauses; and .2 an increase in the *Contract Price,* to be valued in accordance with clause 47, for any unavoidable additional costs incurred by the Contractor as a result of the unexpected adverse *Site Conditions*. .7 If the Principal does not agree with the Contractor's contentions under clauses 37.3.1 and 37.3.2, the Contractor may notify an *Issue* under clause 69. .8 Costs and delay incurred by the Contractor as a result of unexpected adverse *Site Conditions* before it gave the notice required by clause 37.3 must not be counted in any valuation or extension of time.

As with PC-1, this Contract provides in Clause 36.1 that the Site Information does not form part of the Contract. The Principal "does not guarantee" that the information in 36A supplied by the Principal is complete. The Principal "does not guarantee" the information supplied in 36B is reliable i.e., complete, accurate or good quality. Cl 36.1 also states that the Principal is under "no duty of care" in respect of the information supplied in 36B. Clauses provided below.

Item	Clause #	Clause
Site Information	36.2	.2 The Contractor warrants that it: .1 has made its own inquiries concerning the Site, including checking information provided by the Principal; .2 has examined the Site and surrounds and satisfied itself through its own investigation as to the *Site Conditions* which might reasonably be expected; .3 has made its own assessment of the risks, contingencies and other circumstances which might affect the work in connection with the Contract and has allowed fully for these in the *Contract Price* (subject to clause 37); .4 did not in any way rely on the completeness of the information identified in Contract Information item 36A other than as a guide for ascertaining what further Site information the Contractor considers it needs to obtain; .5 did not rely on the accuracy, quality or completeness of information identified in Contract Information item 36B; and .6 has made its own interpretations, deductions and conclusions and did not in any way rely on interpretations, deductions and conclusions made by or for the Principal

Like PC-1, the GC21 Contract provides that claims for Latent Conditions may be excluded - Clauses 37.3 to 37.8 do not apply if it is stated in Contract Information item 37 that the Contractor is to bear the risk of adverse Site Conditions.

Cl 37.3 provides that if the Contractor becomes aware of adverse Site Conditions that differ materially from those reasonably expected at close of tenders, the Contractor must notify the Principal in writing as soon as possible and in any event within 7 days after becoming aware of those Site Conditions. Where practicable, the notification should be given before the Site Conditions are disturbed.

The notice must include details of (1) what Site Conditions the Contractor claims are adverse; (2) how these differ materially from the Site Conditions the Contractor should reasonably have expected at close of tenders; (3) the effect on the Works; (4) the effect on achieving Completion; (5) the extra work and resources involved, and the Contractor's estimate of its costs entitlement; and (6) any other matters the Contractor considers relevant.

Under Clause 37.5 the Principal must notify the Contractor whether s/he agrees that adverse Site Conditions exist (after consideration the Contractor's notification).

Clause 37.5 provides details of what happens if the parties agree or do not agree as to the effects of the unexpected adverse Site Conditions. Refer to above tables of exact clause.

FIDIC Conditions of Contract for Construction

Does not use the term “latent conditions”; rather, “unforeseeable conditions”. Unforeseeable means not reasonably foreseeable by the Base Date (28 days before closing of tenders). Site means the place where permanent works are to be performed, and includes storage and delivery sites, and any area mentioned in the contract as the Site. 1.9: The Engineer is deemed to be acting for the Employer and must obtain the Employer’s approval before accepting claims for time and/or costs.

Cl 4.10 requires the Employer to have made available to the Contractor all relevant data in the Employer’s possession on subsurface and hydrological conditions at the Site including environmental aspects and shall update this with information that comes to hand after the Base date. The Contractor shall be deemed to have obtained information as to

- the risks and contingencies which may influence the Works.
- inspected the site and its surroundings, including the data given by the Employer.

To be satisfied when submitting its tender of all relevant matters including, without limitation:

(a) Form and nature of the site, including subsurface conditions.
(b) The hydrological and climatic conditions; and (c), (d) and (e) … other matters in relation to performing the Works and remedying defects.

Clause 4.12 is headed Unforeseeable Physical Conditions. “Physical Conditions” is described as meaning natural physical conditions and manmade and other physical obstructions and pollutants encountered on Site including subsurface and hydrological conditions but excluding climatic conditions.

If the Contractor encounters adverse physical conditions that he considers having been Unforeseeable, the Contractor shall give notice to the Engineer as soon as practicable. The notice shall describe the conditions so they can be inspected by the Engineer, and why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as appropriate for the physical conditions, and shall comply with any instructions that the Engineer may give. If the instruction constitutes a variation, then the Variations clause shall apply. If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such notice and suffers delay and costs, the Contractor is entitled to claim time and costs.

The Engineer shall inspect and investigate these physical conditions to agree and determine (i) whether and to what extent the physical conditions were Unforeseeable, and (ii) applicable EoT and costs. In making this calculation the Engineer may also review whether other physical conditions in similar parts of the Works were more favourable than could reasonably been foreseen when the Contractor submitted the tender, and may deduct those savings, but the deductions shall not result in a net reduction in the Contract Price. The Engineer is not bound by the Contractor's interpretation of its evidence of physical conditions foreseen by the Contractor at tender time.