UNFORESEEN GROUND CONDITIONS

by

Dean Lewis

A paper given to members of
The Society of Construction Law Hong Kong
in Hong Kong on 27 September 2016

www.scl.hk
UNFORESEEN GROUND CONDITIONS
by Dean Lewis
27 September 2016

INTRODUCTION

The title of this presentation covers a very broad canvass. Claims under construction contracts often involve difficulties encountered by a contractor dealing with ground conditions. These claims can arise out of numerous bespoke matters, depend on the form of contract used, bespoke provisions of the contract, both express and implied, the amount of site investigation material provided to tendering contractors, the impact of any particular circumstance that arose after work commenced and what the engineer might have done after those circumstances arose. My presentation will not occupy discussions of these specific types of events. Instead I will approach the subject by reviewing the evolution of claims arising out of unforeseen ground conditions, with emphasis on Hong Kong. Of course, construction claims do not get to the courts very often because nearly all construction contracts include arbitration agreements.

There have been lots of arbitrations in Hong Kong dealing with claims arising out of unforeseen ground conditions but very little in the way of court authority on the subject. Even if one knows therefore that arbitrators or adjudicators have given important decisions on such claims, it is not possible to report on them unless there is information in the public domain. Fortunately, there is some information in this regard which I can refer to.

My presentation will be structured in this way: first I will briefly review the allocation of risk under construction contracts for unforeseen ground conditions; secondly I will briefly review the alternative approaches that have developed for claims for unforeseen ground conditions, in particular the physical impossibility argument; finally I will review the shared risk regime under what I have referred to as the unforeseen ground conditions provision including the geotechnical baseline report method.

ALLOCATION OF RISK FOR UNFORESEEN GROUND CONDITIONS

Under common law, the risk of unforeseen ground conditions rests exclusively with a contractor. This was decided in a number of English cases in the nineteenth century and the principle coming out of those cases holds true, not only in England and Wales but in most if not all common law jurisdictions.

Most international standard forms of construction contract modify the common law position usually along the lines of allocating the risk of ground conditions to the employer, insofar as those difficult ground conditions could not reasonably have been foreseen by an experienced contractor at the time of tender. This is a sensible approach because it is clearly not possible for an employer to accept all risks arising out of ground conditions unless one is looking at a pure cost plus or similar contract with no fixed completion time.

1 LLB MSc PhD FCIArb FHKIArb Partner of Pinsent Masons.


3 The ICE Form of Contract (or Infrastructure Contract as it is now called), certain versions of FIDIC and, in a slightly different formulation in the NEC Form.

4 In the NEC and MTRC Target Cost Contracts, it is still necessary to have provisions dealing with unforeseen ground conditions because a test must be included for assessing valid extensions of time and increases of the target cost.
UNFORESEEN GROUND CONDITIONS

by

Dean Lewis

27 September 2016

INTRODUCTION

The title of this presentation covers a very broad canvass. Claims under construction contracts often involve difficulties encountered by a contractor dealing with ground conditions. These claims can arise out of numerous bespoke matters, depend on the form of contract used, bespoke provisions of the contract, both express and implied, the amount of site investigation material provided to tendering contractors, the impact of any particular circumstance that arose after work commenced and what the engineer might have done after those circumstances arose. My presentation will not occupy discussions of these specific types of events. Instead I will approach the subject by reviewing the evolution of claims arising out of unforeseen ground conditions, with emphasis on Hong Kong. Of course, construction claims do not get to the courts very often because nearly all construction contracts include arbitration agreements.

There have been lots of arbitrations in Hong Kong dealing with claims arising out of unforeseen ground conditions but very little in the way of court authority on the subject. Even if one knows therefore that arbitrators or adjudicators have given important decisions on such claims, it is not possible to report on them unless there is information in the public domain. Fortunately, there is some information in this regard which I can refer to.

My presentation will be structured in this way: first I will briefly review the allocation of risk under construction contracts for unforeseen ground conditions; secondly I will briefly review the alternative approaches that have developed for claims for unforeseen ground conditions, in particular the physical impossibility argument; finally I will review the shared risk regime under what I have referred to as the unforeseen ground conditions provision including the geotechnical baseline report method.

ALLOCATION OF RISK FOR UNFORESEEN GROUND CONDITIONS

Under common law, the risk of unforeseen ground conditions rests exclusively with a contractor. This was decided in a number of English cases in the nineteenth century and the principle coming out of those cases holds true, not only in England and Wales but in most if not all common law jurisdictions.

Most international standard forms of construction contract modify the common law position usually along the lines of allocating the risk of ground conditions to the employer, insofar as those difficult ground conditions could not reasonably have been foreseen by an experienced contractor at the time of tender. This is a sensible approach because it is clearly not possible for an employer to accept all risks arising out of ground conditions unless one is looking at a pure cost plus or similar contract with no fixed completion time. In such a contract, claims for difficult ground conditions are unnecessary and therefore do not need to be provided for. This is because the contractor will be paid its actual cost of dealing with those ground conditions and if conditions proved difficult the contractor will incur additional cost which will be paid.
Moreover the contractor will be allowed to complete in whatever time the works take. Such a form of contract does not exist to my knowledge.

Contrary to the position in international standard forms of contract, in Hong Kong, public procurers have tended to place all risks of ground conditions upon the contractor. This is with the exception of the Mass Transit Railway Corporation (“MTRC”) and the Airport Authority (“AA”). Forms of Contract which have adopted, by and large, an unforeseen ground conditions provision. To these might be added those few contracts in Hong Kong based on the NEC Form or which adopted the Government’s Sub-Surface Assessment method. The reason for the absence of the unforeseen ground conditions provision in the Hong Kong Government form of contract lies in a dispute in which it was involved in 1969. This involved the contract for the construction of the Plover Cove Dam. In those days the form of contract used by the Government was the ICE Form and this is likely to have been the form used for this contract. The tender anticipated alternative completion dates, one in October 1966 and the second in April 1967, to coincide with low tides enabling efficient closure of the dam to the exclusion of seawater. The tenderer offering the lowest price offered to achieve the earlier date subject to a premium cost of HK$10m. The Government accepted this offer specifically on condition that the engineer would only be empowered to grant extensions of the earlier date for variations, delay in supply of pumps or power supply by the Government, any other act of prevention by Government “but not in respect of any other cause whatsoever”. However, the standard form of Government contract (that is the ICE Form) contained an unforeseen ground conditions clause and the engineer interpreted the conditions of acceptance of the offer as not excluding this provision and granted the contractor extensions of time for dealing with unforeseen ground conditions with the net result being that the earlier date for closing the dam was not achieved but the contractor still received the premium. This appears to have been an embarrassment to the Government and the Director of Public Works reported to LEGCO: 

“Finally, I should like to add that the clause which permits the Engineer to grant extensions of time and extra payments when adverse unforeseen site conditions occur, has now been deleted from the PWD General Conditions of Contract. This clause usually gives rise to arguments as to what constitutes adverse site conditions and whether they could or could not have been foreseen by an experienced contractor. It is however accepted that deletion of this clause means that the Contractor has now to accept greater risks and this may lead to higher prices for some projects.”

It is far too simplistic to suggest that the Plover Cove dispute is the sole cause of the omission to this day of the adverse ground conditions provision from Government contracts but it clearly was the original direct reason. It might be seen to be ironic by some that the reason for the removal of the unforeseen ground conditions provision was an apparently incorrect decision of an engineer in favour of the contractor. It is not known whether the Government sought arbitration specifically on the HK$10 million premium but it is known that a large arbitration took place in 1976 concerning matters under this contract which ultimately had an interim award and subsequently settled. This was the first known arbitration of a construction dispute in Hong Kong and it has been stated that “it was apparent that neither side had much experience of arbitration and possibly for this reason the procedure adopted was basically a mirror of high court procedure.” Some may question whether experience of arbitration makes any difference since the same problem persists to this day with many arbitrations.

The modified Government form, post Plover Cove Dam, came under scrutiny in the case of Mitsui Construction Co Ltd v. The Attorney General 1983. The case concerned the construction of water supply tunnels to Plover Cove. Because of difficult and unexpected ground conditions, the required quantities of temporary support and lining were much greater than in the Bills of Quantities. Instead of 40 tonnes of temporary support, about 3,000 tonnes was needed and instead of 275 metres of lining almost 2,500 metres was required. No variation was required for these increases. Although the engineer extended the time for completion for more than double the original contract period, no additional costs were allowed and the contractor commenced arbitration. The case ultimately went to the Privy Council and the contractor ultimately succeeded on getting a re-rating under what was then Clause 74 of the Hong Kong Government

1 The AA form of contract included the unforeseen ground conditions provision only since around the time of the contract for the midfield concourse about 5 years ago. It was therefore not present in the contracts for the construction of the airport in the 1990s. The Kowloon Cantonal Railway Corporation (now merged with the MTRC) Form of Contract also contained such a provision; see S Rae, ‘Tales of the Unexpected’ (2004) Building Law Journal Hong Kong-China.
2 Included as an optional provision in the General Conditions of Contract for Design and Build Contracts (1999) but very rarely used.
3 M Byrne, ‘Mediation of Disputes in the Hong Kong Construction Industry’ Dissertation for MA in Arbitration and Dispute Resolution, City Polytechnic of Hong Kong May 1994, p. 12.
5 (n. 7) p. 16.
Public Works Department 1977 Conditions. For present purposes, however, I want to refer to a much quoted extract from Lord Bridge’s opinion when dealing with what Mr Justice Rhind had referred to in his judgment at first instance as a contract of “fiendish complexity”:

“...if the contract documents were understood in the sense contended for by the Government, engineering contractors tendering for the work would have two options. They could either gamble on encountering more or less favourable ground conditions or they could anticipate the worst case and price their tenders accordingly. It is clear from what happened here that the worst case might double or more than double the time required to do the work with the consequent increase in the time-related costs. On this basis, tenderers gambling on favourable ground conditions would risk a large loss, while conversely, if all tenderers anticipated the worst case, but in the event reasonable conditions were encountered, the Government would be the losers. It follows that, if the Government are right, there is a large element of wagering inherent in this contract. It seems to their Lordships somewhat improbable that a responsible public authority on the one hand and responsible engineering contractors on the other, contracting for the execution of public works worth may millions of dollars, should deliberately embark on a substantial gamble.”

Leaving aside whether Lord Bridge’s remarks are justified, can it be the case that a tenderer would price a contract by assuming the worst case? If it did, and was lucky enough to win a competitive tender then it might be thought that it would be unlikely that any case would reach the courts or arbitration. In order to be successful in a tender, is it more likely that tenderers will price on the assumption of encountering more or less favourable conditions? In any event, it is in circumstances such as these where we usually find cases to consider. However, it will be seen later that the courts continue to consider that contractors should price for a worst case scenario.

In 1998, the Government employed a consultant, an American construction lawyer, Jesse Grove III, to review the balance of risk under the Government Form of Contract and when he produced his report, he stated that the Government “should accept risk of unforeseeable physical conditions” as they “are best borne by the party who gains the long term benefit of the project, namely the Employer.” When Henry Tang produced his “Construct for Excellence” report in 2001, one of his recommendations was that the Government should urgently reconsider Jesse Grove’s recommendations. In addition the Government appeared to be going down a course of re-introducing an unforeseen ground conditions provision as a result of a large arbitration on the Strategic Sewage Disposal Scheme (more of which later). The current position however is that the MTRC and AA Forms of Contract remain the only forms in Hong Kong adopting the unforeseeability test.

**ALTERNATIVE APPROACHES**

Given the allocation of risk in the Government’s contracts, in cases of catastrophic difficulties arising out of difficult ground conditions, contractors in Hong Kong were forced to consider alternative approaches to the unforeseeability test. Of course, the alternative approaches normally involve very difficult legal arguments. The alternative normally considered would be a claim in misrepresentation or that the adverse ground conditions require a variation. This would usually involve a suggestion that the employer has disclosed inaccurate site investigation materials or has failed to disclose accurate site investigation materials. Given the disclaimers usually encountered, I do not know of any successful claim in Hong Kong although there have been elsewhere. Sometimes the particular facts may present an opportunity to argue that an implied warranty has been given by an employer by the presentation of site investigation materials before tender

---

11 HCCLI/1983 unreported, para. 77.
14 Dillingham Construction Pty Ltd v. Downs (1972) 13 BLR 97.
17 See A Marriott (n. 9).
18 For example, see Dillingham Construction Pty Ltd v. Downs (1972) 13 BLR 97.
as in *Bacal v. Northampton Development Corp* but with most forms of contract this would be a difficult argument to say the least. Another possibility is to suggest that a contract has been frustrated. Again this is a very difficult and extreme example although might be possible even where, as with the Hong Kong Government Form of Contract, the contract contains a force majeure (or special risk) provision. At least, this has been held to be the position in Singapore.

Difficult arguments and alternative approaches are not new in Hong Kong. The 1908 case of *Lau Yeong Wood v. The Standard Oil Co of New York* concerned a contract for the construction of a sea wall and reclamation in Lai Chi Kok. During the construction a typhoon washed away part of the reclamation and a few months later the sea wall slid forward. The contractor had great difficulty rectifying this and was terminated by the engineer's delegate. Unfortunately for the engineer, there was no power of delegation in the contract and the termination was unlawful. Relying on *Bush v. Whitehaven* Trustees the Chief Justice held that where the circumstances contemplated by a building contract for works are so changed as to make the special conditions of the contract inapplicable, the contractor may treat the contract as at an end and recover upon a *quantum meruit*. This may have been the first case of commercial impossibility in Hong Kong although it was not argued on that basis. The judge was perhaps ahead of his time, in particular in identifying a particular approach to interpretation of construction contracts in Hong Kong, stating:

> “The contract contains a number of clauses, some of which are unintelligible even in English, and must be meaningless jargon when translated into Chinese. How is it possible to bind the contractor rigidly by the terms of that contract, and moreover to these terms as expounded and expanded by the English decisions? This does not mean that the contract is to be torn up, only that we must be a little more careful in endeavouring to ascertain the real intention of the parties.”

An alternative approach which has been successful in Hong Kong relates to Clause 15 of the Hong Kong Government Form of Contract which provides:

> “Save in so far as it is legally or physically impossible the Contractor shall execute and complete the Works in strict accordance with the Contract to the satisfaction of the Engineer and shall comply with and adhere strictly to the Engineer’s instructions on any matter related to the Contract whether mentioned in the Contract or not.”

A number of claims were brought forward against public procurers in Hong Kong in the 1990’s based on this and similar provisions. Some related to ground conditions, some related to difficulties in executing other works. The existence of these cases was alluded to by Jesse Grove in his report where he mentioned that given the allocation of risk of ground conditions to the contractor, contractors may attempt to pass back to the employer such risk “through a strained theory of impossibility”. Whether the theory is strained or not, I am aware of it being successfully deployed on a number of occasions. Indeed recently Sir Vivian Ramsey referred to these deployments as a result of the removal of the unforeseen ground conditions provision noting “*Hong Kong construction lawyers are probably the cleverest people in the world*” Given that Sir Vivian was involved in one or two of the Hong Kong impossibility cases Hong Kong construction lawyers cannot claim all the credit.

The Hong Kong impossibility cases are confidential decisions and details about them cannot be divulged save to the extent that such matters are within the public domain. The information I now provide is from documents in the public domain and in the written version of this presentation the source documents are cited. There are two cases I am aware of that concerned ground conditions. The first concerned a contract for improvements to the Tuen Mun Road in 1996. The dispute arising out of this contract resulted in a temporary binding mediation under the Hong Kong Government Design and Build Form of Contract (1993 Edition). This form of dispute resolution is no longer in any of the Government Forms of Contract. Essentially, it provides for a mini-trial or adjudication but referred to as a mediation where a decision is binding unless overturned in arbitration.

---

21 [1908] HKCU 6.
22 (1888) 52 J.P. 392.
23 (n. 21) p. 7.
24 (n. 21) p. 4.
25 Society of Construction Law Hong Kong One Day International Conference 2015: A Year of Reform for the Hong Kong Construction Industry? (Morning Session Close).
The dispute arose out of an incident on 18 August 1995 when a 10-15 tonne piece of rock fell from the slopes above the Tai Lam Section of Tuen Mun Road where the contractor was carrying out slope excavation. The boulder bounced off the lower part of the slope and landed in the middle of the Kowloon bound carriageway ending up in the fast lane, where tragically it was hit by a van. The driver was killed and his passenger injured.

Some weeks later the contractor served notice on the Government that on the basis of expert technical and legal advice parts of the works were impossible to construct in accordance with the contract requirements. The contract requirements which the contractor claimed were impossible to comply with essentially required the slope excavation works to be carried out with no closure to the road except in certain limited situations and secondly, of course, that the works should be carried out safely.

The case came before the mediator (who was a distinguished Queens Counsel and former High Court judge specialising in construction law) in May 1986 and he received representations from counsel as well as expert evidence and so the case was effectively an adjudication. The mediator decided that the contractor had made out his case and held that it was physically impossible to complete the part of the works concerned in strict accordance with the contract, particularly in relation to lane closures and safety of operation. The contractor was accordingly relieved of the obligation to complete those works. The Government decided not to pursue the case in arbitration.

The second case where physical impossibility arising out of ground conditions issues concerned a tunnel contract involving the Strategic Sewage Disposal Scheme in the late 1990s.27 This involved a tunnel contract where the ground conditions were not suited to the tunnel-boring machine used with the need for changes to the method of excavation.28 The contractor argued that water inflows into the tunnels made it impossible to complete the tunnels and stopped works. Eventually the Government forfeited the contracts.29 The contractor’s impossibility claims were arbitrated and most, but not all, of the claims failed.30 There may well be other impossibility cases. It would also appear that some of these cases have succeeded on the basis of what is referred to as “commercial impossibility”.

Physical impossibility is obviously an extreme remedy but where there is no alternative approach it can be of no surprise that a contractor might turn to such a claim where very difficult conditions occurred. It should also be borne in mind that physical impossibility is not restricted to something which is absolutely impossible according to the laws of nature.31 It may also encompass what is known as “commercial impossibility” where the cost or time required for completing the works is out of all proportion to what is contemplated by the contract. This doctrine is based on the principles laid down in Moss v. Smith,32 Tito v. Waddell,33 neither of which were construction cases but also in the construction case judgment of Sir William Stabb QC in a case decided in 1973, Turriff Limited v. Welsh National Water Development Authority.34 In this case the contractor was required to construct joints between rectangular pre-cast concrete segments of a sewer to an exacting one sixteenth of an inch tolerance. In construing clause 13 of the ICE form of contract the judge looked at the wider commercial context in which the contract was entered into and concluded that the achievement of such tolerance was practically or commercially impossible. The principles of commercial impossibility laid down in this case and other cases can be summarised as follows:

(a) Absolute impossibility is not required. Impossibility applies where it is impossible to comply with a contractual obligation “from a practical commercial point of view” or “on an ordinary commercial competitive basis”.35 It applies where the obligation is “outside the range of the practicable and reasonable”.

27 A Marriott (n. 8).
31 Such as in the case of Yorkshire Water Authority v. McAlpine (1985) 32 BLR 114. For a detailed analysis of physical impossibility see D Lewis (n.2).
33 [1977] 3 All E.R. 129.
36 For example Tito v. Waddell (n. 32).
For example, on the contractor by virtue of Clause 13. Sub-clause (1) is the deeming provision as regards the site conditions and sub-
of Contract for Civil Engineering Works and the MTRC and AA Forms of contract. As I mentioned earlier, the Government

THE SHARED RISK REGIME

In this section, I will consider the allocation of risk in some of the Hong Kong contracts; namely the Government Conditions of Contract for Civil Engineering Works and the MTRC and AA Forms of contract. As I mentioned earlier, the Government Form does not have an unforeseen ground conditions provision and most consider that it places all risk of ground conditions on the contractor by virtue of Clause 13. Sub-clause (1) is the deeming provision as regards the site conditions and sub-

No claim by the Contractor for additional payment shall be allowed on the ground of any misunderstanding in respect of the matters referred to in sub-clause (1) of this Clause or otherwise or on the ground of any allegation or fact that incorrect or insufficient information was given to him by any person whether in the

39 Parkman Consulting Engineers v. Cumbrian Industrials Ltd 78 ConLR 18 at 93-94; see also its reference in S Furst and V Ramsey, Keating on Construction Contracts (2016 10th ed Sweet & Maxwell) para 21-055.
40 J Grove (n. 14).
employ of the Employer or not or of the failure of the Contractor to obtain correct and sufficient information, nor shall the Contractor be relieved from any risk or obligation imposed on or undertaken by him under the Contract on any such ground or on the ground that he did not or could not foresee any matter which may in fact affect or have affected the execution of the Works.”

Clearly without an unforeseen ground conditions provision this clause makes any claim, outside the realms of misrepresentation, impossibility or other extreme remedy, implausible. It does not however expressly prevent the contractor from claiming an extension of time and if ground conditions are sufficiently difficult a claim for an extension of time might be allowed under the “special circumstances” ground.42 Given the wording of Clause 13(1) and in particular the words “could not foresee” a claim for an extension of time is almost certainly going to require a contractor to establish at least that the ground conditions complained of could not have been foreseen but even then it would be a question of whether the grant of an extension of time was relieving the contractor of an obligation under the contract or merely changing that obligation. In the Mitsui case the engineer awarded an extension of time of over 2 years under the special circumstances ground for adverse ground conditions. It is probably an underused provision because it does not carry with it any financial compensation.

Now I wish to explore some cases dealing with unforeseen physical conditions. First I should caution against a case which has been decided on the terms of one particular contract being relevant to questions arising out of a different contract. Some cases concern the ICE Form, some the FIDIC Form and some concern other contract forms. A consistent thread emerges in most of the Forms of contract. All of them include the deeming provision regarding site inspection followed by the unforeseen physical conditions provision. These provisions contain almost the exact same wording for the test of unforeseeability, illustrated by this extract from Clause 38 of the MTRC Form of contract:

“If however during the Execution of the Works the Contractor shall encounter within the Site physical conditions (other than weather conditions or conditions due to weather conditions) or artificial obstructions which conditions or obstructions he considers could not reasonably have been foreseen by an experienced contractor at the date of the Letter of Clarification.”

Cases on the ICE or FIDIC Forms of contract can of course provide guidance for matters under the MTRC and AA Forms of contract but each specific contract must be considered in its own context and wording to consider the degree to which a case on the ICE or FIDIC Form can provide guidance.

The unforeseen physical conditions clause has been in the ICE and FIDIC contracts for many decades and has been subject to scrutiny, both academic and judicial.

“Engineering arbitrators tend to construe the expression very generously in favour of contractors.....This attitude can be very unfair to more prudent contractors who price for such risks and in consequence lose the contract to less prudent or more litigious competitors.”43

Leaving aside the emotive question of fairness some points can be made about this provision. First the burden of proving a claim must rest with the contractor as the provision normally contains notification and substantiation or particularization requirements. Secondly the test of reasonable foreseeability is that of an experienced contractor, which is clearly a higher standard than an ordinary or reasonable one. Thirdly the contractor must prove not only that it would not have foreseen the physical condition taking into account the broad deeming provision but also that it should not have included the risk of encountering such condition in preparing its tender and programme. What therefore seems on first blush as an eminently claim friendly provision, from an employer’s point of view there are unlikely to be many types of physical conditions that are not foreseeable.44 After all the contractor, being an experienced one impliedly in the locale where the works are situated,45 will be deemed to have reviewed not only the information provided by the employer but also all other information readily available in respect of either the site or the assessment of the risks of adverse ground conditions.46

42 Clause 50(1)(b)(xi); see D Leung (n. 38) p.33, 95.
The has been very little case law on the physical conditions provision. There have however been some cases on what can constitute a physical condition and on what degree of foreseeability is required.

**PHYSICAL CONDITIONS**

**Humber Oil Terminals Trustee Ltd v. Harbour and General Works (Stevin) Ltd** is a 1991 case where in the construction of mooring dolphins and reconstruction of a berthing dolphin, a jack up barge was used equipped with a large crane, as sleeved by the contractor. During lifting the barge collapsed and this was due to a peculiar characteristic and interaction between what were a perfectly foreseeable soil type and the stresses applied in the lifting by the crane and barge legs. The contract was based on the ICE Form and the Court of Appeal agreed that the combination of stresses and soil conditions was a physical condition within the meaning of Clause 12 and the claim succeeded. This suggests that a physical condition can be unforeseeable even where the ground conditions themselves are foreseeable where the ground behaves in an unforeseeable manner. This decision has been criticised but is likely to be a very rare occurrence.48

However a similar case is **Associated British Ports v Hydro Soil Services and Dredging International (UK) Ltd**.49 In this case there was a contract (based on the ICE form of contract) for the strengthening of a sheet pile quay wall. Part of the works involved the installation of vertical grout anchors and whilst this was done the sheet piles buckled significantly. There was no suggestion that the ground conditions were not foreseeable only that for various reasons the buckling of the sheet piles was. The court found that the condition of the sheet pile wall and its associated structures were foreseeable and the claim failed.

In the Australian case of **Atlantic Civil Pty Ltd v. Water Administration Ministerial Corporation** the absence of suitable material and presence of unsuitable material in a borrow pit was held to be a physical condition for the purposes of a similar unforeseen ground conditions provision.

**Foreseeability**

In his 1991 book Max Abrahamson considers the provision in the ICE Form of Contract as ambiguous and states:

“If a claim excluded only if an experienced contractor could have foreseen that the conditions...must occur, or is it sufficient that he could have foreseen that there was a possibility, however remote, that the conditions might occur?

The mere fact that some risk of meeting the conditions was foreseeable can hardly be enough, since an experienced contractor will know that anything can happen, particularly in work underground. It is suggested that a claim is barred only if an experienced contractor could have foreseen a substantial risk.”51

Abrahamson’s idea of “substantial risk” appears to have come from the case of **CJ Pearce & Co Ltd v. Hereford Corporation**.52 John Uff, in his commentary in Keating, relies upon the same case for the view that no claim can be made if something could have been foreseen by an experienced contractor having access to all available sources of information as referred to in the deeming provision.53 He also considers that this must include the actual knowledge of the contractor even if that goes beyond what an experienced contractor would know, otherwise there would be recovery for conditions which the contractor foresaw and presumably priced for.54

The **CJ Pearce** case involved the laying of a sewer pipe to replace an old pipe under a contract based on the ICE Form. The “approximate” location of the old pipe was shown on tender drawings and it was accepted by witnesses on both sides that this meant that the pipe could actually be located 10-15 feet either side of the specified line. In excavating the pipe...

---

48 Akin Chambers, Hudson’s Building and Engineering Contracts (10th Ed, 2010 Sweet & Maxwell) para. 5-079-5-80; the decision is considered as “unconvincing” in N Dennys and R Clay (n. 45) p.697
50 83 BLR 113.
52 (1968) 66 L.G.R. 647.
was damaged but as it was actually within the accepted limits of the approximation the judge found that it was foreseeable within the meaning of clause 12. Whilst arguably Abrahamson’s “substantial risk” concept can be gleaned from this decision it is more difficult to justify Professor Uff’s conclusion from the report seen.

The next case I wish to refer to is the 1991 case of **Compagnie Interafricaine De Travaux v. South African Transport Services**\(^\text{55}\) in the Appellate Division of the Supreme Court of South Africa. This involved a contract for the construction of a long tunnel and contained very similar site inspection provisions to those in the ICE and Hong Kong Government forms of contract save that to the provision which states that no claim will be allowed for conditions deemed to have been assumed by the contractor was added: “except in the case of adverse sub-surface conditions which in the opinion of the engineer could not reasonably have been foreseen.” A geological report and core samples from a limited number of boreholes were made available to tenderers. The report contained an analysis of the quality of rock along the length of the tunnel. In particular almost 95% of the length was predicted to be very good to fair quality and only 2% was predicted to be fair to very poor quality. The evidence showed that the actual quality of rock encountered along the length of the tunnel was 36% of very good to fair and 35% fair to very poor. This was held by the court as being significant, was the only information available to the contractor at time of tender and therefore the actual conditions were not reasonably foreseeable. Given the significance of the difference in this case between predicted and actual the case does not throw a great deal of light on how to interpret the foreseeability test.

The next case I wish to explore is the case of **Obrascon Huarte v. Government of Gibraltar**\(^\text{56}\). This was a decision of Mr Justice Akenhead. Obrascon is a Spanish civil engineering contractor which was awarded a contract by the Government of Gibraltar for the construction of a road and tunnel under the runway of Gibraltar airport. The contract was based on a FIDIC Form and had a duration of two years but problems were encountered, in particular with difficult ground conditions primarily arising out of contaminated ground, and after two and half years with only 25% of the works completed, the Government terminated the contract. The underlying issue which would determine the termination issue was whether the extent and amount of contaminated materials in the ground to be excavated were reasonably foreseeable by an experienced contractor at the time of tender.

The contemplated materials encountered were substantial and voluminous causing the contractor to redesign the works and this gave rise to the extreme delays and ultimately the termination. The Employer’s requirements referred to the history of the site, starting as a racecourse and being developed as an airfield and shooting range. There was also reference to an environmental statement which stated that the risk of encountering contaminated soils was “low”. There was also made available to tenderers a site investigation report and a land desk study. There was also a requirement that tenderers should allow for 10,000m\(^3\) of contaminated land out of the 200,000m\(^3\) of material expected to be excavated. There was also a reference to “from initial study there appears to be little contaminated material.” Whilst therefore the documents suggested low levels of contamination, the environmental statement also stated:

> “Further unsuspected contaminated ground could be discovered during intrusive works, potential exposing ground workers to unacceptable levels of contamination.”\(^\text{57}\)

The Judge found that an experienced contractor would have been alerted by the warnings and would not have limited itself to the information in the tender documents. The 10,000m\(^3\) figure was no more than a “say” number. There was in any event a large amount which would be spread over the site rather than being in one particular area.

> “What was needed and could have been expected from experienced contractors was some intelligent assessment and analysis of why there was contamination there (namely the recent and less recent history) and therefore what the prospects of encountering more than had been unsurprisingly revealed by the pre-contract site investigation, even if it would be difficult to quantify. The very obvious questions which any experienced contractor asks and would have asked, in relation to what was in effect a brown-field site is: what was this site used for before? The answer broadly was and always would have been that the key part of the site (the tunnel area) was at the end of a runway and near a fuel farm on what had for many years been on extensive rifle range and therefore there would be an expectation of a very real risk that there could be extensive lead and hydrocarbon residues from these activities in the made ground.”\(^\text{58}\)

\(^{55}\) (1991) 4 SA 217.

\(^{56}\) [2014] EWHC 1028 (TCC).

\(^{57}\) Ibid para 206.

\(^{58}\) (n. 56) para. 213.
“I am wholly satisfied that an experienced contractor at tender stage would not simply limit itself to an analysis of the geotechnical information contained in the pre-contract site investigation report and sampling exercise.”\(^{(59)}\)

“I am satisfied that OHL, did not in fact encounter physical conditions in relation to contaminated soil over and above that which an experienced contractor could reasonably have foreseen by the date of submission of its tender. The primary contaminants encountered were lead and hydrocarbon, particularly PAHs, which were reasonably foreseeable at the date of tender as likely to be encountered particularly along the line of the tunnel and the tunnel ramps and within the made ground which extended down in places to over 5m below existing ground level. In terms of quantities of contaminants to be foreseen, it is difficult to put any precise figure on what should have been foreseen but in my judgment the amount would be very substantially above 10,000m\(^3\).”\(^{(60)}\)

The contaminated materials were therefore foreseeable and the termination justified. Obrascon appealed unsuccessfully to the Court of Appeal although the court did not give any fresh or different guidance on the application of the foreseeability test.\(^{(61)}\)

Two major principles flow from this case. First, a tenderer should not confine itself to consideration of the materials made available to it as part of the tender documents. This can be easily justified as the foreseeability test is of an experienced contractor and it is probably implied that that experienced contractor is experienced in the locale of the works. An experienced contractor would therefore not limit itself to the no doubt limited site investigation material but would either have knowledge or would find out about the site topography, geology and usage. As stated by the judge following the judgment: “Of course, courts and arbitrators will have regard to the practicality of tenderers obtaining such information but, where much of that information is actually provided and referred to in the tender documentation, proving an unforeseeability claim may prove difficult. Most civil engineering tenderers are aware that boreholes and trial pits only sample what is within the 100 mm or 150 mm tube or 2 or 3 m trial pit. Particularly in made or contaminated ground, it is difficult to extrapolate what may lie between the boreholes and pits. It is easier to extrapolate in relation to the natural ground profiles of the underlying soil or rocks.”\(^{(62)}\)

Secondly, a tenderer who appreciated a risk, in this case of contaminated land, would price its tender on the basis of the worst-case scenario. This is probably the most controversial aspect of the decision (as supported on appeal) as if a contractor prices a risk on the basis of the worst-case scenario,\(^{(63)}\) there cannot be a claim when that worst-case scenario eventuates. The key in this analysis is therefore the risk itself. If the risk is something that a contractor foresaw or should have foreseen, he will be deemed to have priced that risk on the basis of the worst-case scenario. This might of course mean either that contractors will be assuming a larger risk of physical conditions than they believe or that employers will be paying higher contract prices and in many cases where the worst-case scenario does not eventuate. Nevertheless the case still leaves open the question of what risk must be assumed. Abrahamson’s “substantial risk” therefore is still a possible test and whilst the Obrascon judgment does not address the degree of risk necessary, there would certainly appear to have been a substantial risk of contaminated materials.

There has not been much in the way of academic critique of this case so far.\(^{(64)}\) It appears to have so far missed the attention of the commentator of the latest edition of Keating. Hudson’s however state:

“The decision is salutary for contractors seeking to avoid the consequences of underpricing the work by making over-optimistic assumptions as to the general conditions likely to be encountered as a reminder that they should carry out a realistic independent investigation of the likelihood of adverse ground conditions based on all the available site conditions. Where there is a range of possible outcomes, Contractors will be expected to consider the worst case scenario in deciding on their pricing and proposed methods of executing the works.”\(^{(65)}\)

\(^{(59)}\) (n. 56) para. 215.

\(^{(60)}\) (n. 56) para. 227.

\(^{(61)}\) [2015] EWCA Civ 712.


\(^{(63)}\) In dismissing Obrascon’s appeal Jackson LJ seemed to approve of Akenhead’s formulation of ‘The contractor needed to make provision for a possible worst case scenario’. (n. 61) para. 94.

\(^{(64)}\) See for an analysis of the case see D Carrick, ‘Foreseeing the unforeseeable’ Chartered Institution of Civil Engineering Surveyors, Construction Law Review 2016.

\(^{(65)}\) N Dennys and R Clay (n. 45) p. 696.
The second recent case I want to mention is a decision of Mr Justice Coulson in *Van Oord UK Ltd v. Allseas UK Ltd.* This case concerned the construction of a Gas Pipeline in the Shetlands. One of the claims was for unforeseen ground conditions because certain conditions were different to that suggested in the site investigation at pre-contract stage. In rejecting the claim, the Judge stated:

"On analysis, and leaving aside the difficulty that OSR never actually reviewed the ground conditions and the method of working on the Southern section as they went along, OSR's claim is based on the fundamental misassumption that they were entitled to treat the Mackintosh probe results as some sort of guarantee, such that any deviation whatsoever from those results gave rise to a claim under Article 12.2.3. That is not so. Contractors are provided with all available information as to ground conditions, but ultimately it is a matter for their judgment as to the extent to which they rely upon that information. In my view, it is wrong in principle for a contractor to argue that, merely because, in some particular locations, the conditions were different to those set out in the pre-Contract information, those different conditions must somehow have been unforeseeable.

Although that view is confirmed in the Obrascon judgments, I do consider it to be commonsense. Every experienced contractor knows that ground investigations can only be 100% accurate in the precise locations in which they are carried out. It is for an experienced contractor to fill in the gaps and take an informed decision as to what the likely conditions would be overall. Here, OSR quite properly assumed that there would be variable layers of peat, and some deep pockets of peat. They were right to do so. In my judgment, they cannot now make a claim because, putting their case at its highest, they were some more deep pockets of peat in the Southern section than were shown in the Mackintosh probe results. They could reasonably have been expected to assume that there could well be more, or different, such pockets of peat in the ground."

Whilst this case does not go so far as to repeat the Obrascon ratio that a contractor should price for the worst case scenario based on the available information, it certainly is consistent with the ratio that a contractor should make his own investigations and interpretation. Some justification for the worst-case scenario ratio might however be found in one of the criticisms of the provision. As Duncan Wallace put it: "experienced contractors who foresee such a risk as probable, and price accordingly, lose the contract to the lowest prices of rash or inexperienced contractors who will be bound to litigate to extricate themselves from the financial difficulties involved or, worse still, to a class of contractor whose main skill lies in the successful advancement and prosecution of this type of claim." The provision therefore results in a tender based on the, in his words: "best possible scenario". The adverse ground conditions provision is a risk sharing provision not one that should be considered by contractors as always being there to get them out of a hole, as it were. As Abrahamson has stated: "The clause is, however, carefully limited, and it should not be read by the contractor, the engineer or an arbitrator as giving carte blanche to claim or award extra payment whenever the contractor loses out on a calculated risk." If the Obrascon ratio is correct, much of the uncertainty apparent on the face of the unforeseen ground provision is removed.

**Geotechnical Baseline Reports**

Whilst again cautioning about relying upon the applicability of cases dealing with different forms of contract and that it is obvious that ground conditions cases each have their very different facts, nevertheless these cases give some guidance on the interpretation of the test for unforeseen physical conditions, whether it be in the ICE form, FIDIC, the NEC or the MTRC and AA Forms. However the MTRC adopt a Geotechnical Baseline Report ("GBR") method so it might be that the relevance of these cases might be called into question so far as the MTRC Form is concerned.

---

68 For a more detailed critique of the provision, as found in FIDIC, see N Bunni, *The FIDIC Forms of Contract* (3rd Ed Blackwell) p. 311-315.
72 For a discussion about the value of GBRs, as they are used in Hong Kong, see J Longbottom, ‘Geotechnical Baseline Reports – Their Use & Abuse in Hong Kong’ ADR Digest, issue 13 Spring 2011.
The MTRC provide a GBR with the tender documents. In broad terms the GBR is a report by the MTRC’s consultants about the geotechnical conditions expected at the site. It will usually refer to all the sources of information, including the specific site investigation materials for the contract under tender. It also contains one specific section which contains what it calls Baselined Parameters (“Baselines”).

The contractual significance of the GBR is dealt with in the Particular Specification and broadly the important principles are:

(a) The Baselines are “an” interpretation of geological conditions that may be encountered, not necessarily the only interpretation. Of course the MTRC and their geotechnical consultants can take a view on what they wish to baseline and the form those Baselines take.

(b) The contractor is deemed to have taken into account the Baselines in his tender.

(c) Where the Baselines address the geotechnical parameters on which a claim is based, they will be the starting point and taken into account by the Engineer when considering whether particular conditions could reasonably have been foreseen.

(d) Where the Baselines do not address the geotechnical parameters on which a claim is based then the Engineer will consider whether particular conditions could reasonably have been foreseen in the normal way taking into account of the full range of information available to the contractor and knowledge an experienced contractor would be expected to have.

(e) The Baselines are only included in the contract for the purposes of claims and the contractor must not use the Baselines in either his design or execution of the works and must make his own assessment and interpretation of geological conditions.

Where therefore the contractor is able to make a claim based on actual conditions being different from the Baselines, he will prima facie have a claim under Clause 38, the unforeseen ground conditions provision. However such difference is not an automatic valid claim as the Engineer is directed only to take such difference into account in his assessment under Clause 38. If the difference in conditions is small or does not impact on the contractor in terms of time, method or cost then a claim would not be justified despite the difference between actual and Baselined conditions. Clearly, the guidance given in the judgments I discussed earlier is not going to be as significant in the case of a Baseline claim.

However where the contractor has a claim which is not based on a difference with any Baseline, a Clause 38 claim reverts to the usual position and in that case the guidance given by the cases is of relevance.

As MTRC’s contracts provide for arbitration we may never receive judicial clarification of precisely how the Baseline machinery works. Whilst the Baseline concept is one with obvious attractions for both MTRC and contractors, applying and using the baselines is not always straightforward and without controversy. With GBRS prepared by different engineers using differing approaches and parameters it might be unwise to consider the Baseline approach as creating a unified level playing field across all the MTRC portfolio of contracts. Care is always needed when studying the Particular Specification and GBR when tendering any contract. There is a world of difference, for example, between baselining the total quantities of different types of rock and soil expected to be excavated and baselining some of the geological qualities of the rock and soil but leaving the tenderers to evaluate the quantities risks.

© September 2016

The views expressed in this paper are those of the authors alone, and do not necessarily represent the views of the Society of Construction Law Hong Kong.

The discussion set out above is a general one and should not be relied upon in place of legal advice specific to the facts of any case. The author accepts no liability for any such reliance.
The MTRC provide a GBR with the tender documents. In broad terms the GBR is a report by the MTRC's consultants about the geotechnical conditions expected at the site. It will usually refer to all the sources of information, including the specific site investigation materials for the contract under tender. It also contains one specific section which contains what it calls Baselined Parameters ("Baselines").

The contractual significance of the GBR is dealt with in the Particular Specification and broadly the important principles are:

(a) The Baselines are "an" interpretation of geological conditions that may be encountered, not necessarily the only interpretation. Of course the MTRC and their geotechnical consultants can take a view on what they wish to baseline and the form those Baselines take.

(b) The contractor is deemed to have taken into account the Baselines in his tender.

(c) Where the Baselines address the geotechnical parameters on which a claim is based, they will be the starting point and taken into account by the Engineer when considering whether particular conditions could reasonably have been foreseen.

(d) Where the Baselines do not address the geotechnical parameters on which a claim is based then the Engineer will consider whether particular conditions could reasonably have been foreseen in the normal way taking into account of the full range of information available to the contractor and knowledge an experienced contractor would be expected to have.

(e) The Baselines are only included in the contract for the purposes of claims and the contractor must not use the Baselines in either his design or execution of the works and must make his own assessment and interpretation of geological conditions.

Where therefore the contractor is able to make a claim based on actual conditions being different from the Baselines, he will prima facie have a claim under Clause 38, the unforeseen ground conditions provision. However such difference is not an automatic valid claim as the Engineer is directed only to take such difference into account in his assessment under Clause 38. If the difference in conditions is small or does not impact on the contractor in terms of time, method or cost then a claim would not be justified despite the difference between actual and Baselined conditions. Clearly, the guidance given in the judgments I discussed earlier is not going to be as significant in the case of a Baseline claim.

However where the contractor has a claim which is not based on a difference with any Baseline, a Clause 38 claim reverts to the usual position and in that case the guidance given by the cases is of relevance.

As MTRC's contracts provide for arbitration we may never receive judicial clarification of precisely how the Baseline machinery works. Whilst the Baseline concept is one with obvious attractions for both MTRC and contractors, applying and using the baselines is not always straightforward and without controversy. With GBRs prepared by different engineers using differing approaches and parameters it might be unwise to consider the Baseline approach as creating a unified level playing field across all the MTRC portfolio of contracts. Care is always needed when studying the Particular Specification and GBR when tendering any contract. There is a world of difference, for example, between baselining the total quantities of different types of rock and soil expected to be excavated and baselining some of the geological qualities of the rock and soil but leaving the tenderers to evaluate the quantities risks.