

立法會

公營房屋建築問題專責委員會

第二十一次研訊的逐字紀錄本

日期： 2001年9月13日(星期四)

時間： 下午2時30分

地點： 立法會會議室A

出席委員

劉健儀議員, JP (主席)

何俊仁議員(副主席)

何鍾泰議員, JP

李卓人議員

呂明華議員, JP

陳婉嫻議員, JP

陳鑑林議員

黃宜弘議員

楊孝華議員, JP

鄧兆棠議員, JP

石禮謙議員, JP

麥國風議員

劉炳章議員

余若薇議員, SC, JP

缺席委員

涂謹申議員

證人

公開研訊

第一部分

前房屋署高級助理署長(新發展工程)
潘承梓先生

第二部分

安誠工程顧問有限公司代表
高華先生
梁國堯先生

Legislative Council

Select Committee on Building Problems of Public Housing Units

Verbatim Transcript of the Twenty-first Hearing
Held on Thursday, 13 September 2001, at 2:30 pm
in Conference Room A of the Legislative Council Building

Members present

Hon Miriam LAU Kin yee, JP (Chairman)
Hon Albert HO Chun-yan (Deputy Chairman)
Ir Dr Hon Raymond HO Chung-tai, JP
Hon LEE Cheuk-yan
Dr Hon LUI Ming-wah, JP
Hon CHAN Yuen-han, JP
Hon CHAN Kam-lam
Dr Hon Philip WONG Yu-hong
Hon Howard YOUNG, JP
Dr Hon TANG Siu-tong, JP
Hon Abraham SHEK Lai-him, JP
Hon Michael MAK Kwok-fung
Hon LAU Ping-cheung
Hon Audrey EU Yuet-mee, SC, JP

Member absent

Hon James TO Kun-sun

Witnesses

Public hearing

Part I

Mr Stephen POON Sing-chi
Former Senior Assistant Director/New Development
Housing Department

Part II

Ir Alan CLOVER
Ir Rupert LEUNG Kwok-yiu
Representatives of Hyder Consulting Limited (formerly known as Acer
Consultants (Far East) Limited)

主席：

歡迎各位出席公營房屋建築問題專責委員會的公開研訊。

我想提醒各位委員，整個研訊過程必須有足夠的法定人數，即連主席在內共5名委員。此外，我亦想提醒出席今天研訊的公眾人士及傳媒，有多宗法院的待決案件，案情可能觸及部分委員會現正調查的事件。而在研訊過程以外場合披露研訊上提供的證據或將會在研訊上提供的證據，將不受《立法會(權力及特權)條例》所保障。因此，如有需要的話，傳媒及公眾人士應就他們的法律責任徵詢法律意見。

今天的研訊分兩部分。委員會首先會繼續向前房屋署副署長(工務)潘承梓先生就天水圍第31區第一期的地基工程錄取證供。取證之後，研訊會進入第二部分，委員會將向安誠工程顧問有限公司的代表取證。安誠工程顧問有限公司曾為天水圍第31區第一期進行探土及地基研究工作。

現在進入研訊的第一部分，請證人潘承梓先生進來。

(潘承梓先生進入會議室)

潘先生，多謝你再次出席本專責委員會的研訊。我想提醒你，你是繼續在宣誓下作供的。

在2001年9月11日的研訊上，有5位委員已舉手但尚未提問，我首先邀請他們提問，然後才邀請其他委員提問。這5位委員依次是：

- (a) 劉炳章議員；
- (b) 麥國風議員；
- (c) 何俊仁議員；
- (d) 李卓人議員；及
- (e) 何鍾泰議員。

首先請劉炳章議員。

劉炳章議員：

多謝主席。我想提問有關SC1-H0102號文件，文件內容是有關分判制度的……

主席：

潘先生，你有這份文件嗎？SC1-H0102號文件。

劉議員，你可以開始提問。

劉炳章議員：

文件內容是有關分判制度。在6月份的研訊上，專責委員會曾詢問分判制度有否規限總承包商作出分判的情況，當時委員會得到的答覆是，就打樁工程而言，只可以有一層分判，不可多於一層的分判。我現在針對打樁工程的分判情況，請問潘先生，房署在分析標書時，有否要求最低標價的3位承建商提供如何分判和分判予哪些分包商的資料？

主席：

潘先生。

前房屋署高級助理署長(新發展工程)潘承梓先生：

主席，如果負責打樁工程的公司認為需要將部分打樁工程分判給其他公司，他們必須告知房署。

主席：

劉議員。

劉炳章議員：

你們有否在評審標書時，向最有機會獲取合約的幾間公司詢問有關如何分判工程的問題？還是在承建商取得工程合約後，才要求他們提供分包的細節呢？

主席：

潘先生。

潘承梓先生：

主席，我相信兩種情況也會出現。我們會在承建商入標時瞭解情況；以及在他們取得合約後，但在施工之前詢問有關情況。

劉炳章議員：

針對這項工程，你們是在批出合約之前或之後詢問承建商，還是在兩段時間都曾提出詢問？

潘承梓先生：

關於這項工程的細節，我相信要向當時負責處理有關結構工程事宜的同事查詢。

劉炳章議員：

請問潘先生本人在分析標書之後及把文件提交建築小組委員會之前，曾否看過有關文件及特別留意該範疇的事宜呢？

主席：

潘先生。

潘承梓先生：

主席，我忘記了當時曾否發生這樣的情況。如果是……

劉炳章議員：

但一般來說，會有這樣的情況嗎？

潘承梓先生：

就一般而言，如果同事在處理標書時發覺有任何特別情況，會在提交建築小組委員會的文件中提出。

主席：

我們想清楚知道，在評審承建商的標書時，你們是否已知道工程將會分判予哪些分判商？承建商需要提供分判商的名稱是否一項既定的規定？還是沒有任何規定，他們可以自行決定是否提供資料？現在我們對有關情況不大清楚，你們要求他們提供資料，但在哪一個階段進行呢？

劉炳章議員：

這是否既定的……

主席：

是既定的程序嗎？他們是否必須在入標時向房署提供有關公司的名稱呢？

潘承梓先生：

主席，我現在是憑記憶回想當時的程序。我們沒有規定承建商在入標時必須提供分判商的名稱。但承建商如在施工前把工程分判予其他公司，便必須告知房署。

主席：

OK。

劉炳章議員：

潘先生，無論你們是在評審標書時還是在投標者中標後才要求提供詳細的分判資料，你們有否規定他們所提供資料的內容？例如分判予哪些人及如何分判：只分判工、分判料，抑或分判包工料？有否限制分判一層後不能進行再分判？有否指定他們向哪些供應商取得原材料？

主席：

潘先生。

潘承梓先生：

我們要求承建商在施工前呈報地盤的組織圖及執行工程的有關人員名單，在名單中，我們可以看到承建商有否打算把部分工程分判予其他承建商，如有的話，我們會要求他們提供進一步的資料。

劉炳章議員：

資料中有否說明分判情況？如只分判工，還是分判工料？有些分判工程可能是承建商提供材料，而分包商純粹提供勞動力，這是第一種分判方法；第二種分判方法是連工包料；第三種方法

是包工、包料及包機器；此外，更有一種方法是包工、包料、包機器及包管理。分判方法也有很多形式。

主席：

潘先生。

潘承梓先生：

據我瞭解，承建商不能把全部工程分判予分包商，我們不容許total subletting的做法，不過，把工程的其中一部分判予熟悉的分包商，則是容許的做法。

劉炳章議員：

在分判方法中，你們有否規定承建商的分判範圍不能包工料及機器呢？

潘承梓先生：

沒有。

劉炳章議員：

主席，我想繼續跟進。在評審首數名承建商的標書時，如果你們沒有規定承建商提供分包商的資料，則會出現一種情況，就是各投標商均打算延聘同一名分包商。如果沒有這項規定，你們如何監控該數名投標商都打算延聘同一名分包商，並在計算價錢時，僅在管理及利潤方面作出自己的預算，便向房署提交標書？在這情況下，你們收到的標書可能並非真正具競爭力的標書，而且可能出現下列情況，第一，圍標行為；第二，如果該分包商本身沒有能力……

主席：

讓潘先生回答吧。

劉炳章議員：

好。

主席：

潘先生，你講出事實便可以了。

潘承梓先生：

首先，我們不容許total subletting。第二，我們只是與承建商簽署合約，所簽訂的合約沒有規定工程分判予哪些分包商。第三，這不單是房署的做法，我相信其他政府工程及私人工程也沒有要求承建商指定由哪些分包商承辦部分工程。

劉炳章議員：

主席，我相信打樁工程與一些普通的上蓋工程明顯不同之處，是打樁工程的技術性要求相當高，如果分包商沒有具體.....

主席：

劉議員，我們不要討論這問題了。也許我們問潘先生，在他的記憶中，處理天水圍第31區第一期地基工程所採用的程序吧？你還想提出這方面的問題嗎？

潘先生似乎還未有回答你剛才提出的其中一項問題，是有關如何監控承建商的分判情況？潘先生曾經提及從名單中可知悉是否有分判工程的情況。請問除了名單外，是否還有其他文件可以顯示或向你們報告其分判方法呢？還有其他方法監控承建商不能將全部工程分判，或不能超過一層分判嗎？

潘承梓先生：

我們可以在地盤組織圖看到，如果建築商把部分工程交給其他人士處理，便須在組織圖表中顯示。

主席：

圖表會顯示分判予某公司，但有否提供分判的性質呢？劉議員剛才提到不同形式的分判方法，那麼你瞭解分判情況的程度為何，還是無須你瞭解這方面的情況？

潘承梓先生：

據我記憶，我們沒有要求總承建商提供太多有關這方面的資料，我們只是要求一般性的資料。如果他們把工程分判予其他公司，他們必須告知房署。

劉炳章議員：

那麼你們如何監控沒有分拆第二層、第三層或第四層分判呢？你們如何監控分包商在技術、財務及管理等方面的能力呢？

主席：

潘先生。

潘承梓先生：

主席，我們主要是監察總承建商，他們是否具有財力及能力承辦這項工程，至於承建商把合約哪一部分的工程分判予哪些公司，這是該公司內部的事務。

劉炳章議員：

主席，潘先生的意思是不會監管分包商，是嗎？

主席：

是，這是他的答案。

劉炳章議員：

潘先生還未回答我另一項問題。如果在評審標書階段你沒有要求出價最低的首3名投標者提供分包商的資料，你如何知悉首3名投標商並非延聘同一名分包商呢？如果是同一名分包商，不管其日後的表現是優是劣，這樣也是遭人圍標。你如何保證沒有圍標的情況？如果這3、5名投標商都延聘同一名分包商，分包價錢當然相同，差別只在於個別投標商賺取不同的管理費和利潤。假如分包商日後的表現很差劣，則無論哪一名投標商中標，都同樣會出現問題，可能工程不能完成或有人失蹤。請問你在事前有否設立監控制度呢？這是質量保證的一種.....

主席：

潘先生，你剛才是否提到不容許出現劉議員所描述的情況？如果不容許這情況，有甚麼機制可確保這情況不會發生呢？

劉炳章議員：

有甚麼方法或機制呢？

主席：

如果你們不介意5份不同的標書出現同一間分包商，便無須任何機制，但如果不容許出現這情況，你們又有何機制可以防範呢？

潘承梓先生：

我們沒有這種機制，我相信全港也沒有這種機制。其實劉議員的問題牽涉一般出現在分包制度之下的問題。我在先前的研訊中曾表示，我們只監察在名冊上總承建商的工作表現。我們清楚瞭解總承建商的資料、財政狀況和工作表現，我們有這些資料。但承建商分判工程予規模較小的公司，關於這些分包商的資料，我相信全港也不可能有一份包括小規模分包公司的名冊，並長時間監察他們的表現和曾參與的工程項目。

主席：

我們只須知道房署實際上是否有這機制便可以了。

劉議員。

劉炳章議員：

主席，請潘先生翻閱剛才提及的文件，是SC1-H0102號文件第二頁，當中載述打樁工程的分包只可以有一層分包，而且分包商必須在批准的名單內，他剛才指沒有這份名單，他所說的與文件內容並不相符。文件的(a)(i)段說明分包商必須在批准的名單上。

主席：

是。

劉炳章議員：

我想指出，他所說的與文件所載有出入。此外，另一項問題是有關天水圍……

主席：

請先讓潘先生回應這一點。在我印象中，潘先生回答時表示沒有規定不能有相同的分包商……

劉炳章議員：

他說沒有這份名單，全港也沒有這份名單。

主席：

潘先生，你想澄清嗎？

潘承梓先生：

這是部門提供的文件，請部門解釋這一點吧。據我記憶，是沒有這樣的approved list。

主席：

那麼，不要在這一點上爭論了。

劉炳章議員：

不再爭論了。最後一項問題，負責天水圍打樁工程的分包商曾否遭房署除名、紀律處分或警告呢？我指分包商，不是大判。根據這份文件Page 2第(b)段，合約賦予Contract Manager權力解僱不符合要求的分包商，請問負責天水圍打樁工程的分包商或天水圍打樁工程的任何一名分包商曾否被房署紀律處分、除名、罰款或扣分？

主席：

潘先生，你有這方面的資料嗎？

潘承梓先生：

對不起，我不知道這方面的情況。

主席，我看過文件後，發覺部門提供的文件，內容不單涉及打樁工程，而亦牽涉building and piling works，那麼，subcontractors' list可能是指在building contract內的subcontractors' list。

劉炳章議員：

不是。主席，對不起，我想說的是(a)(i)段，(a)(i)段說明的是piling contractor.....(a)(i)段說明打樁分包不可以外判超過一層。

潘承梓先生：

據我理解，在某些情況下，在總承建商建造上蓋的building contract內，我們會要求該承建商連地基一併建造，即整份合約包括地基和上蓋工程。在這情況下，我們為總承建商提供的資料包括piling contractor的list在內。建造地基工程的部分可能是以分判的形式進行，即總承建商在合約內把建造地基的工作分判給另一間打樁公司。據我理解便是這樣，也許這點須由部門澄清。

主席：

OK。

劉炳章議員：

我想問最後一個問題。在這項打樁工程中，有沒有分包商曾被房署.....

主席：

潘先生已經回答了。

劉炳章議員：

他已回答了？

主席：

他已回答了，他不知悉.....

潘承梓先生：

據我所知，我們沒有一份有關分包商的名冊。

主席：

不，他的問題是有沒有分包商被除名或……

劉炳章議員：

分包商在具體項目中被除名、紀律處分或扣分等……

主席：

潘先生的答案是不知悉，對嗎？

潘承梓先生：

我們沒有監察分包商的名冊，我們根本沒有名冊可藉以監察他們的工作表現。

劉炳章議員：

為何沒有呢？

潘承梓先生：

我相信不單房委會沒有這名冊，全港也沒有這名冊。

主席：

潘先生堅持他先前的答案。或許稍後我們向房署詢問是否有該份名冊，好嗎？麥國風議員。

麥國風議員：

多謝主席，我的問題是有關房屋局曾經提交立法會房屋事務委員會的公開文件……

主席：

文件的編號是甚麼？

麥國風議員：

編號是SC1-H0017……不知道潘先生有沒有這份文件？

主席：

OK，潘先生是否有該份文件？SC1-H0017號文件。

麥國風議員：

是房屋局提交立法會的文件。

潘承梓先生：

對不起，首先我想問我可否看這份文件？因為這是紀律小組的文件.....

主席：

可以，這不是紀律小組的文件，這是一份公開的文件，是房屋局提交立法會的.....

麥國風議員：

是向房屋事務委員會提交的。

主席：

提交房屋事務委員會的文件。

潘承梓先生：

但立法會以外的人士能否看這份文件？

主席：

這是一份公開文件，你是可以看的，潘先生。

麥國風議員：

潘先生，文件第10至15段。內容主要講述調查小組經研究所得證據後，發現主要是兩個原因導致地基出現問題，第一是不符合標準，第二是監管不足，包括房署職員監管不足。我想問潘先生對這方面有何意見？

主席：

麥議員，潘先生出席研訊是為了提供他所知道的事實。你現在詢問他的意見……

麥國風議員：

我想問他本人是否認為監管不足。因為他曾經是……

主席：

是否監管不足的問題正是我們現正進行調查的範疇，潘先生的個人意見並非我們需要索取證供的一部分。我們需要索取資料並作出是否監管不足的結論。或許你先修訂問題再作提問，好嗎？

麥國風議員：

OK。

主席：

我認為最好不要問潘先生或任何證人的個人意見，應該向他們問及事實，即他們知識範圍內的事實，這才是我們需要尋求的資料。

麥國風議員：

潘先生，調查小組曾否與你會面？

潘承梓先生：

沒有。

麥國風議員：

沒有。另外，第12段提到房署需要遵守一些工作手冊。你是否知悉這些是怎樣的工作手冊？

主席：

潘先生。

潘承梓先生：

主席，我們有很多不同的工作指引和手冊，我相信部門已向小組提交。

麥國風議員：

可否講述有哪些工作手冊？你自己是否知道有哪些手冊？

潘承梓先生：

包括ISO 9000、Consultant Management Manual、結構工程師的Checking Procedures。

主席：

好。

麥國風議員：

另外，第15段提到調查小組建議考慮紀律研訊有關事件中4名職員。你是否知悉是哪4名職員？

主席：

麥議員，這些資料也不需要從潘先生方面得知。有關紀律研訊或有關方面的事項都不屬我們的調查範圍。

麥國風議員：

我沒有其他問題。

主席：

謝謝你。何俊仁議員。

何俊仁議員：

多謝主席，我想問潘先生，以你記憶所及，是否所有有關地樁工程的合約都採用不需討論的議程予以通過？如果情況並非如此，哪些採用需要討論的方式？哪些採用不需討論的方式？

主席：

潘先生。何議員的意思是指提交建築小組委員會的文件。

何俊仁議員：

對，對不起，是指建築小組委員會。

潘承梓先生：

主席，我曾在上次研訊中作出解釋，有關我們提交建築小組委員會進行討論或不討論的文件分為3大類。第一類是presumption paper，這類文件很簡單，不需作出討論，也不用提交建築小組委員會會議。第二類文件是需要進行討論的，每月的建築小組委員會會議詳細介紹有關文件，並且在會內進行討論。第三類介乎兩者之間，從96年開始引進有關係統，是為順應當時建築小組委員會的要求，當時建築小組委員會表示有太多文件，引致他們開會的時間太長。這類文件包括一部分打樁工程的投標建議書。我不清楚自96年開始實行這制度後，是否有打樁工程需要討論。我相信有這種情況，因為有比較複雜的個別情況，是需要在開會時討論的，至於這類文件的數目，則須由部門提供資料。

主席：

在上次研訊中，你給予我們的答覆是，絕大部分地基工程的投標文件都不予討論，當然你說有些很特別的文件，便需予以討論。我想何議員的問題是，為何你們不討論這些文件呢？你說除非有委員要求討論，你們才會討論，否則便獲得通過，不需進行討論。我們對你的答案所理解的便是這樣。但為何你們認為這些打樁工程的投標文件可採用這種方法處理，不需小組委員會必然地予以討論呢？

潘承梓先生：

主席，據我記憶，我們在96年開始實行這制度前，曾向建築小組委員會提交一份文件，表示應該怎樣分為兩組、劃分的準則為何等，我們曾有一份文件就此作出清楚的交代。或許請部門提供這份文件……

主席：

何議員。

何俊仁議員：

我看過有關審批天水圍第31區的建築合約的文件，你們列出最低價錢的3份標書，似乎焦點都集中在價錢，你們也列出樁柱的長度，但似乎這點並沒受到特別注意。現在請你作出評估，倘若當時的顧問工程師把最新資料納入文件內，即包括不會進行預鑽，甚至提供有關把樁柱長度縮短至22米等資料，這份文件是否都會屬straightforward的文件，不會進行討論？

主席：

潘先生。

潘承梓先生：

向建築小組委員會所提交有關打樁工程的文件中，除了包括工程的價錢外，我們會把技術報告一併納入文件內，也會向建築小組委員會提交採用某類樁柱和其深度的資料，並包括結構工程師的評估，即結構工程師表示這間建築公司的建議是否適合、可行。

主席：

何議員。

何俊仁議員：

換言之，當天的日期是19.....也許日期已不重要。在通過這份合約時，如果由建築工程師提供全部最新資料，你作為預備或預批這份文件的官員，你應看過所有有關報告。在這情況下，你也覺得毫無疑問可把文件視作straightforward的文件，不需加以討論，是否這樣？

主席：

潘先生。

潘承梓先生：

主席，向建築小組委員會正式提交這份文件的開會日期是96年8月22日。通常是在星期四開會，而開會前約10日，即前一個星期的星期一，我們會在星期一例會中審閱所有草稿，並在會上決定哪些文件需要討論，哪些不需討論。與會人士包括負責草擬這

些文件的總結構工程師或助理署長在內。我們參考他們的意見後，按這些文件的複雜性而決定是否需要討論。

主席：

何議員。

何俊仁議員：

主席，據你所說，在預批文件時，你應該與總結構工程師和有關助理署長(即你在上次研訊中提及的陳先生)進行討論，他們清楚地向你表示由38米縮短至當時計劃的26米也沒有問題。如果屬實，你是否知悉他們曾進行有關的計算工作，還是他們純粹接受顧問工程師的意見呢？

主席：

潘先生。

潘承梓先生：

主席，我想提出兩點。第一，在上次研訊後，我曾翻查紀錄，在討論這份文件的星期一例會，當時陳季龍先生可能正在放假，由何樹基先生代表他開會，何樹基先生是總結構工程師。

主席：

那麼你能否回答.....

潘承梓先生：

第二，我再查看該次星期一例會的會議紀錄，並沒有就這件事提出任何特別事項。

何俊仁議員：

潘先生，你曾否留意樁柱的長度縮短了？你們的估價曾經增加1億多元——原本安誠工程顧問有限公司要求38米，所以曾增加預算數額——後來卻縮短至26米，當然你當時不知道更縮短至22米，可能那些資料後來才提交至你手上。你當時看到這些資料後，曾否與你的下屬討論這問題呢？尤其是與專業人士，包括總結構工程師何先生，你曾否與他進行討論，詢問他覺得有沒有需要進行討論呢？你曾否問他是否已就樁柱是否穩妥進行計算呢？

主席：

潘先生。

潘承梓先生：

主席，程序應該是這樣的——我們編製預算時，即到設計審批的第二個階段的scheme design時，我們須編製approved project budget。當時我們是在打樁工程招標前大約6個月編製這個approved project budget，這是根據較詳細的探土報告資料編製的。根據當時的資料，我們的顧問公司——對不起，當時顧問公司尚未進場——我們部門的工程師認為更早期的預算不足夠。根據探土報告的資料，他們認為有些樁柱須打得更深，所以在預算中增加了款項，但這始終只是一個預算。直到打樁的程序，我們當時要求承建商一併負責設計，即這是一個design-and-build contract，樁柱的設計由承建商負責。我們的工程師編製預算時有一個約數，由於我們當時以PPC piles為準則，所以他按照採用PPC piles的大概深度而編製預算。他編製預算時可能會計算出使用樁柱的大約數目，所以能夠計算出價錢。但到承建商投標時，不同的承建商可能有不同的設計，樁柱的深度亦按不同設計而定，所以我們在投標時，並沒有指定所有樁柱一定要達到某個深度。

主席：

潘先生，我想在這裏打斷你的答覆。我明白這是一個design-and-build的做法，但樁柱長度實在相差得太遠，是38米。當時你們增加一億元的budget時，文件載述你們的要求是由30米增加至38米，最終在提交建築小組委員會的文件內，該承建商(即投標者)把樁柱縮短到26米，其後再縮短至22米，即差不多縮短了一半。難道你不覺得這種情況很特殊，應該經過討論，認為可以接受26米或22米，才繼續進行工程嗎？還是你認為預算是38米，承建商現在縮短至多少也不要緊，讓他自行應付呢？

潘承梓先生：

剛才談到第二個步驟，即投標時由承建商提交樁柱設計。但在審議標書的過程中，顧問公司有需要先研究建築商的建議是否可行，然後顧問公司把報告交給我們的工程師進行研究。在我們草擬文件提交建築小組委員會的程序前，他們已經完成這個程序，認為建築商的意見可行。

主席：

何議員。

何俊仁議員：

潘先生，我想簡潔地問你一個問題，希望你清晰地回答。你是否很清楚在你們的制度內，房署官員有責任再計算一次，查究不但承建商所計算的數目，連顧問工程師所計算的數目也是正確的？因你們現在計算的數目……現在你們的設計與原本探土時的設計有很大的分別，你們曾否計算清楚，認為是安全及沒有問題呢？如果曾這樣做，你自己又曾否進行查核？如果設有這制度，你有沒有……

主席：

是否設有這種制度？還是由承建商……

何俊仁議員：

還是完全信任顧問工程師？

潘承梓先生：

負責監管顧問工程師的房署同事有需要進行抽樣檢查，check顧問工程師的報告。

主席：

抽樣？

何俊仁議員：

我不明白抽樣的意思，你們並非查核整份報告書嗎？你們不是從專業角度，查核數據是否成立、方程式是否正確，以及計算的方程式是否採用適當的數據(即探土時的數據)嗎？曾否全部check過？

主席：

潘先生。

潘承梓先生：

實際上怎樣進行check和check哪一部分，則須問我們的結構工程師。但他們應該看過剛才何議員所提及的大綱、大原則和一部分細節。

主席：

我想問我們剛才描述的情況，即原本你們認為樁柱長度要達到38米，最終建議為26米，甚至是22米。這種情況是否需要你們再計算一次？我是指天水圍第31區第一期。

潘承梓先生：

我們沒有硬性規定到達多少米時，便要再計算一次。我們編製預算時通常會預得寬鬆一點，即safety factor可能會很大。

主席：

會差不多達到50%嗎？

潘承梓先生：

我也不太清楚在個別情況下額外提高的比例。

何俊仁議員：

是否樁柱長度只有10米，你們也不會再追問？如果工程師說沒有問題，那麼樁柱長度是10米、5米，你們也認為沒有問題，你們認為可能是因為樁柱數目多而已。是否沒有一個數字會令你們“響起警號”呢？

主席：

不要緊的，潘先生，請你告訴我們。

何俊仁議員：

是的，你說沒有也可以。

主席：

你可以告知我們是否設有這個制度，沒有也……

何俊仁議員：

因為我們不明白，在甚麼情況下會“響起警號”？在甚麼情況下，你們認為須再計算清楚是否可行？

潘承梓先生：

希望大家明白，編製預算時只能計算約數，當時我們並沒有一套完整的地基設計的數字和圖則，當時工程師也是憑估計，推算樁柱大約的深度，以及估計地基的工程費用。

何俊仁議員：

主席，我想說在審標時……

潘承梓先生：

但到審標時，個別的建築商已經準備了一套設計圖樣和有關數據。

主席：

所以你們都會信賴他，正如剛才何議員所舉的例子，他建議樁柱為10米、5米，你們都會接受而不會再追問。原因是你們認為他已經掌握所有資料，因此，所提供的建議都是OK的。

潘承梓先生：

到了那個階段，他已經有一整套很詳細而精確的地基設計和有關計算……

主席：

何俊仁議員是否還有問題？

潘承梓先生：

有關計算……是經過我們的顧問公司進行check的程序，然後交給我們。

何俊仁議員：

我提出的最後一個問題是，房署完全相信顧問公司和承建商，而你們也依賴建築小組委員會完全相信他們，因此，文件提

交建築小組委員會後便不設討論或無須進行討論，是否這樣呢？所以你們只衡量價錢。

潘承梓先生：

我剛才也說，在收到顧問公司的報告後，我們進行checking procedure，究竟check甚麼呢？我想，這須由負責的工程師解釋。

主席：

李卓人議員。

李卓人議員：

多謝主席。我想提出幾個問題。第一個問題是，我看到你們為參與投標者提供一份client brief。你可否解釋client brief的作用？

主席：

潘先生。

潘承梓先生：

主席，這是我們審批工作的第一步。我在上次研訊上說過，審批工作有3個階段，這是第一個階段。所謂client brief究竟是怎樣的文件呢？它的作用是清楚列出業主的的要求，房委會有自己的政策，但在整體政策下，每一塊土地的發展是需要訂定較明確的指示，例如：可以興建多少個單位？單位的面積為何？每類型單位的數量是多少？需要多少個停車位？商場需要多少空間？以及……

李卓人議員：

簡單說，是業主的的要求。

潘承梓先生：

是業主的的要求。

李卓人議員：

我看到天水圍第31區的client brief，是完全沒有提述任何關於foundation的部分，亦沒有提述任何關於Acer的顧問報告，為何你們沒有在這份client brief加以提述？你在上次研訊上曾回答說，如果投標者有興趣的話，是可以自行查閱Acer那份報告。但為何你們不在client brief內提到業主有一份Foundation Advice Report呢？

主席：

潘先生，你知道是哪一份client brief嗎？

潘承梓先生：

我知道是哪一份client brief。據我記憶，client brief內最低限度有兩段提到天水圍地質的情況.....

主席：

李卓人議員，請你說明是哪一份文件？

李卓人議員：

是，我有那份文件.....

主席：

是否BC44/96號文件？

李卓人議員：

190 of 95，BC190/95。

主席：

BC190/95。

李卓人議員：

是的，那份文件很空泛地提到一些關於地質的問題，但並沒有提到有一份Foundation Advice Report。請看那頁，第2.4和2.5段。

主席：

請問文件的日期？

是甚麼年份？

李卓人議員：

190 of 95。190/95。

主席：

我是指日期，是否有日期？

李卓人議員：

1995年12月6日。

主席：

但地質報告是在96年編寫的，對嗎？

還有revised client brief，便是我剛才提述的BC44/96號文件。

李卓人議員：

BC44。

主席：

最後那份嗎？

李卓人議員：

是。

主席：

那是投標前6個月編寫的，那份應是最後的一份，提到須增撥1億多元以應付一些較深的樁柱。那份文件應該是最後的一份。

李卓人議員：

那麼可以看那份文件有關foundation的部分。

主席：

在BC44/96號文件中那份revised client brief，在哪一頁提到foundation呢？

潘先生，或許你指引我們看有關部分，好嗎？

你說client brief內曾提到foundation，你說有兩段提到foundation的。

潘承梓先生：

這是一份revised client brief，我們撮要把修改的部分放進文件。

主席：

即這並非original的一份。那麼，哪一份曾提到foundation呢？

潘承梓先生：

原本那份。

主席：

之前的一份……之前是190/95。

李卓人議員：

是190/95那份。

主席：

是190/95那份。

李卓人議員：

當時尚未有Acer Report。

主席：

你說這份文件的哪個部分提到foundation呢？

李卓人議員：

在第2.4段。

潘承梓先生：

第13頁。

主席：

李卓人議員。

李卓人議員：

但其實，你們在95年12月編寫這份client brief時，你們是否已把工作 commission 予 Acer，要求他們編寫 Foundation Advice Report？秘書處是否有這方面的資料？何時要求Acer.....

主席：

我們稍後會有Acer的代表出席研訊。

李卓人議員：

但是，我想問，如果房署已經知道他們正在編寫Foundation Advice Report，為何不在client brief內提及呢？

主席：

請向潘先生提問，好嗎？

李卓人議員：

讓人知道政府正在編寫這份報告。

主席：

是，請你向潘先生提問，好嗎？

李卓人議員：

潘先生可否解釋一下，當時你們為何不在client brief內提及正就業主的要求在foundation方面編寫Foundation Advice Report？

主席：

潘先生。

潘承梓先生：

我們曾先後兩次把client brief提交建築小組委員會，由建築小組委員會代表房委會決定是否批准進行這項目。目的是這樣——考慮項目是否可行？我們會考慮所有的因素(包括地質方面)，讓房委會的建築小組委員會參考。到日後投標時，我們準備好所有探土報告，而所有參與投標的建築商也可以參閱這些報告，包括剛才所說的Acer Report在內。

主席：

李卓人議員。

李卓人議員：

另一個問題。

潘承梓先生：

只是目的不同，當時我們想取得業主的批准進行這個項目。

主席：

李卓人議員。

李卓人議員：

我提出的另一個問題是，在整個過程——考慮採用PPC piles的過程中，AC即Consultant Architect或其轄下的sub-consultant曾否向房署提過不應該採用PPC piles呢？

主席：

潘先生。

潘承梓先生：

據我所知，直至投標階段，我們所有的報告也指出3類地基也是適合的。

主席：

李卓人議員。

李卓人議員：

關於另一類問題，我想問有關委任顧問的過程。我看到一個由你們提供的flowchart，是關於如何委任顧問的。請參看那個flowchart，應該是在BC28/96號文件內的那個圖表。

主席：

潘先生，你找到有關文件嗎？

潘承梓先生：

找到。

李卓人議員：

是BC28/96號文件。文件的Appendix C是個流程表，潘先生是否看到該流程表呢？

潘承梓先生：

看到。

李卓人議員：

根據流程表，最後部分是建議建築小組委員會同意。流程表的中間部分有一個步驟，是要求consultant(即顧問建築師)提供所有sub-consultants的資料。你是否看見中間那個box，即第四個步驟。根據這個流程表，你們當時是需要向他們取得所有sub-consultants(分判顧問)的資料。我記得你在上次研訊中，曾說只是取得結構工程師的資料。但根據流程表，其實你當時是否應該索取所有資料，包括建築結構工程師、土力分判顧問(sub-consultants)的資料呢？根據流程表，是否應該在這個階段已取得那些資料呢？

主席：

潘先生。

潘承梓先生：

是，主席，我在上次研訊中已作出解釋，整個selection process 須在3至4周內完成。在這過程中，我們發覺總顧問公司須與其他顧問公司達成協議，會有一定的困難。所以我們內部的要求是，主要的顧問公司只須提交結構工程和屋宇裝備方面的 sub-consultants 名單，但其他(包括地質和 landscaping) sub-consultants 的名單，是可以稍後才向我們提交，即待我們 appoint 他們後，才向我們提供名單。

主席：

是，李卓人議員。

李卓人議員：

即你們並非確切遵從這個流程表的步驟，你們向BC提交的文件載有這個流程表，那麼你們後來有否向BC表明，其實這方面未必能夠遵從流程表呢？

主席：

潘先生。

潘承梓先生：

主席，這個flowchart不能詳細列出所有sub-consultants，而文件亦沒有載明須把所有sub-consultants列出，我們亦不是.....

李卓人議員：

這份文件載列Request submission of details of the proposed sub-consultants，卻沒有載明proposed major sub-consultants，以及為何土力方面不屬於major呢？

主席：

潘先生。

潘承梓先生：

現在看來，我亦同意須加上“major”這個字，這樣會比較清楚，但當時.....

主席：

但李卓人議員剛才的問題是，其實你們最終不必提交所有 sub-consultants 的名單，你們曾否向建築小組委員會交代這一點呢？當然你們在實際過程中遇到困難，不能取得全部名單，只能取得兩個名單，但有關這偏離既定安排一事，你們曾否向建築小組交代呢？

潘承梓先生：

我記不起是否有一份文件，是特別為這件事作出交代的。但在我們向建築小組委員會提交有關聘請某間顧問公司的文件中，我們會在議程中提及。

主席：

最後一位，何鍾泰議員。

何鍾泰議員：

首先請潘先生看剛才討論過的文件，SC1-H0102號文件的附件A。附件A第4段的第(5)部分，即剛才討論有關承建商是否需要提交其分判公司的資料，其實當時房署的要求是這樣的——如果建築師要求(當然，這建築師有可能是房署的建築師，也有可能是外判後的建築師)，承建商是有責任交出其判頭或分判公司的資料。請問潘先生，當時的情況是否這樣？

主席：

潘先生。

潘承梓先生：

是，這是合約的標準條款。

何鍾泰議員：

是的，你剛才說，通常也不會向他們索取資料，即向承建商……

潘承梓先生：

這條款載述“if so required”。如果我們認為有需要時，便可以提出要求。

何鍾泰議員：

但從來也沒有提出這樣的要求，對嗎？

潘承梓先生：

不是。是視乎情況而定。

何鍾泰議員：

有……

潘承梓先生：

這條款是應該納入建築合約的。

何鍾泰議員：

建築合約？

潘承梓先生：

是。

何鍾泰議員：

潘先生，是哪一份建築合約？

潘承梓先生：

這是我們的Standard Conditions。

主席：

潘先生，這份 Annex A 是否標準的建築合約，即 General Conditions of Contract 的一部分？

潘承梓先生：

是。

主席：

即在96至97年度也是採用這個條款，對嗎？

潘承梓先生：

是。

何鍾泰議員：

潘先生，換言之，你們與顧問公司簽署合約，這是標準合約的一部分，即如果他要求的話，承建商便須提交資料，對嗎？

潘承梓先生：

這是我們標準的建築合約，是我們與承建商簽署的合約。

何鍾泰議員：

是與承建商簽訂的？

潘承梓先生：

是與承建商簽訂的。

何鍾泰議員：

換言之，不論是分判工程或是由房署自己監察的工程，與承建商簽署的合約也有這一項條款，對嗎？

潘承梓先生：

這是建築合約……

何鍾泰議員：

即the Architect，有可能是顧問建築師，也有可能是房署本身，對嗎？

潘承梓先生：

是。

何鍾泰議員：

The Architect for the contract，即該合約的建築師。

我想問，這項差不多是你們的基本要求，如果建築師要求的話，承建商必須提供其分判公司的名稱？情況是否這樣？

潘承梓先生：

是。

何鍾泰議員：

那麼，曾否提出這樣的要求？不論是房署直接監察的工程或分判予顧問公司監察的工程，曾否提出這樣的要求？

主席：

我想，潘先生，請回答你所知悉的，據你所知悉，曾否提出這樣的要求？

潘承梓先生：

我對建築合約較為熟悉，我記得有這樣的情況。

何鍾泰議員：

當時你本人曾否告知下屬這是需要執行的事項，還是你給予他們一些指引，在甚麼情況下便應該要求承建商提交這些資料？你曾否向你的下屬提供這類指引？

主席：

潘先生。

潘承梓先生：

在我的記憶中，並無有關這方面的特別指引。

何鍾泰議員：

為甚麼？

潘承梓先生：

我對建築合約較為熟悉。有一部分的工作或工序，例如上蓋方面，灌石屎或釘板等工序，如果我們發覺出現質量或建築商提供的人手有問題的情況，以及我們懷疑他的承包商直接牽涉這方面的問題時，我們便要求他們提交資料。甚至有些情況，我們查出是哪一間公司，在證明該公司不合作後，我們便要求他們不要繼續執行這份合約，曾經有這種情況。

主席：

何鍾泰議員。

何鍾泰議員：

潘先生，你剛才說，通常只是上蓋工程合約才執行？

潘承梓先生：

不，我說以我自己的經驗，我對上蓋工程方面較為熟悉。

何鍾泰議員：

我為何這樣問呢？是因為這份文件的前一頁提到附件A時，說明這是為上蓋工程和地基工程而設的，即兩種工程也須如此執行。

潘承梓先生：

這點或許勞煩部門方面提供更多資料予以澄清，以我理解，這份 Annex A 的內容是有關“Standard Conditions of Building Contract”。如果是有關地基，有些字眼應已修改。

主席：

是嗎？

何鍾泰議員：

謝謝主席，我問……

主席：

或許我們須澄清這一點。

潘承梓先生：

Engineer……

何鍾泰議員：

主席，我想問潘先生，他覺得在何種情況下需要建築師提出這些要求？不管是打樁工程還是上蓋工程，你是否覺得有需要告知下屬在某情況下需要做、在某些情況下則無須提出這些要求？

潘承梓先生：

剛才我已說過，如遇到工程方面的某部分工序或工作做得不好，而又是由分判商負責的，我們便需要該分判商的資料。

何鍾泰議員：

你剛才即是說，就這方面你並沒有給予下屬特別的指引。

潘承梓先生：

據我記憶，在這方面並沒有特別的指引。

主席：

何議員。

何鍾泰議員：

主席，我想提問有關第二部分的問題。第二個問題是，你們內部運作的守則，即 work manuals 有要求如 Director's Representative，或負責監管顧問的職員，有責任確保所得到的顧問服務是最好，即優質的專業服務。在文件是這樣寫的：要得到“have a duty”……

主席：

何議員，你可否說出這份文件的編號？

何鍾泰議員：

這份是 SC1-G0006(c)/TCC。

主席：

是。因為你向證人提出這問題，所以必須提供這份文件予他參閱。

何鍾泰議員：

我想這是一個很普通的問題，可以參閱這份文件。

主席：

這是我們自己編製的文件。

請問有沒有 manuals 的編號？

何鍾泰議員：

我不知道 manuals 的編號。不過，我認為這是一個很普通的問題，即使沒有這份文件以供參閱也一樣。我以另一種形式提問，我意思是：房署方面有工程外判，以房署的身份而言，若把一項工程外判予顧問公司，你們便會有一批人員監察這顧問公司，這批人員是否有責任確保所得到的顧問服務是合乎你們通常認為良好的專業服務？

主席：

潘先生。

潘承梓先生：

是。

何鍾泰議員：

如果專業顧問所提供的資料，與你們原本預計的資料相距甚遠或頗大，你們應自行判斷應否接受，對嗎？

主席：

潘先生。

潘承梓先生：

是。

何鍾泰議員：

我接着要問的是，剛才你說在96年8月22日舉行建築小組委員會會議，請問你是否知道在舉行會議前，該承建商已提交其地基設計的計算資料，因為這是設計及營造的(design-and-build)；他們提出由第1至第16座地基的樁柱長度為22米，而他們亦打算採用短樁柱；你知否他們在開會前已提出這點？此外，在8月21日，即前一天，他們亦提出不進行預鑽的工作？

主席：

何議員，他亦已回答這方面的問題。

潘承梓先生：

是的。每一次也有……

何鍾泰議員：

因為下一部分我還有……

主席：

我想在時間上你須掌握。

何鍾泰議員：

是的，我知道。

主席：

你明白嗎？這問題其實他曾回答，你是否希望他重複這答案？

何鍾泰議員：

重複是有需要的，因我接着的部分才是最主要的。

主席：

潘先生，請簡單重複你的答案，好嗎？

潘承梓先生：

首先在時間方面，我剛才曾說過，如果在8月22日舉行會議，大約在10天前即8月12日左右，我們的草擬文件便會呈交星期一會議。

何鍾泰議員：

即早一天收到的信件或資料，你們不一定看過。

潘承梓先生：

上次研訊有委員提出這問題，事後我已作出跟進並參閱有關文件，其中部分信件的日期顯示信件是在8月12日之後收到的。我們收到這些信件的日期可能會遲一、兩天，雖然信件上印着這日期，但信件經顧問收閱後才送交我們，所以也會有一、兩天的時差。

何鍾泰議員：

我現在的主要問題便在此。潘先生，在8月22日建築小組委員會通過了你們的文件，而你們的文件是基於10天前所收到的資料擬備的，你們擬備了文件，而文件亦獲得通過；不過，承建商提出了不同的資料，告訴你們會省掉某部分的工作，如果這點納入合約中，是否已經與原先投標的情況有所偏離呢？

主席：

潘先生。

潘承梓先生：

主席，首先，我們審核標書的程序通常須在兩、三個星期內完成，在這過程中，不管是我們自己的工程師還是顧問工程師，都須提出很多問題，特別是關乎設計方面，他們會向有關的承建商查詢很多事項，並要求他們提交更多資料，這些信件也是我們審批標書的部分工作。不錯，我現在回顧起來，有部分信件確實發出得極遲，其中有一封信的日期是8月21日，至於何時交到我們手上則不得而知。這封信很遲才發出，究竟我們在22日舉行會議之前，我們的同事有沒有機會研究這些事項，我須回去向他們查詢才知道。以我記憶所及，我們在星期一的例會上審議這些草擬文件時，並沒有人提出在該份文件內有甚麼事項須予更改，或收到甚麼新的資料須加以留意。

主席：

何議員。

何鍾泰議員：

潘先生，你也知道，在specification(即承建商合約的標準部分)中，明文規定必須進行預鑽；但承建商在21日則表示不進行預鑽，即減省了一些工作；與此同時，在Acer的顧問報告中指明，這地基最少須用26米長的樁柱，而承建商則提出22米長的樁柱便已足夠，顧問公司則表示最少須建造25米長的樁柱，而承建商的標書也表示會建造26米長的樁柱。然而，當你們處理文件後，承建商則來信表示只建造22米長的樁柱，不會建造那麼長的樁柱。其後你們提交的文件並沒有更正此點或留意到樁柱縮短的問題，而提交予建築小組委員會通過的是無須討論的文件，即以“straightforward paper”的形式通過。在文件通過後，你們是否應該不容許承建商修改標書條款內的有關資料呢？

主席：

潘先生。

潘承梓先生：

主席，或許我分開兩部分來解釋：第一，我已經說過在舉行會議前，即在星期一的例會或8月22日舉行會議上，我沒有收到任何報告……

主席：

潘先生，這些你已說過，但問題不在這方面。問題是：如果建築小組委員會批出的是26米長的樁柱，是否應該不容許修改呢？現在似乎並非如此，似乎由你們星期一會議以至建築小組委員會審批的期間發生了很多變化，但你們卻好像沒有任何機制處理這些變化。雖然建築小組委員會批准了一個準則，但該準則在後期不知基於甚麼理由竟可全部偏離，情況是否如此呢？如果不是這樣，勞煩你更正以上的說法。

潘承梓先生：

這點正是我想解釋的第二部分。我們向建築小組委員會提交的文件，內容確有提到這間建築公司的標書內所提供的資料，樁柱的深度大約26米，這亦是一般性的技術資料，供建築小組委員會作參考之用，但這並非作為他們接受我們的建議，把這份合約批予承建商的基準。

何鍾泰議員：

潘先生，承建商在落標時，其標價必定說明本身採用樁柱的長度，尤其這些是design-and-build合約，設計後才營造，全部都包括在內。他們是根據本身的所謂assumptions，即自己預算如何建造而投標的。如果在投標後，你們以為該承建商的標價很低，可是，他們稍後卻告訴你不進行預鑽。但預鑽在很多情況下是必須的，根據Acer的報告，差不多一定要做，以致這種樁柱不切實際，即“impractical”，因要進行這麼多的預鑽工作。如果他們表示無須做，接着便不做，並將26米樁柱縮減為22米，如此大部分的工作也減少的話，其實承建商的標價已經與此不符，可能成本已降低了很多，也節省了不少金錢。這是否對其他投標者不公平呢？

主席：

潘先生。

潘承梓先生：

主席，就原則方面，我不同意這種看法。這是一種design-and-build contract，我們接受的是建築公司投標時的價錢，一份“lump-sum contract”，全部包括在內。日後他們可能會遇到困難，工作可能較多或須建造較深的樁柱，雖有額外支出都是由承包商負擔，所以，開支可能出現增減，因為這是一份“lump-sum contract”，合約規定，lump sum 是不可以更改的。我們的合約亦規定，如果承建商認為設計上須作出修改，其修改的事項是要獲得我們的顧問工程師或我們的結構工程師批准的。

主席：

何議員。

何鍾泰議員：

潘先生，即是說，即使一位承建商投標後，你們接受了他的標書，亦已擬備了文件送交建築小組委員會審批並獲通過，但該承建商再作修改及減少其工作量，你們亦認為可以接受，對嗎？我只想問這麼簡單的一個問題。

主席：

潘先生。

潘承梓先生：

我不可以說他減省這工序是為了節省費用或減低工作量，不過，合約就是合約，這是一份 **design-and-build contract**，當中有條款清楚寫明建築公司對本身的設計可以提出修改，這些修改如獲得負責的工程師批准，我們根據合約條款是不可以反對的。

何鍾泰議員：

不過，潘先生，在你合約“**specification**”部分指明要預鑽，而他卻表示不會做這項工序，是否已偏離合約的要求？

潘承梓先生：

關於預鑽的部分，我們的章程亦有寫明，預鑽不是唯一的方法；為何要預鑽呢？正如我上次所說，在打樁時遇到阻礙，即遇到硬質石層 (**hard pans**) 令打樁有阻礙時，便須用預鑽的方法；但如我沒有記錯，我們的“**specification**”亦說明預鑽不是唯一的方法。

何鍾泰議員：

潘先生，你是否不大同意 **Acer** 的報告指這個地盤有很多硬塊，一定要進行預鑽，以致這種方法採用 **PPC** 樁其實不是那麼實際，即“**impractical**”？

潘承梓先生：

我剛才所說的其實已寫在合約章程的條款內。至於我們的工程師是在甚麼情況下，雖已參閱了 **Acer** 的報告，但依然採用我們這份章程，則要邀請負責的工程師解釋。

主席：

好，各位同事對潘先生所作證供還有沒有其他跟進問題？只容許簡短的跟進。

石禮謙議員：

主席，我想跟進剛才 **Raymond** 所提出的問題，即關於 **tender** 的情況。主席，我現在可否提問？

主席：

我不知你的問題是甚麼，請你先繼續發問。

石禮謙議員：

這合約與平時的合約不同：第一，因為你們從client brief已知道該幅土地存在問題；第二，隨後在95年5月，你們聘請Acer進行technical報告，接着在8月你們再把tender brief提交予BC；Acer的報告十分清楚指出，bedrock depth由26米至50米，這些資料你們應均已全部審閱及納入tender brief內。當tender交回後，承建商表示要建造26米樁柱，但後來改為22米，而22米和26米相差4米，正如剛才何議員說，相差4米並非只是縮短4米，因為以4米所承受的力度，要增加很多樁柱——我會繼續解釋下去……

主席：

石議員，請你提問有關的問題，好嗎？

石禮謙議員：

我要這樣說才可以提出相關問題，因我要跟進剛才何鍾泰議員所說的情況。如果你說已接受的樁柱長度是26米，便須以這長度乘“x amount of piles”；若長22米，則經他計算後須否採用較多樁柱呢？是增多還是減少呢？因為他曾計算過，他剛才說是“fixed sum”。如果你去買一個蘋果，但對方只給你一個橙當然不可以。現在我問你們批出的合約是26米樁柱，共有多少條樁柱、會投放多少piles？Subsequently，樁柱的數目改變了，是否也增加了piles，而justify他可以接受22米長的樁柱呢？

主席：

潘先生，你知否有沒有作出此項計算呢？

潘承梓先生：

以我所知，我們的顧問工程師有做這項計算，認為建築公司提出的修改在設計上是可以接受。至於工程所用的材料、數量及涉及的銀碼，我相信大家也會明白，或許何議員會較清楚，在design-and-build的設計內，樁柱是一部分、樁帽是一部分，有些情況是樁柱的數量及深度會影響樁帽的厚度，所以要整體衡量，但實際資料須由負責這部分工作的工程師提供。

石禮謙議員：

他們有否計算過？

潘承梓先生：

我相信有。

石禮謙議員：

他們有否將資料提交予建築小組委員會？因為這些資料對整份合約的價錢有很大分別。

主席：

有否將資料提交予建築小組委員會？

潘承梓先生：

據我所知道，並沒有將這些細節再提交予建築小組委員會審批。但他們是有計算過這些數字的。

主席：

你知道他們有計算過這些數字，還是你相信他們有計算過這些數字？請你更清楚地說明這點。

潘承梓先生：

當時他們實際上有否提交一份十分詳細的報告，我記不起了。

石禮謙議員：

還有最後一條問題。建築小組委員會有否看過Acer的報告才決定採用甚麼樁柱呢？

主席：

潘先生。

潘承梓先生：

採用甚麼樁柱不是由建築小組委員會決定的。

主席：

但早前你曾回答，Acer的報告並不是在client brief內提交的，因為這是提供予承建商及投標人士參考的，對嗎？答案仍是如此嗎？所以建築小組委員會並沒有看過這份報告，對嗎？

潘承梓先生：

在我們呈交client brief時，應沒有將該份報告提交建築小組委員會。不過，有否在其他場合提交，我則不知道。

主席：

鄧兆棠議員。

鄧兆棠議員：

多謝主席。我想問一問潘先生，剛才他說PPC piles可以不用預鑽而有其他方法解決問題，不知道有何方法無須預鑽而又可以解決問題呢？

潘承梓先生：

正如我剛才所說，在章程中有說明，採用PPC piles時，如果樁柱打進硬石層，而這些硬石層的硬度又不足以承受指定的重量，便須打得更深，至於如何打穿這些硬石層則有不同方法，preboring是其中一種。

主席：

其他方法呢？鄧兆棠議員問你除了preboring外，還有何方法可以處理這些問題？

鄧兆棠議員：

有何其他方法呢？

潘承梓先生：

可以採用其他方法鑽開石層，在章程中已有說明。

鄧兆棠議員：

鑽開石層，又是預鑽嗎？

潘承梓先生：

不是預鑽。

主席：

即遇到硬石層才鑽下去。陳婉嫻議員。

陳婉嫻議員：

我想跟進這問題。你表示未必要採用預鑽方法，可以採用其他方法，請問當時採用了甚麼方法呢？

主席：

潘先生。

潘承梓先生：

主席，我只能說出我對章程的理解，除了預鑽外，承建商還可以修改設計。我不是工程師，但據我理解，1支樁柱能承受若干重量，如果以3支樁柱便可把重量分散，減少每支樁所承受的重量。因此，在遇到某些岩層時，1支樁不能承受的重量可由3支樁分散承受，在這情況下，便可能無須打穿石層。

主席：

陳議員。

陳婉嫻議員：

潘先生的意思是BC批出的合約，其後可以作出很大程度的修改，對嗎？

主席：

潘先生。

潘承梓先生：

主席，根據我們的design-and-build合約內的條款，各承建商在施工遇到困難時可以修改設計，但這些修改必須得到結構工程師的批准，才可以接受。

陳婉嫻議員：

由房署的結構工程師同意便可以修改，你是否……

潘承梓先生：

不是，天頌苑的合約訂明，修改必須得到顧問公司的結構工程師同意。

陳婉嫻議員：

他同意便可？

潘承梓先生：

是。

陳婉嫻議員：

要向BC提交報告嗎？

潘承梓先生：

不需要。

主席：

好。何鍾泰議員

何鍾泰議員：

潘先生說，如果所用樁柱的長度縮短，樁柱的數目會增加，而樁柱所承受的力便會減少；在投標時，26米長的樁柱有……

主席：

1 882支……

何鍾泰議員：

後期樁柱的長度縮短至22米時，須增加多少支樁柱呢？

主席：

當樁柱長度為26米時共有1 882支，請問修改為22米後，樁柱數量有否增加？

潘承梓先生：

主席，我忘記了，我相信部門可以提供這方面的資料。

主席：

好。

多謝潘先生出席今次的研訊。其實這部分的研訊應在昨天完結，但卻延至今天，我很多謝潘先生能夠出席這兩天的研訊，日後委員會若認為有需要，會再邀請你出席研訊。現在你可以退席。謝謝。

我們在進入研訊第二部分前先休息5分鐘。

(研訊第一部分於下午3時55分結束)

(研訊第二部分於下午4時開始)

主席：

現在委員會已有5位委員，研訊可以開始。

現在進入研訊第二部份，委員會會向代表安誠工程顧問有限公司的高華先生及梁國堯先生錄取證供。高華先生擔任該公司的董事，而梁先生則是該公司的工程經理。現在請證人高華先生及梁國堯先生進入會議室。

(安誠工程顧問有限公司代表進入會議室)

高華先生及梁先生，請你們戴起耳筒。多謝你們出席今天的研訊。首先，本專責委員會決定所有證人均須宣誓作供，我將以專責委員會主席的身份負責為證人監誓。

你們可選擇以手按聖經的宗教式宣誓，或以非宗教式宣誓。請依照放在你們面前的誓詞宣誓。首先，請高華先生宣誓。

Representative of Hyder Consulting Limited, Ir Alan CLOVER:

I, Alan William CLOVER, solemnly, sincerely, and truly declare and affirm that the evidence I shall give shall be the truth, the whole truth, and nothing but the truth.

主席：

Thank you Mr CLOVER. 梁先生，現在請你宣誓。

Representative of Hyder Consulting Limited, Ir Rupert LEUNG Kwok-yiu:

I, LEUNG Kwok-yiu, solemnly, sincerely, and truly declare and affirm that the evidence I shall give shall be the truth, the whole truth, and nothing but the truth.

主席：

多謝你，梁先生。

高華先生，你曾於2001年9月12日向專責委員會秘書提供證人陳述書。

你現在是否正式向專責委員會出示證人陳述書為證據？請高華先生回答我的問題。

Ir Alan CLOVER:

Yes. Yes, we are.

主席：

多謝你。我現在宣佈上述文件獲接納為向專責委員會出示的證據，各位委員，文件編號為SC1-C0005/TCC。

高華先生及梁先生，首先我想向你們提出以下問題。

貴公司現名為 Hyder Consulting Limited，早前稱為 Acer Consultants (Far East) Limited。安誠工程顧問有限公司在1994年年底及1995年年初獲房屋委員會聘請就天水圍第31區進行土力評估研究(geotechnical assessment studies)，並在95年年底再進行地基研究(foundation report)。請問早前的兩次土力評估研究(geotechnical assessment studies)的內容為何，以及這兩次研究與1995年年底再進行的地基研究(foundation report)有何不同？

Ir Alan CLOVER:

If I may respond to that? The geotechnical assessment study is the first phase of work that is undertaken in this process. Therefore it must be regarded that it is very preliminary and sometimes it is only based on desk-study

information. Actually, though, for the work that was undertaken on this particular project, there was some bore hole information and site investigation that could be incorporated. The basic objective of the study was really to just identify what the issues might be and how they may be resolved, but not go into too much detail on the later aspect. So it is more a problem of identification and identifying what additional work would need to be done later at the later stages.

The foundation advice report is the next stage where you are being more specific but again it is still, if you like, an interim stage whereby because the final full details of the actual construction project may not be known at that particular time – it will only be known in outline – the basic conclusions of the report are rather presented in the form of options which may be a statement of preference in terms of the foundation types that could be used for the project. It will also highlight the additional work that would be needed to confirm any conclusions that may have been drawn, and it would also highlight and bring to the attention of people that were going to use that report at a later date any particular concerns or issues or aspects that either should be taken into account in the future work or may be at that time have still not been resolved.

Chairman:

Thank you, Mr CLOVER. 何鍾泰議員。

Ir Dr Hon Raymond HO Chung-tai:

Madam Chairman, I would like to ask Mr LEUNG and Mr CLOVER whether or not you have had previous experience of using PPC piles, pre-cast pre-stressed concrete piles, on any of your jobs that you were responsible for?

主席：

梁先生。

Ir Rupert LEUNG Kwok-yiu:

Yes, I may answer this question. Acer has been involved in previous developments in Tin Shui Wai area, Area 5 and Area 16. That was in the late 1980's and in the early 1990's. At that time we were also under, as a consultant to the Housing Authority, we were responsible for the foundation supervision and foundation advice and foundation assessment of contractors' design of those foundations for those Housing Authority developments in Area 5 and Area 16. And in those sites we have also used pre-cast pre-stressed concrete piles.

Ir Dr Hon Raymond HO Chung-tai:

Mr CLOVER, did you also use PPC piles on some of your jobs before?

Ir Alan CLOVER:

My responsibility in this context is that I have been the senior person in the division. I will acknowledge that actually this aspect of the piling I have not personally been involved in other than being the senior person in the division.

Ir Dr Hon Raymond HO Chung-tai:

So I assume that both of you have had adequate experience in the use of these sorts of piles?

Ir Alan CLOVER:

Yes.

Ir Dr Hon Raymond HO Chung-tai:

And it follows that I would like to know if these piles, this type of piles were used, would you have any concerns about certain, any aspects, for instance, the height of the buildings or the types of ground conditions? Any major concerns that you may have if you were to use this type of piles?

Chairman:

Who is taking this one? Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

Yes, according to our experiences of using these pre-cast pre-stressed concrete piles ...

Chairman:

For short, use "PPC".

Ir Rupert LEUNG Kwok-yiu:

... PPC piles, these piles will terminate at a depth with a SPT N-value of about 80 or 70 something or 80 or up to 100 in the Tin Shui Wai area. So in case – that is what we said in the foundation report – in case at a certain depth we have found some strata with the SPT N-value of above, 80 or 100, but below it there are some soft layers we would have to concern that the pile cannot be driven below this hard layer and through this soft layer, and this soft layer may have some settlement concern, given that the high-rise building has a very large foundation loading.

Ir Dr Hon Raymond HO Chung-tai:

So, you are saying that you are concerned with one aspect, that is, settlement of the foundations later on?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Ir Dr Hon Raymond HO Chung-tai:

Would that be gradual settlement or would that be a type of settlement that would last for a long time after completion of foundations and the superstructures?

主席 :

梁先生。

Ir Rupert LEUNG Kwok-yiu:

Yes, normally we estimate the soil stiffness, that means the soil elasticity, based on the SPT N-value, and this one will be some kind of instantaneous settlement that comes, as the loading increased, then there will be, the settlement will occur.

Ir Dr Hon Raymond HO Chung-tai:

Would you be rather concerned whether or not the set that you get on site, as recorded during the piling process, you would accept the record as the actual, the set numbers because of the gradual settlement later on or because of the, for instance, heaving of the ground, etc? Would you have any concern in that?

Ir Rupert LEUNG Kwok-yiu:

The set? You mean the driving set or the piling set?

Ir Dr Hon Raymond HO Chung-tai:

Yes, whether or not the final record of SPT N-value would be the final one, whether or not there will be variations later on due to ground heaving or gradual consolidation of the ground?

Chairman:

Apparently Mr LEUNG does not understand the question, is it? Can you rephrase the question, Mr HO?

Ir Dr Hon Raymond HO Chung-tai:

Now, if you drive these piles into the ground, you are certain that the ground would not make any movements?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Ir Dr Hon Raymond HO Chung-tai:

Or would you assume that there would still be movements of the ground at the bottom of the piles?

主席：

梁先生。

Ir Rupert LEUNG Kwok-yiu:

Yes, if you drive the pile and then you cannot drive it further down, but because underneath the pile there may still be some softer soil, that may contribute to settlement of the foundation, even though that pile itself has been driven to set.

Ir Dr Hon Raymond HO Chung-tai:

Are you aware that there could still be disturbance and further consolidation of the ground, either movement or even heaving of the ground after these piles have been driven? That is the characteristics of this type of PPC piles. Are you aware of this type of phenomenon?

Ir Rupert LEUNG Kwok-yiu:

You mean the heaving?

Ir Dr Hon Raymond HO Chung-tai:

Heaving as well as further consolidation.

Ir Rupert LEUNG Kwok-yiu:

Yes, because of the large displacement characteristics of PPC piles, when you drive the piles it may result in densification of the surrounding soil.

Ir Dr Hon Raymond HO Chung-tai:

So you think that if the driving sequence would be a specified type of sequence, that is either from the centre driving outwards or from one end of the site to another, would it be specifying a type of driving sequence for this type of piles?

Chairman :

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

That will be, it will be preferable to drive it from, either from centre, from centre out or from one face to, from one side forward, rather than driving the surrounding piles first and then drive the centre piles.

Ir Dr Hon Raymond HO Chung-tai:

What would be the consequences if the driving was to start from one end of the site to another rather than from centre outwards?

Ir Rupert LEUNG Kwok-yiu:

From one end to another? If the piles are driven from one end to another, because you are densifying the surrounding soil, if you are truly driving from one end to the other end then I think it will still be OK, as also the same as driving from the centre outward. What I consider that will have a problem is that you drive the piles at the peripheral first and then before going to drive the piles near the centre.

Chairman:

So in other words it is either from one end to another or radiating out, but not from the outer perimeter inwards?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Ir Alan CLOVER:

Can I contribute to that, Madam Chairman? I think the important issue with these piles is that, because of the large displacement that is caused when the piles are constructed, you do not want to trap – I think I would use that term – an area of the ground because then, when you actually did the piling in that area, you might get values that are not actually representative of the true condition of

the ground because you have pre-conditioned it by the surrounding piling. And therefore we, on the project that we have undertaken where we have actually been involved in the piling ourselves, we would look to adopt a piling sequence that would not make that occur. We would not want to trap areas by the piling. So hence there is this normal preference that you would, if it is a long linear feature you work from one end to the other, or if it is a symmetrical feature you start in the middle and work out so that you are pushing this wave away from you rather than trapping it beneath the development.

Ir Dr Hon Raymond HO Chung-tai:

Because this soil pile interaction is so significant as far as this type of piles is concerned, so I think the driving sequence is very important, as Mr CLOVER you were saying, if the piles are driving down to a certain depth it could create a certain type of densification, that means the ground conditions would appear to be better than the results of the earlier ground investigation. Is that the point that we are talking about?

Ir Alan CLOVER:

That is totally true. In fact there was, I think it was in 1987, there was a publication in the Hong Kong Institute of Engineers' journal which exactly documented this effect that had been encountered on a few Housing Authority sites. And therefore it was obviously something that had to be taken into account of in the design of any project using these piles.

Chairman:

Mr HO.

Ir Dr Hon Raymond HO Chung-tai:

Just now I was asking either of you would specify or have any concern about the type of ground as well as type of, or height of buildings, when you specify this type of pile to be used. Would you say for certain height of buildings then you would allow this type of piles to be used; beyond certain height you would not permit such piles to be used? Would you do that or not?

Chairman:

Who will take this one?

Ir Alan CLOVER:

I shall respond to this.

Chairman:

Mr CLOVER.

Ir Alan CLOVER:

I think it is not so much the height. Height is an important function but I think what that is leading to is the sensitivity of the structure to differential movement, and obviously for tall, slender structures, the higher the building is, that is causing an issue. With this type of piles settlement is a major factor and major consideration of the design, and obviously if you are getting different settlement between adjacent piles, which might give rise to differential settlement, it can be said that one way of avoiding that in a sensitive structure is not to use this type of pile, which is more sensitive to this type of phenomenon.

Ir Dr Hon Raymond HO Chung-tai:

Now that we have covered some characteristics of this type of piles, if we come back to this Tin Shui Wai Area 31, in your 1996, February report you were saying that the type of hard pan that exists there is very extensive across the site and you would prefer preboring if PPC piles were used. Was that your recommendation?

Ir Alan CLOVER:

That was very much our recommendation. I think that came about, as my colleague mentioned there had been previous experience on our own sites where we had followed them through the whole process of design and construction. That had led us to develop awareness and also there was much published information concerning this phenomenon. So the short answer is yes, it is, and particularly in this area where this phenomenon of hard pans, that is more dense layers underlain by softer layers, has been identified.

Ir Dr Hon Raymond HO Chung-tai:

Mr CLOVER, in fact in the synopsis of your report you went as far as saying that the use of this type of piles was rendered impractical because of the necessity of using preboring.

Ir Alan CLOVER:

Obviously preboring is introducing another factor. When you are selecting a pile for a particular project there are the technical issues which are, may be, such matters as obviously the load-carrying capacity, the settlement characteristics, the driving characteristics if it is a driven pile. There are also matters of cost and programme as well, and those are factors that all have to be

combined together to come to the decision on what is the most appropriate foundation to use.

Ir Dr Hon Raymond HO Chung-tai:

Mr CLOVER, if preboring was not chosen by the contractor appointed for that particular site, would there be other methods that you would permit him to use?

Chairman:

Mr CLOVER?

Ir Alan CLOVER:

Do you mean in respect of the PPC piles?

Ir Dr Hon Raymond HO Chung-tai:

To deal with the hard pans, PPC piles.

Chairman:

In respect of this particular site, Tin Shui Wai Area.

Ir Dr Hon Raymond HO Chung-tai:

Using PPC piles.

Ir Alan CLOVER:

I think probably my colleague will be the best person to respond to that.

Ir Rupert LEUNG Kwok-yiu:

Because of this settlement, concern of settlement, so we have suggested the piles have to be driven to beyond those hard pans. If preboring is not to be used to overcome the obstruction to install the pile beyond those hard pans, I think unless the contractor can propose some other method that can install the piles beyond those hard pans.

Ir Dr Hon Raymond HO Chung-tai:

Mr LEUNG, what I am asking is, if the contractor was not going to choose preboring, would there be other methods that you would accept in place of preboring to deal with hard pans on this site?

Ir Rupert LEUNG Kwok-yiu:

I do not know about other methods that can ...

Ir Dr Hon Raymond HO Chung-tai:

You would not be aware of any other method?

Ir Rupert LEUNG Kwok-yiu:

I am not aware of other methods.

Ir Alan CLOVER:

I assume you are not aware of any other method with respect to PPC piles. The other method would be to use a different type of pile.

Ir Dr Hon Raymond HO Chung-tai:

Well, let us say if the contractor has chosen PPC piles, right, if he is not going to use preboring method, Mr LEUNG is saying that there is no other method that you can think of?

Ir Rupert LEUNG Kwok-yiu:

I am not aware of other methods.

Ir Alan CLOVER:

We are not aware where we have accepted another method.

Chairman:

Can we have one person answering at the same time, please? Thank you.

Ir Alan CLOVER:

No would be my answer.

Ir Dr Hon Raymond HO Chung-tai:

And Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

I am not aware of other methods that can install the PPC pile beyond the hard pan.

Ir Dr Hon Raymond HO Chung-tai:

OK, now if on this site, if I may ask Mr LEUNG or Mr CLOVER, if N-value, SPT N-value is, say, about 25, what type of ground would you envisage?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

You mean the SPT N-value is above 25?

Ir Dr Hon Raymond HO Chung-tai:

About 25.

Chairman:

What type of ground?

Ir Rupert LEUNG Kwok-yiu:

What type of ground? I would suggest it is not very stiff ground.

Ir Dr Hon Raymond HO Chung-tai:

What type of ... it is very difficult to say?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Ir Dr Hon Raymond HO Chung-tai:

For instance, alluvial deposits or estuarine?

Ir Rupert LEUNG Kwok-yiu:

It can be alluvial, it can be alluvial and it can be the in-situ decomposed rock with SPT ...

Ir Dr Hon Raymond HO Chung-tai:

In other words can you say that if it is SPT N-value 25, it is relatively poor ground conditions? Can you say that?

Ir Rupert LEUNG Kwok-yiu:

Yes, in terms of founding a pile it is not good enough for founding a pile.

Ir Dr Hon Raymond HO Chung-tai:

Not good enough for founding a pile? For founding PPC pile?

Ir Rupert LEUNG Kwok-yiu:

Yes, yes.

Ir Dr Hon Raymond HO Chung-tai:

Can we say it is not good enough for founding a PPC pile?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Ir Dr Hon Raymond HO Chung-tai:

OK, now if a contractor submitted a design, because it is a design-and-build contract, using say 26 metres, of course it is within your recommended range, 25 to 48. And then if ultimately the pile length is reduced to 22, what sort of consequences would you envisage?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

I would check where those, if it is 22, where and in what ground condition that pile would be founded in.

Ir Dr Hon Raymond HO Chung-tai:

The whole site.

Chairman:

We are talking about the site area 31 ...

Ir Dr Hon Raymond HO Chung-tai:

Area 31, the whole site.

Chairman:

... with which you are very familiar.

Ir Rupert LEUNG Kwok-yiu:

Because in general at a depth of 22, from SPT N-value, it would not be good enough for founding the piles.

Chairman:

Specifically we are talking about Area 31, Block 1, so if you can identify that particular area.

Ir Rupert LEUNG Kwok-yiu:

Yes.

Chairman:

Would that also be acceptable if you are driving the piles to 22 metres?

Ir Rupert LEUNG Kwok-yiu:

I do not think so. I do not think it would be acceptable.

Ir Dr Hon Raymond HO Chung-tai:

You are saying it is not acceptable if it is reduced from...?

Ir Rupert LEUNG Kwok-yiu:

If it is 22 metres from ground level, if the pile is 22 metres from ground level, I do not think it is acceptable.

Ir Dr Hon Raymond HO Chung-tai:

If it is 26, would that be permissible?

Ir Rupert LEUNG Kwok-yiu:

26?

Ir Dr Hon Raymond HO Chung-tai:

If it is 26, is that acceptable?

Ir Rupert LEUNG Kwok-yiu:

26? From the five drill holes that have been sunk during our stage for the Block 1, I do not consider it acceptable either.

Ir Dr Hon Raymond HO Chung-tai:

Even 26 is not acceptable?

Ir Rupert LEUNG Kwok-yiu:

No, if you are talking about 26 for the whole ...

Ir Dr Hon Raymond HO Chung-tai:

What would be the minimum acceptable length of pile for this site?

Ir Rupert LEUNG Kwok-yiu:

For this area it will be about 32, I think, 31, 32.

Ir Dr Hon Raymond HO Chung-tai:

Thank you. OK, I have no other questions, Madam Chairman.

Chairman:

May I supplement one question here? Assuming the pile length is reduced to 22 or 26, can that be made up by driving additional piles, and if additional piles are driven, would you consider that acceptable?

Ir Rupert LEUNG Kwok-yiu:

It will not help with the settlement.

Chairman:

OK, thank you. 下一位是楊孝華議員。

Hon Howard YOUNG:

I would like to follow up on a question that was asked in the previous session on the nature of the ground in this particular project. Some mentioned that these places used to be drained-off fish ponds. Is this a relevant factor at all when it comes to piling or is it irrelevant because it is nowhere near so many metres below the ground?

Ir Rupert LEUNG Kwok-yiu:

Because the area is built up from fish ponds but the piles are found, not found on the alluvial deposit but found in the in-situ decomposed soil below, so these few layers on top would not affect the design.

Hon Howard YOUNG:

So, it had nothing to do, it would not materially affect? It is the soil way down below that? Whether it is a fish pond or not is not a material aspect of it, OK.

Ir Alan CLOVER:

Could I add to that response? There is one element, though, and that would depend on the relationship between the actual foundation cap level and the other aspects of the development in that, if there was a large soft layer near the surface through which the piles passed on their way down to the founding level, and that was loaded by, say this whole area had been sand filled and the area had been raised up, if that settlement of the sand fill was continuing because of compression of, say, the underlying deposits that had once formed the fish ponds, that actually introduces an additional load onto the pile by, in effect it is dragging the pile down. And in certain environments, that is, the technical terminology for that is negative skin friction, and that extra additional load sometimes has to be taken into account in the design of the pile. So it really is a matter that it reduces the load-carrying capacity of the pile or may do in certain circumstances.

Hon Howard YOUNG:

Would the net effect of that therefore make you change any recommendation of what type of pile to use or make it, because of the negative skin effect, does that mean that the remedy would be to pile it even deeper than you normally would?

Ir Alan CLOVER:

The issue is really in respect of it is reducing in effect, if that phenomenon occurs, the load-carrying capacity of the individual pile. So it may end up that you need more piles.

Hon Howard YOUNG:

Quantity, not deeper or shallower but more, more piles?

Ir Alan CLOVER:

No, more.

Hon Howard YOUNG:

Is there any indication in the report for this site that that sort of action would be recommended?

Ir Rupert LEUNG Kwok-yiu:

Yes, you mean the negative skin friction?

Hon Howard YOUNG:

Yes.

Ir Rupert LEUNG Kwok-yiu:

Yes, in the ... normally we would consider, because these fields are not filled for very long time and there is the estuarine deposit which is very compressible below the new fill, so these layers, we would consider these layers for negative skin friction. That means this layer, we will consider this layer will have a negative skin friction on the piles, and the pile design has to take this into account, and the pile capacity has to be reduced accordingly.

Hon Howard YOUNG:

Is this a factor that was specifically pointed out in the report for this particular site?

Chairman:

Can you identify the particular paragraph covering this particular point?

Ir Rupert LEUNG Kwok-yiu:

Yes, 4.2.5 on Page 10.

Chairman:

Yes, negative skin friction. Any further questions, Mr YOUNG?

Hon Howard YOUNG:

Yes, one final one. Procedure-wise, normally when you have a consultant doing the geotechnical and the assessment, the foundation advice report, when does the responsibility end, so to say? Is it you give the report to them and then whoever tenders it out, then it is their business to take advice on that? Or is there a procedure where it has to, whoever tenders the design actually has to go back to you to see whether it fulfils everything that you said in your report?

Chairman:

Mr CLOVER?

Ir Alan CLOVER:

Yes, our engagement was via the Geotechnical Engineering Section of the Hong Kong Housing Authority, which primarily dealt with the planning and the definition of the factors to be taken into account in the detailed design of the foundations and other geotechnical aspects of the project. Hence our scope of work covered just that and, once that was fulfilled, in effect our obligations other than in responding to enquiry and query on our report ends with the completion and the acceptance of our final draft. The only way that we would continue involvement, if we had then moved into the next stage which is undertaken under different areas of the Hong Kong Housing Authority. So again the short answer to your question is that our involvement and responsibility finished with the acceptance of the final report on this particular instance, because we were required to provide no further input. Our scope and brief only went that far, to provide advice up until the foundation report.

Hon Howard YOUNG:

OK, in the normal scope of things this was pointed out, there was talk about negative skin friction and what you should do about it in Paragraph 4.2.5, and that is the end of the report. So if whoever in the end is going to build the thing did not conform entirely to whatever was recommended in that paragraph then normally it would be, presumably the Housing Authority would be the person who would, would they be in a position to check that?

Ir Alan CLOVER:

Well, when they ...

Hon Howard YOUNG:

Or do they have to throw it back to you again?

Ir Alan CLOVER:

Well, when it moves into the next stage it would be presumed that the organisation would either engage its own professionals or have its own professional staff in-house to provide it expert advice and specialist advice on geotechnical matters. Also obviously when it moves into the next stages, there may be additional work that is undertaken which, because we are dealing with geology which is a natural phenomenon, it relies heavily on interpretation at any particular stage which, as a project advances, as more information becomes

available, could lead to a change in the interpretation. Also some of the aspects, negative skin friction being one of them, will depend on the configuration, that is the relationship between the layers that are compressing and causing the negative skin friction and the actual foundation itself. It could be that if a basement was involved for instance, and some other peripheral arrangements, the phenomenon of negative skin friction would not be an issue. So the point that we got to was that we did not actually know in detail what the form and development of the structure would be. Subsequently then, when it moves to the next stage, whilst we may have drawn attention to certain aspects of concern or aspects that needed further investigation and study, that does not necessarily mean that that remains true. It is up to the next stage to confirm and maybe come up with further evidence to either say that that is not an issue or confirm that it is an issue. The purpose of our reporting was to highlight these matters.

Chairman:

OK, thank you. 李卓人議員。

Hon LEE Cheuk-yan:

多謝主席。I would refer the witness to the foundation advice report, Page 13, Paragraph 5.2, which is concerning preboring. And at the end of that paragraph it said as follows: “As indicated in the above table extensive preboring is expected in order to install the PPC piles to a satisfactory founding stratum. Not only will it put heavy demand on the use of preboring machines (which are not commonly available) the time required for such works cannot be under-estimated. Therefore, the decision on adopting PPC piles should be carefully scrutinized.” There is a comment saying that the preboring machines are not commonly available. Can you explain more on this observation because we thought PPC pile is quite commonly used, especially in Tin Shui Wai area where almost all the Housing Authority projects are using PPC piles. So we thought that preboring is quite a standard procedure in the Tin Shui Wai area, so the machines should be quite commonly available. Can you explain more why you said here that the machines are not commonly available? Can you give a comment on this?

Chairman:

Mr CLOVER or Mr LEUNG? Yes, Mr LEUNG.

Ir Rupert LEUNG Kwok-yiu:

Yes, normally the pile driving contractors, the foundation contractors, they will have many plants of pile driving equipment, but preboring is not a thing that they always do, so they will not have many preboring machines readily available

because this, for most sites, preboring is not a thing that needs to be done. So for the piling contractors it is not a kind of machine that they have plenty of that is available in their equipment.

主席：

李卓人議員。

Hon LEE Cheuk-yan:

主席，I thought Tin Shui Wai, I think, I do not know because of course we are talking about this particular Site 31, Phase 1, but I thought the whole Tin Shui Wai geologically should be quite similar so there should also be a lot of hard pans apart from this particular site. So I would presume that in other areas where they are using PPC piles they should all have to go through this procedure of preboring. Is that the case? If that is the case then it should be commonly available or at least some of the contractors, foundation contractors who have done all those contracts for Housing Authority on the Tin Shui Wai site, which is quite a big site, should already have this sort of machine. Can you explain a bit? Is it because other sites in Tin Shui Wai actually do not require preboring?

Ir Rupert LEUNG Kwok-yiu:

Because Tin Shui Wai is quite a large area. For this Area 31 we have found these hard pans, it does not mean that in other areas in Tin Shui Wai there is a similar significant problem, so in other sites where PPC pile is used, that amount of preboring required may not be as extensive.

Hon LEE Cheuk-yan:

Thank you. Can I assume that if that is the case then these sort of machines are not commonly available and so if a foundation contractor had to use this sort of machine then is it easy to, say, rent such a machine even if it is not commonly available or would they really have to import this sort of machine? So the availability of this sort of machine, how do you observe? Can it be easily rented or no, anyone using this sort of machine had to import it from somewhere else and put a lot of investment into it? Can you explain also on this, what is your observation?

Ir Rupert LEUNG Kwok-yiu:

I think they can rent it.

Hon LEE Cheuk-yan:

And if they can rent it then do you know the cost and the time, and so when you compare this option to the H, the steel pile option, the H-steel pile option, how do you, what will be your observation on the costing? If there are a lot of requirement of preboring and then a lot of time required on preboring, but the H-steel pile is more expensive as we heard from some other sources, how do you compare the price, the cost when you put these two together?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

From material cost, steel-H pile is more expensive than PPC pile, but when it comes to, when you require extensive preboring, the cost of PPC pile may not be as favourable, then it will become not as favourable as compared with the steel-H pile because the preboring, you need to rent the machine and you need additional procedure that will increase the cost. And then it will no longer be as favourable as compared with steel-H pile. I am not sure whether it would still be more expensive or it will be cheaper, but the saving will not be as great.

Hon LEE Cheuk-yan:

主席，我還有一條問題。Another question, referring to 4.4.5 of Page 12 of the report. This 4.4.5 says that: “If the foundations are to be designed by the Contractor, in addition to fulfilling the Specification of the HKHA, the Contractor shall satisfy the GEO with their foundation design”, which means that they have to submit also the foundation design to the GEO. Is it a very common practice or requirement commonly known that contractors had to submit that foundation design also to the GEO office?

Ir Rupert LEUNG Kwok-yiu:

It is up to the discretion of the project office to decide.

Hon LEE Cheuk-yan:

But here you say that it is a circular requirement, so the circular of the Works Branch required that to be done by the Contractor when they do the design. So is it something that in a way not just for the project officer to decide but also it is the ...

Chairman:

It is a discretion.

Hon LEE Cheuk-yan:

... discretion of the Works Branch?

Chairman:

It is discretionary.

Ir Rupert LEUNG Kwok-yiu:

In this regard I think we need to go back into the technical circular 16/92 and of course I do not have a copy of that here so I am not quite sure about this.

Chairman:

If you read the whole paragraph it seems to be saying that: “As the site lies in the scheduled area in the Northwest New Territories, the requirement stated in the Works Branch Technical Circular No. 16/92 regarding submission of details of foundation works to the Geotechnical Engineering Office for checking shall be observed.” So you seem to be saying there that you need to submit to the GEO for checking and therefore it follows, the following sentence says that: “If the foundations are to be designed by the Contractor”, then the contractor shall satisfy according to that circular and submit, shall satisfy the GEO with the foundation works, and submit the designs to the GEO accordingly. That seems to be what this paragraph is saying unless you are telling me it is saying other things.

Ir Rupert LEUNG Kwok-yiu:

Yes, yes.

Chairman:

OK, that answers your question. Any further questions? No? If none, 余若薇議員。

Hon Audrey EU Yuet-mee:

I am looking at the HKHA reporting requirements and aims where they set out some guidance notes on the geotechnical assessment study. And one of the things it says which I assume are guidance notes to consultants like Acer who are going to produce the soil investigation report, one of the things says that you have to “identify problem areas and not generally to offer solutions.” I was

very puzzled when I read this. I do not understand why you are not to offer solutions.

Ir Alan CLOVER:

If I could just clarify. The guidance notes are actually an internal document for the Hong Kong Housing Authority. They are prepared for the Housing Authority staff use, but in this instance they were actually made available to us, so we could understand the manner in which Hong Kong Housing Authority staff would actually undertake this work themselves. The wording that I have used is actually a direct copy from the document, so I am not really the right person to answer that question, I am afraid. I am just trying to find it, I do have a copy of it with me but I did actually notice that when I was preparing the documentation, that it used those words.

Hon Audrey EU Yuet-mee:

So, you do not understand why as a consultant you were only asked to identify the problem but not to offer the solution?

Ir Alan CLOVER:

At that particular stage, because as I said to you, it might be that you do not actually know what the project is. You may have been just given a site to identify what the issues are, but you could not come up with the solutions because you did not actually know the context of how the site was going to be developed.

Hon Audrey EU Yuet-mee:

But in this case I think, when we are talking about the Tin Shui Wai Area 31, Phase 1, you were actually given the schematic designs and you know where the blocks are going to be put ...

Ir Alan CLOVER:

That is correct but ...

Hon Audrey EU Yuet-mee:

... and how high they are going to be.

Ir Alan CLOVER:

That is correct but this was a developing situation so when we prepared the first plan it was very much in outline and then as it moved on in fact the concept changed and there were revisions to the drawing, the layout, the number, the size,

so it was, this work was being done in parallel with the developments, with the concept development of the development itself. So in the early stages we could not offer solutions because we did not know what we were trying to target.

Chairman:

Mr LEUNG, you want to supplement?

Ir Rupert LEUNG Kwok-yiu:

Yes, I want to say that at the onset of the, for the geotechnical assessment report stage, it is not necessary there is a layout of, a development layout of the site, though in this case we have been given the layout of the site at the geotechnical assessment stage, but this layout changes, will change in the course of the study and that layout at the foundation advice stage is already different from that in the geological assessment stage, and I am not sure what the ultimate layout is, is it the same as that we have assumed in the foundation advice stage, whether it is the same.

Hon Audrey EU Yuet-mee:

So even though you might not be sure as to what the eventual layout is going to be, you could still give advice on matters such as the depth to which the piles should be driven. Are you saying that it does not really matter on the eventual layout of the construction and the superstructure?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

Because the pile depth actually depends on where the block is located because the ground geology varies from one place to the other. So for us to suggest what will be the range of the pile depth we really need to know where the block is located.

Hon Audrey EU Yuet-mee:

Yes, but then you are still able to say that the pile depth should be a minimum of 31 to 32m, even though you might not be sure as to the eventual layout?

Ir Rupert LEUNG Kwok-yiu:

You mean in this report, in the foundation advice report?

Hon Audrey EU Yuet-mee:

Yes, that is right.

Ir Rupert LEUNG Kwok-yiu:

In the foundation advice report we have based on the layout plan we were given at that stage, in the foundation advice report stage.

Hon Audrey EU Yuet-mee:

So in other words the pile depth might depend on the eventual layout? Is that what you are saying?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Hon Audrey EU Yuet-mee:

What about the number of piles to be driven? Would that also, I am also of course talking about PPC piles only, would that also depend on the eventual layout?

Chairman:

Mr LEUNG.

Ir Rupert LEUNG Kwok-yiu:

It depends on the loading of the tower block, of the structure.

Hon Audrey EU Yuet-mee:

Yes, now one of the things that you mentioned in the report is the percentage of preboring, and I think in Paragraph 5.2 you gave a range of the percentage of the preboring that should be done.

Ir Rupert LEUNG Kwok-yiu:

Yes.

Hon Audrey EU Yuet-mee:

Can you tell us what determines the percentage of the preboring? What are the factors that you look at? In other words, does it only depend on the geological conditions or would it also depend on the eventual superstructure, the height, the loading, the layout and all that?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

Yes, at that stage we have about five or six bore holes per block, or under the footprint of each block. And from those bore holes, there are some bore holes that we find hard pans, some we do not find hard pans. So, based on this proportion we estimate what will the likely percentage of area hard pans will be encountered, and based on that we will estimate what will be the amount of preboring required. This percentage, and therefore preboring required, is indicated here for the cost estimate purpose, and while actually where preboring is actually required will require confirmation by further ground investigation.

Hon Audrey EU Yuet-mee:

So in other words it really depends on the layout, where the superstructure is going to go. You look at the footprint and then you look at the geological conditions in order to arrive at the percentage for the preboring?

Ir Rupert LEUNG Kwok-yiu:

Yes.

Hon Audrey EU Yuet-mee:

Now, what I have difficulty understanding is that, as things eventually turned out, the tender was awarded to a particular piling contractor, and the documents show that this particular piling contractor then had some variations proposed on the preboring, and I will read you the particular paragraph. I will read you the particular paragraph first. It says: "Regarding the 'hard-pan' ground condition in the areas, as we have carried out piling works in the adjacent areas, we consider precast prestressed concrete piles can be driven through for most of occasions. We shall carry out trial working piles to determine the driving condition in different parts of the site. If piles are found on the hard pan layer, we shall carry out settlement calculation to justify our piling design with additional Site Investigations if required. Preboring works will only be carried out at certain pre-determined problem areas as actual site circumstances require." So this paragraph does not say that no preboring will be done but it suggests that perhaps a preboring percentage will be met, and they are going to do some calculations. Now, can you explain to us how does calculations affect the percentage of preboring?

Ir Rupert LEUNG Kwok-yiu:

Because the pile, even the pile when it is found on a hard pan, it may still have the right pile capacity but just that when the building is built, under that loading, the soft layer below the pile toe may be, when under compression, may induce larger settlement. So I think what it says in that paragraph is that they would check the settlement and justify this, the settlement will be, the estimated settlement will still be OK.

Hon Audrey EU Yuet-mee:

But is this an acceptable way of carrying out the piling? In other words, that they would do it sort of by trial and error and settlement calculation?

Chairman:

... to overcome the problems that you have identified?

Ir Rupert LEUNG Kwok-yiu:

Trial and error?

Hon Audrey EU Yuet-mee:

Is that not what it suggests? "We shall carry out trial working piles to determine the driving conditions in different parts of the site."

Chairman:

Ms EU, can we show the witnesses the particular document so that they can read it rather than trying to comprehend what is being said? No, you do not need to give it. The secretary can do that. Can we just extract that particular ...? Sorry, some housekeeping matter. Yes, actually you only need to read that particular paragraph. I think the question is: is the method being described there an acceptable method to overcome the problems that you have identified in relation to the site?

Ir Alan CLOVER:

Having read the paragraph, this statement is in respect of the trial piling and I have the impression that what the intent was is that they would undertake trial piles which they would utilise to confirm two aspects. And obviously it would be presumed that the important issue is where you do your trial piles because there would have been site investigation, there had been site investigation, and therefore areas of hard pan had been identified. And it would be presumed that the trial pile would be specifically located in that area, and then be driven, and that could have two consequences. That one consequence could be that you

could actually discover that you could drive that pile down through the hard pan so thereby it is not an issue any more. Or alternatively if you found that you could not drive the pile through the hard pan, knowing the geology, the soil parameters in that area, you could then undertake an analysis to establish whether a pile founded in that manner would give you the acceptable bearing and settlement characteristics. And I would presume from that they would then draw the conclusion on how they could proceed on the site, and that could be a function of how deep the hard pan was.

Hon Audrey EU Yuet-mee:

So are you therefore saying that it is an acceptable way of overcoming the problem?

Ir Alan CLOVER:

Well, it would be totally dependent on a trial pile being undertaken and analysed appropriately.

Hon Audrey EU Yuet-mee:

Now, in answering a question from Dr HO, I think you said that the minimum pile depth should be 31 to 32m, and you were asked whether 22 or 26 was acceptable and you said no. But looking at this particular letter and also the attachments to it, it gives one the impression that a pile can be driven to 22m instead of 31 or 32, and it can be justified by settlement calculation. Now can you explain that to us, and do you agree that this is something that can be justified by settlement calculation?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

If you are talking 22 metres, according to the ground investigation we have sunk for Block 1, 22 metres is not on the hard pan, it is not on the hard pan. 22 metres, the SPT N-value is just 20 something or 30, it is not on the hard pan.

Hon Audrey EU Yuet-mee:

Is 22, a pile depth of 22 metres, is that something that can be justified by settlement calculations?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

Personally I will not see that the pile will be driven to set at the SPT of 20.

Hon Audrey EU Yuet-mee:

I think the witnesses probably have not seen, of course, the attachments to the letter sent by the Housing Authority accepting the particular tender. I do not know, Madam Chairman, whether we can provide the attachments plus the acceptance letter to the witnesses and ask them to comment on really the workability or the ...?

Chairman:

I think this one, the whole set we can, yes, because we obtained that separately from the Housing Authority.

Ir Alan CLOVER:

If I can respond? In the work that we had undertaken we had a certain amount of information to which we supplemented by our own experience of the area. From that work that had been done in Area 5 and 16 it had come to be our opinion that you could not find a PPC pile until you had reached a much higher SPT number, up in the order of about 80. Based on the geology information that we had and the test results that we had, for Block 1, 80 did not occur at 22 metres. It occurred at a much lower depth. Therefore I think we would have been moving forward on the basis that we consider it unlikely that a pile could be founded at 22 metres, and even on the basis of settlement calculations.

Hon Audrey EU Yuet-mee:

So, in other words, Mr CLOVER, looking at those documents which were attachments to the contract accepting the piling tender, are you saying that no reasonable structural engineer could have accepted those terms?

Ir Alan CLOVER:

I think the important aspect I think here is that we had a certain amount of site investigation. These documents do say that it was the intention of the contractor to undertake further site investigation. And also the comments made in here are not absolute in the manner that they said they were definitely going to do it that way. It was all subject to further testing and proofing, if you like, on the site. So I do not think it would have been too unreasonable to accept the contractor's proposals, but it would be on the basis of what the contractor was saying himself, what he would do. And therefore the important issue was to make sure that he actually does that work, so it is the next stage, I think, that the decision becomes important.

Hon Audrey EU Yuet-mee:

Yes, but it is not just the question of doing the trial piles and where you do them because there is also the question of pile depth and the SPT N-value and so on, so my question, my previous question to you was, looking at those documents you now have, which I am telling you now are the attachments to the letter accepting the piling tender, would you say that a reasonable structural engineer could have accepted those terms?

Chairman:

Mr CLOVER, if you find that you are not in a position to answer the question then just say that you are not in a position to answer it. 梁先生。

Ir Rupert LEUNG Kwok-yiu:

Just for the driving of piles we need to fulfil the driving the pile to set by a dynamic formula. For driving a pile to set means you drive until a certain point then you calculate the dynamic formula that the pile capacity, the penetration is really true. And if from, if you say the pile set, because in this letter it does not say that the pile will be found at a depth of 22 metres, but if I look at the drill holes at 22 metres, because the SPT is just 20 or 30, our opinion is that the pile cannot be driven to set at that depth. It shall have been driven deeper.

Chairman:

Have any of the tenderers or eventually the contractor awarded the contract ever approached you to seek further clarification on the foundation advice report?

Ir Rupert LEUNG Kwok-yiu:

No.

Hon Audrey EU Yuet-mee:

Sorry, Chairman, can I just ...?

Chairman:

You want to continue?

Hon Audrey EU Yuet-mee:

Yes, thank you. Sorry.

Chairman:

I thought you had finished. Sorry.

Hon Audrey EU Yuet-mee:

In your synopsis to the soil investigation report your conclusion was, because of a number of reasons you set out there, the use of PPC pile was impractical. Did it surprise you that eventually PPC piles were used for this site?

Chairman:

That is in your own synopsis.

Ir Alan CLOVER:

Yes, if I could, I think it is important you should take the whole context in which the statement was made because it actually links it to time and programme, and of course there are many factors that need to be taken into account in the actual selection of a pile type. Obviously the whole point of going to tender on a design and construction basis is that you are relying on the expertise, maybe resources at a particular time, of a contractor and therefore the important issue there, I think, was in respect of time and the need for preboring.

Hon Audrey EU Yuet-mee:

You mentioned, of course, the question of time and cost. Now, based on your report an estimate of the cost for the piling work was done, and eventually it was put out to tender on that basis, and when the tender came back the cost was almost a quarter less, I mean it was 24 percent less than the budgeted estimate. And I do not know whether you are able to assist us on the question of cost? Would you be able to give us any comment if we tell you eventually what was the tender price for this particular piling contract, PPC contract?

Ir Alan CLOVER:

I personally cannot give you any comment on that, I am afraid, from my own personal knowledge.

Ir Rupert LEUNG Kwok-yiu:

Yes, we have, we know that H-pile, the material cost will be higher than the pre-cast concrete pile, and also H-pile will normally be found at a deeper depth as compared with PPC pile. Then if a tender based on the H-pile will normally be more expensive than a tender in PPC pile. But taking into account that if we are going to do a large amount of extensive preboring, then this difference may

become less because we had not gone into detail of the cost estimate based on the two options in this study, so that is all I could say.

Chairman:

Thank you. 李卓人.....You want to.....啊，你未問過？何俊仁議員，他未問過，讓他先問。

Hon Albert HO Chun-yan:

Thank you. Just a few supplementary questions. Now, can I take witnesses back to Paragraph 5.2? Now in the table you gave an estimation of the percentage of piles, namely PPC piles, requiring preboring. Now, is it not that this percentage are worked out according to the knowledge of the layout and which you check against the precise location of the hard pans in that particular area?

Chairman:

Mr LEUNG?

Ir Rupert LEUNG Kwok-yiu:

Yes, we have for this report we have a layout plan of the main blocks so these blocks are referring to the block in that layout plan, and in the footprint of each block or in its vicinity we have the bore holes, and then there are some bore holes we have encountered hard pans, some we have not. So this estimate is based on knowledge that there are some bore holes with hard pans and then bore holes without hard pans so it is an estimate on that basis.

Hon Albert HO Chun-yan:

Is it possible, at least theoretically, that preboring could be avoided as far as possible if the layout is changed so as to avoid driving the piles against the hard pans?

Ir Rupert LEUNG Kwok-yiu:

You have to do very extensive ground investigation to locate which areas you do not have hard pans.

Hon Albert HO Chun-yan:

But then you have to work out a separate, entirely different layout and you know, carefully seeking to avoid the position of the hard pans?

Ir Rupert LEUNG Kwok-yiu:

If you intend to avoid totally the hard pans you will need to carry out a very extensive investigation.

Chairman:

You need to know where they are?

Ir Alan CLOVER:

Exactly, and if I can add to this? In the Phase 1 area, I think there are 53 boreholes, of that sort of order, and there are sixteen of those, about one-third, actually have a hard pan in it. So generally say about 30 percent for the whole area as a whole, but obviously there is some concentration but generally they are quite reasonably spread in their distribution. There are some areas, and hence because of the blocks' layout some blocks will have more, some will have less, but this is a phenomenon, really it is just statistics. You are playing to some extent with numbers to try and give at least some indication for the next stage, but the information will only be as good as the number of bore holes, and just because you have a bore hole that does not have a hard pan, it does not mean that two metres away from it there is not a hard pan. And these bore holes, I believe, were spaced in the order of 15 to 20 metres apart on average across the whole of the area.

Hon Albert HO Chun-yan:

I see. You just mentioned that the minimum limit of the pile that you would have thought is necessary for it to be founded on the bedrock stratum or the layer of rock with an SPT of about 100 would be 32 to 38 ...

Chairman:

31 to 32.

Hon Albert HO Chun-yan:

... 31 to 32, right? But it seems that they are suggesting, I mean the contractor is suggesting that there may well be situations where they can found the piles on certain hard pans and then, subject to certain adjustment calculations. Is that feasible?

Chairman:

We are coming back to the question which Ms EU raised earlier, and I think we are still trying to understand whether this proposal here is workable, and

perhaps you can assist us in this regard. How do you know whether it is a hard pan or whether it is just rock bottom? Who knows?

Ir Alan CLOVER:

The phenomenon of the hard pan is a feature of the manner in which the original rock has decomposed to a weathered soil, and because the original rocks were of a sedimentary origin in some areas, obviously sedimentary rocks themselves vary in their characteristics. And then when they weathered to form the soil you end up with these hard areas because the original rock was more resistant. The actual distribution of that within the ground is totally unknown vertically and horizontally because that is just a characteristic of rock. In respect of how you know it is a hard pan or whether it is the other material, that comes from purely an interpretation of the site investigation results, and I must stress on the word “interpretation”. We are dealing with geology which, it is quite common for two people to take the same information and come up with a different conclusion. The possibility of that decreases obviously with experience and the amount of information that you have. So the actual initial situation is not absolute both in terms of opinion and location, if you like, on a site. Hence a certain conclusion can be reached based purely on the site investigation information, but the real proof is by actually doing trial work in the field. That is fundamental in this situation. Hence the phenomenon of the hard pan is we cannot differentiate it from what is underneath it because you could have a hard pan that has a very high SPT, but the material underneath it could also have an SPT of 100, which is OK for founding. Or you might have a situation that you have a hard pan of 200 but the material underneath it is only 25. That would be the one that would be of concern.

In terms of the piles they themselves, the significance of that and the likely occurrence of a softer zone occurring beneath the hard pan decreases the deeper that hard pan is, i.e. the closer you are getting to rock. Therefore you have to put all that information together as part of your trial pile to establish, if you felt that you could found at a higher level you would have to prove that by having the appropriate extent of site investigation around your trial pile location, and undertaking the loading of the pile and doing a detailed settlement analysis of the pile. Because another aspect that needs to be taken into account is that the pile generates its bearing or load-carrying capacity from two components: the friction on the side of the pile and the end-bearing of the pile itself. What are critical there are the parameters that you actually assign to that.

We as part of our evaluation based our parameters on purely laboratory information specific to this area and the SPT results because the SPT can be used to actually derive by empirical relationships other parameters that you use in the foundation design. But the real proof is by actually undertaking a pile test. And it is not unusual for you being able to use higher loads on piles once you

have done a pile test because, for a number of reasons, being the sample in the ground may have been disturbed, the way you test it in a laboratory, the actual conclusion that you come from a laboratory test may be conservative. So it is possible that founding on a hard pan could be proven to be adequate, but I do not, we do not know enough about the next stages that were adopted in this to actually be able to comment whether it was actually possible at this particular location. It is just that, based on the work that we undertook up until the point of the foundation advice report, we had drawn the conclusion – we take into account the experience that we had had on adjacent sites – we made the statements concerning what we felt were the depths that would be required for that type of pile.

Hon Albert HO Chun-yan:

But would it be more time-consuming if trial piles were used?

Ir Alan CLOVER:

Yes.

Hon Albert HO Chun-yan:

You know, in lieu of the method of preboring?

Ir Alan CLOVER:

You would still have to do some trial piles, but preboring is very time-consuming.

Hon Albert HO Chun-yan:

It is even more time consuming than ...?

Ir Alan CLOVER:

That depends how much you have to do, of course, because there are a number of ways you might do it. The extreme case is that you would bore a pilot hole at every single pile location, determine whether there is a hard pan or not, and then do your prebore. Another way of doing it is that you drive the pile, if you hit a hard layer that you considered to be too high or your settlement analysis indicated would be unacceptable based on other information that you had of the area, you would take the pile out and then do a prebore.

Hon Albert HO Chun-yan:

How do you know the settlement if the pile is not loaded yet with the building?

Ir Alan CLOVER:

The settlement comes from a theoretical calculation of the load that it will carry.

Hon Albert HO Chun-yan:

I see, so calculations can be done?

Ir Alan CLOVER:

Oh, yes, very much so, yes. Because obviously the whole foundation is designed on the basis that each pile will carry a particular load, which is derived from the structural load which can be calculated quite readily, and there are other aspects of dynamic load, wind load, aspects like that, so you actually know what load the pile has to carry as part of your design.

Chairman:

Mr LEUNG, you want to supplement?

Ir Rupert LEUNG Kwok-yiu:

Yes, settlement calculation can be carried out but its accuracy depends on the accuracy of the parameters, the soil parameters, the soil elasticity you assumed in your settlement analysis. And of course the more investigation, ground investigation you have done, the more precise picture of the ground conditions you know, and which area, the variation of the soil properties across the site. You have that picture and then you can do a better settlement analysis.

Hon Albert HO Chun-yan:

I am not sure whether I understand you correctly in that PPC piles could be used without preboring even if the piles were founded on hard pan layer but subject to adjustment calculation which must be done accurately and carefully.

Chairman:

We are trying to reconcile your earlier statement that with the use of PPC piles then you need preboring, and one specific question put was, is there, if they do not use preboring is there any alternative, and your answer was categorically no, "no, there is no other alternative". Now it seems that this particular method is somewhat acceptable. Of course there are other considerations but nonetheless it is an acceptable method to replace preboring. So this is what we are confused about and we need your help to clarify.

Ir Alan CLOVER:

If I can clarify, I think the response to the previous question as an alternative to preboring was actually given in the context of an alternative method for going through the hard pan, not as an alternative way of overcoming the problem. To undertake analysis based on other information, site investigation, is a different matter.

Hon Albert HO Chun-yan:

So is it still necessary to break through the hard pan and land the piles at the bedrock? It is absolutely necessary so there is no question of landing or founding on the hard pan?

Ir Alan CLOVER:

No, it is not absolutely necessary. That is what we are saying. It is not absolutely necessary. It will depend, it will be very site-specific and location-specific within the site.

Hon Albert HO Chun-yan:

You mean it is not absolutely necessary to found the piles on the bedrock? Is that what you are saying?

Ir Alan CLOVER:

Yes.

Hon Albert HO Chun-yan:

Sometimes it can be found on the hard pans?

Ir Alan CLOVER:

Correct, yes.

Chairman:

Depending on whether the sub-layer is hard enough?

Ir Alan CLOVER:

Exactly.

Hon Albert HO Chun-yan:

But how do you know that?

Chairman:

By doing the calculation. Is that what you mean? By doing that calculation.

Ir Alan CLOVER:

You would do the calculation. The context that I would see obviously, the simplest context that you would be achieving that is that you have a hard pan but you have, the layer underneath is not a particularly soft layer so there is no need to go through it because you have actually got what would be the bearing level of the PPC pile is actually beneath the hard pan, i.e., if you have really got a 100 beneath the 200 you do not need to go through it. But if you have got a 25 beneath the 200 you should go through it.

Ir Rupert LEUNG Kwok-yiu:

The settlement will depend on what, if you found a pile on a hard pan, the settlement will depend on what is the soil below the hard pan, whether it is a thick layer of soft soil or it is a very thin layer of soft soil. That makes a difference. If it is a thin layer of soft soil the settlement may not be very great. If it is a very thick layer of soft soil, then the settlement will be great. How soft it is, that is the elasticity of the soil, and the thickness of the soil, all these need to be taken into account in the settlement analysis, and all this has to be found out, you have to gather this information by the ground investigation.

Hon Albert HO Chun-yan:

Sorry, final question. According to your investigation report, what percentage of these hard pans found in this particular area can be accepted for founding purpose? Because that is quite relevant or directly relevant to the calculation of the length of the piles, because it seems that in certain situations or at least at certain spots piles can be at a shorter length.

Ir Rupert LEUNG Kwok-yiu:

In our report we have considered that the hard pans have to be gone through.

Hon Albert HO Chun-yan:

It has to be gone through?

Ir Rupert LEUNG Kwok-yiu:

It has to be gone through the hard pans, but whether you can justify it by a settlement calculation it will depend. You have to do a detailed foundation

design and then do a settlement analysis before you can proceed to that stage. That is beyond the foundation advice report.

Chairman:

Mr CLOVER, do you want to supplement?

Ir Alan CLOVER:

Yes, if I can add to that as well. Of course, if I could return to the statement I made that we are dealing with geology, the information, the assumptions, the conclusions that you can reach are only as good as you are prepared to put confidence in your interpretation of the information that you have at any one time. I think on the basis of the information that we presented in our foundation advice report, particularly in respect of the number and the spacing of the bore holes, we were of the opinion that it was extremely unlikely that you would be able to found on the hard pans. That does not mean that you could not found on hard pans, though, because if somebody was prepared to come in and do a lot more closely-spaced site investigation as part of their foundation exercise, they could possibly prove to the satisfaction of themselves and others that in particular areas it was perfectly possible to found on a hard pan.

Hon Albert HO Chun-yan:

But Chairman, according to what Mr CLOVER just said, then without the benefit of further investigation one cannot come to the conclusion that the using of piles of, say, 22 or 26 metres are totally unacceptable. It may be acceptable. It all depends on further site investigation.

Ir Alan CLOVER:

I think the context is that we are saying based on the information we have here that it was extremely unlikely that you could found at that level and I would suggest that even additional site investigation would have also shown that it was extremely unlikely that it could found at that level.

主席 :

李卓人議員。

Hon LEE Cheuk-yan:

主席。I would like to refer you also about nearly the same as what Mr HO has mentioned but in another angle. It is your 5.4 foundation option on Page 14 where you said that: “If this foundation option is adopted”, meaning the PPC, then “it is necessary to carry out additional drilling for more information on the

ground conditions for deciding the extent of preboring and to carry out rigorous settlement analysis during the design stage.” So how long it takes usually if I take this project and I want to really do what you said, a rigorous settlement analysis, to really decide the extent of preboring, how long it takes for one to do that? I am sorry I have no practical experience in this although I studied engineering but that is too many years ago!

Chairman:

Mr CLOVER.

Ir Alan CLOVER:

Unfortunately I do not think there is a simple answer to that because it is like many things in life: if you are prepared to throw enough money at it, you can do things either very quickly or very slowly. In this particular context, of course, it would depend on the number of drilling rigs that you were prepared to mobilise to undertake your site investigation. The actual analysis itself once you have the results is not that complex. I think the major time issue in here would be actually obtaining the information in the field by way of additional site investigation.

Hon LEE Cheuk-yan:

How long, I mean in the normal case, how long it takes? One month? Two months or one week, two weeks?

Ir Alan CLOVER:

I think my colleague is better to respond to that because he is the person that does it the most.

Ir Rupert LEUNG Kwok-yiu:

For drilling a drill hole to that depth I think it would normally take about a week's time, one week's time. And if you, say, for this building block you plan to do more ground investigation, say if you plan to do ten more drill holes, if you mobilise five rigs onto the site then it would take about two weeks' time to obtain the ground information.

Hon LEE Cheuk-yan:

Because this needs to be done in the design stage so would it require a contractor who is interested in tendering to do site investigations before they tender if they want to do a design on the foundation?

Ir Rupert LEUNG Kwok-yiu:

Yes, they are allowed to, if they want to do some investigation. I think according to Housing Authority practice if the tenderers want to do some ground investigation before they submit a tender they are allowed to do so.

Hon LEE Cheuk-yan:

So if they are allowed to do so then they should be able to, say if they tender for 22 metre pile lengths, they should be able to justify it already if they have already done all the ground work on site investigation to justify the design. Is that the case then, that they can do that if they want to, to justify the design of 22 metres?

Chairman:

I think they can only answer to their knowledge because they are not the persons to grant such approval or otherwise. Mr CLOVER?

Ir Alan CLOVER:

Yes, that is exactly how I would respond. Obviously each contractor has his own extent of knowledge and experience, and he would take that into account when he made his proposals, and he would also have his own plan, no doubt, of how he would intend to prove that and proceed on that basis. So it would vary from contractor to contractor.

Chairman:

OK, if members have no further questions I shall bring today's hearing to a conclusion. Mr CLOVER and Mr LEUNG, thank you very much for coming around to assist us. In future if this Select Committee needs your assistance we shall certainly request you to come again. In the meantime, thank you very much for your time.

主席 :

各位議員，我們要移步到會議室C進行閉門討論，多謝。

(研訊於下午5時35分結束)