AGS (HK)
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GROUND INVESTIGATION GUIDELINES 03 - PROCUREMENT

Introduction

This guideline is intended to provide project proponents with advice on GI procurement by identifying the key players in the Hong Kong market, the types of standard contracts employed and the most applicable for works being considered and tendered, as well as setting out general procurement timescales. This guideline should be read in conjunction with the related Contract Documentation Guideline (GIG01).

The information given in the following sections is based on present working conditions, which may be subject to change through Government legislation or market forces. These notes should therefore be used only as a guide to GI procurement. For government contracts due reference should be made to the ETWB Project Administration Handbook which is available at the following web address - http://www.ced.gov.hk/eng/publications/publications_f.htm.

Key Contract Players

As common to all civil engineering based procurement practices, in GI works the key contract players can be subdivided into Clients, Consultants (Designers), Main Contractors and Subcontractors (often providing specialist services). By far the greatest volume of construction works is carried out on behalf of Government Departments, however the market is changing and private and Corporation clients are having an increasing important role. The following list provides a general breakdown of the 'Key Contract Players' in the GI market in Hong Kong being augmented by Figure 1 & 2 which also set out related standard procurement methods employed.

- GEO Materials Division – Lets and administers GEO Term Contracts (LPM, Regional, Marine, Geophysical, Laboratory etc) and reviews Consultant designed GI's for government departments;
- Government Departments – Those government departments dealing with infrastructure development such as HKHA, HyD, WSD, DSD, ASD, EPD & TDD.
- Corporations – Large corporate bodies of the KCRC, MTRC & AA who will either require investigations specifically for infrastructure projects or related commercial/residential developments;
- Private Clients – Mostly property developers involved in construction of new residential areas or office blocks with often associated infrastructure elements (eg., Discovery Bay and its tunnel), or for industrial or main utility installations (eg., CLP Chi Ma Wan Cable Tunnel). A variety of small construction based private clients also exist.
- Consultants – Mostly engineering companies involved in either the geotechnical interpretation of the ground which is often allied to mostly civil or structural components of a project;
- GI Contractors – For government works less than HK$ 3M both the Group I and Group II list of Contractors (as defined by Environment Transport Works Bureau (ETWB) Technical Circular No. 13/90) may tender for the works. For government works greater than HK$3M only the Group II List of Contractors can tender for the works. For a list of Group I & II Contractors go to http://www.etwb.gov.hk.consultants_and_contractors/. To be approved onto these lists prospective GI Contractors are required to meet GEO defined criteria such as safety, technical ability, appropriate staffing levels & ownership of plant and a sound financial record. For works with large corporate bodies, it is common to find each corporation contains a list of approved suppliers and contractors;
- For government departments other than the GEO, GI Contractors not on the Group I & II ETWB lists may be considered for Term Contracts or individual contracts respectively if they appear on their respective approved lists. For private clients any GI Contractor may be considered but the general practice is to engage Contractors accepted by Government;
- GI Subcontractors – on large scale government GI contracts or on private contracts the main GI Contractor may be allowed to subcontract some areas of either the fieldworks or laboratory testing to companies on and not on the Group I or II lists. These may include specialists in certain in situ (eg., hydrofracture or geophysical tests) or laboratory tests (centrifuge testing), or companies who will carry out standard drilling/laboratory testing. The subcontracting of these works must be to the approval of the Engineer and the Client.

Notes

In practice at the present time in Hong Kong tendering for term or government contracts is restricted to ETWB Group I & II list contractors as set out in the above sections. However, recent WTO legislation that has now been adopted by the HKSAR means that any company may tender for any GI Contract with an estimated tender sum greater than HK$50M.

Choice of Best Method of Procurement

The choice of what is the best method of procurement for required GI works directly relates to the Client, contract associations, the scale and complexity of the works, and the

time framed allowed for not only procurement of services but for their execution and the overall project programme.

Figure 1 provides the general methods of procurement used by the majority of Clients, while a more detailed account of the types of contract employed are set out in detail in the Contract Documentation Guideline.

In general for Government single large investigations, Corporation or private client contracts a project specific Specification and Conditions of Contract, along with a 'Remeasurable' Bill of Quantities (BQ) is generally accepted as the most appropriate method of GI works procurement. The advantages of this type of contract procurement is that known unique site conditions can be clearly set out and catered for; the scope of the works can be determined accurately at the tender stage (there by precluding the need for numerous variation orders &/or disputes, during the Contract), with an associated understood works programme, and the BQ can be priced by Contractors with the confidence that only minor unknowns will exist, which will have hopefully limited effects to their quoted rates. For Term Contracts the normal procedure is the use of a standard Specification and Conditions of Contract with a 'Schedule of Rates' BQ. The 'Schedule of Rates' basis is employed due to the fact that in many cases the overall scope of works over the Term Contract period cannot be accurately determined at the Tender Stage. This means that there is a certain amount of risk that usually is borne by the GI Contractor in terms of apportioning sufficient resources to complete Works Orders in the required time frames, and gaining a fair price to do the works. For this reason many GI Contractors dislike these methods of measurement and pricing.

Due to the relative short duration of all these contracts no provision for price fluctuation is normally given.

Evaluation of Tenders

The evaluation of tenders should be carried out systematically and objectively. The tender documentation should set out clearly the required elements to be provided by prospective Contractors so that sufficient information is available for a balanced, fair and timely assessment to be made. Information such as method of execution of the works, method statements for any specialist works, resources, project experience, CV's of key personnel, safety and quality management plans/systems, nomination and experience of subcontractors, and a credible programme should all be sought. For government tenders performance on previous government contracts is additionally considered in tender evaluations and is playing an increasingly important decision parameter for award of these works. Due to the relatively low costs of GI works, when related to construction, the financial standing of a tenderer is not considered as such an important determinant. If tenderers do not provide the required documentation then a decision of either disqualification or clarification by the Client through the Consultant/Designer will need to be made.

It is the usual case that the Consultant/Designer will carry out a pre-tender estimate of the works based on available up to date rates.

The three lowest tenderers, in terms of total costs for the works, if they have meet all tender submission requirements, will then be generally considered in more detail, with the remaining tenders not considered further. The exception to this rule is that if a very low price is tendered for the works (perhaps in the region of 20% lower than the second lowest tenderer), the evaluator may consider that this cost is below that feasible to undertake the required works to technically acceptable levels, in a safe and environmentally sensitive manner, to the necessary project timescales. In these circumstances the lowest tenderer should be discounted. The rule of thumb is that the lowest tender should not be automatically considered to be the most appropriate option.

After identification of the legitimate three lowest tenderers, comparisons are made between the BQ rates quoted by these companies with any significant 'under' or 'over' priced items, as well as discrepancies in calculations, clarified.

On completion of the financial evaluation, final selection of the 'Preferred' Contractor for recommendation to the Client is undertaken. For Government contracts the standard formula weightings are 60% price and 40% past performance, although certain Departments (eg., DSD & WSD) do have a more comprehensive technical evaluation assessment than simply past performance. For Corporations in general if all Contractors pass the technical section of the evaluation then the lowest tenderer is usually awarded the works. For private clients the lowest tender price is usually accepted without little if any consideration of past performance, technical ability, personnel etc. In certain circumstances private clients will negotiate with the two lowest price tenders to drive the cost of the required works down further. This is, as previously indicated, not the recommended approach for tender evaluation. Ideally tender evaluation should be based on a 50% technical and 50% price weighting scheme, as this will provide the most appropriate balance between technical excellence, experience and past performance against value for money, however as can be seen this is not the current situation.

The assessments of tenders is completed by the issuing of a Tender Evaluation Report, which in its conclusion must provide a recommendation of the 'Preferred' Contractor to undertake the works, however it is Client's who have the ultimate award decision. Tender evaluations are usually completed over a two week period on provision of the contractors tenders.

GI Contract Procurement Timescales

It is assumed in determining GI procurement timescales that the required GI scope of works for projects has been identified with the locations of exploratory investigations, amounts of in situ tests and samples derived along with the required volumes of laboratory tests defined. In addition, as part of the Desk Study the land status and information on utilities will have been collated and considered appropriately.

An accurate assessment of the timing to procure GI Contracts is essential so that sufficient time is allowed within the overall Contract period for relevant ground investigation information to be gathered, so that appropriate interpretation can be carried out, further investigations undertaken if necessary, and ultimately to be fed into the other engineering design elements of the works in hand.

Too often GI contract procurement is only allowed a cursory amount of time in overall Contract programmes due in part to a lack of appreciation of the necessary requirements and associated realistic time frames to achieve individual elements. In addition, some clients and project managers still have the perception that GI's are a relatively unimportant part of a engineering project. Therefore, it is important for the Geotechnical Manager to explain to the Project Manager on what is deemed a reasonable time period to procure and execute

the GI contract such that the relevant information can become available for design.

It should be noted that a sound appreciation of the procurement process should also be reflected in the amount of time allowed within GI Contracts to carry out the defined scope of works, ie., professionals producing tender/contract documents must have, or seek, sufficient knowledge, (including if necessary advice from Contractors and Specialist Sub-contractors) of the works being tendered for. Contract defined substantial completion dates and liquidated damages should consider the complexities of the works, such as access, permit requirements, environmental sensitivity of sites, restrictions to working hours, allowances for public holidays and bad weather, safety procedures, etc. The GI Contractor should be given an adequate and fair amount of time to complete the works in a safe and satisfactory manner.

Provision of acceptable completion dates for all parties may be achieved by prioritising works or by practical subdivision of types of works within a GI Contract. The normal practice is to subdivide the works into fieldwork and laboratory testing and related reporting of each. However, certain of the following subdivision elements could be used so that required ground investigation information can be made available at the right time:

- Subdivide the fieldworks into land and marine/shallow water sections;
- For large GI's consider subdividing the fieldworks by geographical areas or prioritise the works such that an even distribution of the results can be obtained;
- Subdivide the fieldworks into the completion of non-intrusive (geophysical/mapping) before intrusive works (drillholes and trial pits). This is best practice as the findings from the initial ground based surveys may be used to refine the second phase works;
- Certain in situ testing may require long periods to complete, eg., hydrofracture testing, therefore subdivisions for the holes in which these types of tests are carried out could be considered or special attention paid to planning these holes;
- If horizontal or long inclined holes are to be drilled then these usually require a substantial period to complete and therefore could be considered as an individual section within a Contract;
- If access to proposed works is uncertain during the fieldwork period allowed then these works may be 'subject to excision' and therefore could be planned for in terms of completion in a separate section of the contract;
- Groundwater or other installed instrumentation within a contract that requires long term monitoring should be sectionalised;
- Certain laboratory testing may require a phased approach, with the results of a first tier of tests defining if further phases of tests are required. In these cases a considerable time lag may occur between the first and second phases and completion of these types of tests and even in some cases phases of test should be considered. For example classification of proposed dredged marine mud by ETWBTC No. 34/2002.

Often due to difficulties in funding, environmental sensitivities, changes in alignments, design layouts or scope of works, and public and political opinion, many projects are delayed with reference to their initial overall programmes. This ultimately in many cases is transferred directly to the GI Contracts where there is a temptation to reduce the contract period to suit. This has implications for the entire contract as reducing the time scales for the same amount of works may lead to not only an increase in the cost of the GI works (including their supervision), but also safety problems on site and poor ground investigation. Based on the information provided by this type of investigation either ground interpretation may be conservative or wrong, which ultimately will lead to over design and related cost increases, or construction delays and an associated 'Claim' driven construction contract. In these circumstances professionals should seek to minimise any such 'knock-on' effect to procurement of GI Contracts.

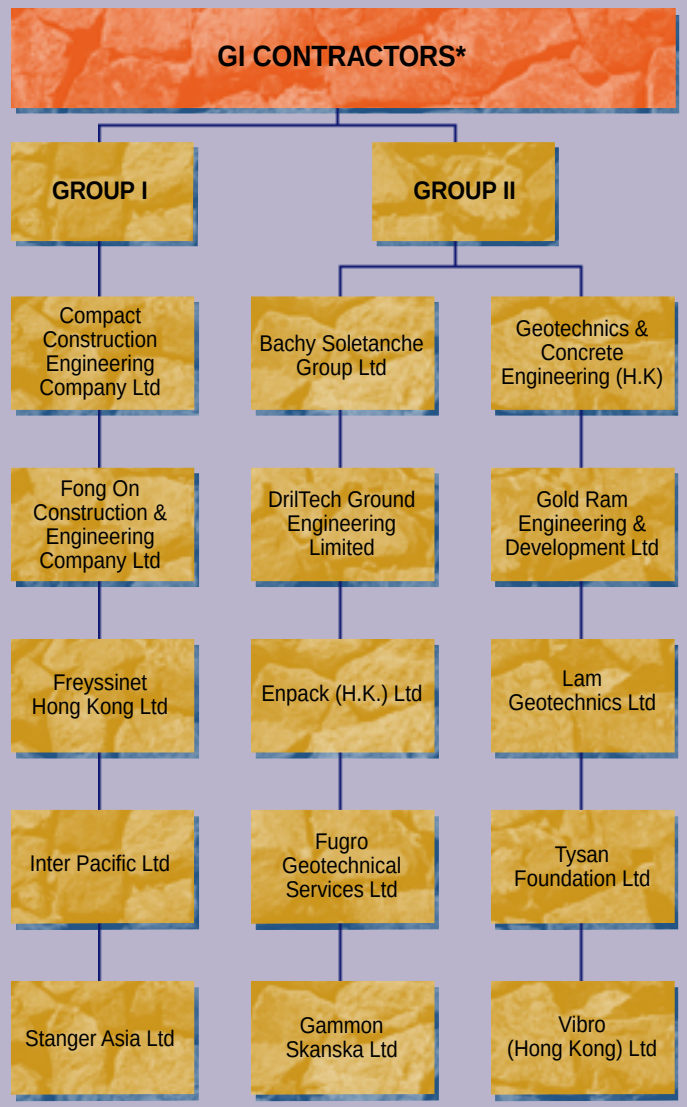
The following estimated timeframes can be used as a guide for GI contract procurement (see also Figure 3), however consideration to the scale and/or complexities of contracts as set out in the previous paragraphs should be made:

- Government Contracts in excess of HK$ 3M – 18 weeks
- Corporation or Large Private Contracts – 16 weeks
- Government Department procures GI works through GEO Term Contract – 8 weeks; and
- Government Department Term Contract procurement – 16 weeks
- Small Private Clients – 14 weeks

The following sections provide a notional general checklist of activities in time order for facilitating procurement of GI Contracts:

a. Obtain approvals, access and permits, eg., DLO approval to carry out works on government land, WSD approval for drilling within water gathering grounds and within/outside installation exclusion zones, HyD excavation permits, AFCD/EPD permission to carry out works in a Country Park or SSSI's, MTRC & KCRC approvals for working within their delineated areas. Permits are normally not issued unless input from the Contractor on issues including mobilisation, method of works, safety plan and programme are available. However, giving advance notifications of the works to the relevant authorities and obtaining their initial comments could help expedite subsequent permit applications;
b. In tandem with a) produce standard sections of the documents;
c. Finalise tender documents and send out to tenderers;
d. During the tender period answer all tender queries and if required produce any tender addenda;
e. Obtain all prospective tenders and undertake a tender evaluation report including any required clarifications of submitted details from individual or groups of tenderers;
f. Make a tenderer recommendation to the Client;
g. Produce contract documents and award contract;
h. Ensure that sufficient time is available for mobilisation/access as it is usually the GI Contractors responsibility (often with the help of The Engineer for the Contract) to procure WSD standpipes, to seek from HyD, TD & HKPF approval of temporary traffic measures, to identify and avoid utilities and in doing so carry out site meetings with relevant utility companies personnel, to seek approval of helicopter pads or pick up points and flight paths (CAA), etc.

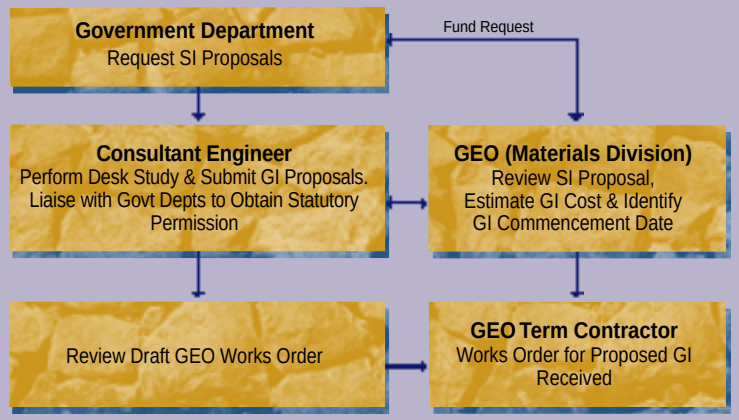
Key Contract Players & Methodology For GI Procurement – Figure 2



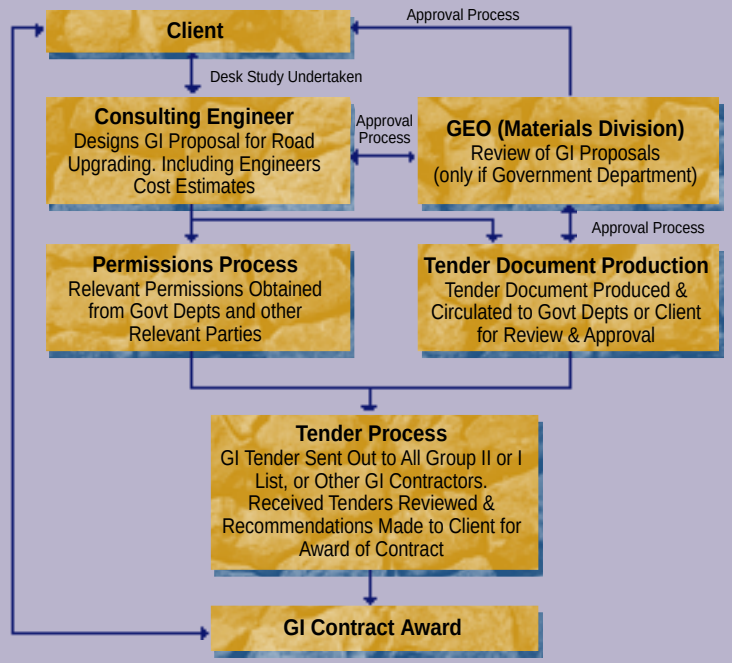
Notes*

1. ETWB list as of 30 June 03
2. Other contractors are approved by BD as Registered Specialist Contractors – Ground Investigation Field Works (RSC-GIFW)

GOVERNMENT DEPARTMENT GI < HK$3M PROCURED THROUGH GEO TERM CONTRACT



GI WORKS PROCEDURE FOR PRIVATE CLIENT/GOVERNMENT DEPARTMENT (>HK$3M)



Key Contract Players & Related GI Procurement Contracts – Figure 1

GOVERNMENT DEPARTMENTS

- GEO
- HyD
- WSD
- DSD
- HKHA
- ASD
- EPD

TYPES OF GI CONTRACT PROCUREMENT EMPLOYED

1) Specific department term contract (ETWB Group I/II List or another company).
2) Works Order procured through GEO Term Contract (ETWB Group I/II List).
3) GI procured through open tender (ETWB Group I/II List) for works > HK$3M.
4) Term contracts usually on 'Schedule of Rates' basis, while open tender contracts usually on a 'Remeasurable' basis.

PRINCIPLE PRIVATE CLIENTS

UTILITIES

HK & China Gas, CLP, Towngas, HK Electric, WSD, DSD, EMSD, PCCW, New T&T, Cable TV, Rediffusion, New World Telephone, Hutchison

DEVELOPERS

Hong Kong Land, Sun Hung Kai, Henderson Land, Cheung Kong, Shun Tak, Sino Land, Swire Properties

MAIN CONTRACTORS

ETWB Approved Group A, B & C in following categories
- Roads & Drainage
- Site Formations
- Waterworks
- Portworks
- Buildings

TYPES OF GI CONTRACT PROCUREMENT EMPLOYED

1) GI works procured through open tender with ETWB Group I/II List Contractors or other companies allowed to tender.
2) Both single &/or term contracts used to procure works.
3) Both 'Remeasurable' (for single contracts) & 'Schedule of Rates' (for Term Contracts) used.
4) Increasing tendency for client to ask consultant engineer to procure GI works separately as part of their own agreed lump sum payments.

CORPORATIONS

- KCRC
- Airport Authority
- MTRC

TYPES OF GI CONTRACT PROCUREMENT EMPLOYED

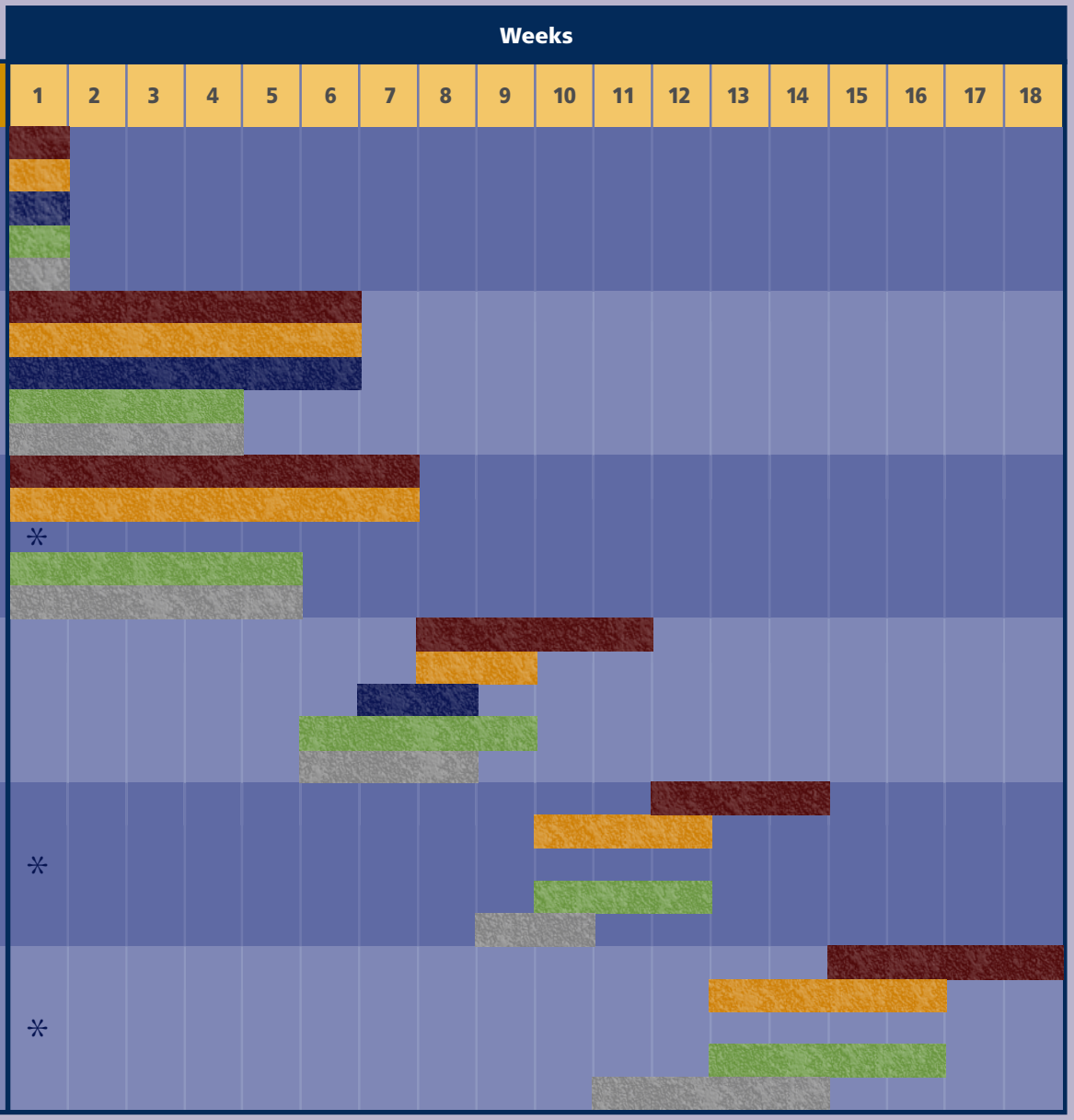
1) GI works procured from open tender.
2) Contracts usually based on 'Remeasurable' basis.
3) ETWB Group I/II list contractors but may have their own approved list.

MAJOR CONSULTING ENGINEERS WITH GEOTECHNICAL CAPABILITY

Atkins China Ltd	Halcrow China Ltd	Mott Connell Ltd	Black & Veatch Hong Kong Ltd
Babtie Asia	Hyder Consulting Ltd	Mouchel Asia Ltd	Scott Wilson Ltd
Benaim	Maunsell Geotechnical Services Ltd	Ove Arup & Partners Hong Kong Ltd	C M Wong & Associates
Fugro (Hong Kong) Ltd	Meinhardt (C&S) Ltd	Parsons Brinckerhoff (Asia) Ltd	Greg Wong & Associates Ltd

AGS General Timescales for Ground Investigation Contracts – Figure 3

Item No.	Description
1	Identify key areas of interface between government, utility and commercial bodies, which may include the holding of a specific forum for all stake holders. Consider at this stage any investigation location amendments.
2	Seek permissions, approvals, agree access and clarify site specific conditions for incorporation into Tender documents either as specific SCC's or within the Particular Specification.
3	Assess practical time to complete detailed works taking into consideration the findings of Item 1 & 2. Undertake an Engineer's cost estimate for the proposed works using relevant recent contract rates that may be adjusted to mirror market conditions. Produce Draft Tender document for comment.
4	Circulate Draft Tender Document to Client or relevant Government Departments for comment and approval. Finalise Tender documents. For Works Orders (WO) provide comments to GEO of Drafts and wait for issuing of final WO.
5	Send out Tenders to prospective GI Contractors, and answer any tender queries or produce any necessary tender addendums during the tender period.
6	Receive bids from prospective Tenderers and carry out and submit Tender Assessment Report for Client. Receive Client approval of report and GI Contract awarded by Client.



Government Contract in excess of HK$ 3M
Government Department Works through GEO Term Contract
✳ Not applicable to procurement Government Department of works through GEO Term Contract
Small Private Contract
Corporation/Large Private Contract
GEO Term Contract