# **REPORT ON THE TUNNELS PROJECT**

for The Royal Borough of Greenwich

2<sup>nd</sup> October 2013



# 1.0 Introduction

- 1.1. I John Willmoth FRICS of Hill International (UK) Ltd. have as instructed by the Royal Borough of Greenwich (Greenwich) prepared this independent Report to consider and comment on the various phases of the Tunnels Project, to encompass:
  - a) The difficulties incurred in completing the Tunnels Project Phase 1, and the resulting rationale for reducing the content of that Phase.
  - b) The further work (Phase 2) carried out post Phase 1 to bring the Tunnels to their current status.
  - c) The actions taken by Greenwich to implement the recommendations as set out in my independent High Level Review of the Management of Greenwich's large scale capital projects (construction).
  - d) The current status of finalising the Phase 1 Final Account and the proposals to complete the Tunnels Project, now titled Phases 3 and 4 respectively.
- 1.2. The refurbishment of the Greenwich and Woolwich foot tunnels was and is a unique and complex project, requiring specialist input, in terms of management, design, materials and construction. The project comprised in general terms of, the replacement of the lifts in the rotunda's to both ends of the tunnels, the replacement and updating of mechanical and electrical equipment and controls, general and specific remedial works, including, the replacement of glazed roofs to the rotundas, and the securing of the structural integrity (safe for use by the public) of the tunnels themselves. The design and construction had the added complications of adhering to the heritage and listing issues, as well as complying with the health and safety standards. The health and safety aspects needing to take account of the public's use of the tunnels, both during the construction work and in regard to the on-going use of the completed tunnels work. To achieve this, considerable investigations

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and survey work, some of which is still outstanding is required prior to completing any design solution, or the carrying out of the resulting required construction work.

- 1.3. The activities that took place and which are taking place in regard to completing the Tunnels Project have now for convenience been grouped into appropriate phases as follows:
  - a) Phase 1 Works:

This phase comprised the design work carried out by Hyder Consulting UK Ltd. (Hyder) and the construction work undertaken and completed by Dean & Dyball Ltd. (D&D) and a variety of specialist subcontractors, under D&D's Building Contract. In the event D&D carried out only part of the required refurbishment works, given the reduction in scope of its work (see section 2.0 of this report). The actual work completed by D&D was insufficient to allow either tunnel to open as finished entities. The Greenwich tunnel was however further advanced by D&D than the one at Woolwich. The works carried out in Phase 1 included the majority of the main design work, the commencement of the installation of lifts to both ends of the Greenwich tunnel, the replacement of the glazed roof to Greenwich north and the start of the structural and building services, which included the removal of old structures such as stairs and service installations, and the provision of the new safety, security and monitoring measures required. This work required the use of subcontractors with specialist knowledge and product experience (see 2.9 below)

b) Phase 2 Works:

Following on from the departure from site of D&D, Lakehouse Construction Ltd. (Lakehouse) was appointed under its framework with Greenwich to carry out the work required to enable the tunnels to open, albeit still on an incomplete basis. The Greenwich tunnel was opened with working lifts at both the North and South sides of the river and a new roof completed to the south rotunda. The Woolwich tunnel was also opened but without lifts, or replacement roofs to its rotundas. Sufficient refurbishment work took place, including mechanical and electrical equipment and controls, to enable both tunnels to open, and to comply with health and safety.

c) Phase 3 Works:

This phase does not include any actual new construction work, but is the assessment, negotiation and settlement of the D&D financial account, including all financial claims, in regards to the work D&D completed under Phase 1. In addition to include the settlement of any outstanding contractual issues in regard to D&D's work, comprising mainly of identifying, notifying and the correcting of any defects required to D&D's work. This stage is made all the more difficult due to the impact of there now being no staff employed in Greenwich or at D&D who worked on the project and who have detailed knowledge. In addition the demise of some of the specialist subcontractors has also impacted.

d) Phase 4 Works:

This phase encompasses the completion of the work to the tunnels as originally envisaged. Further design input required is to be provided by Frederick Snow & Partners, with Sweett providing cost control (see section 6.0 of this report). The finalisation of a Contract Sum for the construction work is to be derived jointly on an open book basis between Sweett and Lakehouse, from negotiations or tendering by the specialist subcontractors, resulting in Building Contract with Lakehouse to complete the works to the tunnels. The work to be undertaken under this phase will include for example, the investigation of the current condition of the tunnels, the installation of lifts to the Woolwich tunnel, the re-roofing of the Greenwich north rotunda, and both the Woolwich Rotundas. Other works to comprise of but not confined to, deep cleaning and infrastructure work to improve the security of the public, completion of lighting, security, surface finishes, information and communications systems to restore the key functionality of both crossings and deliver an enhanced environment, and seek to reduce the public's overall travel times and improve its safety and convenience.

- 1.4. Greenwich set up the management of the Tunnels Project along its normal lines. An Assistant Director (AD) being appointed to head up and take ownership of the project on an overall basis. Under that AD a Greenwich Project Manager was appointed whose responsibility was to manage the project on a day to day basis and report to the AD. Given the size and complication of the project, contractors (consultants) were appointed to assist Greenwich. Hyder was appointed to provide the design work required, with Sweett providing NEC project management (basically contract administration) and quantity surveying services.
- Funding for the project was provided by a fixed grant from DCLG awarded in 2009. The grant was allocated for fixed amounts over a three year financial period with no provision for slippage between the years.
- 1.6. The facts on which I have based my report have been taken either from the documentation provided to me, or directly from Greenwich or from the contractors (consultants) involved directly in the project. Information in regard to Phases 3 & 4 has been provided by the Greenwich Project Manager and Sweett's.
- 1.7. It should be noted that the appointment of Sweett is being encapsulated into one contract, covering the services it has provided and those it is to provide.

# 2.0 The Tunnels Phase 1 Works (Dean & Dyball Contract)

# Introduction

2.1. I have considered this phase of work by setting out the basic background to the project which, comprises the appointment of contractors (consultants), a brief description of the construction procurement problems, the rationale for the early curtailment of this phase. I also include an overview of the not inconsiderable particular difficulties associated with the Tunnels Project. Finally I provide my observations on the four key parties involved in Phase 1, and their performances, that is, Hyder, Sweett, Dean & Dyball and Greenwich. I conclude with a summary of my observations and opinions on the difficulties experienced in this phase of works.

## Background

- 2.2. Hyder Consulting UK Ltd. (Hyder) was appointed by Greenwich under a Transport Framework Agreement in 2008/2009, to carry out investigations and surveys, and to provide the design and specifications required to enable the necessary work to the Greenwich and Woolwich Tunnels to be constructed. Cyril Sweett now called Sweett UK Ltd. (Sweett) was appointed by Greenwich to provide quantity surveying services.
- 2.3. Sweett tendered to Greenwich in 2008 to provide project management services, in advance of its appointment Sweett provided services in regard to procurement. At the end of 2009 Sweett was appointed to provide project management services (mainly in regard to contract administration), by way of an appointment through Hyder, whose services were increased to take this into account. Sometime later, apparently due to friction between Sweett project management and Hyder, Greenwich took over that appointment, and contracted directly with Sweett for its service.
- 2.4. The initial concept design and feasibility budget put forward by Hyder for the Tunnels was reviewed by Sweett, who reported to Greenwich that it estimated

the works proposed by Hyder would cost some £13m to £14m, this was in excess of the Greenwich funding budget of £11.398m. Hyder was it would appear, designing beyond the level of specification that Greenwich required, mainly in regard to:

- a) Lift shaft enclosures.
- b) Specialist lighting console.
- c) Wiring loom.
- d) Tiling replacement.
- e) Replacement glazing to the rotundas.
- 2.5. Notwithstanding the over-design and the need for it to be reviewed, Greenwich decided, due to time pressures of the grant allocation regime to go out immediately to procure a contractor for the construction work. Given that the design was only in an embryonic state, tenders could only be for a contract based upon a two stage tender process. The intention was to make the necessary changes to the design and reduce costs during and following the selection of a contractor. The two stage tendering approach, requiring the main contractor at this first stage, only to provide prices for, pre construction services, overheads and profit and preliminaries (site set up and management items) pricing. The second stage of the process would be tendered as the design evolved on an open book basis and a Contract price finalised. The procurement process was carried out under the OJEU regulations, and in November 2009 Dean & Dyball Ltd. (D&D) were selected as the Contractor for the project. Such a two stage tender process is not unusual in the construction industry, but requires, in order to be successful, strong management, particularly of the production of the design, to ensure that it is in line with the programme requirements. This is to enable the main contractor to obtain subcontract prices for the specialist work, which in turn allows the finalisation of the second stage (Contract Sum), preferably before any construction work is undertaken.

- 2.6. It seems that Hyder were slow in developing its design, this despite pressure from the Greenwich AD and project manager. Hyder however failed by February 2010 to advance the design sufficiently to allow a contract sum to be achieved with D&D. Due again to the time pressures on the project, the construction work had to start before the Stage 2 (Contract Sum) could be achieved. To enable D&D to start work a Letter of Intent had to be issued by Greenwich, this is a recognised, if not encouraged way to get a project underway whilst awaiting the design. This letter of intent was issued on what was in essence a budget of £9,057,459.55 based upon the scope of work envisaged by Greenwich, and the general contract conditions of the NEC 3 form of contract. It was the intention that this letter of intent would be replaced as soon as possible with a Target Cost as per NEC3 Option C. This replacement of the Letter of Intent was however, dependent upon the design evolving sufficiently to enable D&D to obtain subcontract prices and finalise a Target Cost.
- 2.7. In fact the design it seems never advanced sufficiently in time to enable Sweett to agree a realistic Target Cost with D&D. Sweett did pressurise D&D, and from time to time D&D proposed Target Costs, but these were well above the project funding budget, and were unrealistic. D&D's argument for such high proposals being that the design had not been fully finalised, and that it had to allow a high risk element in its costings. This was it would seem due mainly to Hyder who were still working to complete its design. Hyder apparently still designing to a level of specification beyond that which was required or could be afforded by Greenwich. Sweett reports that it continued pressurising D&D to agree a Target Cost right up to December 2010. However a further factor was, that as time went by there was less and less incentive for D&D to agree a Target Cost, as it was being paid on a cost plus basis, which meant it was subject to little or no risk.
- 2.8. By January 2011 Greenwich was becoming increasingly concerned that the delays to the Tunnels would impact on the Cutty Sark Gardens work, that

project being managed by another of the Greenwich Project Managers. Dates for completion being given by D&D were constantly not being achieved, and by the middle of 2011 it became clear to Greenwich that by the end of 2011 the work to the Tunnels would be well short of that required for completion. D&D were in fact now suggesting a completion date towards the end of 2012. This was not acceptable, the Greenwich AD and Project Manager conscious of the impact this would have and therefore the seriousness of the problem, the question now moving to the fore was how to terminate the D&D work. The Greenwich Project Manager for the Cutty Sark Gardens had become concerned with the impact of the Tunnels delays, and he therefore became involved in the Tunnels Project, initially as an observer, then in more direct terms. He together with the Tunnels team agreed that the best way forward was to reduce the D&D scope of work sufficiently to enable D&D to complete a reduced workload and to leave site by the end of 2011. This action was put in place and D&D duly completed the reduced scope of work and left the Tunnels sites in December 2011.

#### General Complications associated with the Tunnels

- 2.9. The work required to the foot tunnels may at first glance suggest an uncomplicated and relatively small range of work required. This however gives a false impression of the project in hand, the full extent of the work required being difficult to ascertain, as was the design detail to deal with the issues uncovered. Much of the core structure having to be retained to comply with national Heritage requirements, made all the more difficult due to the circumstances under which work had to be carried out. The following are indicative of some of the problems involved:
  - a) The level of investigations and surveys required, to ascertain the remedial work required and the upgrading necessary.
    - i) Condition of lift motors and controllers.
    - ii) The presence of lead and lead contaminated areas.

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- iii) Condition of ducts, linings and service voids.
- b) The national Heritage and listing issues.
  - i) All four rotundas listed, requiring special diligence.
  - ii) Historic fabric requiring specialist design and working procedures.
  - iii) Constant dialogue required with conservation personnel.
- c) The age and nature of the tunnels.
  - i) Consideration of life expectancy of the existing structure and the effect of new materials.
  - ii) The need for monitoring systems to be incorporated to assist in future maintenance.
- d) The lack of historical records.
  - i) Lack of records of the original design intent and consideration in the built structures.
  - ii) Condition of cast iron drain.
  - iii) Has over time air movement allowed a build up of CO2.
- e) The bespoke nature of the lifts.
  - i) Technically never having been replaced they do not have the recognised certification.
  - ii) Replacement lifts cannot be off the shelf, but purpose designed.
- f) The unique nature of the mechanical and electrical works required.
  - i) Complex system of pressures, temperatures and air flows.
  - ii) Each rotunda has a separate power supply, subject to massive overcurrent supplies.
- g) Security of the users of the tunnels.

- i) Balancing pedestrians, cyclists and evacuation.
- ii) Balancing communications and security.
- h) The need to keep open particularly the Greenwich tunnel.
  - i) Critical crossings for pedestrians and cyclists.
  - ii) Whilst Woolwich has a ferry alternative Greenwich does not.
- i) The working health and safety issues.
  - i) Confined spaces.
  - ii) Heights in rotundas
  - iii) Public movement.

#### Hyder

- 2.10. The inability to agree initially a Contract Sum with D&D by February 2010 was due to the lack of progress by Hyder to provide the required design information, for whilst it provided some of the design, it took an inordinate amount of time for it to finalise that design. This resulted in the need for the Letter of Intent, which agreed to pay D&D on a cost plus basis until a Target Cost was agreed. This same inability by Hyder to provide the required design detail, appears to have prevented the agreeing of any meaningful Target Cost with D&D, and hence led to the continuance of the letter of intent.
- 2.11. The reasons for Hyder's apparent inability to progress the design, thus preventing the agreement of a Contract Sum/Target Cost, and initially in part at least, causing delay to the progress of the works, seems to revolve around a number of issues and situations, for example:
  - a) Hyder did not it would appear, carry out the surveys and investigations required at a sufficiently early enough time to allow the speedy resolution of the resulting issues.

- b) Hyder seem to have proceeded with an over specification of "Roll Royce" engineering solutions, which were at odds with the Greenwich budget.
- c) Hyder worked on designing complicated systems such as for example the lighting console, which in the event never worked and was never implemented, but which took up valuable design time.
- d) From the comments I have received, it would appear that Hyder may well have had resourcing problems, becoming involved in other larger projects.
- e) Hyder employed an Architect to deal with Heritage issues, this seems to have caused timescale problems and questions were raised as to its efficiency in this matter.
- f) Hyder's in-house Mechanical and Electrical engineers appear, as so often happens in the construction industry to struggle amongst themselves to agree and come to terms with and resolve the Tunnel problems, particularly in regard to those of power.
- g) Hyder, as so often happens with designers, were slow it would seem in finalising all of its design details, this affected both the agreement of costs and delayed construction work.
- h) It may be that Hyder were over cautious such as for example in its somewhat premature condemnation of the steelwork to the staircases, which could have led to the immediate closure of the Tunnels. This condemnation being later on inspection by the Greenwich engineers, found to be have been unnecessary.
- Whilst the delay caused to the painting of the steelwork would seem to be mainly D&D's problem, information does suggest that if Hyder had been more pro-active, that delay could have been substantially reduced (see 2.16 below).
- 2.12. Whilst my observations above provides a poor picture of Hyder's performance, such performance in the construction industry, is unfortunately not as rare as

it should be. Often design delays can be due to extenuating circumstances, in this case the complications I refer to above could be said to be have contributed, and maybe in some cases excused the design delays. However whilst such complications may provide Hyder with some reasons for delay, the general impression I have been given, suggests that it was Hyder's own, somewhat slow response and application that caused at least some of the problems.

## Sweett

2.13. Whilst in my view Sweett carried out its services to the standard that could reasonably be expected, in hindsight it could be questioned as to whether it could have been more pro-active in putting the problems of cost and contracts to Greenwich. However given the pressure to carry out the work to the Tunnels, it seems unlikely that any stoppage to obtain a fixed price would have been acceptable to Greenwich.

# Dean & Dyball Ltd.

- 2.14. Initially it seems to be no fault of D&D that it was unable to agree a Contract Sum before commencing work on the project, because the design information was unavailable and was needed to obtain from the subcontractors' tenders which would be required to assemble such a sum. However as time moved on D&D was it would seem less than pro-active in moving towards agreeing a Target Cost. Whilst this was not helpful to Greenwich, commercially it was understandable from D&D's point of view given that the Letter of Intent enabled it to receive cost plus without any normal construction risk. In addition, D&D were acquired by Balfour Beatty during this period which was no doubt a further distraction.
- 2.15. As the project moved forward into 2011, D&D became less responsive and pro active in driving the project forward, which although not the cause of the delays, certainly did not help in resolving them. For example by

August/September 2011 D&D was projecting a completion of December 2012, which was excessive given the work remaining.

- 2.16. An item of particular concern and impact was the painting of steelwork. It seems that D&D failed to deal with the correct procurement for the required paint which was suitable to deal with health and safety issues of carrying out such work in the confined environment. This was a significant issue:
  - a) The first paint selected by D&D circa May 2010 should never have been chosen, due to the health and safety hazards and risks associated with that paint, such as the lead and working environment issues.
  - b) The next paint Copon used circa November 2010 failed due to poor workmanship by D&D, which included using the base and activator in the wrong proportions.
  - c) On further investigation Copon proved to be overly sensitive to the environment in terms of curing, and all previous coatings had to be stripped off.
  - d) Finally circa March 2011, one year later, the matter was resolved and D&D proceeded with Matatec, to the steel structures to all four rotundas.

However the impact on time and cost caused by this disruption to the project was substantial.

#### Greenwich

2.17. As stated previously a Greenwich Assistant Director (AD) and Project manager were directed to form the Greenwich team. This was a tried and tested approach by Greenwich on its more normal highways projects, however in regard to this specialist project, it was not successful. One reason being, that there was apparently insufficient formal and regular reporting to the AD from the Project Manager nor, from the AD to his management. As to whether this was because the AD in charge of the project was not as hands on as he must have been, is unclear. If it was, it was likely due to the extra work he carried in

regard to the Olympics and its transport issues. What does seem to be clear is that, whilst the AD and Project Manager were trying to contain the Tunnels problems, they were being unsuccessful, a fact they do not appear to have identified until it was too late. This resulted in the escalation of the problem to the higher management in Greenwich at far too late a stage in the project, and hence the need to re phase the project completion. It is not an unusual occurrence in such projects for the parties directly concerned to get so involved that they forget the bigger picture, which is why a formal mandatory reporting system is required.

2.18. It seems to me from the views expressed by others working on the project that the Greenwich Project Manager was working hard, at least at the beginning of the project, to manage Hyder and the programme. However it appears that he was largely managing it by himself and apparently not seeking support from his AD. Whilst the Greenwich Project Manager put a lot of effort into managing Hyder, meeting with them regularly to progress chase the design and agree scope of works, it seems that Hyder whilst appearing to take on board his comments, in reality continued with its idea of the works required, rather than pro actively seeking to reduce costs by simplifying the design.

#### Conclusions

2.19. The observations I make above should be viewed in the light of the industry difficulties experienced in the procurement of construction projects. In this ever more complex world, construction related projects face more and more areas of risk and uncertainties, never more so than at the early stages of a project. Risks are measurable and controllable, uncertainties are not, with experience and good management it is possible for many uncertainties to be turned into risks, and therefore measured. However unlike factory production lines, construction does not have the same learning curve advantages or disciplines of fixed design, each project containing different aspects and subjected to varying external influences, such as time pressures and site

conditions. In this case the complications I refer to at 2.9 above. Lessons have been learnt from this project and actions are being taken as set out at 4.2 below in this report.

- 2.20. Whilst work to the Tunnels was carried out in Phases I & 2, sufficient to allow the Tunnels to open for the Cutty Sark and Olympic events, the full scope of work required was not completed. I sum up my opinion on the delays to the completion of the Tunnel works as being due to a mixture of, time pressures, the difficult sites, the delay by Hyder in resolving design issues, the Greenwich staff, albeit with good intentions trying to resolve such issues, but without, in a timely manner, standing back to view the bigger picture and reporting it to higher management. This is not I have to say an unusual occurrence in complicated construction related projects. Key factors were:
  - a) The project seems to me to have started off under pressure, without the ideal time allowed to establish a detailed brief by having carried out early investigations and surveys.
  - b) The slow response by Hyder to the provision of design information, its seemingly entrenched position with regard to the level of specification of certain key items, such as lighting control, and its delay in finalising its design of the various elements, was in my view a key factor in delaying the project.
  - c) D&D, whilst pro-active at the start of the project, became less than pro active and even difficult as time moved on.
  - d) The late response by the Greenwich team to appreciate and report the problems and the impact of those problems.
- 2.21. Whilst I am of the view as can be seen from my observations above, that Hyder are likely to have contributed to the delays and costs of the project, this is not to say that Greenwich could construct a legal case, claiming that Hyder failed to provide the level of skill and care that it could have expected from reasonably competent engineers. Even if it were possible the costs of such a

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case would likely out-weigh any recovery, given the relatively small financial sums involved.

# 3.0 The Tunnels Phase 2 Works (Lakehouse)

# Background

- 3.1. From the summer of 2011 the input into the Tunnels from the Greenwich Project Manager for the Cutty Sark Gardens gradually increased, resulting in eventual control of the completion of the reduced scope of works by D&D. Whilst there was not sufficient time to complete the Tunnels project, due to the Cutty Sark Gardens and the Olympics time pressures, some work was necessary in addition to the work carried out by D&D to enable the Tunnels to open. This work included enabling the Greenwich lifts to operate and the need to complete the Greenwich rotunda roof at the southern entrance, plus some basic work to enable the Woolwich tunnel to be opened, albeit without lifts.
- 3.2. The work necessary to enable the opening of the Tunnels was to be managed by the Greenwich Project Manager for the Cutty Sark Gardens, in addition to his management of that project. Sweett was retained as quantity surveyors and contract administrators.

# The Works

3.3. In order to save time Lakehouse Contracts Ltd. was appointed from the Council's framework to carry out the required construction work under a JCT Intermediate Form of Contract. This work was successfully completed in March 2012, in conjunction with the Cutty Sark Gardens work. The Tunnels were opened and the sites cleared apart from the main compound at North Woolwich which remained. Elements of the work started but left uncompleted were, scaffolded out and/or protected, including equipment such as lift motors, to await the final completion phase of the works (now called Phase 4) after the Olympics.

# 4.0 Lessons Learnt and Capital Projects Management

- 4.1. Following on from the difficulties experienced with the Tunnels project, I carried out an independent high level review of the Greenwich management of large scale capital projects in November 2012, presented to the Cabinet at its meeting on 13th December 2012. My report considered the procurement and governance of projects. I have now been able to confirm from the investigations I have carried out on the Tunnels Project that, my conclusion dovetailed with the lessons to be learnt from that project.
- 4.2. Following that high level review Greenwich and changes that Greenwich itself had already identified Greenwich has embarked upon an action plan which can be summarised as follows:
  - a) Review and quality engineering of Framework contract.
  - b) Developing a standard set of Appointment and Construction conditions.
  - c) Standardised management procedure and guidance.
  - d) Use of Project Boards.
  - e) Dedicated electronic filing system.
  - f) Standardised reporting and filing.
  - g) Completion reports.
  - h) Review of staff training.
  - i) Random auditing plan.
- 4.3. Many of these actions have already been put into place, others are being developed. In regard to Phase 4 of the Tunnels project, these actions have

been adhered to as far as is possible and practical, given the particular idiosyncrasies, of the works to be undertaken.

4.4. There are actions such as the setting up of standard forms of appointment and construction which will take some time to put in place, in the meantime the range of other such documents used will be scrutinised in more details before acceptance. For example the use of NEC 3 documents needs to be approached with care and time will be required to complete such documents to minimise the risk to Greenwich.

# 5.0 Current Phase 3 Works

- 5.1. Following the completion of the D&D Phase 1 works, the agreement of the final costs of that works and the rectification of any defects has still to be finalised. A new AD has been appointed to take ownership of Phase 3 Works with the Greenwich Project Manager who managed Phase 2 Works. I am providing independent advice as required, particularly in regard to any disputed items put forward by D&D.
- 5.2. Given that Sweett carried out the last valuation of monies paid to D&D and its knowledge of Phase 1, it was only commercially sensible to appoint Sweett as project managers and quantity surveyors for the Phase 3 Works. This work out of necessity is to be paid for on a time basis at agreed hourly rates.
- 5.3. Sweett has retrieved from its archives all its quantity surveying documentation including the valuations it issued prior to completion of the Phase 1 Works. This is allowing robust negotiation of the final D&D account and resolution of claims and defect liability.
- 5.4. Sweett is currently preparing programmes, which were not forthcoming from D&D, in order to determine the likely extent of delays to D&D, and provide substance to its assessment of D&D's Final Account. Although work is on-

going, the indications are that this will fall within the funding envelope agreed by Cabinet.

# 6.0 Current Phase 4 Works

## Background

- 6.1. Following the work undertaken in Phase 1 & 2 Works, there was still outstanding work left to complete to the Tunnels Project, in order to fulfil the original scope of works required. Phase 4 Work includes the investigation of the current condition of the tunnels, the installation of lifts to the Woolwich tunnel, the re-roofing of the Greenwich north rotunda, and re-roofing to both the Woolwich Rotundas. Other works comprise but are not confined to, deep cleaning and infrastructure work to improve the security of the public, the completion of lighting, security, surface finishes, information and communications systems.
- 6.2. Discussions and negotiations are currently taking place with the specialist subcontractors that worked on the original Tunnel phases. Given that those subcontractors have the skills, products and experience of the previous Tunnel work it would be advantageous for them to carry out the Phase 4 Works. This is subject of course to it being possible to agree a competitive price and programme with them. These negotiations are likely in some instances to take some additional time, in order to ensure a robust approach to achieving a value for money outcome.

# **Greenwich Team**

6.3. The same Greenwich team who are managing Phase 3 will manage Phase 4, in addition, in order to provide strong governance, a Project Board has been set up, chaired by the AD for the project. On that board sit representatives from the Council in regard to maintenance, services, lifts and communications. In

addition I attend that board to provide procurement and construction advice to Greenwich.

# **Contractor (Consultants)**

6.4. For reasons of its knowledge base, Sweett are appointed as quantity surveyors and contract administrators for the Phase 4 Works, based upon an agreed lump sum fee. In addition Frederick Snow & Partners has been appointed to act as principal designer based upon the Lewisham Framework (NEC 3 based), which given that its scope of work cannot be defined in advance and therefore has to be paid on a time basis at agreed hourly rates, this is an acceptable basis. Pellings who were involved in the other Tunnel phases are appointed to be the CDM Co-ordinator under a Haringey Framework Agreement. Specialist input into items such as lifts and communication equipment is to be provided in house by the appropriate Greenwich staff. This will ensure joined up thinking in regard to on-going operation and maintenance.

# **Building Contract**

6.5. Lakehouse Contracts Ltd. who completed the Phase 2 works and who are and have been during the closedown period in control of the site compounds, are currently, under its framework agreement with Greenwich providing support to the project as required. The intention is for Sweett to produce the contract documents, and work with Lakehouse to obtain subcontract tenders, which will form the basis of a lump sum price for the project. As stated above it is hoped that most of the subcontractors will be the ones who worked on the previous phases. These subcontractors will, on conclusion of successful negotiations on time and cost, contract direct with Lakehouse. Lakehouse will, once negotiations have been successfully completed sign a construction contract with Greenwich based upon the JCT Intermediate Form of Building Contract. Whilst no such contract will be signed until a contract sum has been finalised, that sum will include out of necessity some allowances for elements of work that cannot at this stage be specified, but will likely only be determined as the result of exposing the existing structure. However the

intention is to achieve at least 85% of firm prices before contracting with Lakehouse to start the Phase 4 works.

- 6.6. Currently the site compound at North Woolwich has been opened up and is being used as the focal point for the project, and all site meetings. Currently activities include:
  - a) Investigations and surveys.
  - b) Identification of any planning, Building Regulation or Heritage issues.
  - c) Design work by Fredrick Snow
  - d) Detailed discussions and negotiations with subcontractors.
  - e) Identification of and remedial work requirements.
  - f) Consideration as to how best to programme the works.
  - g) Preparation of the Building Contract documents.
  - h) Negotiations on the removal of lead paint.
- 6.7. In regard to the programme, this cannot at this time be fully ratified, as there are still some investigations, design issues, and negotiations to be concluded. Furthermore the condition of the stored lift motors cannot reasonably be tested until they are actually in place, any defect could cause severe delays. However the current target programme is to complete the Greenwich Tunnel by May 2014 and the Woolwich Tunnel by June 2014.
- 6.8. The Contract with Lakehouse is currently expected to contain 85% firm prices, there still being some negotiations on subcontract tenders to be finalised. All indications are that the costs for Phase 4 Works should be within the financial envelope agreed by Cabinet. However there are still risks to the project, which are as indicated below and, as with any such project, these risks could affect both programme and price:
  - a) Defects from previous Phases.

- b) Resolution of problems with the Greenwich lifts.
- c) Redesign of Woolwich lifts.
- d) Defects in stored lift motors.
- e) The removal of lead paint not completed by D&D.
- f) Adverse winter weather.
- g) The agreement of subcontract prices and programmes, particularly:
  - i) Apex Lifts.
  - ii) The roof glazing to the rotundas.
  - iii) Cooling to motor rooms.