Report of the Independent Inquiry into the Construction of the **DG One Complex in Dumfries**

APRIL 2018

Contents

Section 1 – Purpose and Scope of the Inquiry

This section sets out the formal remit for this Inquiry as agreed between the Dumfries and Galloway Council and the appointed Chair of the Inquiry. It is as follows.

To inquire into and report on the following matters:

1. The leadership and project management applied by the Council for the duration of both the original project and the remediation project and the due diligence undertaken internally in assigning responsibility for the remediation project
2. The rationale for the Council entering into the original design and build contract for the facility and the effect this arrangement may have had on the construction process
3. The contractual arrangements between Kier Northern and Dumfries and Galloway Council
4. The role of the Council, professional consultants appointed to act for the Council and Kier Northern and their supply chain in relation to the quality assurance of the construction of the original building including the inspection process, granting of completion certificates for practical completion, possession certificates and building control to allow the building to be occupied and to become operational in 2008
5. The management of risks to the Council; and if Council's standard practice regarding quality assurance provided adequate checks and balances for parties to the contract
6. Dumfries and Galloway Council's handling of the problems with the facility since 2009 including the process that led to the Council commencing proceedings against Kier Northern
7. The scope of the appointment of the professional team during the investigative phase and the extent and adequacy of the methodology adopted and the work carried out to inform the evidence used in proceedings against Kier Northern
8. The issues that the project is now facing, but not originally allowed for and why they were not discovered in the first instance
9. The contractual arrangements between McLaughlin & Harvey and Dumfries and Galloway Council
10. The conduct of the contract negotiations with McLaughlin & Harvey and the Council's level of governance of these arrangements
11. The management and maintenance of the buildings since construction, including advising on whether the current defects should have been found earlier
12. Provide advice and recommendations on any specific or wider lessons which can be learned from this project for Dumfries and Galloway Council and any other bodies
13. Any further relevant matters the Chair of the Review wishes to pursue

Section 2 – Background to the inquiry

1. Introduction

1.1 This Report presents the findings of an independent Inquiry commissioned by the Chief Executive of Dumfries and Galloway Council into the original procurement, design and construction of the DG One leisure complex building in Dumfries; the enforced closure of the facility in October 2014; the process as undertaken to establish the extent of the defects and to recover the cost of making them good ; and the approach adopted in relation to the procurement and management of the remediation contract which is still on-going.

1.2 The Report has been compiled by the appointed Chair of the Inquiry, Professor John Cole CBE, an architect and retired senior civil servant, whose appointment commenced on 14th August 2017. In undertaking the Inquiry, and in the production of the Report, the Chair was supported by Mr. Stewart Macartney, a structural engineer and a director in a multi-disciplinary engineering consultancy and by Mr Chris Phillips, a lawyer and a partner in an established legal practice. This panel of three members was provided with administrative support and office accommodation by Dumfries and Galloway Council.

2. Methodology

2.1 The methodology adopted by the Inquiry followed the standard stages of an Inquiry of this type namely:

- Agreement by the Chair with the commissioner of the Inquiry to a final formal remit for the Inquiry. The final remit is presented in full in Section 1 of this Report.
- Selection and appointment of panel members and administrative support.
- Information gathering including all key documentation available.
- Familiarisation with all documentation, the chronology of events and establishment of the emerging issues.
- Visits to inspect the property in question.
- Development of a protocol for the Inquiry.
- Identification of a list of desired witnesses and issue of invitations to attend the Inquiry.
- The holding of interviews with witnesses, the transcription of evidence taken, the issue of same to the witness in question for comment and any necessary amendment, and the finalisation and signing of witness statements.
- The analysis and professional scrutiny of information and evidence collected.
- A review by the panel of the preliminary findings and recommendations of the Inquiry.
- The preparation and submission of the Report of the Inquiry to the commissioner of the Inquiry.

3. Information and documentation

3.1 Whilst the Inquiry was established as an Independent Inquiry, like many inquiries it had to rely on the cooperation of organisations and individuals to carry out its work, not having had the authority to compel the production of documents or the attendance of witnesses for interview.

3.2 In this regard the Inquiry has enjoyed the full cooperation of the Councillors, Chief Executive, the officers and staff of the Dumfries and Galloway Council who in an open and transparent manner throughout the course of the Inquiry have sought to respond as fully as possible to the requests for information from the Inquiry. In so doing the essential independence of the Inquiry in undertaking its work was acknowledged and respected at all times.

3.3 The information, on which the analysis of the period of the procurement, design and construction of the projects from the initial inception of the project in 1998 through the intervening years up to the present date has been based on and is limited to that which was made available to the Inquiry by the Council, provided by other participants involved in the project or communicated as evidence by witnesses to the Inquiry.

3.4 In addition to the oral evidence provided by the many witnesses to the Inquiry, the Inquiry had recourse to several important sources of information including;

- records of internal meetings of Council committees and between Council officers in relation to the project
- site reports produced by professional and technical staff of the Council and by their external professional advisers during the original construction process
- technical reports and photographs produced by expert witnesses following discovery of the defects;
- papers associated with the litigation process;
- and documentation and photographs produced by the design team members and contractors appointed by the Council to undertake the remedial works to DG One.

3.5 The Inquiry Team would like to express our thanks to those many organisations and individuals who gave of their time to attend as witnesses or make submissions to the Inquiry.

3.6 A small number of individuals or representatives of organisations, involved in the project or in possession of information relevant to the Inquiry, and from whom the Inquiry would have wished to take evidence, had deceased, had retired, were no longer traceable, or, when invited, were unwilling to appear before or cooperate with the Inquiry.

3.7 Unfortunately, a significant amount of information, which would have been of benefit to the Inquiry, had either not been retained, could not be discovered within the archives, or was not offered to the Inquiry by those organisations that may still hold relevant information in their possession.

3.8 It is particularly unfortunate that the management of Kier Construction Scotland and North East, previously known as Kier Northern, the main design and build contractor for the original DG One project, did not accept the invitation of the Inquiry to send a representative of their company to attend as a witness and present their perspective on the project.

4. Witnesses

4.1 It was important that the Inquiry had the maximum possible access to all available knowledge and information relevant to the remit of the Inquiry that was held. This required the cooperation of a wide range of organisations, particularly those that had been directly involved in the original development of the DG One building or in the subsequent investigations and remediation project.

4.2 The list of organisations and individuals invited to provide witnesses or attend as witnesses and their willingness or otherwise to do so or alternatively to provide written submissions to the Inquiry is provided in Appendix 1 to this Report.

4.3 Appendix 1 will also provide a list of the roles and responsibilities of the various organisations involved in the different stages of the development and remediation of DG One since its inception.

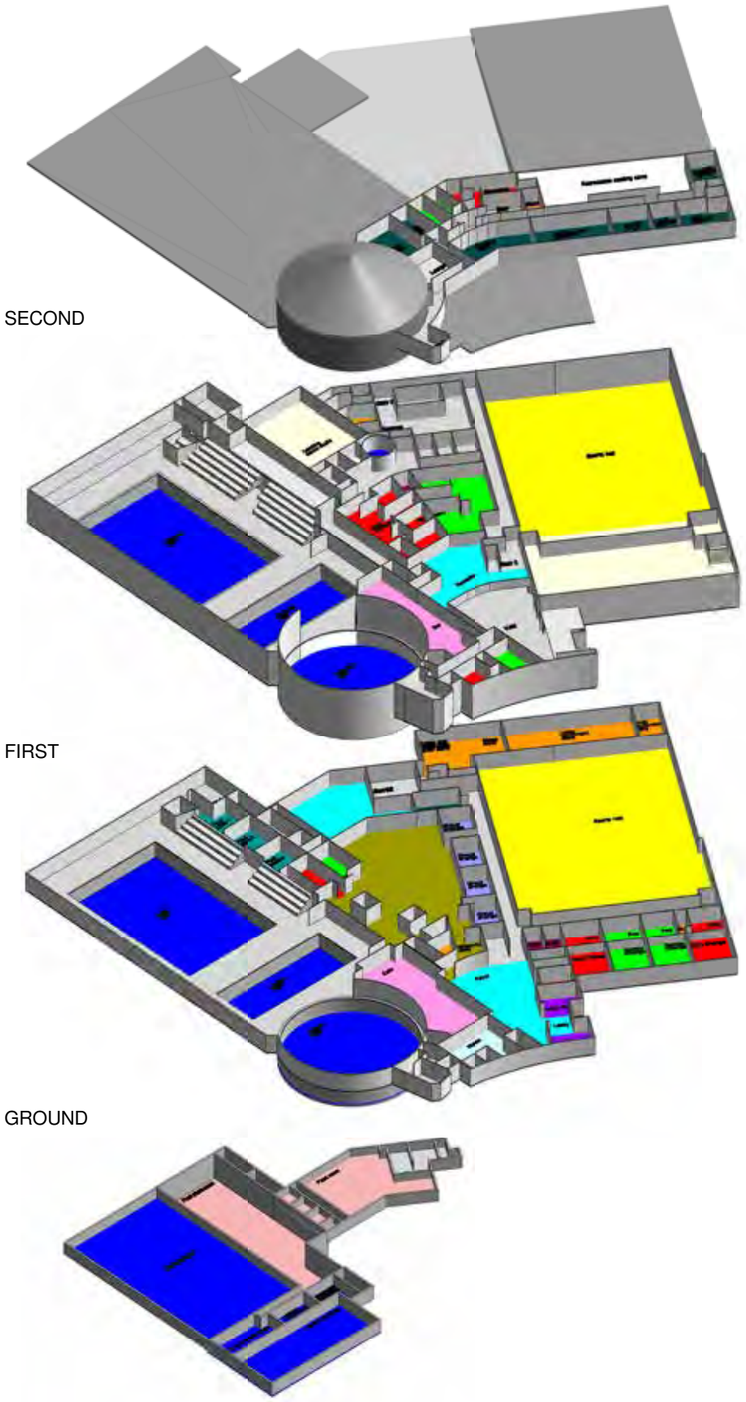
4.4 In relation to the procedural arrangements adopted at the interview sessions, potential witnesses were advised as follows in the letter of invitation to give evidence to the Inquiry:

> *" The evidence-taking sessions will not be open to the public. Each witness will be seen on their own and questions relating to their involvement in or knowledge of the project or knowledge of equivalent project processes will be addressed directly to them. If they so wish, they can be accompanied by a friend, colleague or legal representative of their choice.*
>
> *It is intended that during the interview a recording will be made of the proceedings so that a statement accurately reflecting the evidence provided by each witness can be drawn up. Once drafted this statement will be forwarded to the relevant witness so that they can advise of any amendments and/or clarifications they may feel are required. These statements will be used to help inform the writing and conclusions of the final report of the Inquiry".*

4.5 In writing the Report it is not proposed to name individuals but rather to refer to the organisation they represented, the position they held in that organisation and/or the role that they played in terms of its relevance to this Inquiry.

5. Description of facility

5.1 In order to facilitate a better understanding of the DG One building when reading this Report, the following annotated three-dimensional representations of the layout have been provided.

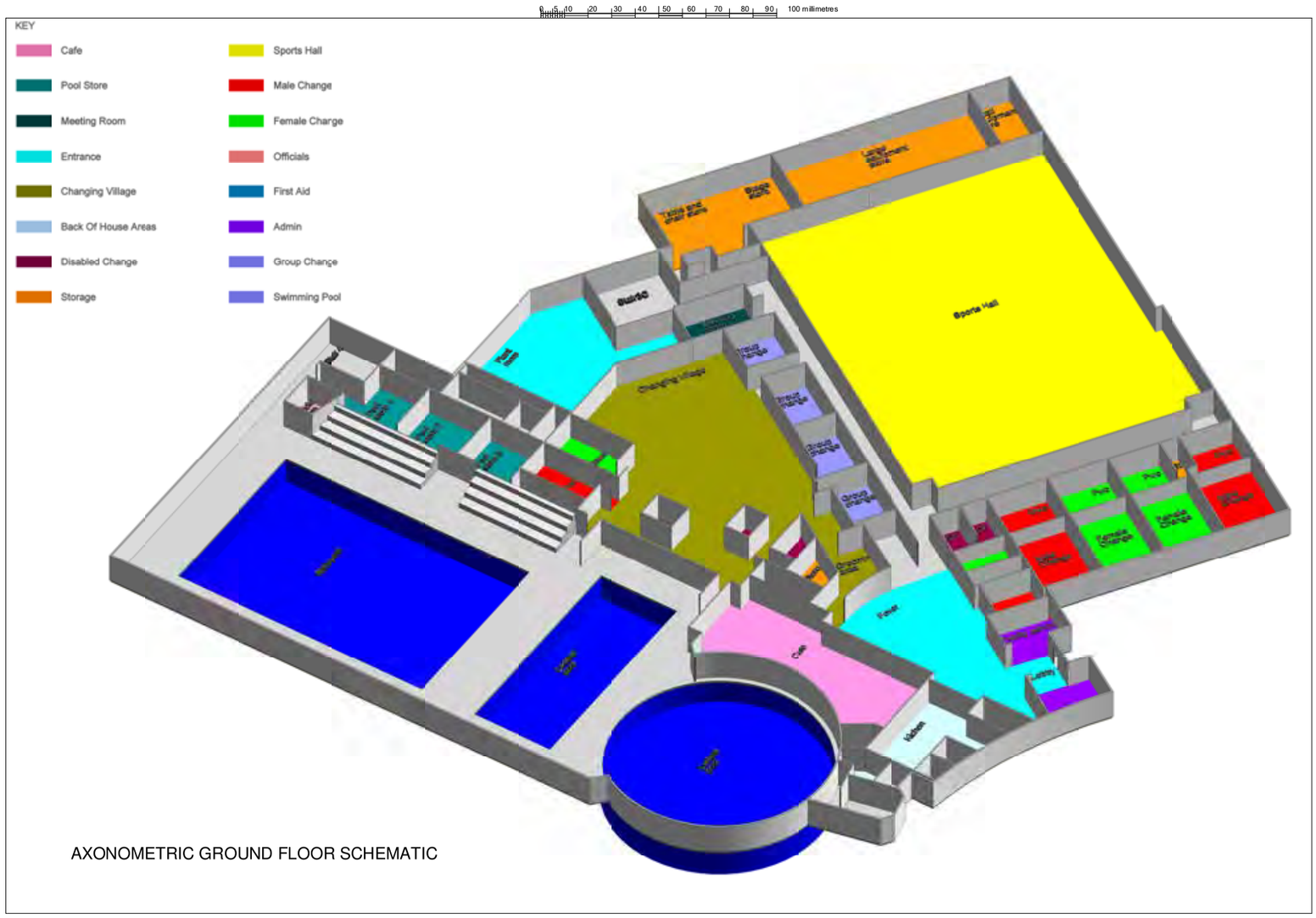


AXONOMETRIC SECOND FLOOR PLAN

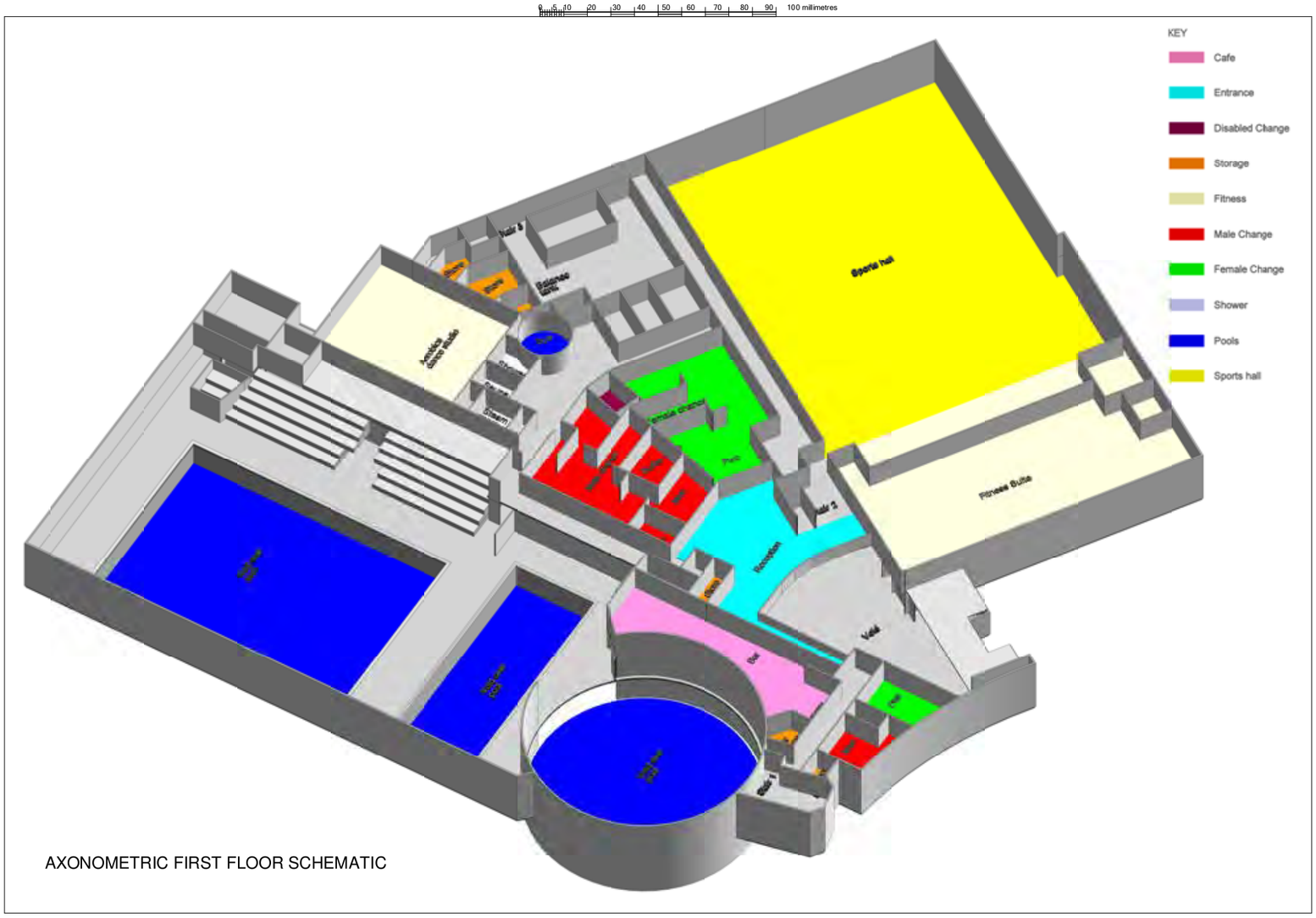
AXONOMETRIC FIRST FLOOR PLAN

AXONOMETRIC GROUND FLOOR PLAN

AXONOMETRIC LOWER GROUND FLOOR PLAN



AXONOMETRIC GROUND FLOOR SCHEMATIC



AXONOMETRIC FIRST FLOOR SCHEMATIC

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The main pool area with views of the leisure pool and flumes in the background

Section 3 - Executive Summary

1. Content and structure of this report

1.1 This Executive Summary will briefly address in turn each item of the remit set for the Inquiry and provide an overview of the related findings of the Inquiry. It will not seek to repeat the detailed chronology of events which is set out in Sections 4 to 7 or to repeat the more in-depth analysis behind the findings as contained in Section 8 of this Report. Only the more significant findings will be presented here. The full list of recommendations emanating from this Report is provided in Section 9.

1.2 The remit for this Inquiry has been challenging. The span of the development of the project has been over some 20 years. That 20-year period has been made up of four phases of distinctly different activities, each of which has had a major influence on the unfortunate DG One saga and each of which in itself could justify a separate report.

1.3 In order to make this Report as accessible as possible to those who will read it, the chronology from inception of the project in 1998 up to the end of 2017 will be divided into four main sections. The four phases each covered by a separate section of the Report are as follows:

1. THE DEVELOPMENT AND PROCUREMENT OF THE PROJECT
The period from inception of the project in 1998 to commencement of the Design and Build Contract in 2006

2. THE ORIGINAL CONSTRUCTION OF DG ONE
The period from commencement of the Design and Build Contract in 2006 to its practical completion in 2008

3. THE DISCOVERY OF LATENT DEFECTS, ENFORCED CLOSURE OF DG ONE AND RESOLUTION OF THE CLAIM FOR DAMAGES
The period from the opening of the Leisure Centre in 2008 up to the financial settlement with Kier in 2016

4. THE REMEDIAL WORKS CONTRACT
The period from the appointment in 2016 of McLaughlin and Harvey as main contractor to undertake the remediation contract up to December 2017 when the Inquiry completed its formal taking of evidence, at which date the remediation contract was not expected to complete until August 2019.

2. Overview of project objectives and outcomes

2.1 The original aspiration for the DG One project as stated in the initial brief for the project in 2001 was to create an energy-efficient building of high design quality that would provide a wide range of high quality sporting and leisure facilities for the public and become a centre of excellence for the region. It was also expected that it should act as a catalyst for the further economic regeneration of Dumfries and have an effective life-span of at least forty years. Evidence of the strong focus on quality and appropriate long-term objectives was expressed in the wording of the brief prepared by the Council at the time requiring that the design should allow the new building *"to grow old gracefully continuing to serve the community over the following forty years"*.

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2.2 These aspirations were totally appropriate and laudable, in that the Council was recognising its responsibility, as the developer of a major civic building in the town centre, by seeking to enhance the quality of the urban fabric of the town as well as seeking to improve the life-styles and quality of life of the communities they served.

2.3 Unfortunately, the building that would eventually open some ten-years after the first decision was made by the Council to replace the existing facility, would subsequently prove to fail to deliver any of the above objectives. Instead of lasting forty years, it remained open to the public for only six years, during which period its effective operation was regularly compromised by failures arising from the poor quality of its construction.

2.4 In 2011, only three years after its opening, the Council, dissatisfied with the response to a growing re-occurrence of defects in the building by Kier Northern, who were the design and build contractor for the project, appointed legal advisers and independent technical experts to carry out investigations as to the cause of the defects and to produce and cost proposals for their remediation in contemplation of litigation against Kier.

2.5 The reports of the technical investigations undertaken, combined with the photographs and evidence provided by witnesses to the Inquiry, described both a surprising and disappointing range and level of defective construction to be found in any one building. The two-page diagram presented on pages in this executive summary demonstrates the degree to which defective construction was found to permeate all parts of the building.

2.6 As the building was procured by the Council using a Design and Build form of contract, the responsibility for failures associated with both its design and construction lay with the Design and Build contractor.

2.7 The decision to use a Design and Build form of contract had been made by an Ad-Hoc Sub-Committee of the Council, who had not accepted the initial recommendation of the Project Management Board to use a traditional form of contract. Their recommendation for the traditional model had been largely based on the perceived risk to quality in using the design and build model.

2.8 The original focus on long-term quality appears to have been replaced at some point in the development of the project by a focus on achieving shorter-term time and cost targets. Although expert independent briefings to the Project Management Board and Sub-Committee had advised that quality could be more at risk using the design and build methodology, the belief by the majority of those making the decision that a design and build approach could better deliver time and cost targets seemed to hold sway over concerns as to quality.

2.9 In examining the outcome of the long-term quality objectives for the project, it is dramatically evident, when one considers the current partly demolished building, that the project completely failed to meet the quality objectives set for it.

2.10 However, it also failed in relation to both the short-term objectives of time and cost, which had appeared to have been given priority in the decision on the procurement model to be used. The eighteen-month contract period set for the project overran by approximately seven months or nearly forty per cent and the lowest tender returned exceeded the, admittedly inadequate, £9.5 million budget that had been set by the Council, by approximately £3 million or just over thirty per cent.

2.11 The outturn cost of construction, as would tend to be the case where limited client changes are sought in a design and build contract, was broadly in line with the subsequently agreed contract sum of £12.67 million.

2.12 However, the true net cost of delivering a compliant and functional project, following extended litigation and mediation processes, which resulted in the Council accepting an offer of £9.5 million from Kier in full and final settlement, is only now emerging as the estimates for the final outturn cost of the currently on-site remedial works contract become more definite.

2.13 The figures in the following table, as provided to the Inquiry by the Council, show that the total current estimated net cost of providing the DG One building to an acceptable standard, will be just over £33 million, almost twice the original total cost of the development as constructed under the Design and Build contract.

	£000s
Original cost of the new DG One facility in 2008 (including construction cost of £12.67 million, fees, site purchase and ancillary costs)	17,341
Additional costs incurred by the Council associated with the closure of DG One and pursuit of the legal claim against Kier	4,220
Current assessment of final reinstatement of DG One	20,963
Total Cost	**£42,524**
Less amount of settlement received from Kier	(9,500)
Net Cost of DG One to the Council	**£33,024**

2.14 Following the Inquiry's investigations, it is difficult to avoid considerable read-across between this Report on the Construction of the DG One Complex in Dumfries and the Report of the Inquiry into the Construction of Edinburgh Schools, published in February 2017.

2.15 Both Inquiries were provided with evidence of widespread failures of quality control by major contractors in relation to two major elements of safety related construction, i.e. major inadequacies in the construction of structurally sound masonry walls and in the installation of essential fire-proofing.

2.16 However, the existence of so many further defects in the DG One building across the work of a much wider range of specialist sub-contractors, raises even deeper concerns and emphasises the importance of the continued pursuit of current initiatives by the Scottish Government in seeking to improve the quality of construction across all aspects of the Industry.

2.17 It is clear that in so doing, the role that current approaches to the planning, procurement, design and management of construction projects may have played in contributing to these problems must be examined.

2.18 In particular, over recent years, as a result of changes in procurement the involvement of the professional members of the design team, i.e. architects and engineers, in the inspection of the works has become increasingly limited on many public-sector projects. There is often no adequate independent professional scrutiny of on-site construction on behalf of the client. Contractors are in many cases effectively only subject to their own inspection of their own work and this inevitably can lead to conflicts of interest as a result of commercial pressures.

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2.19 The availability of high-quality tradesmen in the industry has been the subject of concern for some time. This fact appears to have contributed to unacceptable compromises in the standards of workmanship increasingly becoming the norm. Additionally, there are serious concerns within the industry as to the adequacy of the quality of training currently being provided for building apprentices entering the industry.

2.20 There must be searching questions asked as to the professionalism, practices, training and levels of competence of senior managers, site managers, supervisory staff and individual tradesmen employed at all levels within the Industry.

2.21 Equally the question must be asked as to the on-going ability of public sector organisations of a certain scale to act as intelligent and informed customers for the procurement of complex projects such as the DG One building.

2.22 There has over recent decades been a significant reduction in the employment of in-house professional staff within public-sector bodies, which inevitably has had an impact on the ability of these organisations to attract and retain the necessary complement of experienced professionally qualified staff to allow these bodies to properly fulfil their role in the delivery of major public buildings.

2.23 The current limited number and type of inspections of on-site construction generally undertaken by Building Standards officers cannot, and should not be expected to, provide the necessary level of assurances to clients as to the detailed standard of construction being delivered in their projects.

2.24 Clients, who are ultimately responsible for the safety of their buildings, must therefore arrange for the provision of adequate independent professional scrutiny of the work of contractors so as to ensure the standard of construction of their projects.

2.25 This Inquiry would particularly wish to bring attention to the extensive failures in regard to the omissions and inadequate installation of fire-stopping discovered throughout the DG One building. The scale of these omissions served to completely compromise the fire safety strategy for the building.

2.26 Reports of similar failings of fire-stopping in recently constructed buildings throughout the U.K., including in Scotland, have been frequent and this is one of the issues being investigated following the Grenfell Tower tragedy.

2.27 The design of buildings in relation to fire safety is determined by the requirements of the Building Standards regulations which are largely based on the effective compartmentation of large buildings into smaller fire and smoke sealed areas, thereby containing the spread of fire.

2.28 This whole design approach, on which the safety of the public can rely, is rendered ineffective if fire-stopping to penetrations of compartment walls or floors is incomplete and if inspection processes by builders, clients and statutory authorities are regularly failing to identify deficiencies in its installation. More robust procedures in relation to the proper inspection and certification of this work are required

3. Brief chronology of events

In order to provide the reader with a context for the remainder of the Executive Summary, the following is a brief chronology of the events following completion of the construction of the DG One building in 2008. The full detailed chronology from inception of the project to the present day is provided in later sections of the Report.

3.1 The DG One building was constructed under a design and build contract by Kier Northern between **2006** and **2008**. The initial concerns in relation to the quality of construction of the DG One building were first raised during its construction. Shortly after the much-delayed opening of the facility in 2008, the most significant problems that emerged were associated with the quality of construction of the swimming pool enclosures and the internal tiling to them.

3.2 Over the next few months and years of operation of the facility, despite regular attempts by Kier Northern to remedy them, there were repeated failures of the tile linings to the pools and leaking from the pools into adjacent areas of the building.

3.3 A wide range of other defects were also becoming apparent in relation to the build quality of the external and internal fabric, the specification and detailing of installed elements and the environmental performance of the building. Major problems associated with the construction of the training pool would lead to its enforced closure for a period of several months.

3.4 The recurrence and identification of more defects and the Council's dissatisfaction with the responsiveness and effectiveness of Kier Northern in addressing them, eventually led in **2011** to the appointment of legal and technical advisers to prepare a case for compensation against Kier Northern. The extent of the defects resulted in the subsequent enforced closure of the building in **2014** to allow the necessary major remedial works to be undertaken.

3.5 In **November 2011**, a series of investigations by the Councils in-house professional staff had identified widespread defects and omissions throughout the building, including major omissions in fire-stopping throughout the building. The Council had no option but to order the immediate undertaking of emergency remedial work or face having to close the building on safety grounds.

3.6 The initial report prepared by the independent technical experts, had indicated that in order to carry out the wide range of remedial works necessary, the facility would require to be closed for a period of 17 months. Their initial estimate in **December 2013** of the cost of undertaking these works was **£3.7 million**, however this was prepared without being able to undertake the necessary intrusive investigations as DG one would remain open to the public until **October 2014**.

3.7 As on-going discussions with Kier, in relation to their degree of willingness to accept liability for the defects, had failed to provide a satisfactory outcome for the Council, a decision was made to raise Court proceedings which were subsequently initiated against Kier Northern on **12 April 2013** and to advertise for a new contractor to undertake the necessary remedial works.

3.8 The Council appointed Turner & Townsend as project managers to oversee on behalf of the Council the design, procurement and implementation of a remedial works

contract. The three companies who had provided the independent experts were each separately appointed as members of a design team to undertake the remedial works project, to whom were added new quantity surveyors and additional mechanical and electrical consultants.

3.9 The tendering process for contractors to undertake the remedial contract commenced in **August 2014** to address the schedule of defects that had been identified by the independent technical experts.

3.10 Partly as a result of the late addition of further remedial works to the tender documentation, the lowest priced tender, received on **3rd October 2014**, exceeded the estimate of **£3.7 million** by approximately **£3.2 million** pounds.

3.11 This amount necessitated a re-tender of the works by the Council, due to it significantly exceeding the legal threshold of circa **£4.2 million** which required contracts to be advertised in the Official Journal of the European Union.

3.12 The closure of the building in 2014 allowed the independent experts to undertake their already requested more intrusive investigations. These identified considerable additional defects that were added into the documentation for the new EU-compliant tender.

3.13 The re-advertisement process commenced in **April 2015**. Unfortunately, only one company returned a request to be included on the tender list. Legal advice was sought, and available options were considered by the Council. Ultimately it was agreed that the best option was to seek to negotiate a price with the sole prospective tenderer, McLaughlin and Harvey.

3.14 In **March 2016** an extra-judicial process resulted in a settlement with Kier Northern, who had agreed to pay a lump sum of £9.5 million which would be accepted by the Council as being in full and final settlement of all claims against Kier in relation to the DG One building.

3.15 In **May 2016**, following negotiations and completion of a value engineering process, a contract sum of approximately **£9.8 million** was agreed with Mclaughlin and Harvey to execute the remedial works contract. Works would commence in September 2016 with an intended contract completion date of **March 2018**.

3.16 In **February 2017**, it was reported that following opening up of the external walls of the building by the contractor, in accordance with guidance issued following the findings of the Edinburgh Schools Inquiry, significant additional defects had been identified that would require the total demolition of the external masonry walls to the main rotunda.

3.17 Simultaneously other previously unidentified defects were discovered, including a requirement to extend the length of the main pool, which in combination with the masonry defects and the resultant prolongation of the contract would lead to the requirement for an almost **doubling of the originally negotiated contract sum**.

3.18 The additional work involved was estimated as requiring an additional 21 months extension to the original 18- month contract period.

3.19 In **April 2017** Gardiner and Theobold were appointed by the Council to undertake a short independent review of the project to assist the Council in determining how best to proceed. They produced an interim report for presentation to the **July 2017** meeting of Council.

3.20 The Council at its **July 2017** meeting asked for a consolidated cost report for presentation at its meeting in **September 2017**. The report was required to be based on a finalisation of all investigations and the pricing of all found defects. It was also required to confirm the full potential financial liability of the Council in completing the contract.

3.21 The Council requested the project management team to seek to establish a guaranteed maximum price with the contractor for the completion of the project.

3.22 The 2017 July Council meeting also decided to set up this Independent Inquiry to help inform the Council as to what could have been done to prevent these problems from happening in relation to the construction of DG One, and what should be done in relation to preventing recurrences of the same problems in future projects undertaken by the Council.

3.23 In September 2017 on receipt of a consolidated report and appraisal of options prepared by Council officers, the Council agreed to provide the additional funding estimated as necessary to complete the project. This brought the projected total cost of the remedial works contract to approximately £21 million. In granting this funding the Council called for greater on-going monitoring and scrutiny of the project.

3.24 They were advised at the September meeting that the form of contract that had been used for the remedial works contract did not provide for the introduction of a guaranteed maximum price and that the risk for further variations to the content would unfortunately still have to lie with the Council.

3.25 Following the September meeting changes were made to the reporting arrangements for the project with the establishment of a high- level steering group, including the Chief Executive, the Leader, the Deputy Leader and the Director of Children Young People and Lifelong Learning (CYPLL).

3.26 Additionally, the Council's internal project management arrangements were revised to ensure the full-time commitment to the project of a senior experienced professional member of staff for the rest of the contract.

4. Brief overview of extent of defects

4.1 As previously stated the Inquiry was surprised at the range and extent of defects identified in the technical reports into the construction of DG One. Defects seemed to permeate virtually all elements of the building from the underground drainage through all aspects of the structure and fabric up to the construction of the roof. The two-page diagram on the following pages demonstrates the widespread nature of the recorded defects.

4.2 The presence of so many diverse defects is evidence of fundamental failures in the implementation of quality control processes used by the main contractor and the design and build supply chain responsible for delivering the design, construction, supervision and inspection of the building.

4.3 It also demonstrates failures on the part of the team responsible for administering the contract on behalf of the Council in ensuring satisfactory compliance with the standards required in the contract.

4.4 Photographs showing examples of the wide range of defects found throughout the building will be provided in the remaining sections of the report. The following photographs are presented only as an indication of the extent of the damage caused to the building by the inherent defects.











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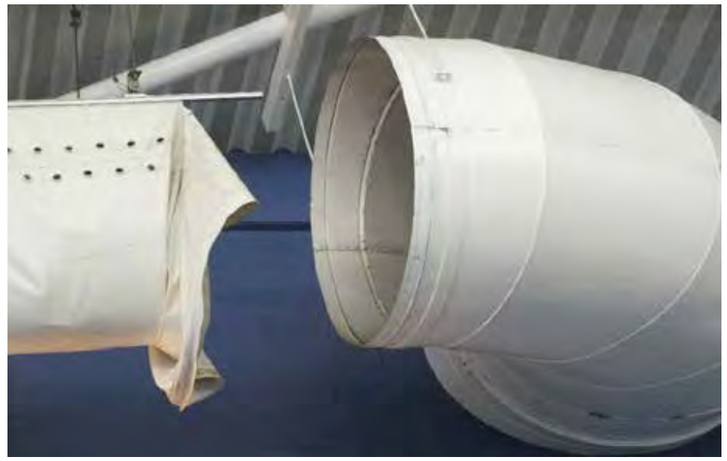
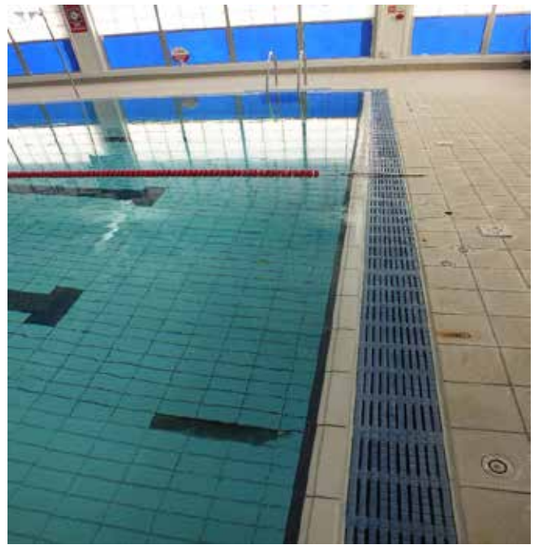
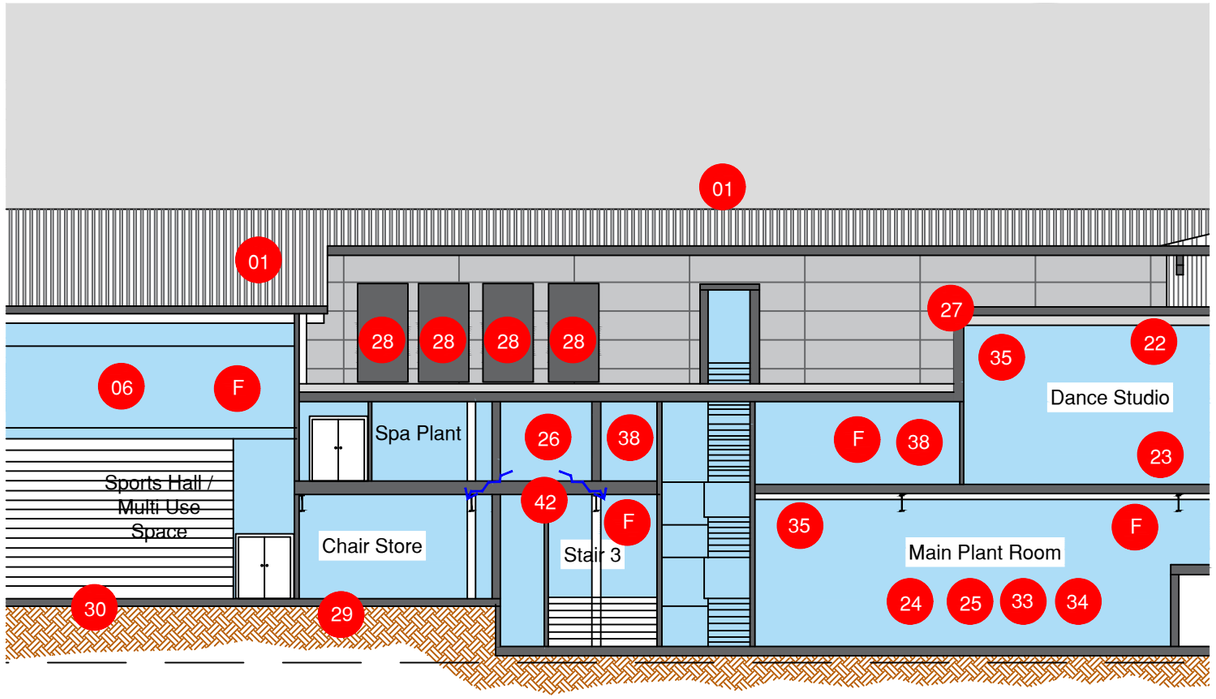
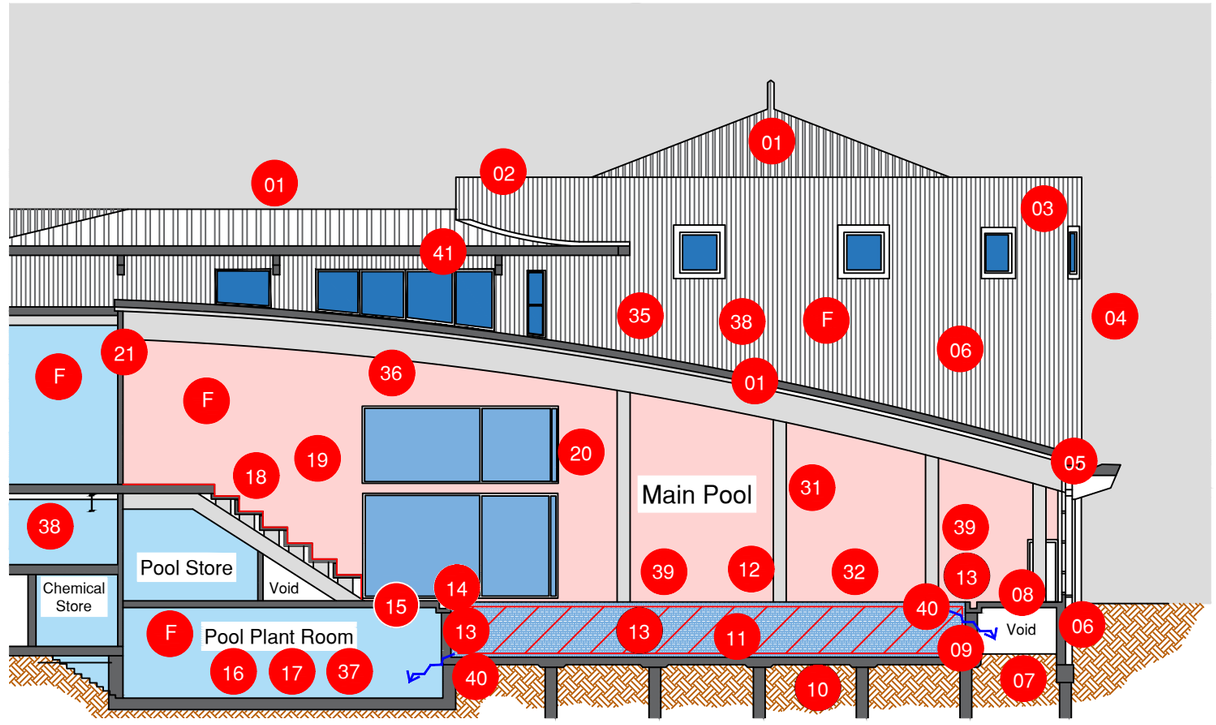



The following sectional drawing of DG One provides an indication of the location and extent of defects to have been found in the building, based on the various reports prepared by the technical experts. Significant defects were identified in relation to virtually all key elements of the building as will be demonstrated in later sections of this Report.





CROSS SECTION ILLUSTRATING EXTENT AND SPREAD OF DEFECTS THROUGHOUT THE BUILDING

COLOUR KEY ON DRAWING	
DRY (COOLER) SIDE OF BUILDING SHOWN THUS	
WET (WARM & HUMID) SIDE OF BUILDING SHOWN THUS	

LEGEND OF DEFECTS			
1	Defects in roof insulation	**12**	Corrosion found in structural steelwork
2	Defects in flashings and air tightness	**13**	Corrosion found in reinforcement in pool walls and scum channel
3	Defects in Cedar cladding	**14**	Defects with pool filtration system
4	Defects in Kalwall System to Rotunda	**15**	Defects in floor tiling around pools
5	Defects with air tightness	**16**	Defects in pool plant and equipment
6	Defects found in masonry walls – wall ties, head restraints and insulation missing, and poor construction requiring rebuilding	**17**	Defects with ventilation system
7	Defects in above and below ground drainage system.	**18**	Defects and corrosion in stainless steel used in pool areas
8	Faults found with damp proof membrane and insulation under floors	**19**	Failed and defective ceiling supports
9	Defects in waterproofing and tiling to pool walls	**20**	Cracking in glass partitions due to movement and poor detailing
10	Defects in waterproofing and tiling to floor of pool	**21**	Air tightness issues between compartments allowing chlorinated air to enter dry side of building
11	End wall to main pool found to be out of position and required to be rebuilt	**22**	Defects in sprinkler system

LEGEND OF DEFECTS			
23	Defects in floor to Dance studio	**34**	Issues identified with Boiler Flue
24	Defects in building services plant and equipment	**35**	Corrosion found in ventilation ducts
25	Defects and corrosion in pipework to hot & cold water systems	**36**	Lighting above leisure pool cannot be maintained without closing pool
26	Leak in Spa pool to floor below	**37**	Defects found in submersible pumps
27	Defects in rainwater disposal system	**38**	Faults found in fire dampers
28	Defects in air-handling units	**39**	Scum Channel constructed too low and required to be reconstructed
29	No insulation or damp proof membrane beneath floor	**40**	Water Leaks from pools
30	No insulation under floor	**41**	Sag in roof due to missing structural members
31	Blockwork around steel columns not tied into walls	**42**	Corrosion in steel beams under spa due to leaks
32	Defects in moveable floor in training pool		
33	Issues identified with Combined Heat & Power (CHP) Plant	**F**	Defects in Fire Stopping & Fire Protection to structure found throughout the building. Fire Escapes not sealed against migration of fire and smoke

5. Summary of Key Findings

Before setting out a summary of the findings of the Inquiry in relation to the formal questions in the remit, it is important to point out that the fundamental failings in the construction of the DG One building were failings on the part of the design and build contractor. The Council had not unreasonably placed significant reliance on the size and experience of a major national contractor to deliver a building to the required standard.

Unfortunately, the construction of the building in many aspects failed to meet the basic standards of the Industry or to comply with both the requirements of the contract and of the statutory building regulations.

It was these failures on the part of the design and build contractor that led to the loss of use by the public of the DG One facilities for what will be a period of some five years and that has led to the incurrence by the Council of very significant additional expenditure, both as a result of having to seek legal redress for compensation and in undertaking the necessary remedial works.

The majority of the Council's failings were related to their lack of expertise as a client and their inability to proactively avoid and effectively identify and respond to the failings of the contractor, which latter requirement for the client would have not come to the fore had the contractor properly fulfilled the requirements of the contract in the first place.

Remit Item 1:

"The leadership and project management applied by the Council for the duration of both the original project and the remediation project and the due diligence undertaken internally in assigning responsibility for the remediation project".

It is the view of the Inquiry that throughout the implementation of the original project and the development of the remedial project, the Council failed to allocate the appropriate internal level of resources in terms of expertise, experience or time resource.

The lack of appropriate sufficiently informed experience and expertise in the planning, procurement, project management and inspection of the DG One project, at both strategic and project execution levels, coupled with the under-resourcing of this work, compromised the position of the Council as a client and its ability to adequately protect public expenditure in the development of the project.

In April 2004, at the early stages of the development, the Corporate Policy Committee of the Council, in recognition of the lack of appropriate project management expertise in the Council, approved a recommendation to recruit a professionally qualified project manager with relevant experience in the procurement and delivery of complex buildings, whose first duty would be to take charge of the DG One project.

The approved recommendation to create a permanent post was not acted upon. The interim acting project manager, whose experience of construction was predominantly civil engineering and roads related, continued in the position of project manager until the completion of the project. In addition to the role of client project manager he was asked to undertake the formal role of Employer's Agent on the Design and Build contract, a demanding and technical role in a major building project, a role which he had not previously carried out using a contract form which he had not previously used and in an area of construction in which he had very limited relevant previous experience.

It is the view of the Inquiry that the Council's failure to implement the approved recommendation to recruit and appoint an experienced building construction project manager to oversee the development of the DG One project was a contributory factor to subsequent failures in the project.

There appeared to be a lack of adequate awareness on the part of the Council in relation to the need to, and how to, protect the quality of both the design and construction, having, with their choice of a design and build contract for the original building, largely delegated responsibility for these functions to an external contracting organisation.

It is clear from the evidence given to the Inquiry that there was a general presumption on the part of some Council officers that they could rely on the ability and experience of a major national construction company such as Kier to just get on with the work, with limited need for further input from the Council. In this case that reliance would unfortunately prove to have been misplaced.

Many public-sector clients use design and build as a way of transferring cost and time risk to a contractor, however in doing so, without having adequate protective mechanisms in place, they expose themselves to the risk of the building quality being compromised. One of the key requirements of those necessary protective mechanisms is investment by the client in the provision of informed, expert and properly resourced independent scrutiny of the work of the builder.

It is the opinion of the Inquiry that in the case of the original construction of DG One, the required level of informed independent scrutiny was not adequately provided for by the Council.

In relation to the remediation project, it is the view of the Inquiry that there was a failure to establish an appropriate wider strategic view of the multi-million-pound restoration of DG One as a major construction project in its own right, rather than it being viewed as simply the undertaking of a collection of necessary repairs to defects.

The priority of efforts on the part of the Council would appear to have been attached to addressing the needs of the legal process for the pursuit of damages, unfortunately resulting in an inadequate focus on properly establishing the remit of the construction project.

The Inquiry perceived a certain lack of informed ownership of the building aspects of the project amongst the Council officers involved in the development of the remedial works project. As a result, it was only very late in the development process, indeed after the on-site construction had commenced, that the necessary reviews of the total needs of the building project, other than in relation to the remediation of the defects attributable to Kier, were adequately considered.

It is the opinion of the Inquiry that failure to establish a dedicated and fully resourced project management board to oversee the remedial works project and to appoint a full-time in-house project manager with construction procurement experience during the development of the brief, procurement and early construction stages of the remedial works contract, led to a lack of a necessary informed proactive influence by the Council on the nature and direction of the project.

The nature of the remedial works project demanded a close technical coordination and liaison role between the contractor and the design team during the early construction stages to respond efficiently and effectively to what was emerging in the opening up of the building. It is the view of the Inquiry that this was not properly resourced and the necessary dynamic to drive the project forward was insufficient.

In the opinion of the Inquiry the Council failed to provide effective strategic and executive project and contract management to the level that would be normally expected of an informed client body, primarily through a failure to allocate appropriate resources to the project.

Remit Items 2 and 3:

"The rationale for the Council entering into the original design and build contract for the facility and the effect this arrangement may have had on the construction process" and

"The contractual arrangements between Kier Northern and Dumfries and Galloway Council"

Before considering these two remit items, it is perhaps useful to remind readers of a key phrase in the Council's original brief for the DG One building,

> *"that the building should be designed to grow old gracefully over the following forty years, whilst continuing to serve the needs of the community".*

Given their interesting juxtaposition looking across English Street at each other, a comparison between the DG One Building and County Buildings, the current head-quarters of the Council, may bring this issue of quality into focus

The latter was completed in 1914, designed in the Edwardian Renaissance style of the period by architects J M Dick Peddie and Forbes Smith, an Edinburgh based practice. It was built in local red sandstone, set out in a well-proportioned central block framed by matching wings, high-ceilinged and airy inside, using high quality durable external and internal finishes, and evidently built by builders who took a pride in their work and were well supervised. Today it exudes an air of permanence and still provides an appropriate and pleasant environment for the undertaking of the Council's business. It continues to make a positive contribution to the quality of the built environment in Dumfries.

This listed building still sits elegantly in its place, ***having indeed grown old gracefully over more than one hundred years, and today still effectively serving the needs of the community***. The Council at the time of its construction in 1914 had clearly understood the value of investing in quality and how to achieve it. Their investment has served the town well, paid for itself many times over and undoubtedly will continue to do so for many more years.

At the other end of Hood's Loaning stands DG One, a building for which the initial stated ambition of the Council was equally and appropriately high, completed in 2008, the exterior and interior of the building were already looking somewhat tired before the enforced closure of the building in 2014, only six years later, since when much of it has had to be virtually taken apart and rebuilt.

This building, delivered using a Design and Build procurement methodology, clearly failed to achieve any of the quality objectives set for it by the Council.

To achieve the longer term strategic objectives for the building and for the town of Dumfries, the DG One building, as no doubt was the case of the County Buildings more than a hundred years earlier, would have required a procurement strategy that was designed to support the achievement of the Council's aspiration for a building of high design quality, together with a properly calculated estimate of the cost for such a facility, to allow an appropriate budget to be set by the Council.

It is the opinion of the Inquiry that the choice of design and build for a flagship project was not in the best interests of the Council in terms of its desire for a building of enduring and civic quality. The risks attached to taking this decision were increased in light of having a poorly resourced and relatively inexperienced client interface with the contractor. This resulted in a situation where the quality objectives for the project and the wider public interests of the Council were not adequately defined in the procurement process or adequately protected in the construction of the building.

It is also the opinion of the Inquiry that the process used by the Council to determine the procurement route was over-complicated and lengthy, inappropriate for the detailed involvement of a non-specialist committee, lacking in informed professional input and highly subjective in terms of the criteria used for the assessment of bids.

It is also the view of the Inquiry that the decision to simultaneously advertise for separate design only and design and build proposals for the project was unnecessary, fundamentally flawed and wasteful of private sector resources.

Evidence to the Inquiry suggested the existence of a highly prevalent but misconceived view amongst many of those within the Council that were associated with the project, that as this was a design and build contract, the Council had very limited rights to question the design and construction processes, as these were the responsibility solely of the contractor.

This belief appears to have been an influencing factor in the way in which the contract was administered and the lack of adequate enforcement of the contractual rights of the Council during construction.

An argument, often put in favour of design and build, is that if the building is badly built the client can subsequently pursue the contractor as a single point for damages, as both design and construction risk lie with the contractor.

However, as events have shown in the case of DG One, the ability to sue is no recompense to the public for being deprived of the amenity in question for several years, and the process of suing is often prolonged, complex and expensive, offering little assurance that a client will recover all costs incurred, both as a result of having to undertake the remedial works to the building and in the expensive pursuit of a legal process.

In this case significantly less than half the costs incurred as a result of the defects in the design and build contract were recovered by the Council from Kier, effectively leaving the Council having to pay an additional £16 million over its original expenditure of £17 million on the project.

All pubic-sector client bodies, in seeking to construct a facility to provide services to the public, should have in place the necessary properly resourced, appropriately experienced and relevant professional expertise to seek to ensure that the building is being designed, specified and constructed correctly in the first place, rather than seeking to rely on the right to sue if things go wrong.

Intended savings by under-investing in the necessary resources to protect the quality of buildings and the achievement of clients' short-term and long-term objectives more often than not will prove a false economy.

The aim of transferring all risks away from the client to a contractor through using design and build is in reality unachievable, as the risk to the functionality, safe use and life-time maintenance of buildings that happen to be poorly constructed, ultimately will lie with the client who will be held liable for any resultant negative consequences.

Remit 4:

"The role of the Council, professional consultants appointed to act for the Council and Kier Northern and their supply chain in relation to the quality assurance of the construction of the original building including the inspection process, granting of completion certificates for practical completion, possession certificates and building control to allow the building to be occupied and to become operational in 2008".

Inspection of the works on behalf of the Council during the original construction of DG One

The views of the Inquiry on the role of the Council in failing to recruit and appoint a project manager from an appropriate professional background and with relevant experience of the form of contract to be used has already been stated.

The Inquiry also views as inadequate, the arrangements made for the monitoring of the quality of works on site, particularly in relation to the decision to proceed with the part-time appointment of a clerk of works who, like the project manager, was from a civil engineering and roads-related background. The project justified and required the appointment of a full-time building clerk of works with experience in the construction of complex buildings.

It is recognised by the Inquiry that the Council did advertise for, but failed to attract, an experienced building clerk of works and that as a result the clerks of works who was appointed had been approached by the project manager, who had worked with him on roads contracts for many years, to ask if he would be willing to undertake the role.

The Inquiry does not question the experience of the Clerk of Works in relation to civil engineering works, however, the knowledge set required to undertake this role for a heavily serviced building project such as DG One was completely different.

The Inquiry is also of the opinion that the level of provision of support to the Employer's Agent of professional architectural and mechanical engineering advisors as initially sought by the Council was inadequate, given the limited experience of the project manager in complex building projects, and that there was a subsequent failure to effectively utilise even this limited level of support during construction.

Evidence provided to the Inquiry indicates that despite the identification of a number of significant problems of design and construction by these professional advisers to the Employer's Agent, no effective action was taken to ensure that their concerns were properly addressed by the contractor.

The Inquiry was advised that there were also significant failures to address defects in reports prepared by members of the Council's in-house structural engineering and mechanical and electrical engineering teams following weekly visits to the site by them.

It is the opinion of the Inquiry that there was a lack of coordination of the various inputs from those undertaking site monitoring roles, who appeared to have limited contact if any with each other or with the main contractor and construction supply chain. There was also a dis-connect between the identification of defects in both design proposals and work on-site, and the subsequent checking of the effectiveness of follow-up actions taken by the contractor.

It is the opinion of the Inquiry that the Council did not adequately enforce their rights as laid out in the contract in relation to the identification of defects both in the development of the design and on-site, the issuing of instructions to the contractor to remove defective work and the use of the powers of the contract in situations where the contractor failed to do so.

The contractor's failure to provide the required standard of construction

One of the most fundamental requirements in constructing a building with three internal swimming pools and a first-floor spa pool is to ensure that their enclosing tanks and the drainage connections to them are fully waterproof. The quality of detailed design and the level of detailed supervision of the construction of these elements should have been given the highest priority.

It is evident from the records available that there was poor coordination of the design development for these areas and poor supervision of the work of the various sub-contractors involved. Major defects were identified in virtually all aspects of this work, the pools continued to leak throughout the short period that the building was open and in so doing caused extensive damage to structure, building fabric and services installations in areas adjoining and below the pools.

The defects in the building were not limited to the construction of the pools. Failures to achieve acceptable standards of construction were identified throughout the building from the underground drainage right up to the roof

In the opinion of the Inquiry the extent and nature of the defects discovered are evidence of a lack of care, attention, basic construction skills and understanding of some of the fundamental principles of good construction on the part of those who built this building and those who supervised them.

The DG One project is an extreme example of the failure of quality management functions throughout all levels of site operations and management in the execution of this design and build contract, which have led to Dumfries & Galloway Council incurring major costs in remedying the extensive defects within the building.

It is also a finding of the Inquiry that the Contractor, subsequent to the practical completion of the building, failed to respond adequately to the requests of the Council in relation to undertaking effective permanent remedial works to the discovered defects in the building.

It is disappointing that Kier and key members of their design and contracting supply chain were not willing to give evidence to the Inquiry. Accordingly, the Inquiry is unable to provide the views or perspective of Kier or the members of their supply chain on the poor quality of construction that was delivered.

Building Standards Infractions

It is a legal requirement under the Building (Scotland) Act 2003 that approved building warrants are required from Building Standards before construction is allowed to commence. In the case of DG One, only a stage 1 warrant had been received covering the foundations of the building when work commenced on site. While the stage 2 and stage 3 warrants for the above ground elements of the building were submitted by the design and build contractor for approval in mid-2006, they were not issued as approved by the Council's Building Standards Department until March 2008, at which stage the project was virtually complete.

This was a breach of the law, and as a result the building had been built without confirmation that the designs to which the contractor was working were compliant with the regulations.

It would subsequently be shown that the fire escape strategy as-built did not comply with the regulations and revisions to the layout of the building would be required to overcome this as part of the remedial works contract.

Records indicate that five visits were made to inspect the site by Building Standards Inspectors, three in relation to drainage and two in relation to inspection of fire-stopping. No references are made to Build Standards inspectors having undertaken any inspections of the many other parts of the building where breaches of building regulations would be identified.

Subsequent surveys after the opening of the building would identify widespread and major breaches of fire compartment walls and floors through inadequately installed or totally omitted fire-stopping. Other surveys would identify major problems with the underground drainage installations.

Unfortunately, the effectiveness of these inspections as confirmation of compliance with the requirements of Building Standards could not be relied upon.

It should not be forgotten that irrespective of the inadequate quality of inspections undertaken by others, the design and build contractor is responsible for constructing the building in full compliance with the regulations and should have carried out his own inspections to confirm this compliance.

It is a legal requirement that a Notice of Acceptance of Completion Certificate for a building is issued by Building Standards before a new building is occupied in order to protect the safety of building users. This objective can only be effectively realised if the processes used to verify compliance, particularly in relation to issues such as fire protection, are robust.

At the time of the opening of DG One in May 2008, the required Notice of Acceptance of Completion Certificate had not been issued. A Temporary Occupation Certificate (TOC), permitting only temporary occupation, had been issued by the Building Standards Department to cover the brief period from 18th April 2008 until 18th June 2008.

On the expiry of this TOC on 18th June 2008, no Notice of Acceptance of Completion Certificate or extension to the TOC was applied for or issued, however the new building remained in full public use from its opening on 28th May 2008. It would not be until **11th June 2009**, that a Notice of Acceptance of Completion Certificate for the building would be issued by the Building Standards Division of Dumfries and Galloway Council.

This in effect meant that the on-going use of the building by the Council, during the period from 18th June 2008 until 11th June 2009, was in contravention of the requirements of the Building (Scotland) Act 2003, such requirements being the responsibility of the Council itself to administer.

It is the finding of the Inquiry that there were multiple failures on the part of the Contractor to adequately comply with the requirements of the Building (Scotland) Act 2003.

The Inquiry also finds that there were significant failures in the administering of the Building (Scotland) Act 2003 by the Council's Building Standards Department in relation to both the response times in issuing approved warrants and to the inadequacies in the reasonable inspection of the works to confirm compliance with the regulations.

The Council's Project Management Board and Project Manager should also have taken reasonable steps to ensure that statutory requirements in relation to the granting of warrant approvals and the acceptance of completion certificates had been satisfactorily complied with in accordance with standard practice, the requirements of the contract and the law of the land.

The granting of statements of practical completion by the Council

In the situation in which the Council found itself, with the DG One building already over 7 months late in a contract of only 18 months duration, there was undoubtedly increasing pressures from both within the Council, which was nearing its end of term of office, and from wider public opinion, to bring the greatly delayed project to a completion.

This may have led to the Council's representatives accepting a building as practical complete without necessarily having the full evidence to confirm than it was. Even ignoring the presence of other significant defects in the building, the major inadequacies in the fire-stopping should have been identified through proper inspections by the Council's representatives and prevented the issue of the statement of practical completion until these had been properly remedied by the contractor.

The Inquiry is of the opinion from the evidence provided that the building was prematurely accepted as having reached a state of practical completion and that the necessary informed inspections of the building elements had not been adequately undertaken to establish this fact and prevent the acceptance of the building in a state which potentially held risks for users of the building.

This opinion is corroborated by evidence given to the Inquiry that on the discovery in 2011 of the extent of defects in the firestopping of the building, the fire authorities indicated that except for the undertaking by the Council to initiate significant emergency remedial works, they would have required that the building be closed due to it being considered unsafe for continued public use.

Remit Item 5:

"The management of risks to the Council; and if Council's standard practice regarding quality assurance provided adequate checks and balances for parties to the contract".

It is the view of the Inquiry that in the execution of the original project there was an over-concentration on the risks associated with the achievement of the cost and time objectives of the Council, which resulted in a lack of appropriate focus on the original quality objectives set for the project, inadequate provision of measures to protect the quality of the project and a resultant failure to achieve a building of quality.

It appears to the Inquiry that the Council placed considerable reliance on the adoption of the Prince2 methodology in the Council's approach to the management of the project. Whilst the methodology provides a useful structured approach to the organisation and procedural aspects of project management, it should in no way be viewed as a substitute for a project team with appropriately resourced professional expertise and experience.

It is also the view of the Inquiry that the Council failed to adequately address the risks associated with the failure of the contractor on the DG One project to deliver the required quality of design and construction by its lack of appropriate resourcing of key roles during construction of the project.

In relation to the remedial works contract, it is the view of the Inquiry that there was a lack of informed strategic oversight and ownership on the part of the Council in the development of this multi-million-pound building project. The main resources of the Council were largely concentrated on the legal pursuit of damages with an inadequate focus and allocation of resources on properly identifying the need for and addressing the reinstatement of the building to an appropriate condition.

The complexity of and level of risks associated with both the procurement and technical aspects of this large project would have justified the full-time allocation of an in-house experienced project manager in both the pre-contract developmental stages and the construction stages, however this provision was not put in place until after a year into the contract period.

It is the view of the Inquiry that In light of the impact that the sub-standard development of the DG One Building has had on the Council's ability to deliver public services, on the financial position of the Council and on its reputation, the Council needs to review its exposure to risk in relation to its organisational arrangements in terms of the allocation of responsibility for and the resourcing of the necessary expertise in the planning, procurement and project management of its major capital projects so as to ensure the quality of its new buildings.

Remit Items: 6, 7 and 8

"Dumfries and Galloway Council's handling of the problems with the facility since 2009 including the process that led to the Council commencing proceedings against Kier Northern"

"The scope of the appointment of the professional team during the investigative phase and the extent and adequacy of the methodology adopted and the work carried out to inform the evidence used in proceedings against Kier Northern"

"The issues that the project is now facing, but not originally allowed for and why they were not discovered in the first instance"

The decision to appoint legal advisers

The preparation in 2011 of a report by the Council's in-house design group on the defects in the DG One building identified, in addition to other major defects in the building, serious inadequacies in the fire-stopping to the building.

The Council had at this stage been involved in regular communications with Kier since the building had opened, thereby seeking to have the growing list of defects in the building properly and permanently addressed by them. These attempts had repeatedly failed to achieve a satisfactory response from Kier leading to growing frustration on the part of the Council.

In 2011 the Council decided that they could no longer rely on this approach and appointed legal advisers and independent experts to undertake the necessary work to identify those defects attributable to Kier and to prepare a case against Kier for the cost of their remediation by other contractors.

In the opinion of the Inquiry the Council's decision to seek damages from Kier and to arrange for a separate contract for the necessary remedial works was appropriate in the circumstances. The Council also acted appropriately and responsively in the actions it took in 2011 to have emergency repairs to the defective fire-stopping within the building undertaken by a specialist company.

As previously stated it is, however, the opinion of the Inquiry that the Council failed to adequately resource the internal strategic and executive construction-related management of the remedial works project.

Failure to comply with European regulations

In mid-2014 completed tender documents for the remedial works contract were issued to a short-list of four tenderers selected from those who had responded to a public advertisement. It was not simultaneously advertised in the OJEU, (Official Journal of the European Union) based on the fact that the November 2013 estimate of £3.38 million, produced by Thompson Gray Quantity Surveyors, was significantly below the threshold of approximately £4.2 million requiring EU advertising.

The lowest price of the four tenders received in October 2014, after adjustment for arithmetic errors, was approximately £6.9 million, more than sixty per cent above the OJEU threshold. The Council would have been in breach of the European Regulations and liable to challenge if they had accepted this tender. Following legal advice, the Council determined that the current tender process should be abandoned, and the contract re-advertised in the OJEU.

It is the opinion of the Inquiry that given the passage of time and the significant additions that had been made to the scope of the work in the Bill of Quantities from that on which the November 2013 estimate was based, standard practice should have required the production of a new cost estimate for the works before going out to public advertisement.

It is the view of the Inquiry that this basic requirement should have been identified by the external Project Managers and the Council advised accordingly before proceeding with the tender.

This would have determined both the need for a major increase in the budget cover required for the remedial works project from the Council and the need to advertise the project in the OJEU. The requirement to check whether projects need to be advertised in the OJEU is a basic requirement of all pubic-sector projects and Council procedures should have been in place to prevent the need for this being overlooked.

Also, despite the Council having being advised in 2012 by the independent experts that the full extent of the defects could not be established until the building had been closed and the pools emptied of water, the issue of the subsequently to be abandoned tender document in mid-2014, predated the closure of the pool and therefore did not take account of the major additional work that would be discovered after the closure of DG One. The fact that the failure to advertise in the European Journal caused this tender to be aborted, would subsequently allow for these elements of work to be added before retendering.

It is the opinion of the Inquiry that the Council should either have closed DG One much earlier to allow the necessary investigations to be undertaken and the additional discovered work items to be included in a comprehensive set of tender documentation, or should not have completed the tender process until after they had closed DG One in 2014 and allowed the additional investigations to be carried out to inform the necessary additions to the tender documentation.

The financial settlement with Kier

In December 2015, following an extra-judicial process of facilitated mediation, the Council agreed to accept an offer of £9.5 million in full and final settlement of their claims in relation to the defective construction of the DG One building. At this time the revised tender received by the Council for the remedial works contract was approximately £10.8 million.

The Council were advised that there was no guarantee that further latent defects would not be discovered but were aware that the significant investigations which had been undertaken had led to more than a tripling of the estimated cost of making good defects from £3.4 million in December 2013 to £10.8 million at the time of their decision. In these circumstances it would not be unreasonable for them to assume that most of the defects had been identified.

There was also an urgency on the part of the Council to proceed with the remedial works as soon as possible and there were doubts as to when the still on-going formal Court proceedings would come to a completion and what the outcome of those proceedings might be.

It is the opinion of the Inquiry that the Council acted reasonably in accepting this offer, based on the information available at the time to the Council and to their legal advisers as to the extent of the defects identified, and based on the analysis provided by their legal advisers as to the reasonable level of recovery that the offer appeared to represent.

It would have been impossible in the circumstances for the Council to have foreseen the level of unidentified latent defects that would subsequently be discovered when the contractor started to open up the building, the additional cost of dealing with these and the impact of having agreed to a 'full and final' settlement

The requirement for an appropriate brief for the remedial works to the building

It is a finding of the Inquiry that there was an absence over the prolonged period since 2011, when it was first recognised that a major remedial contract would be required, of a necessary informed strategic overview as to how to deliver the DG One building to an appropriate level of finish to meet the reasonable expectations of the public.

The design team had been instructed by the Council only to include the making good of defects attributable to Kier in the contract documentation. Consideration of any additional non-Kier attributable issues had specifically been excluded from their brief.

The reason for this approach was twofold. Firstly, the Council were anxious about the growing cost of the project and wished to restrain the content of the remedial works contract to the minimum work necessary and secondly, the legal advisers wished to have a market-tested pricing of the remedial work for the defects attributable to Kier for evidence to the Court, without any betterment or other additional work included that might complicate the submission.

No proper survey of the building had been undertaken to establish the condition of all aspects of the building, even though after six years use it had sat closed for two years. This was particularly important as there had been no comprehensive assessment of the impact of the lack of maintenance by the Council on both the building fabric and the complex services installations since its opening in 2008. The lack of adequate maintenance had been identified as a problem in 2011 in the in-house report on defects.

Additionally, difficulties had been experienced since the opening of DG One in relation to the effective and efficient operation of the building due to its layout. These issues included problems with the first-floor location of the spa and inadequate observation from staff bases of users of the leisure pool.

It was only after the contract had commenced on site and a condition report had been produced, that the Council finally realised the unavoidable requirement for the contract to address maintenance issues and essential client changes in addition to the defects attributable to Kier. The delay in undertaking condition surveys to define the additional non-attributable work until this stage of the project would have a significant impact on the cost of the contract.

It is a finding of the Inquiry that the production of a considered brief for all aspects of work required as part of the remedial works contract, and the development of agreed design solutions that reflected that brief, should have been implemented and completed in the extended period before the release of the tender for the project. The additional work identified as necessary should have been properly incorporated into the tender documentation for the project and not left to be identified until after the contract had commenced.

It is the opinion of the Inquiry that the requirement to identify separately, the cost of the remedial work required to address the defects attributable to Kier for the purposes of the legal case, could have been readily accommodated within the format of a more comprehensive tender.

The failure to identify in advance and incorporate all the work viewed as necessary into the tender contributed to significant avoidable additional cost and prolongation of the remedial works contract.

The missed opportunity to identify defects to the masonry walls prior to signing the contract for the remedial works

One of the most significant factors that led to the extended prolongation of the remedial works contract was the discovery, after the commencement of construction, of the inadequate installation of wall ties, header ties and lateral ties in the external masonry walls, compromising the structural integrity of walls and necessitating the demolition and rebuilding of the external walls to the large three-storey high rotunda.

The contract for the remedial works to DG One had commenced on site in September 2016. Earlier that year in March 2016, following the collapse of a wall at Oxgangs School in Edinburgh and the discovery of defective installation of wall ties throughout 17 schools, a warning had been sent out to Local Authorities in Scotland to undertake checks for these defects in recently constructed buildings, particularly on projects where design and build contracts had been used.

On receipt of this alert the Property and Architectural Services Manager in the Council requested confirmation from the Council's liaison officer on the DG One project that checks for these defects had been undertaken in the building.

Unfortunately, this request was not acted upon until after the contract was let in September 2016. The contractor was subsequently instructed to open up the walls to inspect for these defects. The resultant discovery of widespread defects of this nature, would lead to a major slowing down to the normal progress of the works for a six-month period, while the implications of this discovery and the resultant major increase in the cost and prolongation of the project was reported on and considered by the Council.

The Inquiry is of the opinion that if the request of the Property and Architectural Services Manager in April 2016 had been proceeded with , the defects to the masonry construction could have been identified and the letting of the remedial contract delayed until this additional work had been designed and specified, acceptable rates agreed for inclusion in the contract, and the necessary funding approved by the Council.

This could potentially have avoided the significant costs incurred by the Council as a result of the prolongation of the contract, caused by the 5-6 months period required by the Council to decide to proceed with the project and the time required to undertake the approved additional work.

The adequacy of the role as undertaken by the independent experts

The independent experts brief as provided by the legal advisers had been to report on the **identified failures in design and construction** in DG One. Their investigations, prior to the appointment of the contractor, involved the opening up of several relatively small parts of the building due to it remaining open to the public. These investigations had to be arranged to also facilitate the opportunity for inspection by a set of equivalent independent experts representing Kier.

There was a constraint applied to the Council's independent experts in relation to their undertaking any investigations of areas of the building where defects had not been identified. It was thought that in doing so they could run the risk of being accused by Kier's independent experts of embarking on a "fishing trip" to look for other defects. This could have weakened the position of the Council in the then prospective court action.

It is the opinion of the Inquiry that in general the extent and nature of additional defects discovered following the extensive opening up of the building fabric by the contractor could not reasonably have been foreseen by the independent experts, without considerable additional intrusive and destructive investigations which would have been beyond what could normally be expected.

The type and level of investigations undertaken by the independent experts, including extensive analysis of particular aspects of the work by a number of specialist companies appointed at the request of the independent experts, would indicate to the Inquiry that a professional and experienced approach was adopted consistent with the requirement on the independent experts to act with reasonable diligence.

Additionally, the independent experts consistently advised that they could not give any assurances that further defects would not be found in the building once the contractor had opened up floors and walls and existing service installations had been properly tested.

It is the view of the Inquiry that the only time the majority of these unidentified and largely hidden defects could have been readily identified any earlier was when the original construction of the DG One building was being carried out. This would have required an appropriate level of on-site independent scrutiny and inspection by experienced site monitors acting on behalf of the Council during the initial contract.

In relation to the defective construction of the masonry walls, the evidence to the Inquiry suggests that there were no detailed inspections by Council representatives of these elements during the construction of the building.

Any inspections of the wall construction carried out as part of the quality assurance processes of the original contractor also clearly failed to identify and have rectified what were obvious inadequacies in the installation of wall-ties.

Remit items 9 and 10:

"The contractual arrangements between McLaughlin & Harvey and Dumfries and Galloway Council" and

"The conduct of the contract negotiations with McLaughlin & Harvey and the Council's level of governance of these arrangements".

The contract used for the remedial works contract was the Scottish Form of Building Contract, SBC/Q/Scot Standard Building Contract (with Quantities) 2011 edition. This form of contract is generally used for projects where there is the ability to produce a fully developed set of detailed design drawings and specifications sufficient to allow the preparation of a comprehensive Bill of Quantities which accurately describes and quantifies all elements of labour, fixtures, fittings and materials required to construct a building.

In evidence to the Inquiry it is clear that there were varying views amongst the project management, design team and the independent experts as to the appropriateness of this form of contract for a major remedial project of this type. There was clearly a stated lack of certainty by the independent experts as to the full nature and extent of defects that might be found when the contractor opened up the works, so inevitably the measured quantities could only have been addressed those defects that were visible and capable of measurement.

The Council would be responsible for the cost of all additional work that was required above that measured in the Bill of Quantities. They would also be responsible for the overhead costs of the contractor during the inevitable periods of time required for the development of design proposals and client approvals to address all new defects discovered.

If a two-stage pre-construction approach using approximate quantities had been adopted, allowing for the significantly earlier undertaking of a much smaller first stage contract to establish through opening up of the building the true extent and more accurate cost of defects, the Council would have been much better informed in relation to the options open to it and potentially could have decided not to proceed with the second stage of such a contract.

Additionally, the use of this alternative form of procurement could have allowed for an earlier production of the tender documents, appointment of a contractor and completion of the stage one exploratory works prior to the Council having to take a decision on the level of settlement being offered. This would have placed the Council in a better position in terms of having a much more accurate picture of the true extent of the defects and the much higher estimate of cost of undertaking the necessary remedial works. This may have changed the view of the Council as to the reasonableness of the full and final offer made by Kier.

However, the Inquiry is able to say this with the benefit of hindsight, which was not available to those making the decisions at the time.

The appointment of the contractor for the remedial works contract

Surprisingly, the re-issued European-compliant advertisement attracted only one contractor, McLaughlin & Harvey, expressing an interest in tendering for the remedial works contract. None of the other contractors who had tendered on the previous occasion responded to the advertisement.

Having sought legal advice and considered the options open to them, the Council decided to negotiate with this single contractor rather than to re-advertise. The arguments for doing this were threefold; not wanting a further delay to the process of bringing DG One back into use; a new advertisement may still not attract any further potential bidders; and there might be a risk of losing the single contractor that was interested.

On 16th October 2015, McLaughlin & Harvey submitted a priced tender of £10,864,810 for carrying out the revised content of the remedial works contract. This exceeded the pre-tender estimate, prepared by McGowan Miller Quantity Surveyors in September 2015, by £1,223,439. The main cause of the difference between the two was in the much higher pricing of preliminaries by the contractor.

By mid-2016, following several months of negotiation, a reduced figure of £9,898,984 was agreed as the basis of a contract to be entered between the Council and McLaughlin & Harvey. There is little doubt that with the absence of competition and following a negotiated process, the Council was paying a premium over market rates. However, the adjusted price compared reasonably with the pre-tender estimate that had been produced by the quantity surveyors, McGowan Miller, in the sum of £9,578,831.

If the quantities as measured in the tender had not dramatically altered and contract had not been subject to extended prolongation, the high rate of preliminaries would not have been as influential in increasing the cost of the project as they would subsequently prove to be.

It is the opinion of the Inquiry that the Council, having decided to negotiate with the only contractor responding to their advertisement, did take reasonable steps to seek to mitigate for the lack of competition by insisting on an open book approach to the project and did achieve a significant reduction in the negotiation process.

However, the subsequent level of variation to the scale and content of the project and the major extension to the length of the contract period has placed the Council in a very difficult position in terms of being able to control costs.

The currently predicted outturn construction cost of approximately £19.1 million bears little relationship to the agreed contract figure of approximately £9.9 million. It is the opinion of the Inquiry that while, much of this dramatic increase is due to the unavoidable cost of addressing the virtually unprecedented range and level of defects that were found in the building after construction commenced, the lack of development of a properly resourced strategic direction to the evolution of this major remedial construction project from its inception, has contributed significantly to the problems associated with the project.

Governance of the construction process

The on-going management of this contract required a completely different approach to that required for a green field new building where it can largely be fully designed in advance. The project management and design team had to be able to quickly inspect what was being discovered as the building was opened up and equally quickly determine the appropriate design responses to what was found.

Central to this requirement should have been the proactive daily involvement of design leadership in ensuring the production of fully coordinated and timely design information so as to not to cause delay to the progress of the work to the contractor and the risk of incurring resultant additional costs.

It is the view of the Inquiry that the systems and resources put in place were inadequate in terms of their ability to respond sufficiently effectively and promptly to address the circumstances of this project.

Special arrangements for quicker approvals and much shorter chains of decision-making should have been put in place to reflect the particular needs of this contract. The Inquiry did not get a feeling of the pro-active management of a dynamic and unified design team that this demanding project required. Instead it gained an impression of a somewhat fragmented, reactive and administrative approach.

It is hoped that the full-time allocation of an experienced in-house project manager in Autumn 2017, coupled with simultaneous changes to the strategic management of the project, will bring the dynamism required to drive the project forward to an effective conclusion.

At the time of writing this Report the Inquiry is aware that there are a number of current outstanding decisions of the Council including; proposed changes of use of parts of the facilities; the replacement of current lighting with more energy-efficiency lighting; and the need or otherwise to replace the main boilers. The issue of the need to extend the height of the main flues also does not seem to have yet been resolved.

It is imperative that all required actions under the contract in response to all such issues are quickly decided and appropriate instructions to address them issued to the contractor as soon as possible.

Remit Item 11:

"The management and maintenance of the buildings since construction, including advising on whether the current defects should have been found earlier"

Evidence to the Inquiry from a range of witnesses was unanimous in recognising the under-provision of maintenance funding for the DG One building ever since its opening. The resultant lack of maintenance applied to both the basic cleaning of the building as well as to the more demanding maintenance requirements of the complex mechanical and electrical services installations in the building.

This situation was exacerbated by the fact that that those charged with looking after the building, were constantly having to deal with a stream of problems arising from the inadequacies of its construction, which must also have been a drain on the limited maintenance budget available for looking after the building. This was particularly the case in relation to the continuous problems of delaminating tiles in the pools and leakages from the spa and pools into other parts of the building.

The lack of maintenance to the building over the years since opening resulted in the need for significant additional items having to be incorporated into the remedial works contract in order to ensure the effective operation of the building when it reopened. The most disruptive of these to the progress of the remedial works contract was the need to replace virtually all of the pipework to the low temperature hot water and chilled water systems due to internal corrosion as a result of failure to maintain the system by the required regular chemical dosing.

The need to address this range of maintenance issues was not properly recognised until after the commencement of the remedial works contract on site. The in-house report produced in 2011 had identified a wide range of examples of poor maintenance which should have alerted the Council for the need to undertake a proper survey of the building to establish the need for any work to be included prior to the finalisation of the content of the remedial works contract.

The 2011 in-house report had identified concerns as to the adequacy and completeness of the operational manuals and associated information that should have been provided by the contractor. Without these it would be very difficult for maintenance staff to effectively operate the complex services installations. The report also questioned the effectiveness and adequacy of training of maintenance staff in the operation of the building.

It is the opinion of the Inquiry that the Council failed to provide the necessary level of maintenance funding and put in place appropriate maintenance regimes for the building. A number of the key problems associated with the project, including the inadequacies of fire-stopping throughout the building, could have been detected much earlier if the necessary maintenance regimes had been in place.

Conclusion of findings

This has been a very unfortunate project for Dumfries and Galloway Council. From the initial conception of the project, it has been a story of repeated disappointments, frustrations, unrealised aspirations, delays and rising costs.

It is the opinion of the Inquiry that the original allocation of responsibility for the delivery of the project failed to recognise the need for the appropriate knowledge, experience, skills and resources to act as an intelligent customer for a complex building of this type.

Similar failures in the application of adequate internal resources were repeated in relation to the development and early construction stages of the remedial works contract.

The decision to procure the original building through a design and build methodology, delegated responsibility for design and construction to a contractor. It did so without having adequate informed influence by the Council on the development of the detailed design and on the quality of the detailed construction of the building.

However, none of this should disguise the fact that the principle failings unquestionably lie with the contractor and construction supply chain that built a building with such a wide and varied range of defects that necessitated the deconstruction and rebuilding of major areas of it within a few years of its construction.

The Council had placed considerable reliance on a large, experienced, national contractor to design and build the new facility to the required standards. This reliance would be found to have been seriously misplaced.

The quality of workmanship and failures in the proper installation and assembly of building components in many areas of the construction was unacceptable. It is difficult to understand how this obvious inadequate standard of work was allowed to continue and how it could have been overlooked by supervisors or by quality inspections undertaken by the main contractor.

The nature of the defects in the construction of the masonry walls and in the installation of fire-proofing throughout the building reinforces concerns as to the systemic nature of these defects in new construction work in Scotland.

Together with the other wide-ranging defects discovered, it also raises questions as to the adequacy of knowledge and skills of managers, supervisors and tradesmen in the Industry and the effectiveness of training schemes in producing a workforce to the required standard to serve the on-going needs of infrastructure development in the country.

Finally, the Inquiry would like to return to the original aspiration of the Council to create *"a building that would grow old gracefully while continuing to serve the needs of the community over the following forty years".* Such buildings do not just happen, their pursuit requires knowledge, commitment, and informed championing. They are rarely delivered through the application of predominantly administrative processes or when design development no longer remains under the effective control of the client, both of which unfortunately applied in the case of the DG One building.

Winston Churchill's quotation on the issue of the importance of pursuing design quality in the buildings we create is perhaps somewhat overused but merits repeating on this occasion. He said;

"We shape our buildings; thereafter they shape us"

The way in which this building was built without the necessary care and attention to detail has certainly shaped the experiences of the people of Dumfries and Galloway who have been deprived of using it. However, it has also over the last seven years shaped much of the working lives of those from within the Council, and those supporting them, who have had to struggle with seeking financial redress from the contractor and with the problems of procuring and implementing the necessary making good of the inadequacies in the original construction, as more and more building defects were discovered. This has been for them a largely thankless and frequently frustrating task, none of which would have been necessary if the contractor had satisfactorily fulfilled his contractual obligations in the first place.

If we relegate the importance of long-term quality objectives in pursuit of short-term cost and time objectives, we should perhaps not be surprised if the long-term result is disappointing.

Section 4 – Chronology 1

The development and procurement of the original project

The period from inception of the project to commencement of the design and build contract in 2006

The first public swimming pool in Dumfries, built on the Greensands Dumfries, opened in **October 1963**. By the late 1990's the physical condition of the building had depreciated significantly and was no longer providing facilities of a standard that the community was entitled to expect. A technical appraisal report produced in **1998** concluded that the building was nearing the end of its serviceable life and that;

> *'the Council should begin without delay to plan for a new Dumfries Swimming Pool'.*

The Council agreed to investigate the provision of a new pool and commissioned a study into the future leisure and sports needs of Dumfries and the surrounding area.

In **April 1999** an external specialist consultancy called Strategic Leisure Ltd. was appointed to undertake this study. The new appraisal was considered by the Council in **December 1999** following which it was agreed that new facilities were required and that these should include a competition standard 25m swimming pool, a leisure water area, an indoor multi-purpose sports / events hall, and a health and fitness suite.

The appointment of Strategic Leisure Ltd. was subsequently extended to undertake a second appraisal focusing on the practicalities of how such a development could best be realised in terms of funding, procurement model, possible sites and facility mix. A **Project Steering Group**, made up of officers of the Council, was established to oversee this process.

1. Preliminary selection of the preferred site - May 2001

1.1 Strategic Leisure Ltd. recommended two sites from an initial list of nine for further consideration. The preferred site was in the centre of the town on Hoods Loaning, a site then owned and occupied by the Co-operative Society Superstore. The second preference was a site on King George V Park on the outskirts of the town. The results of the appraisal report were considered on **22 May 2001** at separate meetings of the Council's Community Resources Committee and of the Dumfries and Lower Nithsdale Area Committee.

1.2 Following these meetings, it was agreed that three potential sites should be the subject of further examination; the King George V site on the outskirts of the town; the site on Hoods Loaning; and an additional site on Brooms Road, also in the town centre. The Co-operative Society owned the Hoods Loaning site and had indicated a wish to develop it. The other two sites were both in the ownership of the Council.

2. Funding of the project

2.1 At that time in 2001 there appeared to be limited prospects of the main funding for the project coming from Council resources, especially given the significant amount of capital investment required for the project, and the many other pressures on the Council's capital budget. The Council's annual discretionary capital funding of £10 million at that time was already largely committed and the Council's ability to borrow additional capital to fund such developments was at that time constrained by Government rules **(Section 94 Consents)**. These rules were subsequently amended by Government in March 2004 to facilitate greater borrowing by Local Councils.

3. The client brief - August 2001

3.1 The Council saw the benefit that a state-of-the-art project could bring to the area and was determined to create a facility of the highest design quality.

3.2 The stated aim was to create an integrated, attractive, multi-purpose leisure centre with low maintenance and operating costs which would "grow old gracefully". It was envisaged that the new building would become a regional centre of sporting excellence for Dumfries and Galloway and facilitate a comprehensive range of sporting, fitness and performance activities together with social and conference facilities. It should also act as a catalyst for the regeneration of Dumfries.

3.3 The initial statement of requirements was for a building which would be an example of sustainable design, using passive energy and other energy efficiency measures and provide a flexible and economical facility to use throughout its **designed working life of not less than 40 years.**

3.4 The brief stated that as many areas of the interior as possible should be provided with natural daylight, ideally including top lighting for circulation areas and the multi-purpose sports and events halls.

3.5 It was intended that artwork would be commissioned from artists or craft workers based in Dumfries & Galloway, either as integral to the facility or as freestanding items.

4. Seeking a commercial partner - September 2001

4.1 In light of the then existing limitations on capital funding of the project, the Council agreed to investigate opportunities for a joint development with the commercial sector.

4.2 In **September 2001,** Strategic Leisure Ltd. were further appointed to assist in the identification and selection of a commercial partner willing to invest private sector funding in the project and to collaborate with the Council in the development of community sports facilities in Dumfries.

4.3 In late **September 2001** the Council invited expressions of interest from potential commercial partners for the development of a regional leisure centre on one of the three identified sites. Seven companies were invited to submit offers against the development brief prepared by the Council. Additionally, the Co-operative Society's Property Development Department was invited to submit an offer as they had demonstrated an interest in realising the potential development of their Hood's Loaning site.

4.4 A total of five proposals were received from potential commercial partners. In addition to these bids the Council had a public-sector comparator design prepared by the Architectural Design Services section of the Council.

4.5 The evaluation of proposals was undertaken in two stages. In **December 2001,** an initial evaluation was undertaken by Strategic Leisure Ltd., followed by a more detailed evaluation in **January 2002** by the Project Steering Group. Of the five external companies, three were invited to make presentations to the Steering Group. These presentations took place in **March 2002.**

4.6 In **May 2002,** the Community Resources Committee and the Dumfries and Lower Nithsdale Area Committee (meeting jointly) received further presentations on the proposals from the three companies as well as from the Council's Area Architect in respect of the in-house proposal.

4.7 A private sector consortium led by Capita, proposing a mixed commercial retail / leisure and community sports facility development on **the Brooms Road site,** was assessed as offering the best proposal and was nominated as preferred bidder. A second commercial bidder's proposal on a different site and the in-house option for a development on the King George V site were both held as reserve proposals. The Community Resources Committee agreed that a more detailed design brief for the project should now be prepared by Council officers with the support of appropriate external consultants.

5. Governance and procurement of the project - May 2002

On **30th May 2002,** the first recorded meeting took place of the **Dumfries Leisure Project** Steering Group, which was established to manage the delivery of the project on behalf of the Council. Membership of the group consisted of Council officers from across a range of Council Departments, together with a number of representatives from the Capita led preferred bidder consortium.

On 23rd July 2002, the Council agreed to set up **an Ad-hoc Executive Sub-Committee of the Council**, with all-party membership and representation from the Dumfries and Lower Nithsdale Area Committee and Community Resources Committee, to oversee the development of the Leisure Complex.

5.1 In evidence to the Inquiry, a senior officer with the Council during the full period of the development of the project, commented as follows on an apparent lack of confidence at the time within some members of the Council in the ability of an in-house team to deliver the project;

> *"At that time, it would be fair to say, that there was a degree of distrust between elected members and some of the officers of the Council. The main reason behind this was historical difficulties in relation to the delivery of capital projects"*

> *"There was a school of thought among some elected Members that the Council did not have either the capacity or capability to manage the delivery of a project of the scale of DG1".*

5.2 Evidence to the Inquiry suggested that the subsequent decision not to use the in-house design team was perhaps influenced by the previous experience of the Council in relation to the development in 1996 of the Stranraer Academy, which had been undertaken by the in-house team and which had overrun significantly on both cost and time.

5.3 At this stage it was stated that the Council intended to deliver the Leisure Centre project using a 'Design and Build' procurement route. In this procurement model the Council would appoint a contractor who in turn would appoint and manage an external design team rather than, as in the traditional model, the Council appointing an external design team to manage the project and, on their behalf, oversee the work of the contractor.

5.4 There was no evidence of any study having been undertaken to determine this decision on procurement by the Council.

5.5 It was assumed at the time, as it turned out somewhat over-optimistically, that the preferred bidder would start construction of the leisure complex in **November 2002**. (The project would eventually commence on site in 2006).

5.6 This choice of procurement model was made despite a background of major problems having been experienced with the construction quality of the Council's two most recent and largest Leisure Facility projects that had both been built using 'Design and Build' procurement, i.e. the 'Ryan Centre" and the 'Ice Bowl'.

5.7 The Inquiry was advised that both projects suffered from *"a considerable number of major constructional, mechanical and technical defects"* and in the case of the Ryan Centre this had involved its compulsory closure for about a year. During the period of this Inquiry further evidence has emerged of the recent discovery of significant defects in the construction of the external walls of the Ice Bowl.

5.8 Decisions in relation to the strategic development of a project of this nature including strategic context, project objectives, level of priority, assessment of need, functional content, location, site, capital cost, revenue costs, funding model, benefits, cost-benefit analysis, procurement model and management approach are normally expected, in the case of public-sector projects, to be informed in advance by preparation of a comprehensive business case.

5.9 The business case process is expected to explore and compare options in relation to all these aspects of a project and identify through this analysis an overall preferred option and procurement model in a single document for consideration and approval by the relevant authority, in this case the Council.

5.10 It would appear that the development of the Dumfries Leisure Centre was not subject to this form of structured project analysis which would have been seen as a standard requirement in most public-sector bodies at the time. Rather the approach to many aspects of the project, instead of being planned on the basis of proper investigative and informed analysis, would appear to have tended to be somewhat ad-hoc, shaped by individual opinion and emerging circumstances.

6. Questions as to the viability of the Broom's Road site - July 2002

6.1 **On 23rd July 2002** the Council confirmed **the development on the Brooms Road** site as a high priority project in the Council's Corporate plan with a commitment in principle to make the necessary financial resources available. They agreed that the Project Steering Group should bring back to Members further details on operating models for the complex to ensure that the Council achieved best value for money in relation to managing the revenue consequences of the project. The Council also agreed to meet a proportion of the costs required to progress the preferred option in relation to design development to planning stage, site surveys, impact assessments and fifty per cent of planning fees.

6.2 At that time, the design and construction cost of the community leisure facilities on the Broom's Road site, including replacement of car parking spaces, was estimated to be **£8.567m**. This was planned to be funded by a combination of:

- an existing capital receipt already ring-fenced for regeneration purposes;
- receipts from the sale of town-centre sites in the Council's ownership;
- a potential capital receipt from the commercial partner CAPITA; and
- a potential lottery funding grant from Sport Scotland.

6.3 It was envisaged that the Council's capital programme would make up any shortfall in this funding arrangement.

6.4 In **November 2002**, the Dumfries and Lower Nithsdale Area Committee held a public forum meeting as part of a community consultation process on the proposed development of Brooms Road. A number of representations were made about the potential negative impact on parking availability during and after construction.

6.5 In **December 2002**, returns from 240 questionnaires were received which indicated that a significant majority of respondents did not support the use of the Broom's Road site for the new facility. A petition of 11,600 signatures against the use of the Brooms Road site was subsequently delivered to the Council.

6.6 In **March 2003**, the **Leisure Complex Ad-hoc Sub-Committee**, which had been established to oversee the development, held its first formal meeting. A confidential paper was presented to the meeting which reported the outcome of the consultation responses and the receipt of the petition. It also reported on the outcomes of recent site surveys which had identified that contaminants in the ground were present in parts of the Brooms Road site in excess of the maximum permitted levels. It was estimated that the resultant necessary remediation would add approximately £1 million to the estimated costs of the proposed development.

6.7 Further, as a result of their own market testing, **the Capita-led consortium had now concluded that there was limited commercial value in the Brooms Road site** and therefore limited potential of it generating a capital receipt from the commercial retail / leisure side which could have contributed to the capital cost of the community facility. It was estimated that a community-only leisure facility on the site would cost in the order of £9.2m excluding the cost of replacement of displaced lorry parking estimated at £0.5m. This would mean a resultant funding shortfall to the Council of approximately £5.5m.

6.8 With the apparent failure of the proposed project's ability to sustain a significant commercial interest, the previously established approach to both the site location and procurement of the project required reconsideration by the Council.

7. Consideration of alternative sites - April 2003

7.1 A paper was presented to the Ad-hoc Sub-Committee reporting on alternative potential sites. The paper informed the Sub-Committee that the Co-operative Society had failed to achieve planning approval for a new retail redevelopment of their own on their Hood's Loaning site, which might leave them more disposed to sell the site for alternative use.

7.2 The commercial proposal on another site, that had been identified as a reserved option by the Community Resources Committee **in May 2002**, was no longer deliverable as in the interim the site owners had received outline planning permission for a retail development, considerably increasing the value of the site.

7.3 The **Council in-house design proposal**, which had been held in reserve, was capable of being built on either the Brooms Road or King George V Park sites. The relative design and construction costs were estimated at **£10.3m** for the Brooms Road site and **£8.9m** for the King George V site including allowances for remediation of contamination.

7.4 If, however, the **Capita design**, which the Council now had the right to use, were to be constructed on the King George V Park site, the cost was estimated to be **£8.567m,** approximately £0.5 million less expensive than using the in-house design. A transport assessment would be required for any development at King George V Park which might result in additional costs for works to the road network.

7.5 In conclusion, this paper recommended that more extensive discussions were required with site owners and other interested parties on the development options and more accurate costings should be developed.

7.6 In **May 2003** a new Council was elected, and revised Committee arrangements were put in place, however **the Leisure Complex Ad-Hoc Sub-Committee was retained.**

7.7 The Ad-Hoc Sub-Committee met on **5 September 2003** to consider a more detailed report on site options. Following a further independent examination of six site options, it was agreed to recommend to the Corporate Policy Committee that **the preferred site should be that owned by the Co-operative Society at Hoods Loaning**.

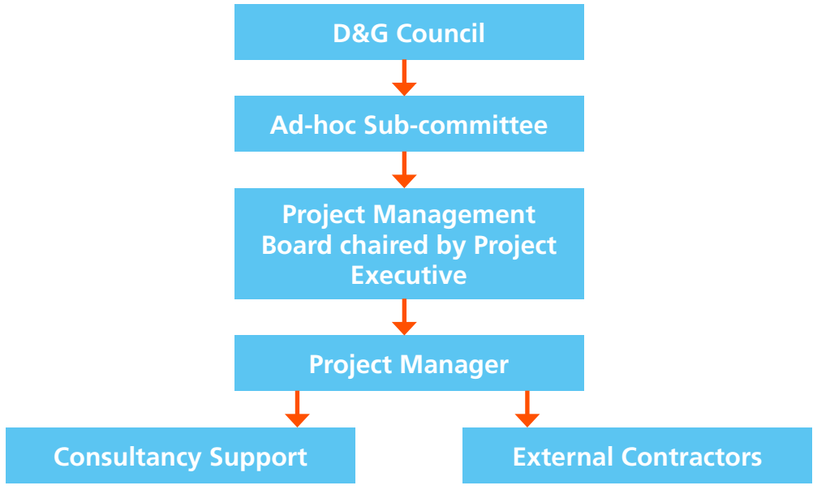
7.8 The meeting was advised that two design solutions were available for development, the design developed by Capita for the Broom's Road site, which the Council had paid for and had now the right to use, and the Council's in-house design. Either of these were capable of reconfiguration if so required to fit on the Hoods Loaning site.

7.9 The meeting also confirmed that the brief for the project should provide a full leisure complex, including swimming pools, health and fitness facilities and a sports hall / multi-purpose auditorium. The projected total cost of the project was now estimated at **£13.478m** including all related overhead costs and the cost of site acquisition.

8. Project management arrangements - October 2003

It was proposed by Council officers that in order to provide an effective management structure for controlling the project, it would be managed in accordance with the **Prince2 Project Management Model**. Using this model an appointed **Project Manager** would report to a **Project Management Board (PMB),** which would be chaired by **a Project Executive.** In this case the Project Executive would be the then Corporate Director of Corporate Services. The membership of the PMB would consist of senior officers from the client department and from relevant departments across the Council. The PMB would report to the Ad-Hoc Sub-Committee of Council that were in turn responsible to Council for oversight of the Project.

8.1 The PMB agreed that training should be arranged for all relevant staff in the use of Prince2. The following diagram shows the proposed structure for managing the project.



Project Management Structure

8.2 The first formal meeting of the PMB was held on **24 October 2003** at which it confirmed its remit and its on-going modus operandi. The Chairman reported that there was strong cross-party political support for the project and that Members were looking for progress on the project with minimal delay.

8.3 It was agreed that the role of Project Manager would temporarily be undertaken by a member of the PMB, the then Head of Architectural Services within the Council, for the period until his retirement which was due to happen two months later in **December 2003**.

8.4 With the departure of the Head of Architectural Services, none of the remaining members of the Project Board would have a background in the strategic and executive management of major construction projects.

8.5 It was agreed that the appointment of a permanent Project Manager would be critical to the successful application of the Prince2 Management System. The Chairman indicated that, while it would be ideal to appoint a full time Project Manager, there was no obvious senior manager within Council available to take the role on a full-time basis.

8.6 In order to adapt the design solution originally intended for Broom's Road, to make it suit the Hood's Loaning site, it was agreed that a new design team should be formed, using in-house capacity as far as possible, but supplementing this with external consultants. The Chairman suggested that it was advisable that appropriate outside specialist advice was taken, particularly given the scale of the project in relation to all other Council leisure schemes undertaken to date.

8.7 Under this proposal from PMB, the project would be led by an in-house architectural team, but external specialist mechanical / electrical engineering consultants would be engaged and in addition the possibility of the use of external architects as consultants in relation to aspects of the final design would be explored.

8.8 The above proposals seemed to assume that, with the decision not to proceed with a commercial partner, the procurement model used would revert to a traditional model in which the Council would appoint the design team.

8.9 However, none of the above proposals from PMB would subsequently be put in place as the procurement model would subsequently change back to design and build.

9. Decision on choice of site and funding model - October 2003

9.1 At the same PMB meeting on **24 October 2003**, it was also agreed to recommend formally to the Ad-hoc Sub-Committee that the Hood's Loaning site be purchased for the construction of the new Leisure Centre. The PMB was advised that the negotiated acquisition price had not been based on a Council valuation but was one that would have the written approval of the District Valuer, confirming that in his professional opinion this was a fair price for the acquisition of the site.

9.2 At a meeting of the Ad-hoc Sub-Committee, on **20 November 2003**, this recommendation was accepted and the Sub-Committee in turn recommended the acquisition of the site to both the Asset Management Committee and the Corporate Policy Committee. The total costs associated with the purchase of the site and related site investigations was subsequently reported as amounting to **£2.187 million**.

9.3 At a full Council meeting on **12 February 2004,** it was agreed to make use of the recently introduced Special Projects Enhancement Provision (prudential borrowing by the Council) and allocate a total of **£9.81m** over the four-year period from 2004-05 to 2007-08 to complete the funding package for the Leisure Complex.

9.4 The potential sources of additional funding towards the cost of the project were identified:

- Capital receipts £1.668m
- Scottish Executive underspend £0.5 m
- Sport Scotland grant £1.5m

10. Appointment of project manager - April 2004

10.1 Under Prince 2 arrangements, the designated project manager is given the authority to run a project on a day-to-day basis on behalf of a Project Board but subject to their direction. The prime responsibilities of a project manager are to ensure the delivery of the required products, to the required standards and within the established cost and time requirements.

10.2 Since **December 2003**, a chartered civil engineer, who was also an employee of the Council, had been temporarily acting in the role of Project Manager for the Leisure Centre project.

10.3 He was then still currently engaged in the final stages of undertaking the role of Project Manager for an on-going PFI Waste Management project for the Council.

10.4 The waste project in question had involved the design, construction and operation by a private sector consortium of a recycling plant as part of the Council's refuse treatment strategy and had been perceived at that time as a successfully managed project. On that basis he had been approached to provide professional and technical support to the PMB.

10.5 On 26th April 2004, a report dated 16 April 2004 was presented by the Chair of PMB to the Ad-hoc Sub-Committee, also attended by the Chief Executive of the Council.

10.6 It recommended that a full-time appointment be made to the position of Project Manager for the Leisure Centre project. However, the report also stated that, in the opinion of the PMB, "*the skills and experience of the project manager on the PFI Waste Management Project were readily transferable to other major projects"* and recommended that the officer in question should be seconded to act as Project Manager on the Leisure Centre project on an interim basis while this position was being filled.

10.7 The PMB report also stated;

> *"As the Council adopts a more structured approach to project management, there is likely to be an increasing demand for specialist project management skills within the Council. There may, for example, be a case for building project management training into the career development path for Council managers.*
>
> *To meet the Council's medium and longer-term project management requirements, particularly in relation to the Leisure Complex, it is suggested that a recommendation be made to the Corporate Policy Committee that a generic project manager post be created and filled through advertisement.* ***The first responsibility for the post-holder would be to deliver the Leisure Complex project****, but the intention would be that the manager would later move on to manage other projects".*
>
> *"….the Board also recommends that,* ***on an interim basis****, the Waste PFI project manager post should be funded from the overall capital budget provision for the project. This budget is based on an assessment of the costs involved in acquiring the site, designing the project, construction costs and other directly associated costs.*
>
> *The costs of a project manager post have not been specifically built in to the cost of the project but can be accommodated for an interim period. It may be, however, that in planning major projects in future, the Council should consider including project management costs in overall project budgets".*

10.8 The minutes of the combined meeting state that approval was given to the secondment of the then current Waste PFI Project Manager, a civil engineer by profession, to the role of Project Manager for the Leisure Centre with effect from the **1st May 2004 on an interim basis.**

10.9 Other than in undertaking the role of Project Manager on the PFI waste Contract, the experience of the proposed interim Project Manager for the Leisure Complex had largely been in relation to the management of road improvement and maintenance projects for the Council. The proposal of the meeting had approved him acting in the role of project manager for the project only on an interim basis.

10.10 In an apparent recognition of the lack of project management capacity in the Council to facilitate the undertaking of more complex capital projects, as stated above, the meeting also agreed to recommend to the Corporate Policy Committee that a new generic Project Manager post be created, whose first role would be to deliver the Leisure Centre and that the necessary budget be allocated to facilitate this post.

10.11 This proposal of externally advertising for a permanent project manager for the Leisure Centre post **does not appear to have been pursued**, as the 'interim' Project Manager would subsequently remain in this role until practical completion of the project several years later. Additionally, he would be appointed to take on the more demanding role of Employer's Agent for the contract, a role which contractually is responsible for confirming that work had been carried out in accordance with the standards specified in the contract.

10.12 The following is an excerpt from the RICS publication entitled 'Professional standards and guidance on Employer's Agent: design and build' published in 2017; It states

> *"In many cases, particularly with a complex project, for example, with a high level of mechanical and electrical installations designed and constructed by the contractor, work would probably be performance specified so compliance is extremely difficult to judge. The function of certifying compliance to quality standards should only be performed by an employer's agent who has the necessary skills and experience"*

10.13 Several witnesses to the Inquiry expressed their concerns in relation to the fit of the skills set of the appointed Project Manager with the requirements of this complex building project, especially as it was intended that this role would include acting in the formal contractual position of 'Employer's Agent', should the use of a 'Design and Build' procurement model be chosen.

10.14 In evidence to the Inquiry, whilst there was acknowledgment of his professional abilities as a civil engineer, several senior officers within the Council had questioned whether he had sufficient building construction knowledge and familiarity with the types of building as opposed to engineering contracts that would be required to take on this role.

10.15 Another view expressed was that it was unfair on the officer for the Council to put him in a position which required a different set of professional knowledge, skills and experience to his own, particularly on a supposedly flagship project.

10.16 In evidence to the Inquiry the Chief Executive of the Council at the time of the project stated in relation to this issue;

> *"I understand that when the Project Manager or the team felt that there was a skills-gap they could, and did, bring in expertise from outside. So, I accept the appointment might be criticised by some, but it was a decision taken after much thought, involving a well-regarded man with technical expertise who could draw on support if needed"*

> *"He was a very competent civil engineer, to the best of my knowledge. But with hindsight, I appreciate that others may consider a certain lacking in the skillset required to oversee a complex design and build project".*

10.17 The Chair of the PMB for the project stated in evidence to the Inquiry:

> *"I don't recall any issue ever being raised about the competence of our project manager or his ability to challenge issues of workmanship on site if they arose".*

10.18 Despite the PMB acceptance of a recommendation to seek the recruitment from outside of a project manager with the specific skillset required to manage the proposed project, no further action was taken in this regard and the interim appointee became permanent.

10.19 In the opinion of the Inquiry, it was unfair to the individual civil engineer to expect him to take on the role he subsequently did, despite his willingness to do so, excellent reputation as an engineer on road projects and his successful execution of the role as lead Council representative on the PFI Waste contract.

10.20 Relevant experience and professional knowledge in relation to building construction and in the administration of building contracts should have been seen as a pre-requisite for such a key appointment for one of the most significant and potentially transformative projects the Council would undertake in the centre of Dumfries.

11. Choice of procurement model

11.1 At the same meeting on **26th April 2004,** a report on the proposed method of procuring the project, dated **22 April 2004** and produced by members of the PMB, was presented to the Ad-Hoc Sub-Committee**.** The report stated;

> *"It is crucial that the Council selects the most appropriate, cost-effective and efficient option for procuring the project, from the various procurement options available".*

11.2 Reflecting the normal parameters of cost, time and quality the report recommended that the primary objectives of the procurement approach should be;

> *"(a) to ensure that the most economically advantageous solution is obtained for the provision and operation of the Leisure Complex*

> *(b) to ensure that the works are completed as expeditiously as possible, without compromise to the overall quality of the facility and*

> *(c) to ensure that the required quality standards are met to encourage maximum use of the facility and minimise maintenance and operational."*

11.3 The report also stated that the method of procurement chosen would largely determine the success of the Council in achieving its goals for the project. The report examined the following four procurement options:

1. Design and Build
2. Traditional Procurement
3. Partnering
4. Public Private Partnership

11.4 A risk analysis was undertaken to help determine which of these potential procurement models would be most suitable for the Leisure Centre project. The results of the risk analysis undertaken are shown in the following table extracted from the report.

	Design and Build	Design, Build and Operate	Traditional Procurement External Consultant Appointment	Traditional Procurement External Design Competition	Partnering	Private Finance
Risk of Cost Escalation	1 x 2=2	2 x 2=4	2 x 3=6	3 x 3=9	2 x 3=6	2 x 2=4
Risk of Time Prolongation	2 x 2=4	2 x 2=4	2 x 2=4	3 x 2=6	2 x 2=4	3 x 2=6
Risk to Quality Standards	4 x 3=12	3 x 2=6	1 x 2=2	1 x 2=2	2 x 2=4	3 x 2=6
Design Risk	1 x 2=2	1 x 1=1	1 x 1=1	2 x 1=2	1 x 2=2	1 x 1=1
Total	20	15	13	19	16	17

Risk Probability 1-5 Low-High

Risk Impact 1-5 Low-High

NOTE:

The procurement route Design and Build with the highest score of 20 is rated as having the greatest overall likelihood of failure in the four areas.

The traditional procurement with an external consultant appointment with the lowest score of 13 is rated as having the least overall likelihood of failure in the four areas

Table 1 – PMB procurement route risk assessment

11.5 From the notes of earlier meetings of the PMB, it would appear that, prior to this assessment of procurement routes, either of the two most commonly used models, Design and Build Procurement or Traditional Procurement, would have been the most likely method chosen for delivering the project.

11.6 In comparing the results for these two methods against the three stated objectives set out above, Design and Build was assessed as liable to give greater certainty of cost outcome than Traditional with a risk score of 2 compared to 6. In terms of the time factor, both methods, each receiving a risk score of 4, were perceived as carrying a similar level of risk.

11.7 It is however worthy of note that the relative risk of not achieving the required quality standards when using Design and Build Procurement was assessed as being 6 times higher with a risk score of 12 than for Traditional Procurement which was allocated a low risk score of 2 under the same heading.

11.8 In total the risk of not achieving the core project objectives using Design and Build Procurement was assessed at 20, i.e. having the highest risk of the four procurement models assessed. This compared with a risk assessment of 13 for Traditional Procurement, which achieved the lowest overall risk score.

11.9 The PMB report stated that following this assessment of the range of procurement models available **their preferred option was the use of the traditional procurement model** i.e. the separate appointment of design and construction teams.

11.10 It is also stated in the 22 April 2004 Report that the Director of Combined Services within the Council confirmed that he did not wish that the Council's in-house Architectural and Engineering Services be considered for the role of lead consultancy within the proposed traditional procurement process. It was his view that the impact of the process of restructuring currently taking place within this service area of the Council might inhibit the provision of a sound basis for a project of this size to be taken forward.

11.11 However, given the established expertise that he felt existed in-house, particularly within the Architectural Services and Structural Engineering section, he expressed the opinion that the opportunity for them to work as part of an externally appointed and externally led design team should be considered as part of the Council procurement process.

11.12 The report stated as its final recommendation to the Ad-hoc Sub-Committee of Council;

> *"Members are invited to consider the options for procurement of the Leisure Complex and agree that the traditional procurement route be developed on the basis of engaging an external design consultant".*

11.13 The minutes recording the decision of this meeting on the 26th April 2004, however, show that the Ad-hoc Sub-Committee did not accept this recommendation but, in expressing a desire to retain the possibility of using Design and Build Procurement, instructed the PMB that the following course of action should be pursued instead;

> *"to invite expressions of interest in developing detailed plans for the Dumfries and Galloway leisure Centre Complex either through undertaking the necessary design specification work as a separate exercise or as part of a design and build scheme"*
>
> *"that the notice of invitation should be based on the technical specification work already undertaken and should* ***highlight the Council's requirement that the project is delivered within budget****" and*
>
> *"that the advertising copy, consultancy and other practical arrangements be delegated to the Corporate Director of Corporate Services".*

11.14 The process directed by the Ad-hoc Sub-Committee of simultaneously seeking separate expressions of interest from design teams and from design and build contractors under European advertisements **was to say the least most unusual**.

11.15 The PMB had appointed Anderson Strathern Solicitors as Legal Advisers to assist with procurement issues, including, the need to establish an appropriate evaluation process, which would be particularly difficult following the unusual decision of the Ad-hoc Committee to simultaneously seek bids under two different procurement models.

11.16 It was made clear to the Inquiry in evidence that while ultimately the decision of the Ad-hoc Sub-Committee would be to support Design and Build, and there were those who strongly supported its use, there were also members on the sub-committee, who had experienced difficulties in the use of this procurement model on leisure facilities in the Council area in the recent past and had expressed concerns about using this approach for the DG One project. In evidence on this point, a retired senior officer of the Council stated;

> *"…… some Members considered that the use of "design and build" as opposed to traditional build methodology meant that the Council "lost control" of a project. There were local precedents in support of this concern.*
>
> *"The former Wigtown District Council, ……., had experienced difficulties with a design and build project which involved the provision of a swimming pool extension to the Ryan Centre in Stranraer, built in the early 1990s.*
>
> *In some ways there were similarities with what was later to happen at DG1 in that, notwithstanding the appointment by the Council of a Clerk of Works to "oversee and monitor" the project, there were a considerable number of major constructional, mechanical and technical defects in the building. Legal action was instituted by the District Council in 1994 and following arbitration, the design and build contractors Norwest Holst agreed to pay for the repairs at a cost of the order of £900,000".*
>
> *I understand that the then Nithsdale Council (which covered the Dumfries area) had a similar experience with their Ice Bowl project. This too was a design and build which required legal action to resolve a number of building and other defects.*
>
> *So, by the time Dumfries & Galloway Council came together following local government re-organisation there was something of a corporate memory of negativity around design and build contracts. I recall in particular that some of those longer serving Councillors who had been with predecessor authorities such as Robert Higgins, Alasdair Geddes and Tom McAughtrie raised concerns within Council meetings at the prospect of a design and build contract on DG1".*

11.17 The decision by members of the Ad-hoc Committee to simultaneously advertise for tenderers for 'traditional' and 'design and build' procurement models had overturned an apparently rationally based recommendation of the PMB following a risk analysis of the procurement models available. This decision would turn out to have major implications for the project.

11.18 Evidence to the Inquiry confirmed that a number of members of the PMB and a range of senior construction professionals in the Council, given their shared desire for a building of quality, had expressed objections to the use of Design and Build for this particular project. The Inquiry was also advised by the senior official from SportScotland who had liaised with the Council on the development of DG One that he had also expressed a preference for the use of traditional procurement for the project.

11.19 This decision would shape the future development of the project, in which it would appear that the achievement of cost and time objectives, took priority over the original focus of the Council on ensuring the quality of the building and its potential contribution to the future development and improvement of the centre of Dumfries.

12. Resourcing of the project - September 2004

12.1 On **13th September 2004**, at a meeting of the PMB, a number of issues relating to the potential inadequate resourcing of the project were discussed.

12.2 It was reported that difficulty was being experienced in obtaining timely input from the in-house Design Services Group, part of DG First, into the finalisation of the architectural services specification and that this was impacting on the planned programme for going out to tender with the project.

12.3 It was also evident from the minutes of the meeting that the **PMB had not put in place the active on-going involvement of professional quantity surveying advice** as part of its resource, although cost control and delivering within the set budget had been identified as a key objective for the project.

12.4 Finally, at the PMB meeting, concerns were expressed by members of the Board over the pressure being placed on officers to work on project-related matters over evening and weekends, due to their other on-going work commitments within the Council, and the view that this could also lead to the possibility of further slippage on the Project timetable. It was agreed that this matter be raised with the Corporate Management Team as a matter of urgency.

12.5 The Inquiry is surprised that given the recognised importance of proper cost-planning and the need for accurate and reliable pre-tender estimates that the PMB had not sought or commissioned the support of an experienced quantity surveyor. This should be an essential requirement for the management and control of all projects, particular large one-off complex buildings of the strategic and economic importance of the proposed new leisure centre.

12.6 The absence of an accurate estimate in this case would lead to both the need for a series of value-engineering reductions, which may well have contributed to some of the problems that would subsequently be experienced with the building, and also to budgetary problems in relation to the planned capital programme of the Council.

The professional backgrounds of the members of the PMB

12.7 Whilst the PMB had the opportunity to access other professional and technical support from within the Council and potentially from external consultants, the professional backgrounds of those on the Board, reflected limited knowledge or experience in the strategic procurement and executive project management of complex building projects.

12.8 As previously stated, the experience of the Project Manager had been largely related to the construction of road and other engineering projects and more recently to his involvement in the Waste Management PFI project for the Council.

12.9 At this time the membership of the PMB consisted of Council officers with the following titles:

Corporate Director for Corporate Services (Chair)
Director of Combined Services
Group Manager – Community Services
Estates Management Service Leader
Project Manager (Civil Engineer)
Business Review Manager
Operations Manager, Leisure and Sport
Finance Officer, Financial Services
Principal Solicitor
External Funding Officer, E & CS
Team Leader, Internal Communications / Public Relations
Planning Assistant, Nithsdale Local Plan

12.10 In evidence to the Inquiry concerning this issue the Chair of the PMB said:

"In terms of experience of that group, I don't recall precisely what actual construction experience or skillset it had. However, I do recall that, at the time, we were certainly comfortable with the range of skills that we had on the project board because we had project management assurance measures and, crucially, a very detailed contract developed in accordance with construction industry standards in place to ensure the building met the relevant quality standards".

12.11 Evidence to the Inquiry suggested that there was a perception within senior construction professionals in the DG First Team that they were being excluded from the strategic planning and development of the project and that their professional advice to the PMB in this regard was not particularly valued or wanted. This was despite the inclusion, as a member of the PMB, of the Head of Combined Services, who had management responsibility for DG First.

12.12 In evidence to the Inquiry he stated;

"Once I realised that my concerns were not really being listened to, I rather lost interest in the project. There seemed little point in engaging further on the basis that my views were having little impact".

12.13 Several witnesses to the Inquiry highlighted the fact that relationships between some members of the Council's DG First team, which included the in-house design services group, and the Project Management Board had been somewhat strained from the inception of the project and particularly so following the decision not to involve the in-house design team in the project.

12.14 A further exacerbating factor that was identified by several witnesses to the Inquiry as inhibiting the quality of contribution to the project from construction professionals employed within DG First, was the requirement under the internal arrangements of the Council, that the cost of providing such services had to be purchased from DG First and paid for by the Client Department. This arrangement had been put into place by the Council following the earlier central U.K. Government initiative of Compulsory Competitive Tendering.

12.15 DG First relied on this income to pay staff. Restrictions on the provision of adequate funding for this purpose was described as having impacted on the level of input that provided by DG First staff.

13. Placing of European advertisements and short-listing - October 2004

13.1 On **25th October 2004** the PMB presented a progress report dated **19 October 2004** to the Ad-hoc Sub-Committee. It advised that in **June 2004** notices for the project had been placed in the European Journal, in line with the decisions taken at the **26th April 2004** meeting of the Ad-hoc Sub-Committee. Expressions of interest had been received from eighteen consortia and thirty-seven individual consultancies in relation to undertaking the design roles in a traditional procurement model and from nine companies in relation to undertaking a design and build contract.

13.2 Two short-lists, one for design consultants and one for design and build contractors, had been produced, each based on assessments of capability and relevant experience of the applicants. The Design and Build tender had been allocated a longer tender period than that for the tender from Design Consultancies, however all tenders were expected to have been returned by the end of **January 2005**.

13.3 The report stated that the 'Design Only' tenders would include for the provision of architectural and engineering design, project costing and 'supervision process' in terms of a lump sum fee and percentage of the costs of the works. **Indicative design layouts, demonstrating compliance with the Client's requirements, and cost estimates for the construction of the designs would also be required.** The assessment would be on the basis of the most economically advantageous solution for the Council.

13.4 The report stated that the tenders for design and build would be assessed against a "*pre-determined quality compliance scoring matrix*". On completion of this exercise the tenderer's prices would be examined and scores allocated again on a pre-determined basis, with ***"an over-riding requirement that these should not exceed the budget figure"***.

13.5 The proposed programme would allow for the assessment of the 'design only' tenders to be concluded at the same time as the 'design and build' tenders at which stage it was planned that a final decision would be made by the Ad-hoc Sub-Committee as to which of the two procurement routes, Traditional or Design and Build, would be adopted.

14. External legal advice on the choice of procurement model - November 2004

14.1 On **18th November 2004**, Anderson Strathern Solicitors, at the request of the PMB, presented a paper to a meeting of the Ad-hoc Sub-Committee with the objective of assisting them in their role in the forth-coming process of determining as to whether the Traditional or the Design and Build procurement model should be used for the project. The paper, after presenting a general analysis of the perceived advantages of the two procurement routes, summarized each as follows:

> **Anderson Strathern Solicitors' Summary provided for Traditional Procurement Route;**
> *"Where cost and quality are important to the client this would be the recommended method, however the client must be aware that traditional procurement takes much longer"*
>
> **Anderson Strathern Solicitors' Summary provided for Design and Build Procurement Route;**
> *"Where time is important to the client this would be the recommended method. Although cost may be reasonably certain once the contract is let, quality can be an issue as the design and construction of the project will be at the discretion of the contractor unless otherwise specified by the client. This is vital to note if quality is essential".*

14.2 This advice was recorded as being noted by the Ad-hoc Sub-Committee.

14.3 Whilst the previous decision of simultaneously seeking tenders under both procurement models was being implemented in line with the direction of the Ad-hoc Sub-Committee, concerns as to the potential use of 'Design and Build' remained amongst at least a minority of the PMB.

14.4 In evidence to the Inquiry two members of the PMB, both with previous experience in relation to the operation of large sports and leisure facilities, stated that given the relatively complex nature of this type of project, they had strongly expressed views that the use of 'Design and Build' procurement would not be appropriate. One of these members of the PMB stated in evidence:

> *"For a building of this size, Dumfries and Galloway looked at a number of options and my own view was that a design and build arrangement was not the way to go. I made my views on this well known. In my experience Sport Scotland's equivalent in England, in running similar projects, would not have allowed a design and build project of this nature. But in Scotland it is and was permitted. My own view was, that to get the quality we needed, we had to go down a traditional procurement route. Unfortunately, however, the Council was pre-occupied at that time with the capital cost control issue and also the timeline. Both these were critical priorities".*

14.5 The second of these two members of the PMB stated the following in evidence;

> *"I sat on the working group as I have explained but the difficulty for me in doing so was that I was very firmly set against design and build. I had had bad experiences in the past in other Councils".*

15. Receipt of 'Design Only' tenders - January 2005

15.1 In **January 2005**, the project brief and specification were still in the process of being prepared by the Client Group with the input of professional and technical advice from Design Services, Property Services and external mechanical and electrical consultants.

15.2 The next few months experienced a series of delays in the finalisation and clarification of the Client's Requirements and other tender documents, leading to postponement of the previously planned dates for going out to tender and requiring an extension to the return of tender dates to **18th March 2005** for the 'Design Only' tenders and to the **1st April 2005** for the 'Design and Build' tenders, both having originally been planned to complete in January 2005.

15.3 On **25th February 2005** letters of invitation to tender were issued to seven short-listed design teams in relation to the 'Design Only' tenders. The letter of invitation requested them to submit fee bids for the various design services required together with:

> *"an indicative layout detail of the Leisure Centre within the site showing how adherence to the Client Brief and Building Fabric Brief may be achieved"*

15.4 It would appear from this letter that, contrary to the statement contained in the 19 October 2004 PMB report presented to the Ad-hoc Sub-Committee on 25th October 2004, the 'Design Only' bidders **had not** in fact been required to include estimates of construction costs based on outline designs.

15.5 On the **18th March 2005**, tenders for the 'Design Only' procurement route were received from consultants offering to provide architectural design, mechanical and electrical services design, structural design, quantity surveying and planning supervisory (health and safety) services.

15.6 The Inquiry team was unable to locate within the Council records any formal assessment, ranking or scoring relating to the *"indicative detail layouts"* other than a sentence or two describing the road access to the site proposed in layouts submitted by each tenderer.

15.7 The information requirements of the process gave no opportunity for tenderers to demonstrate the quality of designs that might have been generated through this process compared with the quality of those that would be offered as part of the 'Design and Build' tenders.

15.8 The 'Design Only' submissions were subsequently reported to the Ad-hoc Sub-Committee as having been assessed only on the level of the fee bids offered.

16. Budgetary concerns - March 2005

16.1 A report to the Ad-hoc Sub-Committee dated **31st March 2005** expressed concern about the impact on the cost of the project as a result of a combination of delays to the project and the then current rate of construction inflation. It stated;

> *"It should be noted that the construction period of the project has now slipped by a year to 2005-06 to 2007-08. It should also be noted that in the last year there has been significant inflation in the construction industry fuelled by skill shortages and an increased demand for steel. These two things lead to a possibility that the budget is unrealistically low and that it may only be sufficient to support a less ambitious project. How realistic the budget is will not be known until mid-April when the 'Design and Build' tenders have been assessed".*

16.2 The report also set out the then current funding sources for the project and their relative levels of contribution as presented in the following table;

Funding Source Contribution	
Cuckoo Bridge Phase 1 receipt	£1.668m (Spent)
Scottish Executive Underspend	£0.500m (Spent)
Sport Scotland	£1.250m (not confirmed)
European Regional Development Fund (ERDF)	£0.320m
Scottish Enterprise Dumfries and Galloway	£0.010m
Council's Capital Borrowing Requirement	£9.810m
Total	**£13.558 million**

16.3 The expenditure items making up the £13.558 budget included both amounts already spent and future estimates of cost. These were recorded as follows:

Items of Cost	£m
Broom's Road Site Investigation and design	0.253
Hood's Loaning Site purchase and associated costs	2.187
Site investigations	0.074
Construction of DG One	9.470
Fees	0.195
Project management	0.118
External Play Equipment	0.200
Furniture and Internal Equipment	0.738
Pedestrian Traffic Control	0.060
Public Art	0.100
Contingencies	0.163
TOTAL	**£13.558 million**

16.4 The estimate within this report for the construction of DG One remained at £9.47 million. A revised pre-tender estimate, as would normally be expected, was not produced.

17. Report on 'Design and Build' tenders received - April 2005

17.1 On **1st April 2005**, tenders for Design and Build were received from only three companies on the initial short-list of six contractors.

17.2 The companies were Barr, Border Construction and Kier Northern. The tender amounts received were as follows:

Kier Northern £12,428,600

Barr £12,693,400

Border £13,491,000

17.3 All three Design and Build Tenders were significantly in excess of the March 2005 client budget of **£9.47 million, the lowest tender from Kier Northern being more than 31% over the budget**.

17.4 All three tenderers provided options to remove elements of the brief and thereby reduce the overall tender sum, but even with this provision none were close to the allocated budget.

17.5 The 11th April PMB meeting was advised that the 'Design and Build' tenders had been assessed in relation to their compliance with the client brief, by three members of the PMB, including the Project Manager, supported by a representative of Sport Scotland.

17.6 The tenders had been copied to external consultant advisors appointed by PMB to assist with the technical assessment of the bids. These were Hypostyle (Architectural), White, Young & Green (Mechanical and Electrical) and Anderson Strathern (Legal). Their assessments of the tenders were expected later in that week.

17.7 It is again noted by the Inquiry that there was professional quantity surveyors report on the pricing and completeness of the tenders received. This would have been the least that would have been expected in tenders of this type for a complex building project, including testing for any front-loading in the payment schedules.

17.8 An assessment of planning constraint compliance was to be undertaken by Planning and Environment officers from the council on **12 April 2005**.

17.9 In light of all three tenders failing significantly to come within the available client budget, previously stated to be an '**over-riding**' requirement, the meeting agreed that options for allocating additional Council funds to the project should be explored with the Finance Department.

17.10 On **12th April 2005**, the Project Manager reported the assessments of the compliance of the three submitted designs against 'planning development aims' for the Hood's Loaning site as undertaken by Council planning officers. It was reported that under this criterion the following scores would go forward for inclusion in the overall scoring matrix for Design and Build:

Kier Northern 3.5 marks

Barr Construction 1.0 mark

Border 1.0 mark

17.11 At the next meeting of PMB on 14th April 2005 it was reported that, as all the bids received were £3 million or more higher than the construction budget, they were all currently being examined to identify elements, amounting to savings of approximately £1.5m, which could be made without compromising the designs.

17.12 The meeting was advised that both the Chief Executive and the Director of Finance had informally indicated that they were confident that a remaining funding gap of around £1.5m could be bridged by an anticipated slippage in the capital programme, offset by the realisation of the capital receipt for the sale of the Loreburn Hall site, in order to achieve the realisation of this key strategic objective by the Council.

17.13 The sale of Loreburn Hall would not subsequently happen and alternative sources of funding would be identified.

18. Concerns as to the design quality of design and build tenders - April 2005

18.1 However, concerns were expressed at the PMB meeting that the Design and Build proposals represented fundamental challenges of design and operation, both in terms of the external appearance of and the required uses for the building. The PMB agreed that the concerns raised by the Board on all three 'Design and Build' proposals must be addressed in order that it was clear what could be achieved and at what cost, while maintaining the integrity of the building.

18.2 The Chairman intimated that there was still the option of selecting the preferred 'Design Only' tender, which should be fully evaluated before going to Committee. However, the discussion on this option seemed to only consider negative factors in regard to the possible use of this option, including the inability to quantify an outturn cost for the project at this stage and the inevitability of a later completion date. The minutes include a statement expressing concern that if the 'Design Only' option was adopted it would be unlikely that the completion of the Leisure Centre would be **within the life of the current Council.**

18.3 In evidence to the Inquiry a number of witnesses identified this latter issue as being a significant factor in determining the procurement model ultimately adopted, even though it had never been formalised as a legitimate objective for the project.

18.4 On **21st April 2005** at a meeting of the PMB the concerns on the quality of design being offered were revisited by members of the Board. Concerns discussed included;

- The external appearance of the building
- Failure to provide the full range of facilities specified by the Council
- The poor relationship between areas – changing rooms/pool areas/ fitness suite etc.
- The layout of the Reception Area
- That the disappointing design could be due to budget / site constraints;
- The importance of ensuring adequate access for persons with disabilities

18.5 In relation to the quality of the design solutions proposed in the Design and Build tenders, it was noted in the minutes of the meeting that;

> *"In operational terms, 2 designs were deemed bordering on unacceptable at the present time, with one bidder (Kier) submitting alternative proposals which seemed to address at least some of the concerns outlined," and*

"that there was scope for the specification to be re-negotiated after the tender had been accepted, but only in minor ways and that that amendments /clarification would be sought from bidders on amended proposals/prices".

18.6 In evidence to the Inquiry in relation to the issue of design quality, one witness, who was a member of the PMB, made the following statement as to his personal views on the quality of the submissions"

"Despite raising issues, it was clear that the Council was going to go down the design and build route, and frankly the designs which were submitted were just awful".

19. Format of the option appraisal on procurement options - April 2005

19.1 The **21st April 2005** PMB meeting also discussed the Options Appraisal exercise intended to inform the final choice of procurement model between using 'Design Only' (the method initially recommended by the PMB) and 'Design and Build'.

19.2 It was reported that the appraisal of the two procurement options had been issued to the members of the PMB and factors identified for each option, although the scoring process required to be looked through. The following points were **agreed;**

"that any comments on the text be fed back by Monday 25 April and scored at a joint session of the PMB" and

"that weighting on some factors be considered, depending on the scores achieved".

19.3 In relation to this last point, it would not be viewed as acceptable practice to amend the weighting allocated to criteria after they had been scored, as this could be used to facilitate manipulation of the outcome of competitions. It is not known to the Inquiry if any of the proposed weightings were changed subsequent to scoring as was being suggested above as a possibility.

19.4 A concern as to the potential impact of an outcome of the Options Appraisal process favouring the 'Design Only' option was **noted;**

"If the Council were to go down the 'Design Only' route, this could lead to a 26-week delay in finalising the tender, with work not starting on site in February / March (2006), which would probably result in the loss of the European Regional Development Fund (ERDF) award".

19.5 The ERDF was proposing a grant of £320k towards the project but the award currently had been made dependent on the project development meeting specific time requirements.

19.6 At the next meeting of the PMB on **27th April 2005**, a revised version of the Options Appraisal scoring process, to be used to assess the 'Design Only' option against the 'Design and Build' Option, was circulated.

19.7 The PMB approved the revised factor assessment text subject to amendment to reflect concerns about relative weighting of key factors. The further requested revisions would be made to the documents and these would be re-circulated. PMB members were required to complete the scoring forms and return them by Thursday 28 April 2005.

20. Scoring of the design quality of the 'Design and Build' submissions - April 2005

20.1 At the same 27th April 2005 meeting, Hypostyle, the external architectural advisors appointed to assist in the assessment of bids, presented an Architectural Report, dated 25th April 2005, assessing each of the designs submitted in the three 'Design and Build' tenders.

20.2 The report included an assessment of each scheme in terms of both its 'Compliance with the Architectural Specification of the Client' and the 'Quality of the Architectural Proposal'.

20.3 The PMB noted the outcomes of these assessments and agreed that the scores allocated by Hypostyle in relation to 'Compliance with the Architectural Specification of the Client' would be included in the overall scoring matrix for the 'Design and Build' bids as follows:

Architectural Specification Compliance

Kier Northern	12.45 out of 15
Border	11.1 out of 15
Barr Construction	10.9 out of 15

20.4 The Hypostyle Report also gave their assessment of the relative ranking of the design solutions based on the overall quality of each architectural proposal. The results of this assessment, as can be seen below, varied significantly from the scores for compliance with the architectural specification.

20.5 This was by its nature a somewhat less mechanistic process than the test of compliance and relied more on professional judgement. These assessments also reflected a different analysis to that already made by the Council's in-house planning advisers.

Assessment of Architectural Proposal

Barr Construction	AAAAA
Border	AAAA
Kier Northern	AA

20.6 The areas of the design considered as part of the above assessment of the Architectural Proposal were;

1. Site Analysis
2. Architectural Composition
3. Arrangement of Space
4. Fire Plan and
5. Life Cycle Issues

20.7 The justification for the comparatively lower ranking of the design submitted by Kier Northern would appear to have been based on a greater number of areas of concern expressed in Hypostyle's relatively brief report in relation to this proposed design solution. These included;

- the lack of a three-dimensional representation of the design being provided with the submission;
- the remote location of disabled parking from the entrance;
- the large number of different materials used on elevations;
- the complexity of the roof form;
- the fact that accommodation was on three rather than two levels;
- questions as to the acceptability of the fire strategy; and
- life cycle issues including potential roof drainage problems and maintenance problems associated with the external use at high level of cedar cladding.

20.8 Copies of this report were circulated to all members of the PMB. It was also agreed that the Hypostyle report would be discussed with Planning and Environment.

20.9 However, whilst the scores for compliance with the architectural specification were used in the overall scoring of the Design and Build bids, the assessment of the differences in the quality of the three Architectural Proposals and the weaknesses of the Kier scheme does not appear to have been used as a factor in determining the scores of the bidders.

20.10 It is also interesting to note that several of the list of weaknesses of the design identified by Hypostyle at this pre-contract stage have had to be addressed several years later as part of the remedial works contract, including roof drainage issues, deterioration of external materials and inadequacies in the fire strategy.

Tender Evaluation Process 'Design and Build' Option

20.11 The following is a list of the criteria used in the Tender Evaluation of the three Design and Build bids against each other. The evaluation used an 80 (Quality) to 20 (Price) ratio.

Quality Criteria	Maximum Score
1) Compliance with client brief	15
2) Siting layout and planning constraint compliance	10
3) Architectural specification compliance	15
4) Programme timescale (relative to long stop)	5
5) M&E specification compliance	15
6) Design Team and H&S experience	10
7) Project Quality Management System	10
Total	**80**

20.12 The prices submitted with the three tenders were used to calculate the Average Price (AP) and marks were accorded as follows depending on how each tender compared with the AP.

Criteria	Score
If tender > 7.5% above AP	0
If tender > 2.5% above AP < 7.5%	5
If tender + or – 2.5% from AP	10
If tender > 2.5% below AP < 7.5%	15
If tender > 7.5% below AP	20

20.13 At a Meeting of PMB on **4th May 2005** it was reported that the above scoring process for the 'Design and Build' tenders had now been completed, subject to a few minor adjustments.

20.14 **Kier Northern had been identified as gaining the highest overall mark, having** achieved the best score in terms of both quality and price, and would be recommended as the preferred 'Design and Build' tenderer. Barr Construction would be recommended to be nominated as reserve preferred tenderer.

20.15 In terms of the potential requirement on budgetary grounds to implement amendments/ reductions to the client brief, savings had been offered by the tenderers on elements that could potentially be deleted. While resultant adjustments to the scoring brought Barr Construction closer to Kier Northern in terms of overall quality /price score terms, Kier Northern remained in a clear leading position.

20.16 The PMB **agreed** that *"the scoring process had been carried out in a fair, consistent and robust manner".*

20.17 The following table shows the relative overall scoring against the scored criteria for each of the three 'Design and Build' tenders.

	Client Brief (30)	Programme (5)	Planning Constraints (5)	Quality Systems (5)	Designer Team (5)	Architect Fabric (15)	Services Design (15)	Price (20)	Total (100)
Barr	20.40	1.00	1.00	2.50	2.00	10.99	8.85	12	58.74
Border	21.00	1.50	1.00	4.00	4.50	11.10	10.95	3	57.05
Kier	22.30	1.00	3.50	2.50	2.50	12.00	9.60	16	69.40

Table 2 – Design and Build Scoring

21. Outcome of the options appraisal on the choice of procurement model - May 2005

21.1 It was reported that the formal Options Appraisal scoring process to assess the use of the 'Design Only' option against the 'Design and Build' Option had been completed. Sixteen factors had been considered and individually scored by seven of the members of the PMB.

21.2 The overall marks received were **58.3** for **'Design and Build'** compared to **46.0** for **'Design Only'**, with all seven scoring respondents selecting Design and Build as their preferred option.

21.3 The PMB **accepted** the outcome of the Options Appraisal and confirmed **that Design and Build was the clearly preferred procurement model**, which they would in turn recommend for acceptance to the Ad-hoc Sub-Committee. This decision was the reverse of the same comparison of procurement options undertaken by the same group of people in April 2004.

21.4 It was agreed that the report for presentation to the Ad-Hoc Sub-Committee should include a summary of the factors considered and the scores achieved at a sufficient level of information to allow ad-hoc sub-committee members to make an informed decision on the outcome of the options appraisal.

21.5 It was also agreed that the report would also include the PMB's endorsement for the use of the 'design and build' route and the nominations of the preferred and reserve 'design and build' tenderers. It was recorded in the minutes of the meeting that:

> *"Although members would be given a clear recommendation to select the preferred tenderer, it was suggested that members be asked to delegate authority to officials to negotiate elements of the facility post-contract-acceptance and that failing agreement, the sub-committee would be asked to review the position".*

21.6 The following table shows the make-up of the sixteen factors used and the average of the scores they each received from the seven scoring members of the PMB. Information as to the rationale for using the chosen sixteen criteria, for the relative weighting allocated to the scoring of each criterion was not available to the inquiry.

Factor		Procurement Route	Average Score
No	Description		
1	**Capital Cost** Score 10 to 1	D and B	8.0
		Trad	3.3
		Preference	**D&B**
2	**Time to opening** Score 10 to 1	D and B	6.1
		Trad	3.3
		Preference	**D&B**
3	**Internal Capital funding** Score 5 to 1	D and B	4.0
		Trad	2.0
		Preference	**D&B**
4	**SportsScotland funding** Score 9 to -3	D and B	5.1
		Trad	3.9
		Preference	**D&B**
5	**SoSEP funding** Score 5 to 1	D and B	3.9
		Trad	1.9
		Preference	**D&B**
6	**Other external funding** Score 6 to -3	D and B	0.9
		Trad	1.9
		Preference	**Trad**
7	**Allocation of risk** Score 9 to -3	D and B	6.4
		Trad	2.6
		Preference	**D&B**
8	**Lifespan of existing facilities** Score 5 to 1	D and B	3.9
		Trad	2.1
		Preference	**D&B**
9	**Cost of maintenance** Score 5 to 1	D and B	3.6
		Trad	2.0
		Preference	**D&B**
10	**Views of Committees** Score 9 to -3	D and B	5.6
		Trad	0.4
		Preference	**D&B**
11	**Visual Impact** Score 9 to -3	D and B	1.4
		Trad	6.9
		Preference	**Trad**
12	**Functionality** Score 9 to -3	D and B	1.9
		Trad	7.7
		Preference	**Trad**
13	**Users' perspective** Score 3 to -3	D and B	0.0
		Trad	2.6
		Preference	**Trad**
14	**Impact on community** Score 5 to 1	D and B	4.1
		Trad	2.0
		Preference	**D&B**
15	**Management of Process** Score 3 to -3	D and B	-0.9
		Trad	3.0
		Preference	**Trad**
16	**Other External Factors** Score 3 to -3	D and B	2.3
		Trad	0.7
		Preference	**D&B**
	Average score for all factors	D and B	58.3
		Trad	46.0
Number of D and B Preferences			11
Number of Traditional Preferences			5
Number of No preference			0

Table 3 – Procurement Route Option Appraisal

Analysis of scoring between design and build and traditional procurement

21.7 The difference in the final scoring of the Options Appraisal between the two options was **12.3 marks** in favour of the **'Design and Build'** option over the traditional model.

21.8 On examination it can be seen that no less than **six of the sixteen** criteria (Nos. 1, 3, 4, 5, 6 and 9) had been allocated to assumptions about cost and availability of funding. On these factors alone the 'Design and Build' option was awarded 10.5 marks more than the 'Design Only' option.

21.9 The 'Design and Build' option scored a further 5 marks more than 'Design only' against the '*Time to Opening*' criterion (No. 2).

21.10 The combined difference of **15.5** marks awarded for **cost** and **time** criteria alone, more than accounted for the final 12.3 marks difference between the options.

21.11 Under two further criteria, listed as '*Views of Committees*' (Criterion No.10) and '*Other External Factors'* (Criterion No.16), a combined total of **7.9** marks were awarded again in favour of the 'Design and Build' compared to **1.1** marks for the 'Design Only' option. The basis behind these two criteria is not understood.

21.12 Only **three** of the **sixteen** criteria used could be seen as relating to the **quality** of the completed building. These were '*Visual Impact*', *'Functionality* and *'Users' Perspective'* (Criteria 11, 12 and 13).

21.13 On these three criteria the 'Design Only' option was awarded a combined score of 17.2 marks compared to 3.3 marks for the 'Design and Build' option, against which quality concerns had already been identified.

21.14 It is clear from this analysis that in the structuring of this exercise that cost and time issues were given precedence over concerns that might been held about the overall design quality of the finished building.

21.15 Sport Scotland, in addition to contributing £1.25 million towards the capital cost of the project, represented a source of specialist professional expertise and information to the Council in relation to both the technical requirements of the facility and the procurement of similar facilities across Scotland.

21.16 In evidence to the Inquiry, a senior professionally qualified member of staff of Sport Scotland, who had personally been involved in the Dumfries project as a representative of Sport Scotland, commented as follows on the decision by PMB to recommend 'Design and Build' as the procurement model;

> *"In terms of the procurement model chosen for DG1, this was an issue that we were asked about at the time. Our advice then, as now, would be to go down a traditional procurement route and I distinctly recall attending a meeting at the Council about this particular point when it was discussed".*
>
> *"When planning and building a sports facility, you always have to remember that when quality and specification is important, as it usually is in a building of this type, the traditional procurement method gives you that quality and level of specification. It might be slower in delivery and might involve some more cost in the short term, but the reality is you have control over what sort of sports pitch or sports hall you get, and we always give that advice to local authorities"*
>
> *"However, we appreciate that there are other views out there, for example in local government, who will have a particular view on the procurement issue. This will often influence decision making but we also have our own views on the issue which we try to get across. Generally speaking, we do advocate traditional procurement as the way to go. Having said that, I would not suggest that design and build does not always work and, if a Council chooses to go down that particular route, we won't refuse to fund a particular project. It's however important that the final decision is an informed one".*

22. Presentation of recommendation on procurement to ad-hoc sub-committee - May 2005

22.1 On **10th May 2005**, a final report on the outcome of the tender process from PMB, dated 6th May 2005, was presented to the Ad-hoc Sub-Committee. The methodology that had been used for the tender assessment process was explained as follows.

Stage 1 (a)	Assessment of 'Design and Build' bids
Stage 1 (b)	Assessment of 'Design and Build' bids based on amended proposals to achieve savings in overall costs
Stage 2	Assessment of 'Design Only' bids
Stage 3	Option Appraisal considering' Design Only' versus 'Design and Build' as the preferred procurement route

22.2 In relation to Stages 1 (a) and (b), the report advised that Kier Northern had received the highest overall marks and had been designated preferred tenderer under this option. Barr Construction had scored second highest and had been designated reserve tenderer.

22.3 The report also pointed out that all three 'Design and Build, tenders had significantly exceeded the then current budget for the project and that after application of submitted savings proposals, which it was considered did not compromise the quality of the overall facility, there still remained a funding gap of £2,393,600.

22.4 In relation to Stage 2, the assessment of the 'Design Only' bids, the report advised that the tenderers for the 'Design Only' option had been required to provide fee bids only, based on an assumed construction cost of £9 million, and had not been asked to provide their assessments of the actual construction costs of the project.

22.5 The report reminded the Ad-hoc Sub-Committee that they had already received an advice note prepared by Anderson Strathern Solicitors on the relative advantages and disadvantages of both methods of procurement. In relation to this advice note the report specifically stated;

> *"This Advice Note indicated that the 'Design Only' route gave the client greater control over design, specified quality and standards. There may, however, be uncertainty on construction costs until the design is completed.*

The overall programme for the project tends to be longer, which can be a crucial factor where the timescale is a key consideration".

22.6 The report listed the names of the members of the two design teams which had respectively been assessed as potential preferred and reserve bidder, the first of which would be appointed if it was decided to proceed with the 'Design Only' option.

22.7 In relation to the time required to complete the project, the report indicated that it was estimated that the 'Design and Build' option would take at least five months less than 'Design Only' with an expected date for completion in late summer 2007.

22.8 In relation to the appraisal of the two procurement options the report stated;

"The appraisal of 'Design and Build' against a 'Design Only' option has, in turn, produced a clear recommendation in favour of the 'Design and Build' option being adopted for this project". and

"In the view of Council officers on the Project Board the proposals submitted by Kier Northern would provide an attractive, fit-for-purpose, modern leisure facility compliant with the client brief and meeting the demanding standards set by the assessment process. The officers believe that the proposed facility will provide the area with a high quality new facility which will live up to the expectations of the community"".

"It is therefore suggested that the Sub-Committee should recommend to the Corporate Policy Committee that a contract for the design and construction of the Leisure Complex should be awarded to Kier Northern, subject to the satisfactory conclusion of final contract details".

22.9 The report also contained a contribution from the Director of Finance in the Council in relation to the budget for the project.

22.10 He explained in the report that as the original budget of £13.478 million had been set in November 2003, the current day equivalent budget allowing for inflation would be £1.200 million higher. It was also noted that a further contributory factor for the funding gap was the cost of some necessary increases in certain aspects of the project's specification.

22.11 In relation to revenue consequences of the project, the report stated that the Finance Department of the Council was seeking further information and clarifications in relation to concerns about the adequacy of allowances in the business plan for proper provision of the full range of necessary life-cycle maintenance costs. The report stated;

"Without this additional information the business plan is considered incomplete and to understate likely expenditure".

22.12 Finally, in relation to the affordability of the project the report stated that the Council's revenue and capital accounts for the year to 2005 were currently being finalised to enable an informed assessment by members of Council as to the availability of funds to bridge the gap and allow the project to proceed.

22.13 The Ad-hoc Committee minutes of 10th May 2005 confirmed agreement to recommend to the Corporate Policy Committee the awarding of the contract to Kier Northern.

22.14 At the next meeting of the PMB on **9th June 2005,** it was reported that the full budget had now been approved, including the Council's underwriting of a contribution of £1.25m expected from **Sport S**cotland.

22.15 It was agreed at the meeting that Kier Northern be advised that a letter of undertaking, guaranteeing their design costs up to their lodging of a planning application, would be tabled at the meeting on **13 June 2005**.

22.16 A planning application was subsequently submitted **on 5th October 2005.** Only one objection was made to the project. A report recommending approval was accepted at the local meeting of the Nithsdale Area Regulatory Committee on **14th December 2005**, before being forwarded as required to the Scottish Executive for final determination. On **18th January 2006,** confirmation of **final planning approval** was received from the Scottish Executive.

22.17 In February 2006 and April 2006 respectively, lottery funding from Sport Scotland and grant funding from South of Scotland European Partnership (SOSEP) in the amounts of £1.250m and £1.653m was secured.

22.18 On **Monday 6th February,** Kier Northern was granted possession of the Hood's Loaning site. The contract period was **86 weeks** from the date of site possession, giving a contract completion date of **27th September 2007**. The contract sum was in the amount of **£12,670,000.**

22.19 It is a legal requirement in Scotland to obtain a building warrant before the commencement of building work. A submission for a Stage 1 building warrant in relation to the piled foundations only was made to the Building Standards Department of Dumfries and Galloway Council on **25th April 2006** and approval to this was granted on **15th June 2006. This however only gave approval for the work to foundations.** It was a legal requirement that further stage or full building warrants would be required before the contractor could commence other aspects of the construction. These would not be received until shortly before the practical completion of the building.

22.20 It is the opinion of the Inquiry that the process used to determine the most appropriate procurement route was over-complicated and lengthy, inappropriate for the detailed involvement of a non-specialist committee, lacking in informed professional input and highly subjective in terms of the criteria established for the assessment.

22.21 The process of seeking to compare a fee bid only submission with a combined worked-up design concept and inclusive price for design and construction to a predetermined programme was a completely flawed concept, which should not have been pursued.

22.22 There was little evidence of any awareness in the management of these processes of the incorporation of the best practice steps that should have been considered when using Design and Build in order to properly protect the quality of the building the Council would receive.

22.23 It is difficult to understand the lack of inclusion and low overall relative weighting of quality-based criteria for what was originally conceived by the Council to be a flagship building that would last at least forty years and would help stimulate a vibrant regeneration of that area of Dumfries.

22.24 It is unfortunately evident that time and cost considerations were the primary drivers of this process, both short-term objectives that would not be achieved, but the pursuit of which, in shaping the choice of procurement. would contribute to the failure to achieve the original strategic long-term objectives for the project.

Section 5 – Chronology 2

The original construction of DG One

The period from commencement of the design and build contract in 2006 up to practical completion in 2008

The form of contract used for the project was **"the Scottish Building Contract With Contractor's Design, May 1999 Edition (January 2004 Revision)"**. The contract was formally signed on behalf of Kier Regional Limited, trading as Kier Northern, on 17th March 2006 and by the Corporate Director for Corporate Services of Dumfries and Galloway Council on 31st March 2006.

The contractual completion date was 27th September 2007 and the level of liquidated and ascertained damages, (to be paid by the contractor for failure to deliver the project by the contractual date for completion) was set at £7,770 per week.

The contract referred to the appointment by Kier Northern of the following members of their design team:

Architects William Saunders Partnership (Nottingham)

Civil and Structural Engineers William Saunders Partnership (Newark)

Mechanical Electrical Design and Build Haden Young (Build) / RYBKA (Design)

Pool Design and Installation Europool Ltd.

The civil engineer employed by the Council, who had up to that time acted as Council Project Manager for the DG One project, was formally named in the contract as undertaking the role of Employer's Agent. The person acting in this role is the formal contractual point of contact with the contractor and responsible for ensuring on the client's behalf that the contactor carried out the work in full accordance with the requirements of the contract.

As the Project manager had limited previous experience of complex building and of using this form of contract, it was recognised that he would require support from other construction professionals with relevant experience to enable him to carry out this role effectively. The use of a shadow design team to support an Employer's Agent is common practice.

It should be pointed out, that whilst clients must take all reasonable steps to ensure as far as possible that the contractor is complying with the contract, which is a responsibility of the Employer's Agent, the primary responsibility for ensuring compliance with the contract requirements lies with the contractor, who, in a design and build contract, should have in place all necessary systems, design team inputs, and supervisory and quality assurance staff to do so.

It is particularly unfortunate that Kier Northern, and the members of their design team, William Saunders Partnership, who acted as architects and structural and civil engineers, and RYBKA, who acted as mechanical and electrical engineers, were not willing to accept the invitation to give evidence to the Inquiry in relation to any quality assurance measures implemented by them on site.

1. Selection and appointment of professional and technical support for the employer's agent during construction - March 2006

1.1 At a PMB meeting on **16th March 2006**, it was reported that fee bids had been sought from five Architectural Consultancies and from three firms of Mechanical and Electrical Consultants to provide professional support in their relative disciplines for the Project Manager in his role as Employer's Agent during the construction phase of the contract.

1.2 It was reported that the Council's in-house Engineering Services Group had been approached and had agreed to carry out the monitoring of the structural engineering work for a fee of £12,000. (The Council's Head of Design Services subsequently in May 2007 agreed at the request of the Employer's Agent to provide in-house mechanical and electrical site monitoring for a defined period between June 2007 and October 2007 for the sum of £5,200).

1.3 Fee bid submissions were received on **23rd March 2006**, which resulted in the appointment of Hypostyle Architects, based in Glasgow, who had previously provided support to the Project Manager during the assessment of tenders for the project, and of Desco Ltd., Mechanical and Electrical Engineering Consultants based in Sunderland.

1.4 Hypostyle were appointed via the 'ACE short form agreement 2002', the schedule for which was signed on 19 April 2006. Their accepted fee bid was in the sum of £33,300. The defined schedule of services as set out in their appointment document included;

a. *"Taking receipt of, and familiarisation with all necessary design, specification and performance details as supplied to the Employer's Agent by the Design and Build Contractor. Providing a report on any substantive variations on these details relative to the Employer's Requirements, and their corresponding impact on the facility" and*

b. *"Visiting the Works, or other premises in relation to supplies or provisions for the Works, at routine intervals, to inspect and report on design and specification compliance, appropriate working practices, extent of completion relative to milestone payments, and other issues pertinent to the Client's interests regarding the Works. Attendance at site meetings with the Contractor as appropriate, normally coincident with routine inspection visits. Providing guidance to the Clerk of Works and Employer's Agent in day to day monitoring of the Works"*

c. *"Addressing ad-hoc technical enquiries from the Employer's Agent or his Clerk of Works, with a maximum response time of 48 hours unless agreed as reasonable to exceed this timescale. The transmission of information may be carried out by telephone and electronically in these circumstances".*

1.5 Desco Ltd. were appointed by letter on 20 April 2006 to undertake a similar schedule of services in relation to the mechanical and electrical elements of the project. Their accepted fee bid was in the sum of £39,170.

1.6 These appointments were reported to the PMB on **17th May 2006**.

2. Difficulty in recruiting a full-time building clerk of works - July 2006

2.1 In relation to the need for inspecting the quality of the contractor's work, the intention of the Council to directly employ a full-time monitoring inspector / Clerk-of Works for the project had proved to be undeliverable, due to the inadequacy of responses to the Council's public advertisement for such a post.

2.2 A report to the **4th July 2006** meeting of the Ad-hoc Sub-Committee advised that the PMB had instead decided to have this role undertaken by **'the more flexible part-time use of a self-employed specialist'.**

2.3 This had resulted in the appointment by the Council, on **3rd July 2006**, of a retired ex-employee of the Council who had worked for them as a civil engineering Clerk of Works, primarily on roads and bridges projects. He was appointed as a self-employed **'Site Monitor'**, following a direct approach being made to him by the Council's Project Manager.

2.4 It was unfortunate that due to the difficulty in attracting a clerk of works with experience of relevant building projects, the experience of the two primary appointments, providing the main on-site presence of the Council with responsibility for checking that the work on this complex building project was to the required standard, would now be primarily civil engineering and roads related.

2.5 The appointment document listed the following schedule of services for the Clerk of Works;

a. *Understand the Employer's Requirements to enable monitoring for compliance by the Contractor*

b. *Understand all necessary drawings, design details, specifications, quality procedures and performance details as supplied to the Employer's Agent by the Design and Build Contractor to monitor the construction of the Leisure Complex and report any apparent discrepancy in them relative to the Employer's Requirements.*

c. *Inspect the Works routinely and at the appropriate frequency to be able to monitor compliance with (a) and (b) above. Record at that time the works ongoing, materials being used, and the contractors or subcontractors involved, together with any apparent non-compliance issues relative to this, which should immediately be brought to the Employer's Agent's attention.*

d. *Liaise with the Employer's Agent and or other Employer's Monitoring Staff as necessary for further instruction or guidance relative to any elements of the Works, which are of a specialist nature, but can be readily observed and recorded for the benefit of the Employer's other staff.*

2.6 The terms of appointment of the 'Site Monitor' did not describe the role as full-time but rather left this somewhat to the discretion of the appointee, who would be paid on an hourly rate. They stated:

"The Inspection regime is anticipated to involve visits to the Site daily but related to works production rates requiring that intensity of monitoring. The duration of the visit will relate to the time needed to perform the services as described in Section 2 and related to the activities on-going".

3. Effectiveness in practice and use of the additional resources provided to support the employer's agent - from July 2006 on

3.1 The following sections are descriptions of the perceived nature of the roles and contributions made to the Employer's Agent based on evidence to the Inquiry given by each of the four sources of support listed below, including to what degree these contributions were viewed as being able to influence the quality of the final project;

1. the Site Monitor/Clerk of Works,
2. Hypostyle Architects,
3. Desco Ltd. and
4. In-house Civil and Structural and Mechanical and Electrical site inspection teams

The site monitor / clerk of works

3.2 The appointed Site Monitor gave evidence to the Inquiry as to his background and experience;

"Over the course of my career, I have worked on various civil engineering contracts. I ended up working for Dumfries & Galloway Council as a clerk of works on roads and bridges for about six or seven years until I retired in 2005".

3.3 As in the case of the Project Manager, now also acting as Employer's Agent, the experience of the part-time ex-Civil Engineering Clerk of Works had been largely related to roads and other civil engineering projects rather than to complex building projects. Despite this apparent lack of relevant experience, his defined role expected him to be the daily on-site eyes and ears of the Employer's Agent, reporting to him on compliance or otherwise of the contractor's work with the agreed specification and required building standards in relation to all aspects of the complex building work involved.

3.4 Instead of a full-time appointment based on normal site working hours, as originally advertised by the Council, this had become a part-time role. In evidence to the Inquiry the appointed Site Monitor stated;

"With regard to my own time on site, I was there Monday to Friday 9 a.m. to 1 p.m. for four hours a day. I was on site until very close to practical completion and I recall when I left they were just tidying up with perhaps a few weeks still to go".

3.5 A standard industry expectation of this type of role, and as set out by the Council in the above job description for the post, would require the systematic production of weekly record sheets commenting on progress, resources on-site, variations from specification, standards of workmanship and any areas of defective work that had been identified. In evidence to the Inquiry the appointed Site Monitor described the role as he had carried it out;

"I would confirm that I did not prepare any reports but rather, would report issues to (the Employer's Agent) verbally. We didn't have a sheet to fill out on a daily basis or anything like that."

"I did not really perform the role of clerk of works at DG1 which would be more focused on measuring and testing. Kier Northern did all of that on site. We were just really looking on and reporting on progress, maybe a couple of times a week".

"Once the designs were in place and the work started a client like Dumfries & Galloway Council doesn't really have much control over what happens".

3.6 The Council confirmed to the Inquiry that they were unable to identify any evidence of site reports having been produced by the Site Monitor.

3.7 The already compromised potential effectiveness of this role was further reduced as a result of the form of contract adopted. Under the Design and Build form of contract being used, as opposed to the situation pertaining in a traditional form of contract, a Site Monitor or Clerk of Works role does not have any contractually recognised authority in relation to the quality of work being delivered. Directions to contractors in relation to the standard of work, including the removal of any identified sub-standard work or opening up of closed-in work for inspection could only be issued by direct instruction of the Employer's Agent.

"On occasion, when I did spot things that weren't quite right I would point it out to (the Employer's Agent). He would be having fairly regular site meetings with Kier although I didn't personally attend any of these meetings. I presumed that he would have raised any issues with the Kier personnel at that time".

"I understand that no damp proof layer was put in some of the floor slabs. This was raised with Kier along with a number of other issues but their standard response when we did this was to simply say "Don't worry, we will guarantee it". In fact, they said that in answer to almost every question that we raised with them".

3.8 It is the opinion of the Inquiry that in the selection, appointment and management of the Clerk of Works by the Council, they failed to ensure the necessary input of a full-time Clerk of Works with relevant experience of complex building projects that would have been justified in the circumstances given (1) the nature and quality expectations of the project, (2) the use of a design and build contract for which the risks associated with the delivery of quality had already been identified by the team; and (3) the experience of the Employer's Agent being predominantly civil engineering-related.

3.9 The failure to require the basic preparation of weekly Clerk of Works reports is difficult to understand. It would also appear from the evidence given to the Inquiry by the Clerk of Works that the attitude being adopted towards Kier was that they were in charge and that the client had little influence or right to interfere.

3.10 However, the design and build contract used gives specific rights to the Employer's Agent to require the removal and making good of any defective work. It would not appear that these rights were adequately enforced.

Hypostyle architects

3.11 As previously stated, the Council had appointed Hypostyle Architects from Glasgow to provide professional and technical advice and support to the Employer's Agent. Unfortunately, Hypostyle were unwilling to accept the Inquiry's invitation to appear as witnesses but instead wrote to the Inquiry. They stated in their letter that the scope of their appointment had been varied at the instruction of the client during the course of the commission.

3.12 In relation to their undertaking of the services described in their appointment schedule, as set out previously, they commented as follows;

"We confirm that we visited the works at regular intervals but did not certify design specification compliance by these visits, nor appropriate working practices, all as per Client's instructions. Any observations made during these visits were reported to the Employer's Agent. We had no design responsibility in the project".

"We confirm that we attended initial site meetings with the contractor but thereafter met contractor and Employer's Agent during regular site visits, convened to review a specific matter as instructed by the Client. This change of meeting format was instructed by the Employer's Agent. We did not attend monthly Progress Meetings nor receive minutes or contractor's reports or other papers for same".

"We regularly responded to the Employer's Agents request for guidance, information or clarification of matters arising……. The process was reactive, responding to requests from the Employer's Agents".

3.13 The Council records provided to the Inquiry only contained written reports for three site visits by Hypostyle dated 25th May 2007, 21st June 2007 and 24th July 2007 respectively. Surprisingly, despite the appointment of Hypostyle to this role having been made on the 23rd March 2006, the first of these reports was dated as having been produced more than a year later. These reports were titled 'Observation Sheets 1,2 and 3' respectively and provided brief commentaries on a range of quality issues that Hypostyle had identified at this stage of the project.

3.14 The cessation of the production of these Observation Sheets after July 2007, would appear to be linked to the change in 'meeting formats' referred to as having been 'instructed by the Employer's Agent' in the letter from Hypostyle to this Inquiry.

3.15 In evidence to the Inquiry the Employer's Agent stated that Hypostyle were in fact on site only very occasionally with the majority of queries from him being dealt with through telephone or e-mail exchanges.

3.16 It is perhaps significant that the total fee eventually paid for all services from Hypostyle during construction was approximately £16,000 as opposed to the accepted bid at the time of appointment of approximately £33,000, a reduction of more than half to the original tender based on the prescribed level of resource.

3.17 The comments made by Hypostyle in the three 'Observation Sheets' produced from mid-2007, included references to construction issues that would be identified as major problems after the completion of the contract. These included the following references

to the ground floor concrete slab, to the quality of blockwork being offered and to the corrosion of steel in the Rotunda;

> *"…… there are areas of cast in-situ slab infill that make contact with the solum, (solid ground) but no dpm (damp-proof membrane) can be identified."*
>
> *"Blockwork quality in the main entrance area is very poor. Setting out not convincing and workmanship on pointing poor".*
>
> *"Rust is appearing on internal steel sections within the rotunda. Coating is to be made good".*

3.18 These reports were submitted by Hypostyle to the Employer's Agent for consideration and subsequent appropriate direction by him to Kier Northern.

3.19 The need to address all three of these issues formed part of the remedial contract that is currently underway, implying that little effective remedial action was taken at the time by Kier on the basis of these reports submitted to the Employer's Agent.

3.20 The potential importance and value of informed on-going site inspections and reports of this type does not appear to have been realised. It is disappointing that the more intensive involvement and roles of Hypostyle as described in their conditions of appointment did not appear to be implemented.

Desco Ltd. mechanical and electrical building services consultants

3.21 Desco Ltd. had been appointed to undertake an equivalent role to that of Hypostyle, but in relation to the mechanical and electrical installations. The schedule of services contained in their appointment with the Council were virtually similar, including the requirement for regular visits to site. However, in evidence to the Inquiry, and somewhat similar to the content of the letter from Hypostyle, a Director of Desco described their agreed role in the project as having been subsequently amended by the Employer's Agent to provide a somewhat different focus.

> *"I remember telling (the Employer's Agent) that we were not clerks of works. He replied that we should not be concerned about that because as "our in house mechanical and electrical team are doing the site issues". It was really just the support on the design side of things that we were now being asked to look at, as the quality of installation and the on-site issues were being covered directly by Council employees".*
>
> *"In the end, I made a number of visits to the site during installation, mainly when called upon to do so by (the Employer's Agent)".*

3.22 As in the case of Hypostyle Architects, the total fee paid to Desco Ltd. was less than their accepted tender amount although by a smaller proportion, approximately £32,000 as opposed to £39,000 thousand in the accepted tender, suggesting again less use of this external resource than was originally intended.

3.23 A Director from Desco, who had been personally involved in the project, advised the Inquiry that the majority of their work had been concerned with checking the mechanical and electrical design information being produced for Kier Northern by their design and sub-contracting team. He stated that they had, as requested by the Employer's Agent, analysed the design proposals and provided numerous technical comments on marked up drawings in regard to a wide range of what they perceived to be inadequate aspects of the design proposals.

3.24 He stated, however, that on several occasions drawings containing design proposals that had been categorised by Desco as not acceptable, were simply re-issued by Kier Northern with nothing having been done to them. The Director from Desco said that he had strongly expressed his concerns on this fact to the Employer's Agent.

3.25 He informed the Inquiry that even issues that were considered by him to be critical in nature had often been ignored. He reported the response from Kier's Design Coordinator on many occasions to have been to remind him that this was a Design and Build contract and that Desco was not responsible for the design.

3.26 The Inquiry were advised that the following were two examples of areas of significant concern identified by Desco Ltd. at the time;

- a major concern regarding the design of the ventilation system which could lead to chlorinated air permeating to other areas of the building from the pool hall.
- the ventilation extract from the pool area being positioned at too low a level with all the hot air rising past it to the top of the Rotunda and staying there

3.27 As in the case of defects identified by Hypostyle, both of these areas subsequently required significant redesign as part of the remedial contract in order to address problems associated with the migration of chlorinated air and unvented excessive heat.

3.28 It was reported in evidence to the Inquiry that when DG One had been operational, staff arrangements had to be put in place to allow for very regular changing of the member of staff who was stationed at the top of the flumes in the Rotunda as the staff could not bear the excessive heat for any length of time.

3.29 The Director from Desco also advised the Inquiry that he had expressed serious concerns in relation to aspects of workmanship on site, particularly the quality of the ventilation ductwork, the installation of the air handling units, and the electrical wiring and controls installations. All of these issues also featured as items in the remedial works contract.

3.30 As in the previous case of Hypostyle, under the procurement model used Desco had no authority to issue instructions directly to Kier and could only pass their information and advice to the Employer's Agent to do so. This process does not seem to have been effective in achieving the required standard of work.

In-House civil and structural engineering and mechanical and electrical engineering support

3.31 As previously stated the Employer's Agent had requested the Engineering Services section of the Council to provide professional support in relation to the structural and civil engineering aspects of the project. This was provided by a qualified structural engineer, holding the position of a principal engineer within the Council, supported by a member of staff reporting to him, who was a qualified civil engineer.

3.32 In evidence to the Inquiry the senior structural engineer stated that while their remit wasn't especially well defined, they saw their role as generally acting as informed eyes for the Employer's Agent. In this role they had no authority to actually instruct the contractor in relation to issues of concern but were required to report any such concerns to the Employer's Agent. In addition to verbal reporting, they did this through submitting regular weekly written reports, which, they were informed, were passed by the Employer's Agent on to the contractor. In relation to the senior structural engineer's view as to how these concerns had been dealt with he stated;

- "I have to say it was pretty frustrating because mostly we saw nothing being done to rectify the issues we raised. I did say to (the Employer's Agent) a number of times "nothing has happened". He would have regular meetings with Kier and assured me that defects were being raised which they were supposedly working through. However, I saw little if any evidence of this".
- "There was a general feeling that because it was a design and build contract, we could not interfere. I don't know what the details of the contract were but (the Employer's Agent) did make it clear that we had no power to interfere and any issues had to go through him".
- "We did not escalate it beyond (the Employer's Agent). We just kept going back to him if we had concerns. In hindsight, perhaps we could have done more".

3.33 Two of the more significant areas of concern which were noted in their weekly reports were;

- The potential compromising by the premature exposure to moisture of the hydrophilic membrane (water-bar) at construction joints in the pool walls which could result in its failure to seal the joint with the surrounding concrete properly and allow a route for water leakages from the pool through the pool wall.
- The lack of a clear specification for the necessary intumescent paint treatment to provide the required fire integrity to structural steel elements and the poor quality of application of this treatment.

3.34 Again, as in the case of the building and the mechanical and electrical design, significant problems were subsequently experienced in these two areas, requiring major remedial works to address leakage from the pools, corrosion of reinforcement in the pool walls and the inadequacy of protective paint treatments to the structural steel.

In-house mechanical and electrical support

3.35 In addition to the role undertaken by Desco in relation to the mechanical and electrical services, the in-house Design Services Group had agreed to provide a site inspection role on a part-time basis. This was provided by two of their Mechanical and Electrical design technicians. The recorded perceptions in evidence to the Inquiry of the two officers who undertook this role included the following points.

- As it was a design and build contract they had limited powers, effectively what they considered to be only a watching brief.
- They spent four hours a week on their visits to site. However, given the size and complexity of the site they both felt that this didn't do the job justice.
- When changes were made to the specification or installation of services on site, they were never really sure whether the changes had been approved or not as they were not party to any on-going technical discussions with the design team.
- When they raised concerns with the Employer's Agent, they were not generally informed if any action had been taken by Kier Northern
- They were unclear what Desco's precise role was relative to their own and generally felt that there was a lack of joined up thinking on the site.

3.36 It is unfortunately evident from these comments that there was limited team-working or effective co-ordination of the various resources provided to support the Employer's Agent in seeking to ensure the quality of the project. In these circumstances it is not surprising that there was ultimately an overall failure to do so.

3.37 The need for professional and technical consultancy and inspection support had been identified as necessary to reflect the lack of experience of the Employer's Agent in these areas. However, the restricted level of this resource allocated and used, the limited frequency of input and the ineffective response by Kier to concerns raised would prove inadequate in protecting the quality of the building.

The role of the employer's agent relating to quality issues

3.38 In evidence to the Inquiry the Employer's Agent confirmed that in his defined role he saw himself as the direct line of communication with the contractor on all issues of quality.

> *"In my capacity as Employer's Agent, I saw my role as being the main interface between the Council and the main contractor. I was responsible for certifying the monthly payments made to the contractor before authorisation. I was also managing the process of ensuring that the contractor carried out the works in accordance with the contract".*

3.39 He pointed out that in the other part of his role outside the building contract, as Project Manager within the Prince 2 management structure, he was responsible for a range of management, organisational, planning and administrative activities associated with the leisure centre development.

3.40 These activities included providing the interface with the project for the integration of the Council's IT infrastructure, negotiations with utility companies, the planning of the provision of ancillary services such as catering, and the proposed installation of audio visual facilities, fitness equipment and public art.

3.41 Together with undertaking the formal Employer's Agent role, this clearly represented a very significant and demanding workload, which was focussed almost totally on a single individual, someone who did not have the benefit of previous experience in acting in this particular role.

3.42 In evidence to the Inquiry, whilst confirming that his main office had been based in the Council's headquarters building, the Employer's Agent stated that he had spent a significant amount of time on site, querying, inspecting and managing the various in-house and external parties, who had been brought in to inspect the works. He felt that others perhaps did not fully share his enthusiasm for the project;

> *"It was a time-consuming element of my job doing all of this and I found it quite frustrating at times. My perception was that not many people were "signed up" to the job in that they did not display a great deal of enthusiasm for the project".*

> *"With so much time and abortive work having been done already (over the previous years) there was a general feeling around the Council that DG1 was acquiring a 'poisoned chalice' label".*

3.43 In relation to the input from his external professional advisors he commented;

> *"Ideally, we would have liked Hypostyle and Desco to come in on a monthly basis but they sometimes had to be cajoled down to look at the site. To be fair most of my queries would be dealt with through email or telephone".*

3.44 This comment presents a slightly different interpretation of the circumstances to the information submitted by Hypostyle and given in evidence by Desco Ltd. Both had advised the Inquiry that the change in the way they undertook their commissions from that specified in their appointments had been made following discussions with the Employer's Agent to whom they reported.

3.45 The Employer's Agent confirmed that he had always passed on to Kier Northern any issues relating to quality that had been identified by the site-monitoring teams. The following are some of the comments he made in relation to these issues;

> *"I was concerned at times about progress and workmanship and did flag things up with the contractor constantly"*

> *"When issues were raised, the contractor would generally respond positively, and I certainly wouldn't let things go. We would continue to monitor progress".*

> *"I also dealt with a succession of five different project managers. (from Kier Northern). I would accept that continuity was probably affected by the fact that they were constantly leaving the business and being replaced".*

> *"My impression was that they had under-priced the job and simply wanted to get it done, get the sub-contractors in, out and away from site. Some of the sub-contractors were very good. With the piling we had no problems and it was done by a big national firm. Similarly, Storey Construction did the foundations and were fine. T.A. Kirkpatrick (structural steel and cladding sub-contractor) were slow but very conscientious. However, construction of the pools and the brickwork were a completely different story and also the second contractor brought on site to finish the cladding and detailing was very poor compared to T.A. Kirkpatrick".*

3.46 The problems with both the quality of construction of the pools and the masonry walls were clearly not adequately addressed as these would subsequently prove to be the two most significant aspects of the remedial works contract.

3.47 Due to the nature of the project the Employer's Agent, even well into the project, did not have the information to allow a proper assessment of the compliance of the design and build team's proposals with the standards required in the contract documentation.

3.48 Evidence provided to the Inquiry indicates that as late as May 2007, for a project which was supposed to complete 4 months later, Kier had still not received, assessed or agreed to the design proposals from Taylor Pools as to the detailed construction of the pools, particularly in relation to the waterproofing measures including the specification of the proposed render, any additives and any surface preparation of the pool walls and floor.

3.49 There were also problems with the quality management of the on-site installations. In June 2007 Europool wrote to ier in relation to the state of the buried pool filtration pipework that had been installed. They stated that on a recent visit they had found filtration pipework to be surrounded in stones, debris and sharp objects and requested confirmation that all pipework would be encased in 150mm of concrete, otherwise they could not guarantee the integrity of the pipework.

3.50 The filtration pipework would subsequently have to be replaced as part of the remedial works contract.

3.51 As an example of the attempts by the Employer's Agent to address issues of quality, the following 'Observation Report' was submitted by him to Kier in August 2007. It related to the pool deck drainage channel, and described a range of design, material selection, construction and workmanship faults associated with the frame and grating to the channel.

3.52 Despite this report, the channel defects would not be properly addressed by the contractor and the complete installation would require replacement as part of the remedial works.

3.53 The Employer's Agent confirmed that he passed all information on defects to Kier for action. Despite him doing so, the unanimous view expressed in the evidence given to the Inquiry, by those who had been regularly visiting the site as part of their monitoring role, was that the contractor failed to adequately address many of the issues raised by them.

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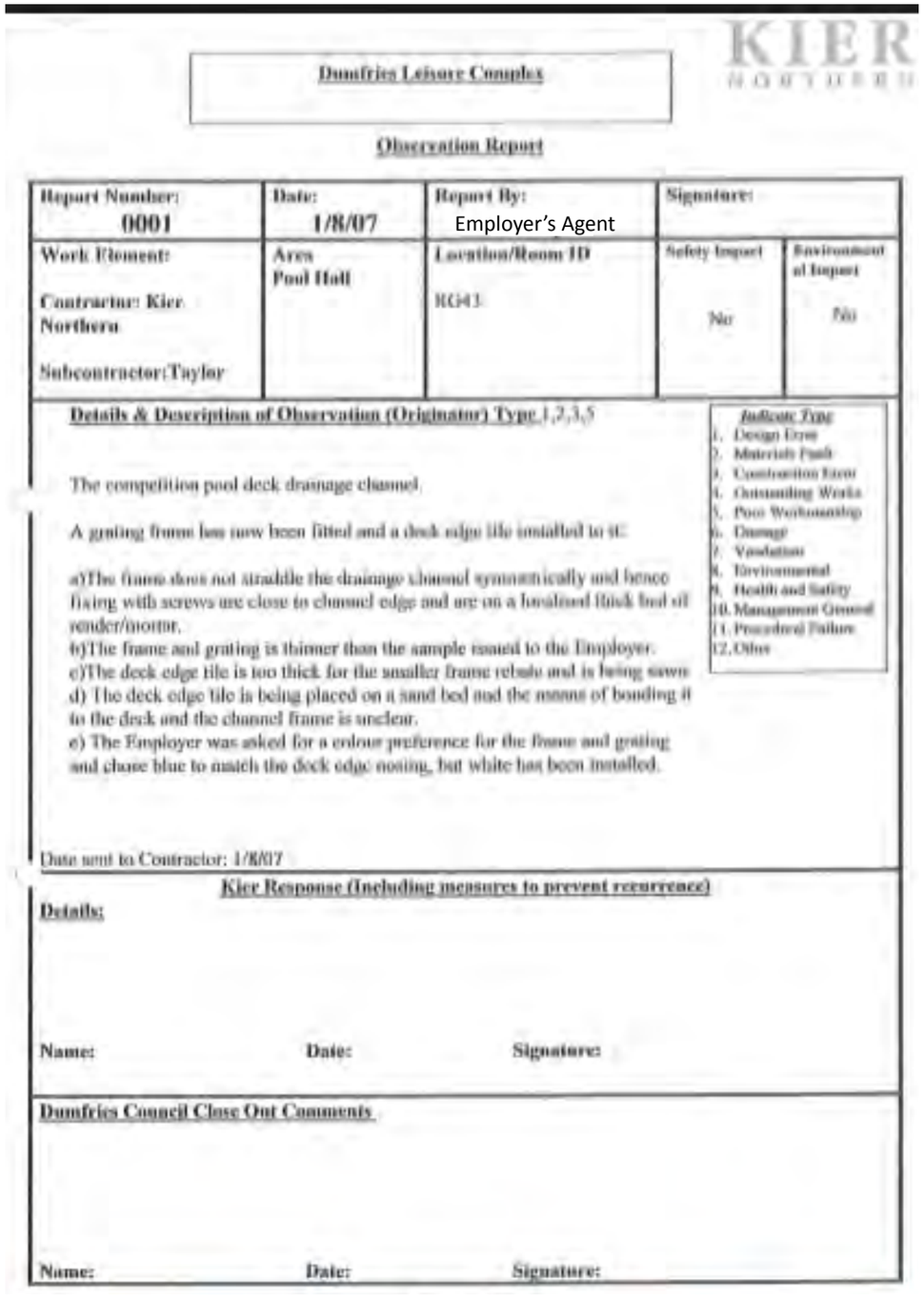


KIER NORTHERN

Dumfries Leisure Complex

Observation Report

Report Number: 0001	Date: 1/8/07	Report By: Employer's Agent	Signature:	
Work Element: Contractor: Kier Northern Subcontractor:Taylor	Area Pool Hall	Location/Room ID RG43	Safety Impact No	Environmental Impact No

Details & Description of Observation (Originator) Type 1,2,3,5

The competition pool deck drainage channel.

A grating frame has now been fitted and a deck edge tile installed to it.

a)The frame does not straddle the drainage channel symmetrically and hence fixing with screws are close to channel edge and are on a localised thick bed of render/mortar.
b)The frame and grating is thinner than the sample issued to the Employer.
c)The deck edge tile is too thick for the smaller frame rebate and is being sawn
d) The deck edge tile is being placed on a sand bed and the means of bonding it to the deck and the channel frame is unclear.
e) The Employer was asked for a colour preference for the frame and grating and chose blue to match the deck edge nosing, but white has been installed.

Indicate Type
1. Design Error
2. Materials Fault
3. Construction Error
4. Outstanding Works
5. Poor Workmanship
6. Damage
7. Vandalism
8. Environmental
9. Health and Safety
10. Management General
11. Procedural Failure
12. Other

Date sent to Contractor: 1/8/07

Kier Response (Including measures to prevent recurrence)

Details:

Name: **Date:** **Signature:**

Dumfries Council Close Out Comments

Name: **Date:** **Signature:**

3.54 In evidence to the Inquiry the Project Executive, also chair of the PMB, to whom the Employer's Agent had reported, expressed the view that in his belief the Council's interests in relation to the quality of project delivered had been protected by the form of contract.

> *"I believe that (the Employer's Agent) was doing his job but it was in the context of a very detailed legally binding contract which had taken many months to finalise and should have protected the Council's interests. There were also the consulting engineers that I have already mentioned who could be called upon as and when required".*

3.55 It is an observation of the Inquiry that on successful projects, when everyone is delivering what they undertook to provide, the contract is rarely looked at. Where this is not the case the terms of the contract must be actively enforced.

3.56 However, to do so when dealing with a large commercial contracting organisation requires; (1) the personal relevant experience and knowledge of the contract administrator, or that of support expertise, to know when delivery is not in accordance with the requirements of the contract and (2) good practical knowledge of and experience in the actual administration of the rights of the contract to insist on the removal and replacement of any defective work.

3.57 With the reduced site visits and uncoordinated use of the external expert resources as previously described; with the lack of opportunity for them to provide supportive involvement in direct communications with Kier; with the limited experience in the use of this contract and of building (as opposed to engineering) construction of the Employer's Agent; and with the other very significant work activities described as allocated to the Employer's Agent, it is perhaps not surprising that the contract was not adequately enforced in relation to dealing with the defects identified at time.

3.58 In evidence to the Inquiry a member of the PMB stated;

> *"I also recall that (the Employer's Agent) was working virtually on his own on the site".*

> *"He may have reported issues to the Project Board but equally, he may well have been told that "in terms of the contract, this should be dealt with administratively".*

3.59 The Inquiry formed the view that the arrangements which had been set up had placed the council officer appointed to undertake the role of Employer's Agent in a very demanding and very isolated position. Without adequate personal relevant building and engineering services construction knowledge and experience, it would have been difficult to effectively challenge the representatives of a large construction firm on the quality of their work in a situation where the contract was from an early stage already running late and was likely to attract liquidated damages.

3.60 In the evidence given by several witnesses, it also appeared to the Inquiry that a belief had developed within staff in the Council that the Employer's Agent had very little power to intervene because it was a 'design and build' contract.

3.61 However, under this type of contract If any work, materials or goods are not in accordance with the contract the employer's agent has three possible courses of action:

(i) issue instructions in regard to the removal from the site of such work, materials or goods

(ii) after consultation with the contractor, issue change instructions as are reasonably necessary to accept the defect, with no addition to the contract sum and no extension of time and/or

(iii) issue such instructions as are reasonable to open-up for inspection or to test to establish to his or her reasonable satisfaction the likelihood of any further non-compliance, with no addition to the contract price whatever the results of the opening-up.

3.62 The Inquiry is of the opinion that there was a lack of properly informed consideration given within the Council to the need for the appropriate level of expertise and support resource to act as the main point of formal contact with a large and experienced contracting organisation. This placed the appointed Employer's Agent at a significant disadvantage in seeking to protect the interests of the Council in dealings with the Contractor.

3.63 The Inquiry, however, is convinced that the Employer's Agent at all times, was applying his best efforts in the interests of the project.

4. Extended membership of the Project Management Board - May 2006

4.1 The first meeting of PMB following commencement of the work was held on **17th May 2006** and was also attended for the first time by a Director of Kier Northern, who had been invited to become a permanent member of the Project Management Board.

4.2 The explanation provided to the Inquiry for this invitation to Kier to have a member on the PMB, was that under the 'Prince 2' methodology it was generally expected that a representative of the 'senior supplier' would be a member of the Project Board.

4.3 On an on-going basis, as the building contract failed to progress in accordance with the programme, much of the agenda and business of the Project Management Board concerned the strategic management of the project, including taking decisions aimed at protecting the contractual interests of the client. This naturally included discussions as to how to respond to any potential on-going failings or contractual disputes with the contractor.

4.4 It is certain that like all such organisations, Kier Northern would have held their own project management meetings to discuss their company's strategic and operational approach to the on-going management of the contract, so as to protect their company's commercial interests, and to which meeting members of the Council's PMB would certainly not have been invited.

4.5 There is clearly a need for regular focussed meetings to be held between the client's project team of professional representatives and the contractors on all major projects. Unfortunately, in the case of DG One, the client team at such meetings would appear to have been only the Employer's Agent.

4.6 However, the invitation for a representative of the main contractor to become a permanent member of the Council's Project Management Board, and to attend meetings where, amongst other things, discussions were taking place on the strategic approach and response to the management of that builder's performance, was in the opinion of the Inquiry taking the Prince 2 approach to an inappropriate extreme.

4.7 There was an assumption implicit in this arrangement that the interests of the contractor and those of the Council were the same. Unfortunately, the evidence of the sub-standard construction of many elements of this project indicate that this was not the case.

4.8 The way that 'Prince 2' is applied to a project will vary considerably, and it is recognised that tailoring the method to reflect the context and circumstances of a particular project is critical to its successful use.

4.9 It is apparent from the records of meetings of the Ad-hoc Sub-Committee that within the Council a very significant reliance was being placed on the assurance perceived to be provided by the adoption of the 'Prince 2' methodology for managing the project.

4.10 Prince 2 should be viewed as simply providing an organisational model, structure, processes and discipline for the management of projects. It is not in any way a substitute for informed decision-making, appropriate expertise or effective independent quality assurance.

5. Initial report of delays to the general progress of the works - November 2006

5.1 In relation to the general progress of the works, delays against the construction programme started to occur as early as in the latter half of 2006.

5.2 In **November 2006** it was reported at PMB and to the Ad-hoc Sub-Committee that the block and brickwork walls to the main sports hall were two weeks behind schedule with key elements of the pool hall construction up to three weeks late. Concerns were also noted about the quality control measures that Kier Northern had in place, particularly in relation to the structural steelwork.

5.3 By **January 2007** the project was running several weeks behind with indications showing that the project was not expected to meet the scheduled completion date of end of September 2007. The main factors contributing to the delay related to the external works, particularly the structural steelwork, roofing and building envelope.

5.4 By **March 2007** the programme was reported as being nine weeks behind schedule. A series of meetings were called with Kier Northern and proposals sought as to how any unavoidable delay to the completion of the project could be minimised.

5.5 The PMB, at its **April 2007** meeting, noted that a letter dated 23 March 2007 had been received from Kier Northern containing formal notification that the contract was running beyond the then current Contract Completion date of **28 September 2007** by approximately **13 weeks**, giving a projected completion date of 28 December 2007.

5.6 In the letter Kier Northern had sought, with reference to specific contract conditions, "an appropriate extension of time and the fixing of a new Contract Completion date".

5.7 Further they requested that the Council contribute to the additional costs associated with a proposal to introduce methods to accelerate the works, with the adoption of which, Kier Northern proposed a revised Contract Completion date of 9 November 2007, six weeks later than the then current Contract Completion date.

5.8 Kier Northern presented the main cause of delay as;

> *"Our inability to secure appropriate levels of specialist skilled labour and materials, namely; structural steelwork, roofing and cladding, due to our sole dependency upon a locally based sub-contractor T.A. Kirkpatrick to design, fabricate, and supply those materials and then install the same in accordance with our master programme.*

5.9 They considered these factors to constitute a 'Relevant Event' under the contract entitling them to an extension of time.

5.10 In evidence to the inquiry the former Managing Director of T.A. Kirkpatrick stated that in his opinion the lack of available developed detail design drawings had been a key contributory factor to the problems they faced in undertaking the sub-contract.

> *"I should say at the beginning that the major problem that we as subcontractors had was a lack of design detail provided…….. When we began, we were given merely a footprint and basic design which had yet to be further developed by WSP. Indeed, even at the conclusion of our involvement in this project we had still not yet received full design drawings"*

> *"Anyone involved in the manufacture of structural steelwork would agree that there needs to be a full set of design details available from the outset of a job. It is certainly the case that with a design and build contract there is pressure to get on site quickly even if the designs aren't yet complete".*

5.11 The Council refused this request for a change to the completion date as the PMB considered that no 'Relevant Events' under the contract had occurred. The request for a contribution to acceleration costs was similarly refused.

5.12 A key purpose behind the request from Kier Northern for an extension of time would have been to reduce the financial impact of the potential application of liquidated damages by the Council for any period of delay beyond the Contract Completion date. The PMB examined a number of approaches as to how they would address the issue of liquidated damages.

5.13 These were presented for consideration at the next meeting of the Ad-hoc Sub-Committee on 24 April 2007. As an incentive to encourage no further delay, the meeting agreed to discuss with Kier an option involving the waiving of damages incurred by Kier for completion during the first six weeks after the current contract completion date, but for every extra week delay over the six weeks, the introduction of a sliding scale to re-claim the amount of damages waived.

5.14 This attempt by the PMB to incentivise Kier to put every effort into finishing the building as quickly as possible would subsequently be adopted but become irrelevant as the delay grew from weeks into months.

6. Untimely issue of project initiation document - August 2007

6.1 On 1st August 2007, more than a year after the commencement of construction, a Project Initiation Document (PID) was issued by the Project Manager/ Employer's Agent defining the project, describing the roles and organisational relationships of participants under the Prince 2 methodology and the basis for both the approach to the management of the project and to the future assessment of its overall success.

6.2 Under the Prince 2 methodology, this document, as its name suggests, should have been produced at the initiation of the project. Its practical value at this stage was questionable.

6.3 The document, prepared by the Employer's Agent, set out the aspirations for the project and described a comprehensive list of mechanisms that were intended to ensure that the quality objectives for the project were achieved. Much of the quite lengthy document appears to be describing management theory rather than reflecting the reality of the history of the development and the then current position of the project.

6.4 In practice, at this stage, the factors influencing the quality of the project and its culture had unfortunately already been largely determined.

7. Further delays to the project completion - August 2007

7.1 At the PMB meeting on **24th August 2007**, which was attended by a senior representative of Kier Northern in his role as a formal member of the Board, it was noted that the programme of works had slipped further behind schedule and indications were that the new completion date would now be **12 December 2007**. The Kier Northern representative advised that these delays had been caused by problems with the steel frame, cladding, roofing and inclement weather conditions.

7.2 The meeting also referred to an on-going lack of communication from Kier in response to a range of concerns raised by the Council at client meetings and it was agreed that the Employer's Agent would meet the management team of Kier Northern later that day to go through in detail the schedule of Council's concerns.

7.3 On **30 August 2007**, the new Council, following its election in May, approved the re- establishment of the Leisure Complex Ad-Hoc Sub-Committee to continue overseeing the work of the PMB and the completion and opening of the new leisure centre.

7.4 Over the next few months there was a repeated sequence of failures to meet continuously revised projected target dates.

7.5 On **26th September 2007** a revised target completion date of **20 December 2007** was reported by Kier Northern. The Council formally notified Kier Northern on **2 October 2007** that they had missed the completion date of **28 September 2007**.

7.6 At the PMB meeting on 24th October 2007, also attended by a Kier Northern representative, it was reported that Kier Northern were proposing a further delayed target completion date of **11th February 2008**. At this meeting concerns were expressed by members that, at this late stage of the project, a commissioning team for the building had not yet been put in place by Kier Northern.

8. Council decision to recover liquidated damages from Kier - November 2007

8.1 At the PMB meeting on **30th November 2007**, the importance of putting a Commissioning Team in place as soon as possible was stressed. It was also noted that a formal letter would be sent out the following week to Kier Northern advising them of the Council's intention to recover liquidated damages. Discussions were held in relation to any impact on the Council's right to recover liquidated damages if the Council decided to take partial possession of the building as was being offered by Kier Northern.

8.2 The old Dumfries swimming pool was finally closed on **22 December 2007**, several months before the new centre would be able to open.

8.3 By **January 2008** it was clear that Kier would not meet the 11th February 2008 completion date. The revised target completion date slipped further to 29 February 2008 and again to 14 April 2008.

8.4 At the PMB meeting on **4th February 2008** it was agreed that the Employer's Agent should advise Kier Northern that it was intended to withhold liquidated damages from payment of the January invoice received from Kier.

8.5 However, this course of action was amended at a meeting on **14th February 2008** when it was instead decided that the current invoice from Kier Northern should be paid in full and that an invoice for damages for the period up to **31 December 2007** be issued to Kier Northern. Accordingly, a letter was sent on **15 February 2008**, proposing to deduct £101,010 in respect of liquidated damages.

9. Even further delays to the completion date - February 2008

9.1 At the same meeting on the 14th February 2008, it was noted that repairs, required to make good damage caused to the hardwood floor in the sports hall by a leak from the sprinkler system, would not be completed in time to allow the handover of the sports hall before the end of March.

9.2 It was also noted that slippage had occurred in the inspection programme issued by Kier Northern on 23 January, and that of the three areas offered only one of those areas had been inspected as being nearly ready. This meant that Kier Northern would not have all areas completed by 29 February 2008. Concerns were also expressed about the number of issues identified by the Council during the snagging process that Kier Northern had not been fixing without further prompting.

9.3 At a meeting of the PMB on 27th February 2008, further concerns on the quality of construction were reported. The commissioning process for the main and training pools had highlighted a fault to the pool channels and frames, apparently caused by poor workmanship. Extensive remedial works were required to repair the fault which involved removing tiles around the pool surround. This meant a further three-week delay to the completion of the pool commissioning period and the pools not being ready until 23 March 2008.

9.4 Concerns were expressed that Kier Northern had failed to pick up on the fault during their own inspection process. It was noted that the Council's Clerk of Works had previously raised his concerns about the workmanship associated with this defect.

9.5 The meeting noted the Council's concerns that they had no confidence in Kier Northern actually meeting the **23 March 2008** completion date, given the past experience of Kier Northern missing previously announced deadlines.

9.6 At a meeting of the PMB on **12th March 2008**, the Kier representative advised of further slippage in the programme and that the revised target completion date was 14th April 2008.

9.7 It was also confirmed at the meeting that the first event to be held in the building was scheduled to take place on **25 April 2008**, which was to be a concert by Dumfries Male Voice Choir. Given the amount of outstanding work still to be done in the facility, it was unlikely that the building would be ready for public opening on that day. It was agreed that the concert on 25 April should go ahead as a one-off event but that the organisers should be made aware that they would only have access to the hall and front of house areas.

10. Decision by the ad-hoc sub-committee that a post-completion review of the project should be produced - March 2008

10.1 At a meeting of the Ad-Hoc Sub-Committee on 13th March 2008, the Members requested that a project review report should be produced after completion. In addition to the review of the finished building it was requested that it also encompass the impacts on the local economy, the strengths and weaknesses of the contract approach adopted by the Council and the strengths and weaknesses of the PRINCE2 Project Management Methodology as applied and as it related to the contract approach adopted.

11. Approval of building warrants at end of project rather than before work began - March 2008

11.1 Surprisingly, the records show that it was only on **28th March 2008**, during the very final stage of construction, that Kier Northern received approved Stage 2 and Stage 3 Building Warrants from the Building Standards Department of Dumfries and Galloway Council. These warrants related to all elements of the superstructure.

11.2 It was, and still is, a legal requirement in Scotland that construction should not commence without the formal issue of building warrants. This requirement appears to have been disregarded by both the Council and the Contractor. In effect without an approved building warrant drawing, there is no way for a building standards inspector visiting the building or for anyone else to confirm that what is being built is satisfactory and will be approved.

11.3 The contractor had first submitted applications for these two warrants **some two years earlier** on 22nd June 2006 and 7th August 2006 respectively. These staged submissions were made at a time which should just about have allowed approval to be granted before construction of the areas that were the subject of the warrants was commenced.

11.4 Due to retirements in the intervening period in the Building Standards Department and limited information in the Council records, the Inquiry was unable to ascertain why it had taken almost two full years to approve these warrants. In evidence to the Inquiry it was suggested that resources at the time were very stretched and there had been major difficulty in recruiting professionally qualified surveyors, who would be willing to move to Dumfries.

11.5 In order to provide a service, the requirement for all officers to have a professional surveying qualification had to be relaxed with staff with the lower HNC qualification being recruited to do building inspections, allowing the qualified staff to focus on approving design warrants.

11.6 The use of the staged warrant approach, which allows construction to start on the earlier phases of construction, while the detailed design is still being produced for following phases, relies on the relatively efficient submission and approval of the design warrants for the next phase so as to allow the natural progress of the work on site. If the further stage warrants are delayed for either technical or resource reasons, under current legislation in Scotland, the contractor should not proceed with the next phase until a warrant is granted.

11.7 In effect, the practical and commercial implications of this are such that it is likely that most contractors will continue with the next phase although to do so constitutes a breach of the regulations. This system puts a significant pressure on Building Standards Departments to

11.8 In evidence to the Inquiry concerns were expressed about the current level of professional staff resources available within the Department position of the Building Standards and its on-going ability to meet the demands for its services. This situation is currently not uncommon in Local Authorities in Scotland.

11.9 In the opinion of the Inquiry, the failure of the Council at the time to comply with the requirements of a system that is administered by itself, and against which it holds others to account, could not be considered as acceptable practice.

11.10 There is a need to review the organisational model, the training and qualification needs, salary structures, career development opportunities and the staffing complement required to provide the high-quality Building Standards service necessary to deliver the primary aim of the current legislation which is to protect the safety of building users.

11.11 The Inquiry acknowledges that efforts were made to improve the service within the Council and the Dumfries and Galloway Building Standards Department would subsequently win a national award for the quality of their service in 2010, just two years later.

12. Further technical problems and the offer of practical completion of the building by Kier - April 2008

12.1 It was reported to the PMB on the 2nd April 2008 that the Council had received payment from Kier Northern of their invoice for the first tranche of liquidated damages in the sum of £101,010.

12.2 At a PMB meeting on the 9th April 2008, a number of problems were reported in relation to the pool design and construction. The most significant of these was in relation to the adequacy of the installed drainage system to deal with the backwash water re-cycling process that had been incorporated into the pool design.

12.3 A second significant problem had been identified in the leisure pool, where it appeared that water had been leaking into the screed below the mosaic tiles. This had necessitated a full drain down to start the process of investigation and remediation. It was suspected that the leak was coming from pipework at the screed level. Further water leakage had also been identified in the area of the Spa pool.

12.4 At a PMB meeting on 18th April 2008, the Employer's Agent reported that he had received an email from Kier Northern indicating that they would be in a position to offer the Council practical completion of the project on 21 April 2008 with the exception of the following areas;

- Competition pool
- Leisure pool
- Training pool
- Health suite
- Pool plant room
- Pool store 3
- Ground floor changing village

12.5 With the exclusion of these core areas, this offer would appear to have represented much more of a 'partial possession' than a 'practical completion' as it did not provide full beneficial use of these core elements of the building.

12.6 However, it was agreed at the PMB meeting that confirmation needed to be sought from the Council's external Architectural and M&E consultants that they were satisfied that the work met the contract requirements before the Council could agree to practical completion. The Employer's Agent undertook to contact them as a matter of urgency.

12.7 It was further agreed that, dependent on the advice received from the consultants, and in order that Leisure and Sport staff could become fully familiar with the building management systems, the Council would agree to take partial possession on **21 April 2008 of only the sports hall and adjacent areas to allow the Dumfries Male Voice Choir (DMVC) event to go ahead on 25 April 2008**. The handover of the remainder of the facility would be discussed with Kier Northern.

12.8 There is no evidence in the minutes of the remaining meetings of the PMB up to the date of full handover of the facility that any confirmation of compliance of the works with the contract requirements was received from the architectural and mechanical and electrical professional advisers; Hypostyle and Desco respectively.

12.9 A letter to the Inquiry from a Director of Hypostyle who had been involved in the project stated that Hypostyle did not certify design and specification compliance on the project.

12.10 On **25th April 2008 the Chair of the PMB**, who was also Corporate Director of Corporate Services within the Council, wrote to Kier Northern, **retrospectively confirming** that the Council's access for installation of equipment to the 'fitness suite' **from 27th February 2008**, and to the Sports Hall and related 'dry changing and associated stores' **from 23rd March 2008** should be considered under the contract as partial completion by the Council of these specific areas with effect from the respective dates.

12.11 Under the contract, with this issue of acceptance of partial completion, entitlement to liquidated damaged for non-completion for those areas of the building taken over by the client would no longer be due to the Council from each of those dates forward.

12.12 This retrospective letter was the only formal contractual notification issued by the Council in relation to these earlier partial possessions.

12.13 There does not appear to have been a statement issued by the Employer's Agent, acting in his formal contractual capacity, confirming that the areas in question had been inspected and accepted by the Employer's Agent as practically complete in accordance with the contract. In the circumstances, however, it would be reasonable to assume that the statement of partial completion was issued with the knowledge and agreement of the Employer's Agent.

12.14 The Royal Incorporation of Chartered Surveyors (RICS) guidance note, Employer's agent: design and build. UK 1st edition, October 2017 states in relation to this issue.

> *"Establishing whether the works are practically complete is one of the most critical duties that the employer's agent carries out".*

12.15 It is not clear as to the rigour of the inspection regime applied by the Employer's Agent or by site inspectors prior to the issue of the above letter; or as to whether any qualifications were applied in relation to the outstanding defects in the areas taken over.

12.16 There was clearly an urgency on the part of Council officers to take over the building even though evidence to the Inquiry and the length of the uncompleted snagging lists would suggest that there were still quality problems in many parts of the building. The decision to take partial possession of the specified areas of the building relieved the pressure on Kier to immediately deal with these defects as the Council no longer had the right to apply further liquidated and ascertained damages in relation to these areas of the building.

13. The issue of a temporary occupation certificate and failure to gain the legally required building standards notice of acceptance of building completion certificate - April 2008

13.1 Before the new building could be occupied by the public, totally separate from the need for a contractual statement of practical completion from the Council as client, it was a legal requirement to have had a Notice of Acceptance of Completion Certificate issued by Building Standards. In certain circumstances, the issue of a Temporary Occupation Certificate (TOC) is used to facilitate temporary use.

13.2 These certificates are required to confirm that buildings have been assessed by the relevant authority as being satisfactorily compliant with statutory building standards and therefore assumed safe for use by the public. The issue of a TOC only provides a time-limited approval in this regard.

13.3 A Temporary Occupation Certificate (TOC) was issued by Dumfries and Galloway Building Standards on **21st April 2008**, the same day that a further partial possession statement for the dry side of the facility had been issued and four days prior to the holding of the first public event, the concert by the male voice choir.

13.4 The TOC covered only the very limited period from **18th April 2008 to 18th June 2008**, by which date the full Building Standards Notice of Acceptance of Completion Certificate would have been expected to be issued to allow the legal use of the building by the public. **No such certificate or extension to the TOC was issued on its expiry in June 2008**.

13.5 Although the new building would be in full public use from **28th May 2008**, it would not be until **12th November 2008** that Kier Northern submitted a Completion Certificate to Building Standards for approval and not until **12th June 2009**, that such a Notice of Acceptance of Completion Certificate for the building would be approved by the Building Standards Division of Dumfries and Galloway Council.

13.6 This in effect meant that the on-going use of the building by the public, during the period from June 2008 to June 2009, was in contravention of the requirements of the Building (Scotland) Act 2003.

14. Issue of the statement of practical completion - May 2008

14.1 At a PMB meeting on **30th April 2008**, it was agreed that Kier Northern should be advised, subject to the promised resolution of any outstanding Health and Safety concerns, that the Council was now prepared to accept handover of the pool areas, with the exception of the spa pool and the flumes. It was also agreed that the Council should now accept responsibility for the whole complex and that the elected members should be advised accordingly.

14.2 At a meeting of PMB on the **7th May 2008**, it was reported that a number of further defects had been identified. Since the competition pool had started to be used it had become apparent that water was leaking into the plant room from the pool channels. Also following inspection by the Council's independent Health and Safety advisor, the Client had on-going concerns about the stability of the flumes.

14.3 However, the PMB agreed that, subject to the issues surrounding the load bearing capacity of the flumes, the spa pool area and plant room being resolved, that practical completion of the building could be accepted on **Friday 9th May 2008. This represented a delay of more than seven months on the specified Contract Completion date**.

14.4 The practical completion of the works was accepted by the Council on **9th May 2008** in the form of a letter signed by the Chair of the PMB. There was no separate signed statement of practical completion issued by the Employer's Agent as would have been the more standard approach. The letter stated;

> *"In terms of Clause 16.1 of the Contract I hereby state on behalf of the Council as Employer, that with effect from today May 9th2008, the Works have reached Practical Completion and that Kier Northern have complied with Clause 6A-5-1".*

14.5 The issue of a statement of practical completion should be based on the results of a detailed inspection of the works and the proven testing of all installations therein. It is one of the key contractual responsibilities of the Employer's Agent in a Design and Build contract that prior to accepting practical completion he or she must take all reasonable steps to ensure that the building has reached a satisfactory state of completion, except for minimal defects, and is safe and ready for occupation. This requires informed and structured professional assessments of all aspects of the building.

14.6 Whilst there was clearly an increasing pressure from Council members to have the building opened, the extent of problems within the building would suggest that it was premature to issue the Statement of Practical Completion until these issues had been properly inspected and resolved. Subsequently major widespread defects to the fire-

stopping in the building would be identified to an extent that could have been readily identified by relatively brief inspections. These defects alone should have prevented the issue of the statement of practical completion.

14.7 The reference to Clause 6A-5-1 of the contract in the above letter relates to the contractual requirement to provide the client with a health and safety file in accordance with the Construction Design and Management (CDM) Regulations.

14.8 Many of the reports provided to the Inquiry of the subsequent investigations required to address the serious defects discovered in the building, refer to omissions, inadequacies and inaccuracies in the compilation of the necessary information about the design, construction and operation of services in the building as provided in the health and safety file.

14.9 It is the role of the Employer's Agent to make reasonable investigations to confirm that these documents are complete and sufficient to allow the safe and effective operation of the building by the Council.

15. Payment of the second tranche of liquidated damages by Kier - May 2008

15.1 On 9th May 2008, a cheque for the second tranche of liquidated damages was received from Kier Northern in the sum of £62,160.

15.2 In an attempt to reduce the balance of liquidated damages that they would still have to pay, Kier Northern again requested a revised completion date based on a series of what they interpreted to be relevant events, including the same three causes that they had put forward in an earlier refused claim i.e. failure to secure skilled labour; failure to secure required materials; and excessively inclement weather.

15.3 They were notified by letter dated 22nd May 2008 that the Council did not consider that the circumstances put forward in their claim were "fair or reasonable to allow any extension of time beyond the original completion date".

15.4 The Council subsequently deducted the final balance due of liquidated damages in the sum of £50,341 from the balance of payments to be made to Kier in finalisation of the contract. In total therefore £213,511 would be recovered by the Council in the form of liquidated damages.

15.5 On 28th May 2008 the new DG One was eventually opened to the public.

15.6 On 10 July 2008 the PMB noted that limited progress had been made to date to resolve outstanding issues contained in the snagging lists issued by the Employer's Agent. The ongoing identification of new defects was also recorded.

15.7 It was also noted that discussions were still ongoing with Kier Northern about finalising their sub-contractor collateral warranties, a requirement of the original contract. It was agreed that all of these should be in place before the Council would release the remainder of retention monies to Kier Northern. The final completion of these collateral warranties would not be achieved until 2016.

15.8 The official opening of the new building, now formally named DG One. was performed by HRH Princess Royal on 29 September 2008.

16. The early emergence of problems in the completed building - August 2008

16.1 At a meeting of PMB on 7th August 2008, only three months after the statement of practical completion had been issued, concerns were expressed about the lack of progress on snagging items by Kier Northern and also the number of problems already being experienced in the DG One building. The minutes of the meeting listed the following:

- The pool 'backwash' system that had been installed was viewed as not fit for purpose
- Many stained or broken ceiling tiles required to be replaced
- Problems were being encountered in using the health suite
- Flumes in the leisure pool had been out of action for 2 days due to necessary remedial works
- The moveable floor required on-going repairs
- Problems regarding air conditioning were evident throughout the complex
- The retractable seating required repair
- Investigations were on-going in relation to the chemical dosing system
- Leaking shower heads remained a problem, despite changes to water pressure
- There were concerns about the grade of steel used on pipework throughout the complex
- Difficulties were being experienced in maintaining the rainwater recovery system
- There were problems with the flooring in the Sports Hall

16.2 This early evidence of a range of diverse problems associated with the design and construction of the building was the start of a pattern of discovery of further and more serious problems, the cumulative effect of which would eventually lead to the Council deciding that it had no recourse but to close the building in October 2014, only six years after its opening.

16.3 In this section there has been an exploration of a series of reasons as to why the defective work was not identified and rectified during the construction process, including the potential ineffectiveness of the measures used by the client to seek to ensure the quality of the finished building.

16.4 This should in no way disguise the fact that the full responsibility for the defective construction lies with the contractor who was responsible both for its design and construction under the form of contract used.

16.5 The Council had decided to place that full responsibility with Kier, no doubt relying to some degree on the scale of the company and its previous experience in the construction of much more complex buildings than the DG One Centre as indications of their competence to deliver a quality building. In this case that reliance would subsequently be found to have been misplaced.

Section 6 – Chronology 3

The Discovery of Defects and the Enforced Closure of DG One

The period from the opening of the leisure centre up to the financial settlement with Kier Northern

In accordance with the stated requirement of the Ad-hoc Sub-Committee, a review of the project was undertaken, and a report of its findings presented to the Sub-Committee in **December 2008**, only 6 months after the completion of the building. The review was intended to examine the effectiveness or otherwise of the approach that the Council had adopted in their management of the project. This review, undertaken largely by the team involved in delivering the project, would of course predate the discovery of more major problems relating to the quality of design and construction achieved and was too early to properly assess; (1) the overall functionality of the building; (2) its compliance with the energy efficiency targets required in the brief; and (3) the achievement of the wider strategic objectives that had been set for it.

1. In-House review by the council after completion of the project in November 2008

1.1 The report sought to present an assessment of the success or otherwise of the implementation of Prince 2 Management Methodology and the Design and Build contract in terms of their effectiveness in the delivery of the required quality, cost and time objectives.

1.2 The review, somewhat disappointingly, does not appear to have applied significant analysis on the lack of effective control over quality, about which, from the evidence of the previous section of this chronology, concerns had been very much to the fore throughout the design and construction period. Rather it would appear to have somewhat under-played those quality problems that had already been encountered during construction and of which more were already becoming evident in the recently opened building.

1.3 The Council's original aspirations for the project had set high quality design and strategic development objectives. They included;

> *"To create an integrated, attractive, multi-purpose leisure centre with low maintenance and operating costs which would "grow old gracefully"*
>
> *"The Complex, would be a regional centre of sporting excellence for Dumfries and Galloway and was expected to be of high design quality that would capture the imagination of all ages and be a real source of local pride. As such it should act as a catalyst for the regeneration of Dumfries Town Centre and should reflect the objectives of the Dumfries Town Centre Strategy and Action Plan 2004-2014".*
>
> *"The building should remain of high quality and be economical to operate throughout its designed working life, of not less than 40 years".*

In relation to the level of achievement of these quality objectives, the findings of the in-house Nov 2008 review included:

> *"As this report makes clear, this was a lengthy, complex and at times difficult project. In a number of respects, including keeping within budget and attracting external funding, it was a successful project and most importantly the end product is a high-quality modern leisure facility which will be enjoyed by local people and visitors for many years to come".*
>
> *"The final Contractor design and installation met the broad requirements of the Client Brief. The areas of minor design shortcomings or defective installation have been, or are being, addressed during the current contractual correction period, which extends until May 2009".*
>
> *"Particular areas of inadequate performance have occurred in the swimming pools in relation to water circulation, treatment, drainage and recovery processes, although not to the extent that customer usage has been significantly impaired. These are still the subject of active discussion with the Contractor and rectifications are ongoing to achieve a reduction in staff resource and consumable usage to the desired efficiency levels".*

1.4 In evidence to the Inquiry the Council's Operations Manager for Leisure and Sport, and a full member of the PMB, was somewhat more critical, stating in relation to his perception of the quality of the building;

> *"My impression once the facility was actually opened was that it was adequate. But it remained a battle even after opening. The pools leaked and the plant rooms flooded. Tiles were popping off the swimming pools. We had anticipated half a million users a year and we did get that number for a few of years so to that extent, the project was a success. However, in those first couple of years all the tiles in the leisure pool had to be replaced. Other problems emerged very quickly. Some of these were caught during the snagging period but as time went on, more and more issues were identified".*

1.5 In relation to time objectives the Nov 2008 review did acknowledge the poor performance of the contract, which had resulted in an over-run of 31 weeks, approximately 37 % of the original contract period, but slightly dismissively stated that *"such delays were not uncommon in major projects"*. The report refers only briefly to the additional extensive time delays in the development and management of the project from its inception in 1998, prior to procurement and commencement of the contract on-site.

1.6 In relation to cost control, the Nov 2008 report stated that as the Client had made minimal changes to the project requirements, these were able to be accommodated within the project contingency allocation, allowing the project to remain within the Agreed Contract Sum. This was attributed in the report to the fact that under the Design and Build contract most construction related risk and hence cost variation risk had been transferred to the Contractor.

1.7 The lowest tender that had been received for the project was some £3 million over the pre-tender budget, and according to the Director of Finance, £1.8 million over budget if legitimate adjustment was made for inflation.

1.8 The lack of realistic cost-planning and reviewing of pre-tender estimates for the cost of the works to facilitate the setting of an appropriate budget by the Council was not discussed in the review.

1.9 It would appear that the management focus on the project was largely cost driven, resulting in a strong self-imposed discipline of not seeking changes to the contract. Evidence to the Inquiry suggests that this led to a situation in which to a very significant extent the Contractor was allowed to implement his interpretation of the contract documentation without major questioning or interference by the client. The Council's Operations Manager stated in evidence;

> *"Every time we raised concerns we were told "unless you want a contract variation you will just have to sue us as that is our interpretation of the contract". That was typically the kind of response we would get on site once the contract was under way".*

1.10 The Nov 2008 review stated that the total cost of £12.67m represented good value for money, in that National Building Cost Indices based on a rate per square metre of floor area for leisure and sports facilities including swimming pools were reported as being some 17% higher than that obtained for the Leisure Complex.

1.11 The in-house review did not consider whether the comparatively lower pricing in the tender submitted by Kier Northern could have impacted on their ability to deliver the required quality in implementing the project. As previously stated the Project Manager / Employer's Agent in evidence to this Inquiry said:

> *"My impression was that they had under-priced the job and simply wanted to get it done, get the sub-contractors in, out and away from site".*

1.12 If the project was considered as having been under-priced at £12.67m, this would put the appropriateness of the Council's pre-tender budget of £9.5 million into even starker contrast.

1.13 The potential impact of this focus on minimising costs on the quality standards achieved was perhaps evident in the following statement by those undertaking the Nov 2008 review.

> *"Despite the presence of monitoring teams, quality standards were not always achieved. Although potentially conflicting with the aims of the contractor's own self policing quality system, a greater Client monitoring resource may have improved this situation, but with a corresponding increased cost"*

1.14 Two important nuances, which could have influenced the Council's management approach to the contract, are perhaps evident in this statement.

1.15 Firstly, that there had been a concern on the part of Council officers that having independent professional scrutiny by their own staff or others could potentially remove some of the responsibility from the contractor for ensuring the quality of the project and thus bring risk back to the client.

1.16 Secondly, the last sentence of the statement would suggest that avoiding the additional cost of greater client monitoring may have been considered more important than investing in such additional cost to help protect the quality of the project.

1.17 The Nov 2008 review stated that it was clear that the form and terms of the building contract were the prime influence on how the project performed. In doing so, there was perhaps recognition that the Prince 2 methodology, in itself, did not give the level of assurance implied by the numerous references by officers to its use, as reported at and recorded following almost every meeting of the Ad-hoc Sub-committee throughout the project. The Nov 2008 report stated;

> *"The application of the PRINCE 2 project management and the project governance model ensured that the project was properly planned and monitored, but once the Design and Build Contract was in place the Council's direct influence over the management of the construction project was very limited".*

1.18 The focus of the conclusions of the review, in relation to lists of both strengths and weaknesses, was very much on how time and cost objectives were managed. The quality of the building, which was the only of these three factors that would continue to matter over the life of the building once it had been completed, was virtually unmentioned in these conclusions.

1.19 A final section of the Nov 08 report included a post-contract commentary by Anderson Strathern Solicitors on the choice of procurement route and contract form used. The conclusion of their analysis was as follows:

> *"In conclusion, the Council protected its position under its contractual relationship with Kier. Both the procurement route itself and the terms of the contract were set up to protect the Council against overrun in costs and delays. The fact that the Council have been able to deflect claims by Kier and recover liquidated damages from them, indicates the strength of the Council's position".*

1.20 There is no reference in this conclusion to the effectiveness or otherwise of the choice of procurement model in relation to ensuring the quality of construction actually achieved, although, at the time of the report, the full extent of defective construction had not yet been discovered.

1.21 The ability to recover damages is little compensation for not having a building of the standard required.

1.22 The commentary by Anderson Strathern Solicitors included their perceived explanation as to the basis on which the Council's original decision to adopt the Design and Build procurement route had been taken.

> *"This was so as to (firstly) satisfy the requirement of cost certainty and (secondly) the design and build route may be more time efficient as it allows the design to be worked up while the building is being built. This satisfies the programming requirements. With in-house expertise within the Council, the issue of quality could be controlled with input into the development of the Employer's Requirements and the Contractor's Proposals so as to ensure that the Council was acquiring what it expected to for its budget. This route would suit the needs of the Council to acquire all the elements of the sports hall and pool that it could afford".*

1.23 This statement fails to recognise that simply having input to the Employer's requirements and being able to some degree to influence the Contractor's proposals, does not ensure that during the subsequent design development process, and more significantly during construction, the Contractor will deliver the specified or required quality. Assumptions in relation to firstly the availability of appropriate in-house expertise and secondly, what the actual level of involvement of in-house expertise in the project would be, were perhaps over-optimistic.

2. Problems experienced in use of the building in its first year of operation - October 2008

2.1 At a meeting of PMB on 21st October 2008, concerns were expressed about the quality of a range of mechanical and electrical installations in the building, particularly *"concerns as to the overall quality of plumbing work that had been carried out"*.

2.2 It was agreed that PMB needed to further consider;

> *"which elements of the contract are not fit for purpose, such as the backwash system, and to assess what remedies are available to the Council to rectify these problems".*

2.3 Subsequently, in 2010, in relation to resolving the failed pool backwash water recycling system the Council wrote to Kier as follows;

> *"The Employer has accepted the Contractor's proposal to omit the backwash water recovery system, which constitutes a change to the Contract. This Works omission allows the equivalent Contract Sum Analysis value of £39,550 to be deducted from the Final Account, as no benefit can be attributed to the original installation still in-situ".*

2.4 Evidence from a number of witnesses to the Inquiry indicated that since the opening of DG One, there had been problems associated with the allocation of adequate funds by the Council to allow for the necessary contracts to provide the full range of required general and technical servicing and maintenance of what was a complex facility.

2.5 It was reported at the October 2008 PMB meeting that;

> *"Concerns had been expressed by Members at the SNP and Independent Group meeting on 20 October2008 relating to the standard of cleanliness of DG One".*

2.6 In addition to the reported underfunding of maintenance, several witnesses commented on the practical difficulty of carrying out some aspects of the necessary servicing and maintenance as a result of the layout and location of plant in the building. One example of this, mentioned by several witnesses, was the difficulty in gaining access to light fittings over the pool hall without the installation of significant scaffolding.

2.7 In the following months, more problems were experienced in using the building. Despite attracting excellent numbers of attendances by members of the public, quality issues in relation to the detailed design and construction of the building continued to create operational difficulties.

2.8 As an indication of the extent of these problems, a list of in excess of two hundred defects, ranging from minor to major, was compiled and issued to Kier Northern in January 2009. Amongst those repeatedly mentioned on this list were problems with leaks, damaged ceiling tiles, excessive water lying on floors, unacceptably high temperatures which were unable to be controlled in many parts of the building, inadequate ventilation to toilet areas etc., discolouration and signs of rusting on a wide range of metal fittings throughout the building, poor quality finishes, fading paintwork, loose fittings and a range of problems with shower and sanitary fittings.

2.9 The **final meeting** of the Ad hoc Sub-committee was held on **3rd December 2008** when the in-house report from the Post-project review was considered and its recommendations accepted. It was agreed that future monitoring of the project would be provided by quarterly performance reports from Leisure and Sport to both Nithsdale Area Committee and Resources Committee.

2.10 The **last formal meeting** of the PMB was held on **28th January 2009**.

3. Failure of the building to achieve the specified efficiency targets - March 2009

3.1 In **April 2009**, in a report to the Resources Committee on the performance of DG1, concerns were expressed in relation to the failure of the building to meet the expected combined annual energy costs of £151,000, as had been set out in the business plan, for water, gas and electricity. The actual costs of these services for the first ten months of operation were assessed to be £295,000, almost double the target annual figure.

3.2 In the full year performance report to the Resources Committee for the period from April 2009 to March 2010, it was subsequently noted that the financial out turn for DG One in its first full year of operation had resulted in an overspend of **£348,679**.

3.3 It was stated in the performance report that this overspend was;

> *"predominantly as a result of unit costs increasing significantly together with the fact that the initial business plan projections appeared in hindsight to be low".*

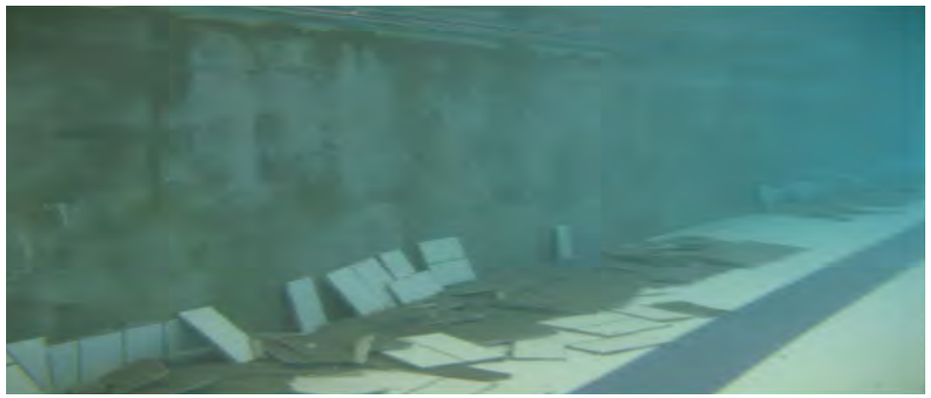
3.4 Subsequent investigations would indicate that weaknesses in the detailed design and/or construction of a range of elements in the building, including failure to properly install and protect insulating materials and to make the building airtight, contributed to greater operational costs than would have been expected if the performance standards set out in the Employer's requirements had been fully complied with.

4. Problems with tiling to the pools and with the floating floor in the teaching pool - August 2009

4.1 There had been on-going concerns about the quality of installation of the movable floor in the training pool since the opening of the facility. As early as at a meeting of the PMB on **21st October 2008**, it had been reported that the advice given by Sport Scotland on the problems with the movable floor was *"that in their opinion the floor in its current condition is not acceptable as fit for purpose"*.

4.2 In August 2009 a preventative maintenance condition survey of the swimming pools was commissioned from a specialist firm UPS Services in August 2009 resulting in the production of a report dated 25th August 2009. The report identified a range of problems including the debonding of areas of tiles from the walls and floors of the pools, deterioration of expansion joint materials and loss of grout.

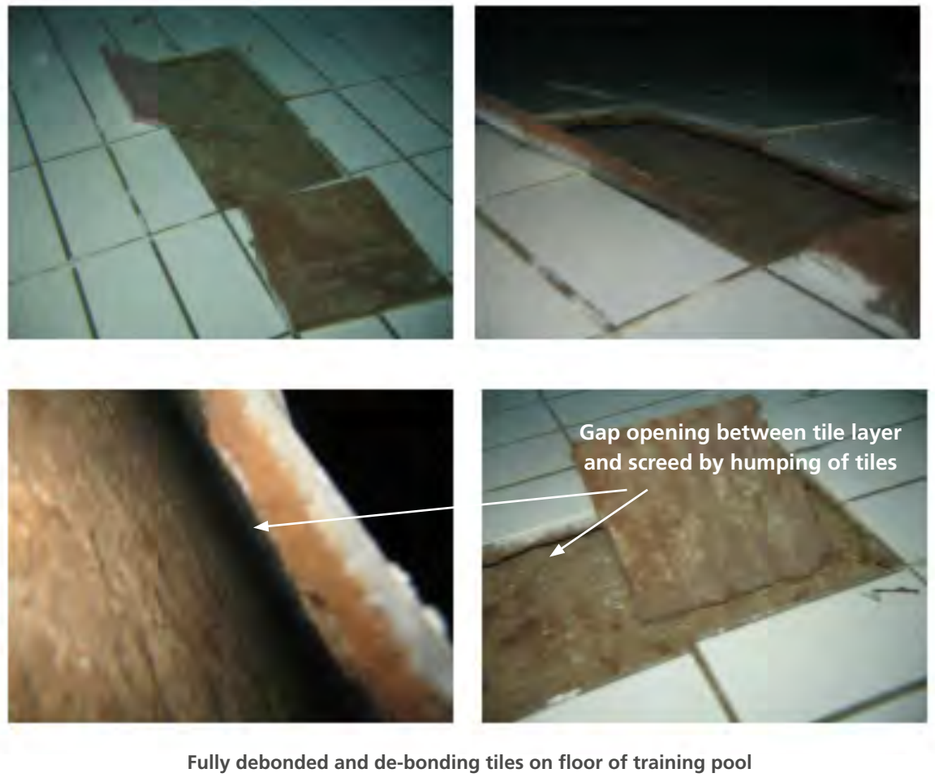
4.3 The following is an under-water photograph from a later report showing large areas of tiling de-bonded from one of the main swimming pool walls.



Tiles fully debonded from wall of main pool

4.4 Over the following period the same specialist firm was asked to undertake several inspections and repairs of defects to the tiling in the pools. One of these inspections of the training pool floor found there to be considerable signs of tile de-bonding to the base of the pool, which they considered to be in an unstable condition.

4.5 They reported that two areas of de-bonded tiles were lifting, which upon removal exposed the presence of excessive voids between the tiles and the background screed, resulting in extensive water ingress. The report also identified areas of calcium growth in tile grout joints throughout the base of the swimming pool, which it was suggested was potentially due to lime secretion from the existing adhesive/grout/screed, and a section of failing expansion joint.



Fully debonded and de-bonding tiles on floor of training pool

4.6 In conclusion the report stated that due to the extent of tile deterioration that was taking place within the swimming pool tank, water ingress may continue resulting in further delamination of tiling taking place. The exposure of areas of the screed, as a result of the de-bonded tiles having been removed, was seen as a potential cause of further failure of the screed. (See photograph below). The report suggested that these combined defects could result in total failure of the existing swimming pool tiling when the pool was drained down.

5. First closure of training pool - October 2009

5.1 Further serious failures associated with the installation of the movable floor ultimately resulted in the decision that Kier Northern would have to replace the movable floor. This necessitated the closure of the teaching pool to facilitate the necessary retiling.

5.2 The enforced closure of the training pool extended to a period of just over three months from **26th October 2009 to 31st January 2010**. The Council assessed that DG One lost in excess of £48,000 of income as a result of this period of enforced closure.

5.3 Kier Northern had been slowly attending to the list of defects as issued by the Employer's Agent, including the list of outstanding defects that had been identified within the contractually defined defects liability period that had ended on **9th May 2009**.

5.4 It was not until **19th March 2010** that the Employer's Agent found himself willing to issue to Kier Northern the "Notice of Completion of Making Good Defects". This certificate would normally be expected to indicate that at that time the client was satisfied

that all items on the list had been satisfactorily addressed. The issue of this certificate entitled the contractor to the release of all retention funds held by the Council under the contract.

5.5 However, the situation in relation to the condition of the external and internal fabric and fittings had continued to deteriorate, including perhaps most significantly, the increased failure of sections of tiling to the pool walls and the on-going leaking of the spa pool. These defects were reported regularly by staff working in DG One., causing damage to the areas below.

5.6 It was reported from inspections of the de-bonding tiles, that in many places a 10 to 15 mm empty void had opened between the tiles and the water-proofing layer on the render. Any defects in this layer would allow chlorinated water to permeate into the pool tank concrete walls and floors.

5.7 The evidence from the numerous reports that would be subsequently produced over the next number of months and years as part of various investigations would suggest that at this stage of the project there must already have been significant evidence of inherent failures in the construction of the building. These would have included critical areas such as omissions in fire-stopping, concerns as to the water-tightness of the pools, leaks from the spa pool into the changing village below, ongoing failures of pool tiling, excessive ponding on floors and significant corrosion to steel components throughout the building.

5.8 In these circumstances the Inquiry finds it difficult to understand the issue by the Council of the "completion of making good defects" notice.

6. Public attendances at the facility - 2009 - 2010

6.1 In **2009-2010**, the first full year of operation, **469,476** members of the public visited DG One. Despite the problems being experienced with the quality of construction, the very significant numbers of people using the building for health and leisure purposes, or to attend events, was a strong justification of the decision by the Council to build a facility with this range of facilities in Dumfries.

6.2 In **2009-2010** DG One had held a total of 81 events attracting 37,351 customers. The varied range of programmes offered by the facility had successfully appealed to a wide market with customers frequently traveling from widespread regions of the UK and staying overnight within the region. The DG One management team had received positive feedback from local businesses who had benefited from pre and post event secondary spending, thereby realising one of the strategic objectives behind the development.

6.3 A report on the performance of DG One was presented to the Resources Committee of the Council on **17th August 2010**. It concluded as follows:

> *"DG One is performing well in terms of customer numbers and income, which are both ahead of targets set for 2009-10. However, energy, servicing, staffing and administration costs are higher than projected. The popularity of DG One has created additional, albeit welcome, pressure and the facility's staff have been working to develop a quality, value for money service which exceeds customer expectations whilst delivering a service which meets the corporate objectives of Dumfries and Galloway Council".*

> *"Operating arrangements are now fully established, and customer satisfaction levels are high, but management and staff are aware of the need for continuous improvement and greater control of key aspects of expenditure to build and secure the reputation of DG One".*

> *"Following handover of DG One in 2008, the Council has been seeking to ensure satisfactory completion of outstanding snagging works".*

6.4 This statement, identifying the presence of outstanding snags in the building, was made by the Council in August 2010, yet the making good of defects certificate had been issued in March, several months earlier.

7. The preparation of an in-house professional and technical report on the on-going defects - March 2011

7.1 In **March 2011** investigations into the tiling defects were commissioned by the Council from a specialist firm, Underwater Pool Services (UPS). This confirmed the existence of extensive areas of loose tiles, chipped tiles and loss of grout from the tile joints in the main pool.

7.2 The Council's in-house Design Services group, on being advised of the extent and level of recurrence of these problems less than three years after completion of DG One, decided that they should undertake a more comprehensive professional and technical investigation of the building and produce a report for the Council. (This report will be referred to as the *'In-house 2011'* report).

7.3 These actions were initiated without having received a request to do so from the formal client within the Council for the building, which was the Leisure and Sport Department, also now responsible for managing the facility. In evidence to the Inquiry the head of Design Services at the time stated;

> *"I would clarify the report was not commissioned as such, but it was felt by the team to be appropriate to pull together all of the concerns that we had identified up until that point. We emphasised that the report could not be considered comprehensive as much intrusive work would have to be undertaken to build a comprehensive picture of the extent of design and construction deficiencies.".*

7.4 Simultaneously with the undertaking of the 'In-house 2011' investigations, DG First commissioned a number of specialist technical investigations into specific aspects of defects in the building. These included;

- a condition survey of the fixed mechanical and electrical services by Hulley and Kirkwood Consulting Engineers
- a thermographic survey report by IRT Surveys
- an inspection addressing issues with the tiling and substrate to the four pools by Neil Beningfield & Associates

8. Summary of findings of the in-house 2011 report - June 2011

8.1 The 'In-house 2011' report, entitled '*Fabric Condition Report*' was completed in June 2011, and additionally included summaries of the findings from the three reports listed above. The in-house report came to a number of critical conclusions in relation to the quality of construction of DG One. These included the following statement.

> *"While many items have been competently installed, there are cases where quality control, robust detailing, and compliance with the client's requirements have either fallen below acceptable standards, or not been complied with. This will impact adversely on operational efficiency".*

8.2 In relation to the Wet Zone, Spa Pool and associated changing areas the report concluded;

> *"Substantial repairs are anticipated in these areas. The opportunity for continued use of these facilities during the repair period will be very limited and realistically require the complete closure of these areas during the repairs".*

8.3 Key findings in the executive summary of the report included:

- Evidence of leakage of pool water through the structure of the pools from the early stages of the facility's life
- Leakage from the pool scum channels had led to water intrusion into the underlying screed to the tiled walkways around the pools. This has compromised the integrity of the screed with the result that substantial areas of tiling and associated items will require renewal
- Water leaks were evident in the vicinity of surface drainage points and at junctions between floors and walls in wet areas. This was particularly evident in the Spa Pool area such that a large area of the changing village on the floor below had had to be closed.
- Based on the Mechanical and Electrical Consultants' report, repairs and system modifications would be necessary to the services installation throughout the building
- Shortcomings in the installation of insulation could not be rectified without extensive and disruptive works

8.4 Other wide-ranging defects relating to the roof, external walls, windows, glazing, internal doors, cracking in floors, stained and corroded steel handrails, damaged ceilings and erosion of fire-resistant coatings to the steel structural frame of the building were identified in the main part of the 'In-house 2011' report.

9. Identification of deficiencies in fire-stopping - June 2011

9.1 Of immediate concern the report described deficiencies in the fire-stopping of compartment walls and floors, essential in the case of fire to prevent the passage of fire from one compartment to another and a compulsory requirement of the Building Regulations;

> *"In several locations in both the 'dry' and 'wet' sides, services and/ or steelwork were noted to pass through compartment floors through excessively large holes where little or no fire-stopping was evident. This problem is also evident in internal compartment walls and must be addressed as a matter of urgency as this comprises a significant fire risk"*

Defective fire compartmentation

9.2 The above photographs show on the left loose half-blocks simply balanced on a fire partition wall with no provision of a fire and smoke seal and on the right unsealed services passing through a compartment wall. These are just two examples of many such breaches identified.

9.3 The effectiveness of fire-stopping should have been one of the key elements in the building to be inspected by the Kier's quality supervisors, by their design team and by the Council's site inspectors.

9.4 It should also have been a standard element for checking by the Building Standards inspectors from the Council before they could reasonably have issued the Notice of Acceptance of Building Completion Certificate on 11th June 2009. Responsibility however for such failures must primarily lie with the design and build contractor.

9.5 It is the view of the Inquiry that on the basis of the above findings, which were subsequently independently confirmed, the Notice issued by Building Standards, permitting use of the building by the public, should not have been issued.

10. Water leakage from pools - June 2011

10.1 The 'In-house 2011' report included the results of investigations into significant areas of water penetration into the and plant room and void areas below the main pool hall floor.

10.2 It concluded that water had been tracking along the interface between the screed and the in-situ concrete structural topping on top of the metal deck 'holorib' permanent shuttering and had been emerging at joints in the metal tray.

10.3 This had resulted in; the creation of extensive areas of encrustation along the full length of the external wall abutting Leafield Road; the saturation with water of the masonry in the wall; the corrosion of both the steel angle supporting the floor and of the wind-posts used to stiffen the external masonry panels causing damage to their intumescent fire-protective coatings; and the saturation of an area of plywood deck which was supporting an area of the floor above. The following photographs from the report demonstrate the resulting level of saturation of areas of the external wall.

External and internal faces of saturated cavity wall

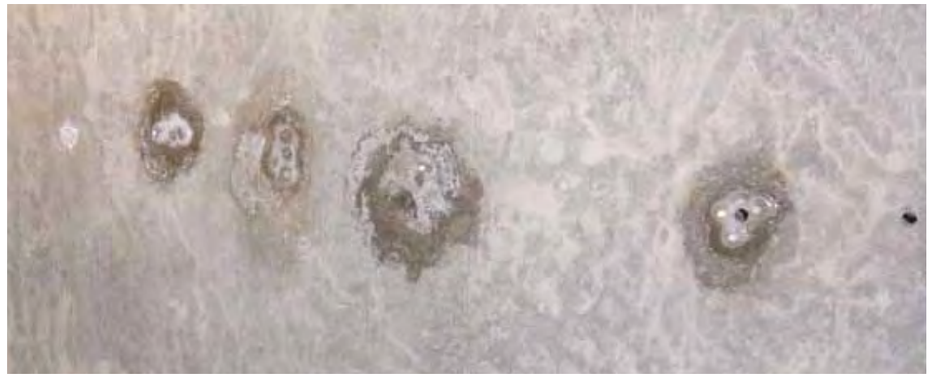
10.4 The "In-house 2011" report included evidence of the results of similar on-going water leakage into the plantroom area, including significant encrustations, some of which were found to contain high levels of chlorides, which can have a highly corrosive effect on structural steel elements.

10.5 In evidence to the Inquiry, the then head of Design Services said;

> *"I recall that what set alarm bells really ringing for me was the void under the main pool floor. There was so much efflorescence and mineral accretion on the underside of the pool shell that it was like "Mother Shipton's cave".*

10.6 The 'In-house 2011' report described the soffit of the plant-room ceiling as having fixed to it a makeshift arrangement of funnels and waste pipework discharging above drains, which had been retrospectively installed to seek to alleviate the problem. There was also evidence of previous attempts to stem water leakage along the plantroom side of the main pool wall by the application of a water-proofing slurry, but this was reported to have proved to be ineffectual as the slurry had de-bonded from the pool wall.

10.7 The report described the apparent use of further unconventional methods to alleviate the problems of water trapped in the hollow voids in the 'bison' floor slabs in the form of a series of almost 200 holes drilled into the soffit of the slabs. At the time of the inspection water was reported to be constantly dripping from several of these holes, which to make matters worse, were directly in front of an electrical control panel.



Water dripping from holes drilled in soffit of bison slabs

10.8 These holes could possibly have been factory formed weep holes although the following photograph shows some of them in a relatively random pattern which would not suggest factory-made.

10.9 As DG One was still operating and open to the public, there were limitations on the extent of intrusive investigations that the in-house team could carry out, however, permission was given to lift a small area of tiling to the walkways around the pool in the pool hall. This revealed that the weak mix sand/cement screed on top of the concrete floor was fully saturated with water and had broken down into a loose sandy mix as shown below.

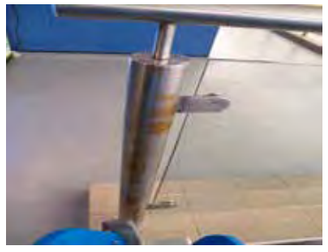
11. Initial report on mechanical and electrical defects - June 2011

11.1 The 'In-house 2011' report summarised the main findings of the Mechanical and Electrical Engineers' report, prepared by Hulley and Kirkwood, including;

- Water ingress to air-handling units
- Lack of condensate pipework from air-handling units
- Lack of, or inadequate, ventilation to plant rooms and voids
- Unsafe or restricted access for maintenance to some air-handling units and boilers
- Ceiling fittings (luminaires, alarms) inadequately supported in suspended ceilings
- Fire damper penetrations not sealed and fire-stopped

11.2 The Hulley and Kirkwood report identified a series of further key problems with the services in the building including the following;

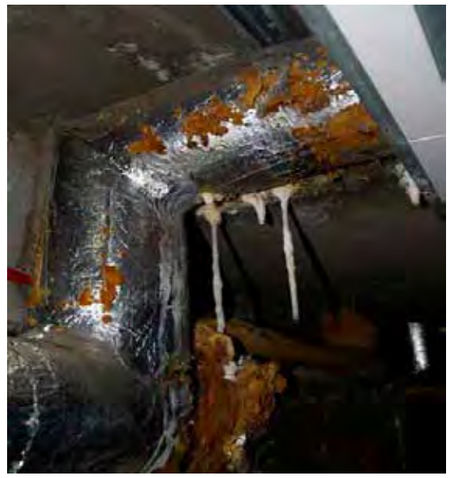
> *"The Operation and Maintenance manuals and as-fitted drawings are incomplete. Commissioning data where recorded from the base build in some instances did not meet the design intent, particularly in relation to ventilation"*
>
> *The poolside and changing village ventilation temperatures and humidity levels are operating out-with design parameters. This is resulting in condensation forming on hard surfaces, corrosion being evident on 'stainless steel' handrails etc."*



Examples of corrosion to steel fittings throughout the wet area

> *"In swimming pool and leisure environments, the ventilation system is a fundamental element of the building operation. In a very short space of time the building fabric will demonstrate the signs of poor ventilation. This evidence is now apparent in DG One, corrosion to steel materials, dampness on ceilings and walls, along with odour issues."*

> *"Severe corrosion was evident to electrical and mechanical services from pool chemicals and condensation"*



Examples of damage to pipe insulation and to galvanised fittings

> *"The ventilation system within the changing village ceiling void sees ventilation insulation missing, pipework insulation missing, no insulation to drainage, leaks from drainage; the effect of the aforementioned leaves the ceiling tiles in a considerable state of disrepair".*

Leaks over changing areas and contractor's *'metal tray with drainpipe solution'*

11.3 The report also commented on an apparent lack of proper maintenance of a range of aspects of the service installations, including the need to address a build-up of organic matter in the cold-water storage tanks. It also noted that a number of alarms had been indicating on the Building Management System apparently without attention from staff.

11.4 It recommended the immediate development and implementation of a programme of planned preventative maintenance, including appropriate training of staff in relation to the management of the systems within the building.

12. Initial specialist report on tiling failures to the pools - June 2011

12.1 The 'In-house 2011' report also included a summary of the findings in the report prepared by Neil Beningfield Associates in relation to the failures of the pool tiling. This report had described what were considered to be a number of significant weaknesses in relation to the quality of construction of the pool surround and had concluded by stating;

> *"The tiles and render will require to be removed and replaced properly. I can see no alternative".*

12.2 A number of specific problems were identified in the Beningfield report, which had been written following extensive on-site investigations supported by independent laboratory analysis. These included;

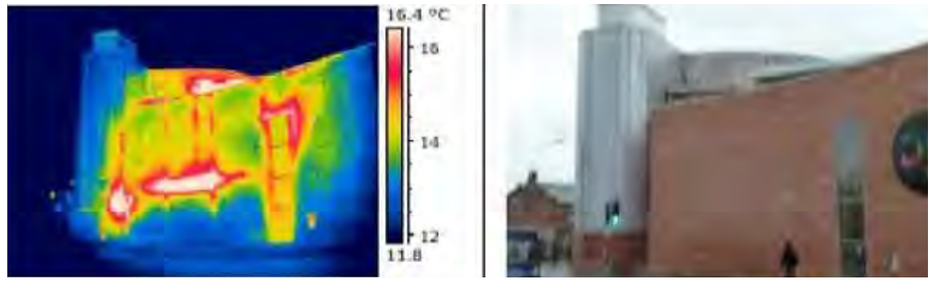
- The tile adhesive application to the inner pool surface was assessed as poor. Tile adhesion levels were found to be as low as 60 - 65% whereas, under 'BS 5385-4: Code of Practice for Tiling and Mosaic in Special Conditions', adhesion levels are required to be as close as practically possible to 100%
- It was concluded that small cracks in the grout, possibly caused by shrinkage or structural movement, had enabled sulphate-containing water to penetrate into the voids behind the tiles where the adhesive was thin or missing
- This sulphate-containing water was considered to have reacted with the cementitious-based tile adhesive to form 'ettringite crystals ', which increase in volume as they grow thus creating a pressure behind the tiles which would tend to push them off the adhesive
- Core samples taken from the pool indicated that the render coat applied to the pool walls was approximately 5mm thick in the areas where it was tested.

13. Initial thermographic imaging test of building envelope - June 2011

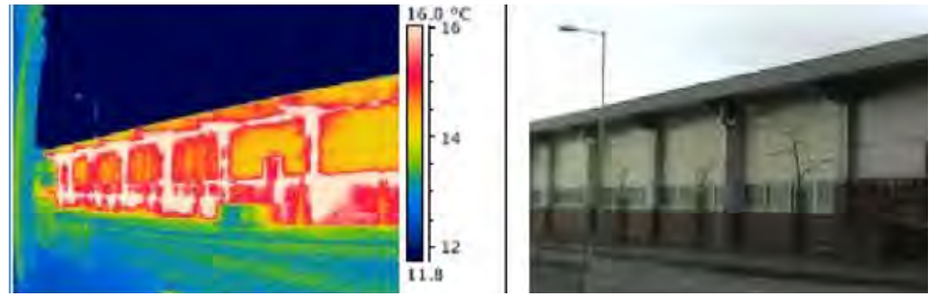
13.1 The range of investigations undertaken had also included the commissioning of a thermographic imaging survey in order to better understand the reportedly less than adequate performance of the external building envelope in relation to heat loss. The findings of the survey, undertaken in May 2011, included the discovery of;

- Areas of missing insulation
- Areas of poorly installed insulation
- Water ingress into the wall construction

13.2 These three factors would have compromised the level of energy efficiency of the building that might have been achieved had they been detailed and/or installed properly. The following photographs are typical examples of many taken of the exterior of the building.



In the above photograph on the left is shown an infra-red thermal image taken of the area of DG One shown in the photograph on the right, the white areas surrounded in red indicate very significant excess heat loss to the centre and the left edge of the natural stonework cladding panel to the foyer street elevation. This level of heat loss is typical of missing insulation resulting in excess energy usage.



The east façade to the pool hall, as shown above, exhibits high levels of heat loss across the lower wall sections, around the main framing members and to the junction between the wall-head and roof soffit.

13.3 The two photographs below show on the left an opened-up section of the south-facing external cavity wall, brick external leaf to the right and blockwork leaf to the left indicating no insulation had been installed in this section of wall, and on the right, an equivalent opened-up section on the west-facing external cavity wall, equally demonstrating that no insulation had been installed here either.

13.4 The bottom photograph below is of an opened-up section at the edge of the roof showing a wide gap in the insulation where it was not carried over the perimeter edge of the building to meet the insulation and vapour seal in the wall, thus creating a major route for heat loss.

Absence or inadequate installation of insulation to walls and roof

Commentary on the provision of as-built information provided under the DG One Contract

13.5 Similarly, to the report on mechanical and electrical services, the 'In-house 2011' report expressed disappointment with the accuracy and completeness of the "as-built" information provided under the original contract, the information "often describing design intent rather than what was actually built". It also stated that an accurate specification, describing materials, components and products used was unavailable.

14. The establishment of a new project board - March 2011

14.1 The on-going and growing list of problems with the construction of the building were now seen as increasingly compromising the experience of users in the building. Additionally, it was felt that the environmental conditions that some members of staff were having to work in were less than ideal. Taking these factors with the emerging findings of the professional and technical reports that had been produced, Council officers recognised that the current approach of continuously having to inform Kier Northern of the list of defects appearing and requesting the contractor to provide a permanent satisfactory solution to the reported list of defects was no longer sustainable.

14.2 In March 2011, in response to the developing situation, the Council established a group of senior officers of the Council to form a new project board chaired by the Director of Customer and Community Service; and including the Director of Chief Executive Services, the Corporate Director of Education and the two Heads of Property Services and Leisure and Sport respectively. The Project Board was supported by an in-house accountant and solicitor. The high-level remit of the reconvened Project Board was to consider the emerging issues and to identify the way ahead.

14.3 Whilst a Project Board was established, this did not provide a dedicated full-time resource as all of the members of the Board carried other significant responsibilities within the Council. Despite the fact that ultimately this process would require the undertaking of a major remedial construction project, there was no in-house executive project management resource with a construction professional background allocated to the project.

14.4 In July 2011, the Project Board sought advice from Hill International, a company providing expert project management and construction claim services, as to the Council's next steps. The Council was advised that further work to that already carried out would be required to draw up a comprehensive schedule of defects in a form and to a standard that could if required be used in any subsequent court action.

14.5 Hill International suggested that to properly protect the interests of the Council, external legal advisers should be appointed in addition to a team of independent professional construction experts, who should be commissioned to compile a comprehensive schedule of defects. They concluded that:

> *"The defects observed in the building fabric and services of the swimming pool areas of the DG One building are significant and collectively likely to represent a breach of contract by the original design and build contractor. As the contractual defects liability period has expired it is likely that recovery of rectification costs will most effectively be made through an action in the court of session".*

14.6 Hill International recommended the following sequence of events be followed by the Council in their pursuit of the restoring the building to a satisfactory condition.

> *"1. Appoint a team responsible to the Council for the identification and rectification of the defects*
>
> *2. Prepare an initial defects schedule*
>
> *3. Prepare an initial programme in outline*
>
> *4. Appoint experts to consider more fully the specific defects identified in the schedule and to prepare detailed reports*
>
> *5. On the basis of these reports update the defects schedule and decide on a procurement method for rectification against an approximate budget*
>
> *6. Enter into a rectification contract with extreme care being taken as to how this contract is awarded and administered*
>
> *7. In parallel to the placing of this contract commence an action in the court of session against Kier Northern."*

14.7 A final recommendation was that *"the Council should appoint a Project Manager to manage the complex interfaces during the investigative process and subsequent rectification programme."*

14.8 It would appear that this last important recommendation was not fully acted upon. There would appear to have been a lack of any significant strategic analysis of the interface between two distinct processes, a legal claim for damages and a remedial construction project.

14.9 External project managers would only be appointed in 2013 with a remit to manage the delivery of the remedial works project.

15. Appointment of legal advisers and independent technical experts - August 2011

15.1 Acting in general accordance with this advice, on 18th August 2011, the Council appointed MacRoberts Solicitors, based in Glasgow, as the Council's legal advisers in relation to the DG One project.

15.2 MacRoberts Solicitors, acting on behalf of the Council, instructed individually named senior consultants in Hurd Rolland Partnership (Architects) and Morris Engineering Design Services (Mechanical and Electrical engineers) respectively to act "as independent experts to investigate the problems at the DG One building and to report thereon with particular reference to whether the problems arise out of the acts or omissions of Kier Northern or those for whom Kier Northern is responsible".

15.3 Both individuals, each with extensive experience in undertaking investigative and expert witness roles, were instructed on the **26 August 2011** and formally appointed on the **23 September 2011** as the Council's expert technical advisers. Both had already commenced the investigation with a joint visit to the site on **30th August 2011**.

15.4 It should be noted that the primary duty of independent expert witnesses is to the court. This duty overrides any obligation to the instructing and paying party or parties. Expert evidence is required to be independent, objective and unbiased. In particular, an expert witness must not be biased towards the party responsible for paying his fee. In providing a written report and oral evidence the expert should be truthful as to fact, thorough in technical reasoning, provide an honest opinion and ensure that the report is complete in its coverage of relevant matters.

15.5 This fact is important as this Inquiry has had to rely to a significant degree on the results of investigations and the content of technical reports produced by the independent technical experts, as these were the main sources of relevant information available to this Inquiry.

15.6 The members of the Inquiry Panel did of course also visit the site on several occasions and, while significant down-taking and opening up had already occurred, were able to directly evidence examples of the original defective work in the building.

16. Initial scoping report on defects from independent technical experts - September 2011

16.1 The independent architectural expert submitted a report entitled *"Initial Scoping Report on Defects"* dated **September 2011**, based on his initial visits to the site and examination of the documentation provided to him by the Council. The preliminary conclusions in this initial report included the following points, many of them reiterating the findings of the earlier 'In-house 2011' report;

- *In summary, damp proofing of the building against moisture migration from the ground appears to be missing, as does insulation below the pool floor leading to chilling of the pool perimeter floor slab, and accelerated condensation.*
- *A pool hall 'air volume' requires a high degree of seal to resist outward migration of the substantial moisture vapour pressure in the pool area. From the inspection carried out to date I am not convinced that the necessary level of seal is present, and the water encountered at various parts of the exterior of this volume such as the underfloor voids and the plant room may all be related to condensation occurring as a result of the omission of seals and insulation.*
- *The first-floor spa pool is un-tanked. It is my view that this is a defect, as reliance on tile grouting and cement alone is recognised as inadequate for waterproofing a water-retaining pool tank. Retiling and external tanking will probably be required to tank and floors to enable the changing village to be fully opened.*
- *Corrosion of fittings requires further detailed investigation to establish the source.*
- *The steel building structure requires inspection to discover if adequate anti-corrosion treatment is applied and where upper floors are carried, whether adequate intumescent treatment has been applied. Also, whether they are compatible both with the pool environment and with each other. Corrosion elsewhere in the plant room also requires to be addressed.*
- *Fire compartmentation appears compromised in a number of locations around the building, and a distinct study looking at fire safety generally should be carried out at an early stage.*
- *The roof membrane is reported as spongy underfoot in some plant areas. This suggests either water ingress from above wetting the insulation base or moisture condensing out below the membrane.*
- *Leaking into the changing village area has been addressed by Kier by use of a series of metal tray and drainpipe constructions, hanging from the soffit. These measures have been in place for two years but should only be considered as temporary mitigation until the leaks can be located and responsibly repaired.* **(Similar even more basic techniques had been used by staff to redirect plant room ceiling leaks away from electrical switchgear. See photograph below)**

Polythene sheeting protecting electrical switchgear in the Plant Room from overhead water leakage, the redirected water being collected in a bucket.

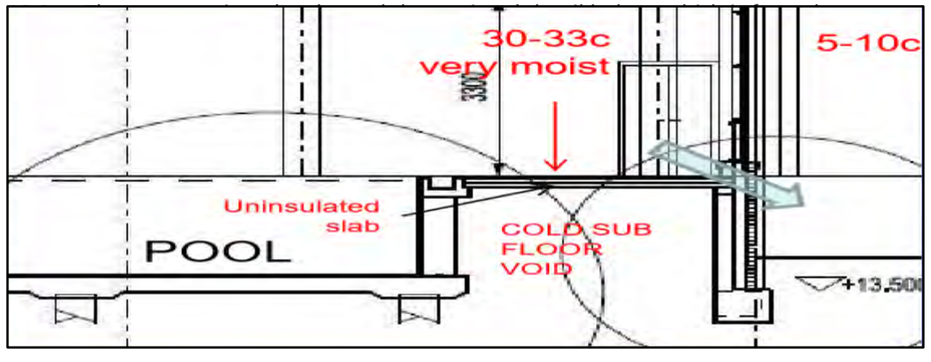
16.2 On 7th October 2011, a presentation on their initial findings was made by the two appointed experts to a group of Council officers from the Project Board. The following slide from this presentation was an illustration of the range of potential defects they had identified at this stage of their inquiries.

16.3 It can be seen that in addition to the problems already highlighted in relation to the physical construction of the building, significant issues were identified in relation to the mechanical and electrical services installations.

EXTERNAL ENVELOPE	POOL TANKS AND SUBSTRUCTURE	SERVICES
1. Roof insulation below specification 2. Wall insulation below specification 3. Overall envelope energy loss suspected excessive 4. Flashings to openings poss omitted 5. Interstitial condensation risks 6. Vapour seals ineffective 7. Steel structure corrosion protection tbc 8. Steel structure fire protection tbc 9. Kalwall panels fixing poss ineffective 10. Fire compartmentation missing	1. Pool surround screed failed. 2. Damp proof membrane and DPC missing 3. Pool perimeter floor un-insulated and condensation occurring to perimeters. 4. Tiling voids accumulating efflorescence and tiling detaching and cracking. 5. Epoxy grout specified- not used; grout failed. 6. Pool tank walls cut down & repoured- rebar & seals survey required. 7. Movement joints hardened - seals to be inspected 8. Seal to scum channel failed	1. Excessive temperature in leisure area 2. Water harvesting filtering inadequate 3. Pool Backwash recovery not operational; o/f unsuitable 4. No pump motor speed control 5. Pre swim showers under pressure 6. Metering not BMS connected 7. Corrosion of pump casings 8. Ahu's condensate drains missing, dehumidifiers not operational, and water ingress 9. Pool hall dehumidification does not treat recycled air 10. Spa pool pump defective and removed 11. Plant and lights access unacceptable

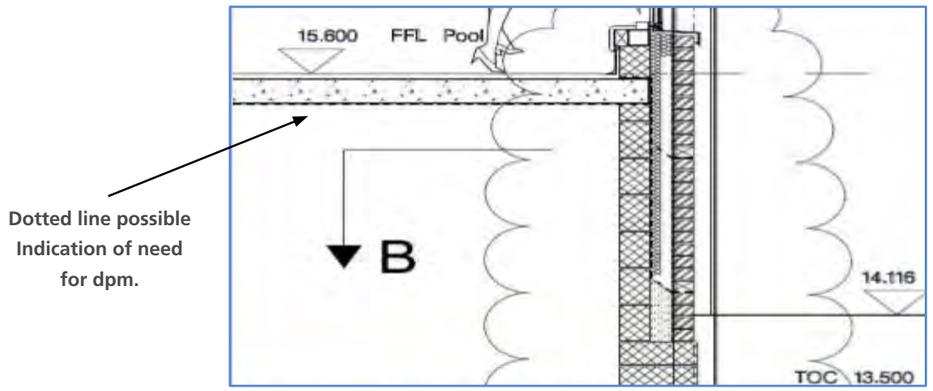
16.4 In relation to the excessive moisture and build-up of encrustations in the void area below the pool the following drawing was shown as part of the presentation to demonstrate the apparent lack of insulation and damp-proof membrane (dpm) in the concrete slab forming the floor to the pool and surrounding walkways.

16.5 It was explained by the architectural expert at the presentation that the very warm moist and potentially highly chlorinated air from the pool hall, having permeated through areas of the uninsulated floor and walls, would then condense on the much colder surfaces within the void areas below, causing deterioration to structural elements and building fabric in these spaces.



Pool perimeter walkway without insulation or damp-proof membrane.
Wet pool air is forced into wall and floor and condenses on cold surfaces

16.8 The presentation also showed the sectional detail below, which is from the construction drawings provided as part of the Operation and Maintenance information. It was prepared by a member of the design team appointed by Kier Construction. The drawing seems to be indicating by way of the dashed line under the concrete floor a requirement for the installation of a damp proof membrane. However it is difficult to see how this proposal would have been practically implemented and no damp-proof membrane pm was found.



Detail from construction drawings showing section through void under pool

16.9 The following photographs were presented as evidence of the deterioration to surfaces and corrosion caused by condensation and water ingress. The photographs below show evidence of encrustations, efflorescence and corrosion in sub-floor void under main pool

Steel columns indicated with red arrows are rusted and corroded

Saturated damp and efflourescence in void under pool area

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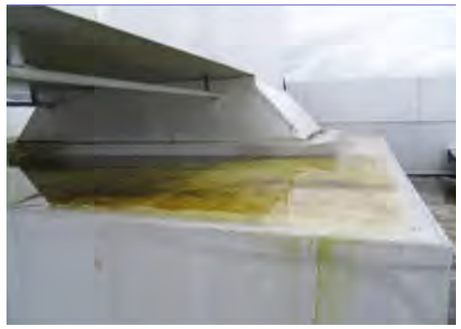
16.10 The following five slides were used as part of the October 2011 presentation to illustrate:

1. The fully saturated and disintegrating sand/cement screed under the tiled walkway areas surrounding the pools and the ponding of water on these areas due to lack of properly constructed falls in the floor levels to drain these areas;
2. The use of a domestic plastic funnel to collect water dripping from leaks in the spa pool and ponding on the floor above;
3. Corrosion of steel columns in the plant room;
4. Roof drainage defects; and
5. Two examples from a large number of reported omissions of essential fire-stopping.

1. Saturated and disintegrating sand/cement screed under pool walkway and evidence of constant ponding on walkway

2. Domestic funnel collecting leaks from the spa pool and area of ponding at Spa

3. Corrosion of steel columns in the basement plant room



4. Examples of poor roof drainage. Water cascading from higher roof on to PVC membrane and ponding on roof due to no fall having been provided

5. Two examples of many major omissions of essential fire-stopping, one in an escape corridor and second in the floor slab of a first-floor plant room

17. Emergency works to fire-stopping omissions throughout building - November 2011

17.1 The Council had now received two technical reports identifying major concerns in relation to the adequacy of fire-protection in DG One due to numerous omissions of essential fire-stopping throughout the building. The undertaking of this work was seen as being of the highest priority and instructions to proceed with this work as a matter of emergency were issued by the Council. Without this immediate remedial action there was a risk that the building would have to be closed to the public.

17.2 Discussions were held in this regard with the Dumfries and Galloway Fire and Rescue Service, who agreed that the building could stay open as long as work commenced immediately without interruption and appropriate additional operational measures were implemented to reduce the risk of fire, until this work was completed.

17.3 Stopfire Ltd, a company specialising in this field, were appointed to undertake this work, including a comprehensive survey of all potential fire-stopping defects. With the exception of the remedial work to damaged and inadequate intumescent fire protection coatings on the steel structural elements, the work was completed in the early months of 2012.

18. Testing of air-tightness of building fabric - November 2011

18.1 In **November 2011**, Building Sciences Ltd, a company that provided testing services of the air-tightness of the fabric of buildings was appointed to test the performance of the DG One building. The report identified a significant number of areas in the external envelope of the building which failed to provide the required standard of air-tightness.

18.2 Smoke introduced internally was noted to rapidly egress the building at the cladding to brick junction and at the eaves junction as in the photograph below.

18.3 In a multi-purpose building of this type it is particularly important that the detailed design and installation prevent the migration of highly heated and very moist chlorinated air from the 'Wet' side of the building to the 'Dry' side. The results of these tests also demonstrated that the necessary sealing was not achieved in the main wall dividing the Wet and Dry areas from each other. The report said;

Test smoke rapidly escaping through eaves junction demonstrating lack of air-tightness

"The initial area inspected was the division wall between Pool Hall and Dance Studio (RF.22) on gridline 13. A number of tiles were removed from the suspended ceiling on the Dance Studio side of the wall. Smoke was introduced at the wall head on the pool side. Substantial quantities of smoke appeared within the Dance Studio almost immediately indicating that significant air leakage paths exist".

18.4 The following photograph shows the smoke injected as part of the test into the ceiling of the Pool hall quickly flowing into the Dance Hall, indicating that unwanted hot, moist air from the Pool Hall was likely to also follow this route.

Test smoke pouring into dance studio from Wet area of building

19. Loss of tiles in main pool - November 2011

19.1 On 24th November 2011, a meeting chaired by the Operations Manager for Strategic Property Services at the Council was called to discuss the condition of the building, particularly in relation to problems with the de-bonding of tiles in the main pool. The meeting was attended by several senior professional and technical officers of the Council and by a representative from Kier Northern.

19.2 The meeting was advised that a total of 120 tiles had fallen off or completely separated from part of the main pool walls and floor. A further 310 tiles had been identified as having become de-bonded.

19.3 After the meeting an investigation identified that the number of tiles in a de-bonded state in the main pool had risen from 310 to 530. Therefore, up to this point a total of 650 tiles had needed to be removed and replaced. This replacement work was carried out by UPS instructed by the Council.

19.4 A Clerk of Works from the Council advised the meeting that, on checking the tiles that had come away, it appeared that there was a problem with the floor screed crumbling and that this would require further investigation.

19.5 The Kier Northern representative at the meeting advised that the sub-contractor who carried out the tiling work on the pool, Taylor Pools, was no longer trading but that Kier Northern would accept responsibility for the problems subject to it being demonstrated that the problem was a latent defect for which Kier would be responsible. The chair agreed to keep Kier informed as to the situation with the tiles and would forward the investigation reports and any other correspondence to them once they were available.

19.6 It was confirmed at the meeting that up to this point there had been no further problems with the training pool since the tiling and movable floor repairs had been carried out the previous year. This situation unfortunately would not last.

20. First draft report of independent technical experts - December 2011

20.1 At a meeting on **19th December 2011** of the Council's Project Board, initial draft reports on their findings were presented by the expert advisers. These included additional significant areas of concerns in relation to both the construction and the performance of the DG One building that had been identified during their investigations.

20.2 The report identified the need for a further series of more detailed investigations and testing of materials. It also pointed out the added difficulties in carrying out the work due to the lack of information in the as-built contract documentation and the number of divergences between what was on the building warrant drawings and what had actually been constructed.

20.3 There was then a discussion in respect of the on-going problem of tile loss from the walls and floor of the main pool. The technical experts advised the meeting that it was difficult to disagree with the conclusions reached in the tile report that the Council had previously commissioned from Neil Beningfield Ltd.

20.4 However, it was pointed out that they would only be in a position to fully appraise deficiencies in the tiling, waterproofing and pool walls once the pool had been drained.

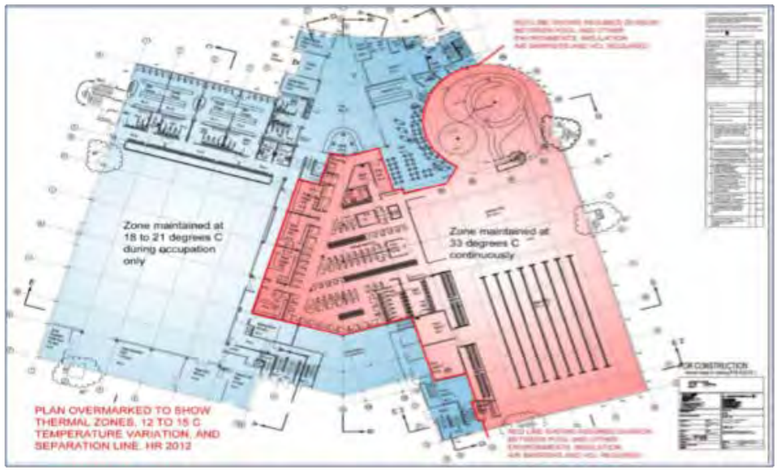
20.5 It was emphasised by the Chair that the Council did not wish to empty the pools until they had no option but to do so, as they wished to preserve the operation of the facility for as long as possible.

20.6 This decision to maintain the operation of the facility would result in delaying the necessary detailed examination of the pools and preventing the identification of the true level of problems associated with their construction for almost three years until the closure of the facility in October 2014.

20.7 Also, during the intervening years as the building remained in operation, the structure, fabric, services installations and fittings of the building would remain exposed to the leakages of heavily chlorinated water and air and would continue to deteriorate.

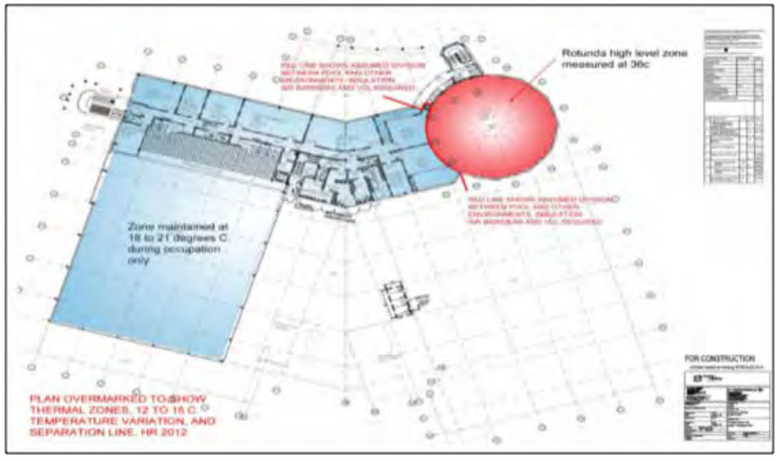
21. Further presentation by the independent technical experts - March 2012

21.1 On 29th March 2012, the expert advisers presented to the Project Board, the following floor plans, one for each of the three levels of DG One so as to better explain the technical problems associated with the heating and ventilation of the building. These plans defined the two main 'wet' and 'dry' zones in the building, each with a highly contrasting set of temperature and environmental requirements.



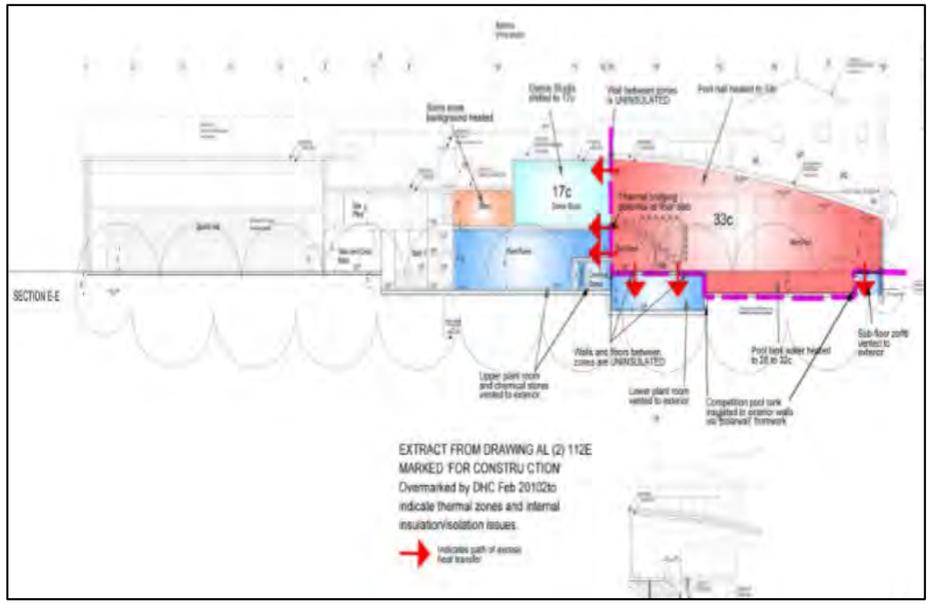
Ground Floor Plan

First Floor Plan



Second Floor Plan

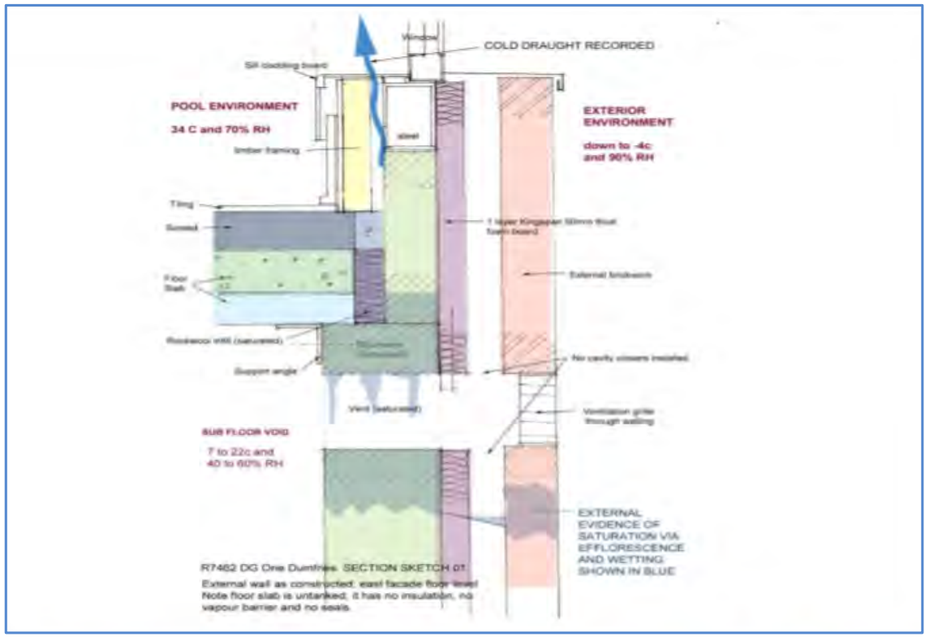
21.2 The sectional drawing, shown below, indicates the direction of movement of hot moist air from the **pink coloured 'wet' zones** into the **blue coloured 'dry' zones**, plant rooms and voids. The penetration of hot air into the dance studio and fitness suite areas, which were required to maintain a cool temperature of 17 degrees, meant that these areas were often very hot and uncomfortable for users. The air-handling units serving these areas were therefore continuously running to extract unwanted hot air, resulting in major inefficiencies in the overall heating and ventilation systems of the building.



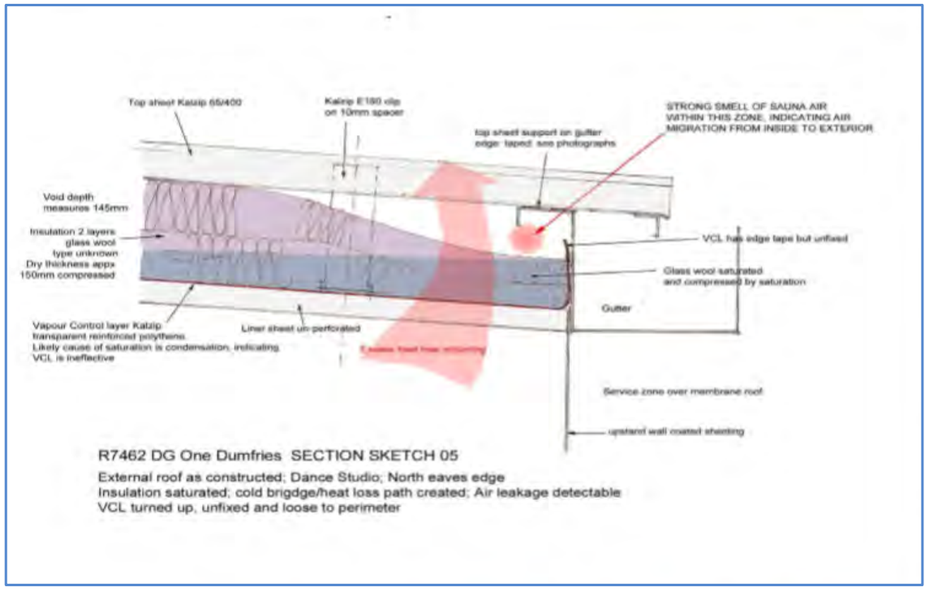
Section through Dance Studio / Pool Room Interface

21.3 In addition to the unwanted internal migration of heated air from wet to dry areas of the building, it was reported that the investigations undertaken had indicated that significant air loss was occurring through the external fabric of the building, due to the lack of a continuous vapour barrier and insulation particularly at the junctions between elements.

21.4 As a result of the absorption of moisture, significant areas of insulation in the external envelope of the building, had become saturated therefore reducing its effectiveness. The following three drawings were part of the March 2012 presentation made to Council by the expert advisers as examples of what had been found in this regard.



Saturated Insulation and blockwork in external wall to side of Pool Hall



Saturated Insulation in roof construction over Dance Studio

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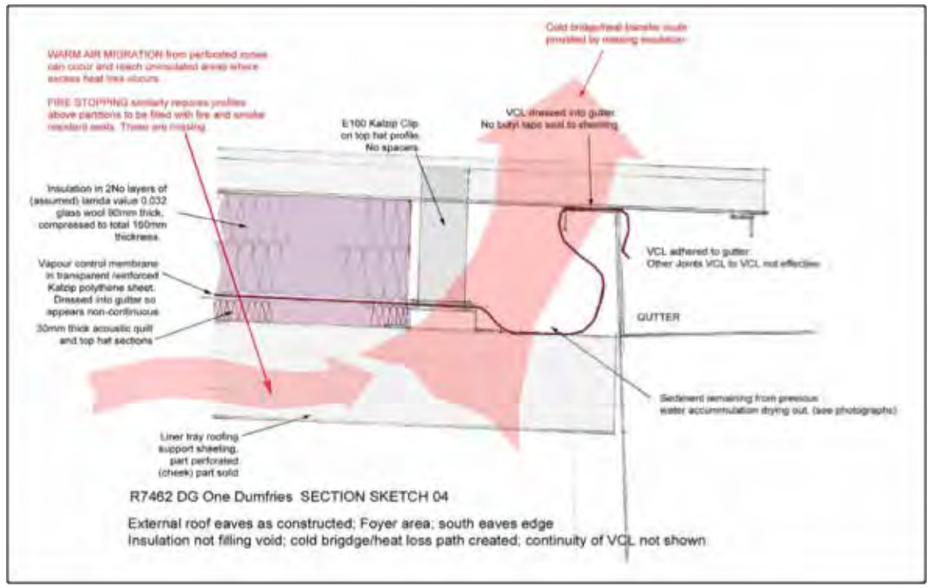


Cold bridging in roof construction permitting excess heat loss

Insulation saturated with water at roof edge

21.5 Thermal transmittance, also known as U-value, is the rate of transfer of heat through a structure (which can be a single material or a composite material), divided by the difference in temperature across that structure. The units of measurement are W/m²K. It is calculated on the rate at which heat transfers through 1 square metre of a structure, where the temperature difference between the inner and outer face is 1 degree Celsius. **The better-insulated a structure is, the lower the U-value will be.**

21.6 The March 2012 Expert's report provided a table, analysing the thermal performance of the building envelope in terms of the level of achievement of the U-values specified in the Employer's Requirements.

21.7 This analysis indicated that with the exception of those areas of external walling constructed using 'Kalwall' panels, where the specified requirements were exceeded, the remaining seven different forms of construction of the external envelope as constructed failed to do so. The following examples of the reported failures to comply with the requirements of the contract have been extracted from this table.

Type of Construction of External Envelope	U-Value Specified in Sport Scotland Guidance to be complied with under the Employer's Requirements	As-constructed	Short-fall
Brick / block inner leaf cavity wall construction	0.2 W/m²K	1.88 W/m²K	1.68 W/m²K
Kingspan panel / block inner leaf	0.2 W/m²K	1.94 W/m²K	1.74 W/m²K
Pool floor	0.166 W/m²K	0.4 W/m²K	0.234 W/m²K

22. Mechanical and electrical defects presentation - March 2012

22.1 The expert mechanical and electrical consultant from Morris Engineering Design Services presented the findings of a report, dated March 2012, which he had produced after completing a survey and series of investigations into the installation and performance of the mechanical and electrical services in the building. This review identified a wide range of defects in these aspects of the completed project.

22.2 The following selected extracts from the expert adviser's report include conclusions on performance and descriptions of perceived mechanical and electrical services design or installation defects;

- *It is concluded that the Air Handling Units (AHUs) for the pool hall are undersized for the required duty and will not maintain the environmental conditions specified in the Employer's Requirements at the winter external design temperature.*
- *Inadequate provision has been made for heating the spa pool and the AHUs will not achieve the range of temperature s specified in the Employer's Requirements*
- *The provisions for cooling in the Dance Studio are inadequate. The calculation sheets have used a room temperature of 21 degrees not 18 degrees and no allowance has been made for the heat gains through the dividing wall with the Pool Hall*

- *The specification of the AHUs serving the Pool hall do not comply with the Employer's Requirements as they do not incorporate heat recovery and dehumidification to control humidity levels in the Pool Hall.*
- *The penetration of water into the frames of the AHUs and through the casings indicate that these are not suitable for external installation or have not been correctly installed so that seals are effective. The corrosion that has resulted from the foregoing defects now means that the operational life and reliability of the AHUs has been considerably reduced*
- *The configuration and layout of the roof mounted AHUs is poor and does not conform to published guidance or good practice in that exhaust air is recirculated in to air intakes. In addition to the problem of contamination of supply air, which also explains why humidity levels are high in dry areas, energy costs are increased because of the demand for cooling being in excess of what is required when ambient conditions permit*
- *The failure to make provisions for the supply of fresh air to the Spa Pool plant room area is a failure to comply with both the requirements of the Building Regulations and ACOP* (Approved Code of Practice) *L24. It is my view that this is a failure to comply with Clause 2.5.7.1.5 as set out in Appendix V.*
- *It has been found that recessed luminaires (light fittings) mounted within the suspended ceilings have been installed directly into the suspended ceiling grid at all locations inspected throughout the building. No independent supports for the luminaires have been provided. The same has been found for the air supply and extract grills within the suspended ceilings although in some areas (dry changing) they were found to be independently supported. The luminaires and air diffuser grills exceed the 3kg weight limit and require being independently supports.*

Luminaires without independent support resting on ceiling over gym

- *Pumps and associated electrical services (installed incorrectly in bunds intended to contain breaches of the water storage tanks) require to be relocated in an appropriate dry area or the equipment upgraded to IP68 rating for submersible use in both the main plant room and the spa pool plant room*
- *The void above the suspended ceiling in the main foyer reception area does not have any sprinklers installed. This is a design defect as the concealed space is greater than 0.8m high. BS EN 12854:2004 requires any such concealed spaces to be sprinkler protected.*
- *The air supply ducts in the pool hall were installed by the Contractor using stainless steel suspension wires, and shortly after practical completion these wires began to fail. Stainless steels (Grade 302, 304, 306 and 316) under stress are not resistant to stress corrosion cracking which is induced in chlorine laden atmospheres.*

22.3 The report also referred to omissions and errors in the Operation and Maintenance Manuals; drawings issued as as-built drawings not in fact reflecting what is actually installed; no instruction manuals having been provided in relation to the operation and maintenance of the pool plant and equipment; no commissioning sheets having been provided showing compliance with BSRIA Application Guide AG 8/91 "Pre-Commissioning cleaning of Water Systems"; and no comprehensive maintenance schedules having been provided."

23. Initial findings of independent structural engineering expert - April 2012

23.1 In April 2012, a senior consultant structural engineer with Wren and Bell Ltd., a firm of structural engineering consultants based in Edinburgh, was instructed by the Council to undertake a review of the condition of the building from a structural engineering perspective.

23.2 His preliminary observations and comments were recorded in a 'Site Visit File Note' prepared by him and dated 17th April 2012. This included the following comments;

> *"There is clear evidence of a water seepage problem through the floor between the main pool hall walkway into the basement pool plant room and also from the first floor Spa to the main pool changing village (located on the ground floor).*
>
> *The floor structure of the pool walkway is 'Holorib' composite concrete slab with a sand / cement screed and tiled finish. A section of the screed had been opened up in the vicinity of the entrance door to pool store 2 to reveal a very heavily corroded steel beam. The sand / cement screed at this location was damp to the touch and a member of council staff had reported that the tile grout in places remained damp even when the pool was not in use".*

23.3 The following photograph, which was included with the file note, shows the corroded steel beam (and its reflection in a mirror) in the screed below an opened section of tiling.

23.4 The same 'site visit file note' also commented on observed active leakage from the pool hall floor to the basement plant room below;

> *"Within the plant room, water was dripping from the floor above, particularly in the vicinity of the steel support beam at the junction between the Holorib to the pool walkway and the precast, prestressed hollow core floor planks. There were temporary pipe runs suspended from the ceiling to collect and divert the drip water. The base plate of one of the supporting columns exhibited significant rusting for a column within a building that has only been in use for around six years".*

23.5 This comment was supported by the following photograph of this rusting column, which was taken during the structural engineer's visit.

23.6 In relation to the structural steel frame on the upper levels of the building, the following comments were made;

> *"Similar issues of rusting steelwork and efflorescence was evident within the changing village to the soffit of the first floor supporting the spa pool. Where ceiling tiles had been removed to expose the soffit of the floor above, significant rusting of the main structural steelwork frame, efflorescence to the underside of the precast concrete floor slabs and evidence of salts leaching from Holorib floor slabs could be observed as in the following photograph".*

23.7 In relation to the continuing leaks from the spa pool on the first floor the 'site visit file note' stated;

> *"The water loss from the spa pool appears to be particularly significant relative to the size of the pool. The spa is located on the first floor directly above part of the main pool complex changing village and at the time of my visit, the section of the changing village below the spa had been semi-permanently cordoned off due to water dripping from the ceiling above.*
>
> *Assuming that there is no other source of the water loss from the spa pool, such as leaking pipework, the natural conclusion must be that the majority of the water loss from the spa pool is seepage into and through the first-floor structure. It might therefore be prudent to give serious consideration to closing and draining the spa pool at some point in the near future to allow a detailed investigation into the cause of the leak and, if possible, effect repairs to prevent the risk of further deterioration to the support structure".*

24. Analysis of construction of the pool walls by structural engineer - April 2012

24.1 The pool tank walls to the three ground floor pools and to the spa pool on the first floor were all constructed by a specialist swimming pool sub-contractor (William Taylor Pools Ltd.), appointed by Kier Northern.

24.2 It was beleived that this sub-contractor had used an adaptation of a system developed by a firm called Polarwall for the construction of the main pool walls. The actual Polarwall system used 50 mm thick expanded polystyrene boards as permanent formwork linked together and held upright by a system of longitudinal rails and stiff plastic cross-ties to form a hollow into which concrete was poured to form walls. However, the original investigations were unable to firmly establish the form of adaptation of this system as used by Taylor Pools in DG One.

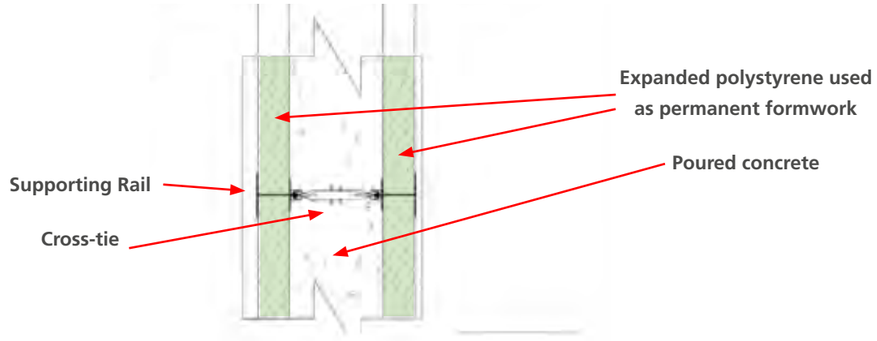


Diagram of the standard form of Polarwall construction

24.3 It was reported that William Taylors Pools had used their adapted Polarwall system for many swimming pools, it was, however, a system originally developed for forming general concrete walls in buildings, including the walls of basements. In January 2012, the architectural expert had noted that Polarwall technical advisers had informed him that Polarwall do not promote the use of their product for swimming pools.

24.4 In his 'Site Visit File Note' of 27th April 2012, the Council's structural engineering expert adviser commented on a note on a drawing numbered 8759/TP2616/002 produced by Harris & Taylor Structural Engineers for William Taylor Pools in relation to the construction of the DG One pool walls specifying that;

> *"All new concrete to be c35(a) ready mix design in accordance with BS8110"*

24.5 The Council's structural engineering adviser in reference to this specified requirement stated in his '*Site Visit File Note';*

> *"This is significant as BS8110 is the design code for normal reinforced concrete. For water retaining structures, the basic design and construction requirements are modified by BS 8007 Design of concrete structures for retaining aqueous liquids. As BS8007 refers to workmanship issues in relation to forming construction joints, I would expect drawings of structures designed to BS8007 to make reference to the code. The lack of reference to BS8007* ***indicates to me that the pool tanks were not designed as water retaining structures and would be reliant on tanking to retain water. The presence of any wat****er bar would therefore be of limited effectiveness as water would be able to seep through a normal (BS8110) reinforced concrete designed structures".*

24.6 It would appear that this analysis was correct. The following e-mail exchanges from during the period of construction of the building relating to this issue were made available to the Inquiry. On **9th May 2007** the Employer's Agent / Council's Project Manager had sent the following email to the Kier Northern Project Manager;

"It is noted that no protection is made to the pool tank walls for concrete curing, and that vertical cracking is evident in the narrow upstand on the latest pour. The same sections show considerable areas of inadequate concrete consolidation. I would be pleased to have confirmation on the integrity of this section of work.

The water stop in the remaining pour of the 25m pool does not bear on the previously cast concrete. Again, I would be pleased to know how this is to be rectified?"

The following email is a response to this query sent to Taylor Pools from a structural engineer at a firm called Rigby and Partners, apparently employed by Taylor Pools to do so. The response had in turn been forwarded by Taylor Pools to Kier Northern's Project Manager and from Kier Northern on **11th May 2007** to the Council's Employer's Agent / Project Manager. The email, including the comment, "*this should put your mind at rest",* sought to reassure him that he need not worry about the cracks and water-stop on the basis of this email from Rigby and Partners.

"The pool we understand is designed to BS8110 and is therefore not subject to the rigorous controls placed on crack widths as is specified in BS8007 where cracks are limited to 0.2mm. Cracks in BS8110 are limited nominally to 0.3mm (BS8110: Part2: 1985 clause 3.2.4.1) and this is based on aesthetic / cosmetic reasons. Concrete unless specifically designed otherwise, will crack during its normal curing process. These are often controlled by joints etc., but the fact is that concrete cracks.

Unfortunately, it looks like the cracks we have experienced in the channel, are a combination of the warm ambient temperatures during and post pour and the fact that no formal curing procedure, membrane or damping down of the concrete was adopted. The concrete, as does all concrete to one extent or another, has shrunk and has manifested itself as the cracks you now see.

The main concern should now be to ensure that the concrete has reached a relatively stable equilibrium point such that no further significant shrinkage takes place. The concrete will continue to shrink to a minute extent over the next twelve to 18 months, but this should not be of any significant consequence. The concrete centre advised me recently, as with most concrete items, that 28 days would be a point where all significant shrinkage could be considered to have taken place.

As the pool is designed to B8110 and ***does not rely upon the concrete to achieve its "water tightness", the main concern is not the concrete, but rather the waterproof render and tiling system that is to be applied.*** *This needs to be able to prevent any water penetration and therefore ingress into the concrete such that you (Taylor Pools) are confident enough to guarantee it.*

The control of the installation of the render / tiling system I would suggest is paramount and you should ensure that the team carrying out the works do so under suitable supervision".

24.7 It would therefore appear that senior managers responsible for overseeing the construction of the pool walls within both William Taylor Pools and Kier Northern, were acknowledging that the essential water-proofing of the pool would rely totally on the detailed make-up and quality of application of the internal finish to the pool walls.

24.8 Kier Northern's originally specification for the swimming pool tanks, as submitted with their tender, had been as follows;

"SWIMMING POOL TANKS AND WATER-RETAINING STRUCTURES

The walls and base slabs of the swimming pool tanks and other water—retaining structures have been designed to BS 8007 and BS 8110 to limit cracking due to early age thermal cracking and flexural cracking during construction, testing and general usage during the lifetime of the building. The base slabs have been designed as flat slabs, suspended on a grid of single piles. At construction joints, proprietary rubber water-stops have been specified and proprietary pore-blocking additives have also been specified in the concrete mix to minimise the risk of cracking that could lead to unacceptable leakages.

As an alternative to this form of construction, if it is economically viable, we may decide to use a standard non-water-resistant structural design for the RC elements and apply a waterproof render to ensure water tightness".

24.9 It is clear from the above email from Kier Northern's Project Manager to the Council's Employer's Agent that the alternative option to use a ***"non-water-resistant structural design for the RC elements and apply a waterproof render to ensure water tightness"*** was the one that was subsequently intended to be implemented on-site. What is also clear is that no reference was made to the need for any remedial action to deal with the cracking and lack of consolidation of poured concrete observed by the Employer's Agent in the concrete pool tank walls.

24.10 This approach **placed total reliance** on achieving a water-proof envelope to the pool on the specification and on the application of the internal render and tile make-up. This left no effective fall-back if this layer should fail, as the concrete wall to the pool had been described as being poorly consolidated, containing noticeable cracking and not being waterproof. This point was recognised by the structural engineer from Rigby and Partners in his email to Taylor Pools when he wrote;

"The control of the installation of the render / tiling system I would suggest is paramount and you should ensure that the team carrying out the works do so under suitable supervision".

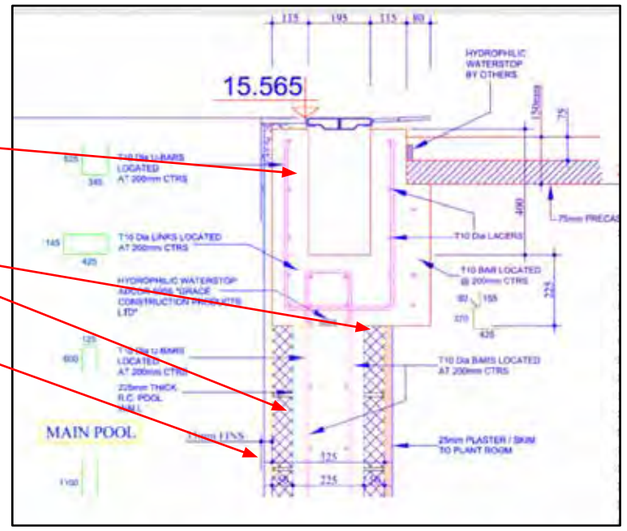
24.11 Any weaknesses or inadequacies in the application of render, adhesive and tile would have the potential for chlorinated water from the pool to ingress the reinforced concrete pool walls. Chlorine is an aggressive oxidising element and its detrimental effect on reinforced concrete is well known. Furthermore, if the statement in the Employer's Agent's email on 9th May 2007 was accurate that areas of the concrete walls "show considerable areas of inadequate concrete consolidation", this would have exacerbated the potential for corrosion of steel reinforcement and the compromising of the integrity of the pool walls should there be any failure to the waterproofing layer.

24.12 The proposed detailed design for the construction of the main pool walls had been produced by a different firm of structural engineers, Harrison and Taylor Ltd. of Lancashire. Their detail drawing shown below indicates a proposed 35mm thick finish to the main pool side of the wall, assumed to be made up of a waterproofed render, adhesive and tile.

24.13 This finish to the pool wall was shown as being applied on top of what would appear to be outer skins of 50 mm thick blockwork in the form of permanent shuttering. There was no annotation confirming the composition of the hatched 50 mm thick elements, however, hatching would normally be taken as denoting blockwork and coursing similar to blockwork masonry can be seen on the detail. It was subsequently confirmed that in the case of the training pool only a 50 mm thick concrete tile had been used as permanent shuttering.

24.14 There was nothing on the detail to indicate that a Polarwall type solution was to be used, the only shared similarity being the principle of pouring concrete between two layers of permanent shuttering.

24.15 The as-built documentation for the project, required under both the terms of the contract and the statutory CDM regulations, failed to show the actual detailed construction of the pool walls as built.



Detail from Contractor's construction drawings by Harrison and Taylor Ltd.

24.16 The following extract from an NBS Specification produced for the DG One project by Kier dated 27th October 2006 provides details of a water-proofing render that had been originally proposed for the pool walls, made up of three coats with a combined render thickness of 17 mm on top of which would be applied adhesive and tiling. This specification was not used in the construction of any of the pools.

Extract from NBS specification

"RENDER APPLICATION TO POOL TANKS

The first render coat to be applied directly onto the bonding agent immediately after application and the render coat should be scratched and roughened off to an overall depth of 10-11mm (never greater than 13mm in one application).

- *The first coat to be allowed to cure without rapid drying occurring, this should take 3 -7 days depending on site conditions.*
- *A second application of the bonding slurry is then to be applied to the cured first render coat and then the final render layer is to be applied.*
- *The top, slightly weaker mix render coat to be again applied straight after the bonding slurry has been brushed into the cured base render. This render layer to be wood float finished to a depth approximately 6-7mm to give an overall render finish of 17mm. The trueness of the surface should be such that over a 2m straight edge (with feet), no more than 3mm variation in gap should occur.*
- *A drying out period of 4 weeks should be allowed for the render coats to fully cure and measures to prevent rapid drying out should be taken.*
- *The above details relating to render mixture and application should be carried out in accordance with clause 19 of BS 5385:2".*

24.17 When the construction of the walls of the main pool was subsequently examined as part of the remedial contract, it was evident that many of the proposed design details had not been followed during construction in that:

- After the concrete had been poured to form the wall, the formwork on the pool side of the wall had been removed to expose the face of the poured concrete wall. The 50mm blockwork tiles shown in the above detail were not used in the construction of the main pool.
- Elements of the Polarwall system, in the form of what would appear to be Polarwall H-rails and Polarwall cross-ties would however appear to have been used in the construction of the pool wall. The inside face of H-rails had been left flush with the face of the finished concrete wall when what must have been Polarwall polystyrene shuttering was stripped away with the main body of the H-rails.
- The finished position of the in-situ concrete wall was 50 mm closer to the pool side than shown on the detailed design so that, when the polystyrene insulation was stripped, the concrete surface aligned vertically with the pool side face of the separately cast in-situ concrete ring beam that formed the edge of the pool above the pool wall.
- The position of the steel reinforcement would appear to have been left in the position shown on the detailed drawing meaning that the concrete cover to the pool side would generally be greater.
- The thickness of the render had been measured as being in places only approximately 5mm thick (Beningfield Report). Reports from the site when the pool was opened up subsequently showed significant variation in the thickness of the render across the walls of the pool

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- The render, adhesive and tile finish was applied directly to the surface of the stripped concrete, not to the permanent shuttering layer as shown in the construction drawing by Harrison and Taylor.
- In laboratory investigations, the tiling to the pool walls was found not to be bedded on solid adhesive. The adhesive contained strips of open channels which were allowing the lateral migration of water behind the tiles and presenting increased opportunities for water penetration into and through the underlying render.
- There was no formal confirmation as to the water-proofing that had been applied in the make-up of the finish to the main pool wall. A thin rubberised paint skin with a thickness of approximately 0.5mm was identified by the scientific expert from CMC in his examination of the tile samples removed from the wall. This layer was found to be regularly perforated.

24.18 The most accurate information available to the Inquiry in relation what was used to waterproof the pool walls is a specification found in the documentation that was sent to the tiling sub-contractor on DG One by a specialist supplier, BASF Construction Chemicals from Manchester. This specification suggests that the rubberised paint skin, which was the only waterproofing material identified by CMC to be in the make-up of the finish to the pool wall, was a liquid applied waterproofing membrane called 'Seccoral 2K'.

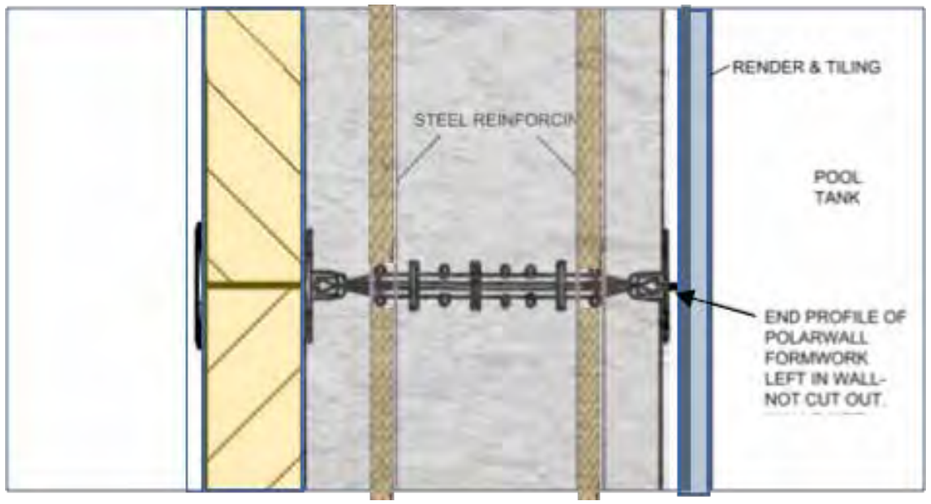
24.19 If the analysis by CMC of the thickness of the waterproofing layer is correct the Secorral 2K was not applied in accordance with the manufacturer's recommendations which states;

> *"A dry layer thickness of at least 2mm is required for all applications acting as a waterproofing layer directly under tiles"*

24.20 The evidence of water penetration through the pool walls is incontrovertible and demonstrates that whatever the final detailed make-up of the pool wall construction and internal finish was, it failed to satisfy the fundamental requirement of preventing leakage of pool water through the pool tank walls to other areas of the building.

24.21 Once opened up under the current remedial contract, it became evident that the separately poured top concrete section of the pool wall, that also served to create the scum /drainage channel around the edge of the pool, had been left short of the required height by the original pool contractor. The additional necessary height to the wall had been made up with crudely formed lumps of mortar packing. The spaces between these created significant voids in the wall that would facilitate the ingress and retention of water within the wall structure. The photograph shows the crude packing and voids on a portion of the top section of the pool wall with the covering piece removed.

24.22 The method of construction used in building the main pool wall would appear to have been similar to that shown in the following diagram. Permanent polystyrene slab formwork, indicated as yellow, was used on the plant room side of the pool wall and finished with a sand-cement render. Once the concrete had cured sufficiently, the equivalent polystyrene formwork on the pool side of the wall was stripped and the Polarwall rails holding it cut back, leaving just the rough vertical back face of the rails level with the exposed face of the concrete. The render, water-proofing paint layer, tile and grout were then applied.



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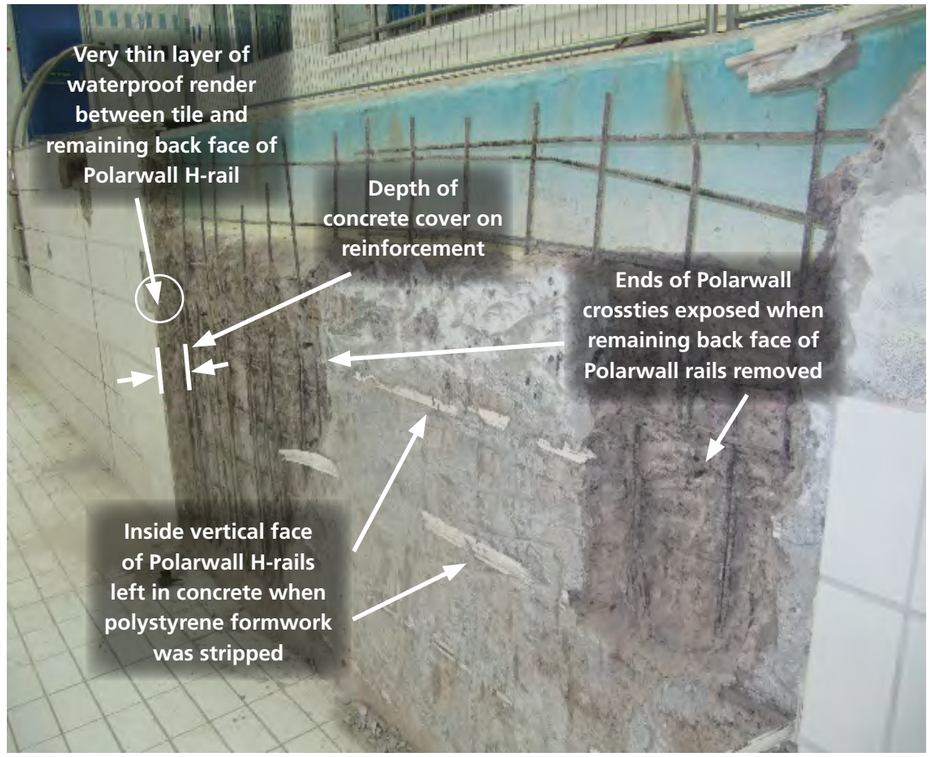
Method of construction used in forming the walls of the main pool

24.23 The following photograph was taken of a section of the wall of the main pool closest to the viewing area after it was opened up as part of the ongoing remedial works contract to address corrosion of reinforcement, inadequate waterproofing and debonding of tiles. One can see the remaining single inner face of the physically cut away H-shaped rails, which would have held the polystyrene shuttering slabs that have been removed



24.24 Technical advice suggests cover depths of 50–75 mm of concrete are required to protect reinforcement against corrosion in aggressive environments, but that thick cover leads to increased crack widths in flexural reinforced concrete members. Large crack-widths (greater than 0.3 mm) are liable to permit ingress of moisture and chemical attack to the concrete, resulting in potential corrosion of reinforcement and deterioration of concrete. As a result, thick cover on reinforcement can defeat the purpose for which the cover is provided.

24.25 The concrete cover on the section of concrete wall below the ring beam would appear to be significantly thicker than 75mm, and this could provide a potentially contributory cause to the excessive cracking identified in the main pool walls referred to in the email from the Employer's Agent to Kier. As explained above, with failures in the waterproofing layer, cracking would have created natural channels for ingress into the concrete of the chlorinated pool water that had penetrated behind the intended waterproof layer.

24.26 Although it may be that in practice, as in the case of DG One, the concrete shells of some swimming pools are not constructed to a waterproof standard complying with BS 8007, it clearly states in BS5385 Part 4 1992 Section 7.2.1;

> *'The design specification and construction of structural shells* (to indoor swimming pools) *should be in accordance with BS 8007'*

and in section 7.1;

> *'The primary objective is that the basic structure behind the tiling should be watertight. Additionally, screed or rendering, bedding material or grout, should withstand continuous contact with the immersion liquid without deterioration'*

24.27 Following the subsequent closure of DG One in October 2014, investigative works were undertaken to determine the actual extent of corrosion to the steel reinforcement in the various pool walls, tests which could not have been carried out when the facility was still open to the public.

24.28 Ground penetrating radar scans were used to establish the depth of cover to reinforcement in the walls and floors of the pools. The survey found the depth of cover to be variable both above and below the recommended standard to provide protection to the reinforcement.

24.29 Further intrusive investigations confirmed leakage through the walls of the pool tanks and corrosion to the reinforcement in the concrete of pool walls, necessitating further work to be added partial reconstruction to the walls of both the main pool and training pool and complete reconstruction of the leisure pool tank and the spa pool tank on the first floor.

24.30 The corrosion of reinforcing steel is an electro-chemical process and the behaviour of the steel can be characterised by measuring its half-cell potential. The higher this potential the higher the risk that corrosion is taking place.

24.31 The half-cell testing undertaken as part of these investigations by a specialist company indicated a strong likelihood of active reinforcement corrosion in progress over a large proportion of the pool tank walls. There was evidence of corrosion in eleven out of seventeen sample locations tested around the pool tank walls. Corrosion varied between slight surface corrosion and severe local corrosion causing significant loss of sectional area. The pattern of corrosion was considered to be unconventional, not following a recognised or logical pattern.

24.32 Indications from Scanning Electronic Microscopy (SEM) analysis on a black corrosion material discovered to be present in the walls suggested the presence of iron, oxygen and chlorine, which in turn suggested pool water as the origin for the corrosion agents.

24.33 Earlier reference was made in this Report to the findings of the investigations carried out in 2011 by Neil Beningfield Associates into the quality of installation achieved in the render and tiling of the pool tanks. These findings concluded that;

a. Where investigated the render coat applied to the pool walls was approximately 5mm thick

b. Tile adhesion levels were found to be as low as 60 - 65% whereas, under *'BS 5385-4: Code of Practice for Tiling and Mosaic in Special Conditions'*, adhesion levels are required to be as close as practically possible to 100%. As a result, void areas were found behind some tiles.

c. The render interface with the adhesive had failed in tension or shear and pointed to inadequate render or excessive forces or both.

d. There were *'grossly excessive sulphate contents in places, almost certainly pointing to contamination by extraneous materials during construction. The expected sulphate content of the render if it was based on Portland cement or Ardex render* (it was suggested the latter may have been used by Taylor Pools), *would be less than 1%. Over 25% was found in the affected areas'.*

24.34 Defects in the water-proofed render, adhesive and tile layer, such as reported above, would create the potential for chlorinated pool water to gain ingress to the non-water-proof concrete wall substrate and could cause corrosion to the reinforcement.

24.35 Above and below are two from many available examples of photographs of corrosion of steel reinforcement and staining of surrounding concrete in pool walls. The inset photograph above is an example of a corroded bar removed from the upper scum channel section of the tank wall showing depleted section as a result of corrosion

24.36 The pool tanks structures were suffering from water ingress into the structure and corrosion of steel reinforcement. A fully effective waterproofing internal lining would have been required. However, no clear evidence was available of tanking or water proofing and materials tests commissioned subsequently confirmed that no effective waterproofing lining had been installed to walls and floors of the pool tanks.

24.37 In 2012 at the request of Kier, analysis of removed samples of tile, adhesive and render had been carried out and a report produced by the Tile Association following the loss of tiles in 2012 from the teaching pool walls. The Tile Association report had concluded;

> *"The pool tank (teaching pool) is not a proven water retaining structure and the render and tiles are not designed to create this, nor has any form of tanking been used. The cementitious grout is porous and the tiling will not be impervious".*

24.38 The final pleadings submitted to the Court on behalf of the Council contained the following assertions in relation to the failure of the waterproofing of the pools to satisfy the requirements of specific clauses contained in the Design and Build contract between the Council and Kier;

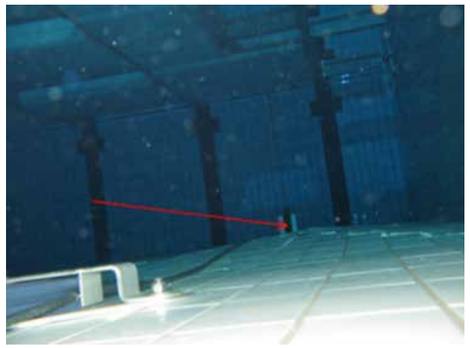
> *"The render coatings to the walls and the screed coatings to the floors are not waterproof, contrary to best up to date practice. Best up to date practice (in relation to the design and execution of the works) where the pool tanks were not watertight required rendering to be inherently waterproof. This was not provided. Therefore, best up to date practice was not achieved in breach of clause 2.5.7.1.3 of the Building Contract.*
>
> *No water-tightness test was carried out during construction, or before tiling, and the water-tightness of the pool tanks including the overflow channels was not checked or demonstrated – all contrary to normal practice, and thus best up to date practice (in relation to the design and execution of the works). This was a breach of clause 2.5.7.1.3 of the Building Contract.*
>
> *The pool tanks are not lined with a suitable material such as '…waterproof cement rendering to ensure that the water loss from the pool does not exceed the permissible limits in Section 2' (SPATA standards). The pools therefore do not comply with the SPATA standards, and therefore do not comply with normal practice, nor best up to date practice (in relation to the design and execution of the works). This was a breach of the Building Contract, Appendix (IV) (4), para 15.2. This amounts to a breach of clauses 2.5.7.1.2 and 2.5.7.1.3.*
>
> *In failing to construct the concrete tanks including the overflow channels and their coatings such that watertight vessels were created, and in failing to test for water-tightness, the Contractor did not meet the high standards of workmanship required. This was a breach of clause 2.5.7.1.4 of the Building Contract".*

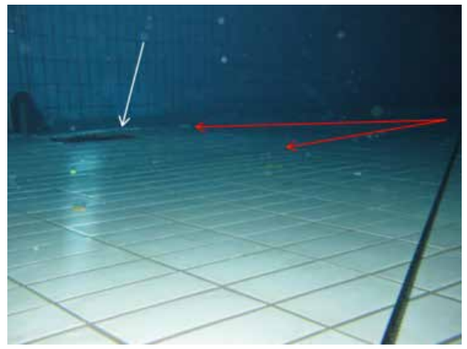
25. Second enforced closure of the training pool - May 2012

25.1 On 15th May 2012 a further significant problem was identified with the training pool that resulted in its temporary closure. Initially this appeared to be a problem with the training pool's movable floor which had already been subject to significant repairs by Kier in 2009. This failure involved a pulley housing base plate to the south side which carried three of the six stainless steel cables to the floor.

25.2 The Council's advisers concluded that the bolt fixings to the base of the pulley housing were inadequate to carry the designed loadings, leading to them failing, pulling out and causing consequential damage to the base plate and the hydraulic ram base plate.

25.3 After further underwater investigations by divers, the expert technical advisers identified that there were further significant problems with the tiling inside the training pool and with some of the pipework underneath the pool. The following photographs were taken in May 2012.





25.4 The photograph on the left above shows the tiled surface of the structural floor below the movable floor to be cracked (arrowed red) along a zig-zag line which appears to follow the tile jointing. A bulge in the plane of the floor is evident. The photograph on the right shows a pronounced bulge to the far side of the pool floor (arrowed red) and several tiles missing (arrowed white).

25.5 After carrying out a series of investigations, the Council formally wrote to Kier Northern on **29th June 2012**, advising them of the problems encountered in the training pool and seeking their urgent proposals for carrying out necessary repairs. These repair proposals were subject to approval by the Council's expert technical advisers.

25.6 On **3 October 2012**, having received repair proposals for the training pool from Kier Northern, the Council requested them to proceed with the implementation of their proposals, including both the fabrication of a new support frame for the movable floor ram and pulley system, and necessary remedial works to the serious tiling defects in the floor of the pool tank. The work was completed by Kier Northern by the end of October 2012, however, the training pool had been closed on this occasion for a period of approximately six months, during which the wet side facility experienced a significant reduction in attendances.

25.7 As the investigative work of the expert technical advisers had progressed, the areas of defective work they identified in the building continued to grow and it was realised that the scale of the work was significant, encompassing all the main elements of the building and its mechanical and electrical services and would inevitably mean the enforced closure of the building while it was being carried out.

25.8 A full schedule of defects was completed by the expert technical advisers in June 2012 in a form that could be used both as the basis for discussions with Kier and for any subsequent legal action that might be required. The list of defects was sent to Kier on 29 June 2012.

26. Initial broad indication of cost of remedial work - June 2012

26.1 The technical advisers had provided the Project Board with a preliminary high-level order of cost of £4 million to carry out the building aspects of the remedial work. They advised that this figure did not yet include any allowance for essential remedial works to the mechanical and electrical services installations, which it was felt could amount to an additional £750,000. These figures had been provided to let the members of the Project Board gain a better understanding of the scale of the defects, even though at this stage there was still a reasonable expectation that this work would be undertaken by Kier Northern at their own cost.

26.2 The expert advisers had at the time stated that these very approximate estimates had been based on their assessment of those remedial works that were reasonably foreseeable at that stage, using 2012 construction rates.

26.3 On **29th June 2012**, in addition to the letter specifically referring to the defects associated with the training pool, the Council had sent Kier Northern a separate letter including a full schedule of known defects and had requested from Kier Northern a formal response as to how they intended to remedy them.

26.4 Kier Northern in reply had advised the Council that they had engaged their own specialist to fully consider all the matters contained within the defect schedule provided to them and were in the process of preparing a comprehensive response, following which they proposed having a meeting with the Council to discuss their response.

26.5 In July 2012, MacRoberts Solicitors, acting on behalf of the Council, formally gave instructions to a leading Junior Counsel at the Scottish Bar, a construction law specialist with considerable proven experienced in construction cases, who shortly thereafter would be made a Queen's Counsel. Over the following months, the Council also formalised the appointments of a senior structural engineering consultant from Wren and Bell Structural Engineering and a senior quantity surveying consultant from FTI, a consulting forensic and litigation practice.

26.6 On **24th August 2012** a meeting was held between Council officers and their legal advisers.

26.7 The Council were advised that adjudication, a form of dispute resolution often used in contracts of this type, was not intended to deal with disputes as cumbersome as that faced by the Council, and in the opinion of their Counsel was not recommended as the appropriate forum for this type of dispute.

26.8 At a meeting on **22nd January 2013** of the Council's Policy and Resource Committee, the Members were asked to consider a report prepared by the Chair of the Council's Project Board. The report outlined the current position and the communications that had been exchanged between the Council and Kier Northern regarding the schedule of defects.

26.9 The report set out the general background as to the nature of the defects including:

EXTERNAL ENVELOPE
Roof and wall construction issues resulting in heat loss, vapour transmission and excess energy costs

INTERNAL STRUCTURE
Floor, wall and ceiling construction issues resulting in leakage, heat loss, corrosion and condensation damage

INTERNAL FINISHES
Problems relating to pool water-proofing and tiling, rendering, incorrect stainless-steel fittings, construction of suspended ceilings, vapour transmission, condensation and unsightly appearance of fittings.

HEATING AND VENTILATION
Lack of plant capacity, poor ventilation leading to heat loss, excess energy costs, specified environmental conditions not maintained.

OTHER DEFECTS
Excessive pool water consumption, plumbing defects, inadequate Operational and Maintenance manuals

26.10 The technical advisers saw the defects as breaching one or more of the contract terms;

- Design failure
- Failure to comply with specification
- Design and construction not In compliance with best up to date practice.
- Materials used
- Workmanship
- Failure to comply with appropriate regulations.

26.11 It was reported that following the Council's letter of June 2012 to Kier Northern, and after considerable prompting, Kier Northern had sent a number of similar responses to the Council stating that they were still considering the information provided and would respond in full in due course.

26.12 In a communication of **7th December 2012**, Kier Northern had stated that the Council would receive a response the following week. The Council had replied on the same day expressing extreme disappointment that no response had been received and stating that in the absence of a substantial and proper response the following week, the Council would have no alternative but to take such steps as it considered appropriate.

26.13 A further holding response had been received from Kier Northern on **16th January 2013** without any commitment as to the timescale within which the Council would receive the required substantial response.

Legal advice to raise court proceeding against Kier Northern

26.14 The report stated that in light of the lack of response from Kier Northern, and what was perceived as a reluctance on its part to engage meaningfully with the Council in relation to the schedule of DG One defects sent to them, the Council's external legal advisers had recommended that court proceedings should be instigated by the Council. The initiation of proceedings was intended to seek to ensure that Kier Northern responded appropriately to the schedule of defects and met its obligations to the Council.

26.15 The report further stated that as the Practical Completion Certificate had been issued on 9th May 2008, there was the potential for a legal time bar to operate against the Council which could prevent it from making claims against Kier in respect of the defects.

26.16 It was explained that Court proceedings would need to be raised by the Council within a 5-year period in order to prevent the time bar from coming into operation. The report stated that the Council had been advised by its lawyers that the most prudent approach, in order to prevent their claims against Kier from being time barred, was to take the start date as being **9 May 2008**. On that basis, the Council would be required to raise proceedings against Kier Northern by **8th May 2013**.

26.17 In so doing, in addition to seeking to recover from Kier Northern the capital costs of carrying out the remedial works to the building, the Council would seek to recover all other costs or losses it had incurred or would incur as a result of the defects in DG One.

26.18 The Committee were advised that the additional costs or losses that the Council may seek to recover from Kier, were currently being finalised and would be based on the advice of the Council's external legal and quantum experts. They had been broadly estimated, at the time of the meeting, at £6 million, including the most recent costing of the remedial building works, which had been assessed at £3.7 million.

Remedial works timetable

26.19 The report indicated that the design and procurement processes that would be required before commencing a newly procured remedial works contract, should the Council decide to proceed with that approach, would take up to 10 months, which would result in an assessed construction start date for the remedial works in early 2014.

26.20 The advice received from the technical experts had been that the most effective way to carry out the remedial works was to close all parts of the building to the public to allow work to progress simultaneously to both the 'wet' and 'dry' sides of DG One'.

26.21 They had estimated that the facility would need to be closed for around seventeen months although while the works to the 'wet' side would require the full period to complete, it was thought that the 'dry' side could be completed and handed back at the end of month four, allowing the Council to have part of the facility operational and generating income.

26.22 The Members were informed that despite assurances from Kier Northern, no substantive response had been received, in light of which, the report included a recommendation to raise court proceedings.

26.23 This recommendation was accepted, and the following decisions were made;

- to initiate court proceedings against Kier Construction Ltd, seeking to recover costs including the full costs of the remedial works required at DG One Leisure Centre and all other reasonable costs and losses incurred;
- to commence design and procurement of the remedial works; and
- to receive further reports to this Committee and the Full Council as appropriate, including updates on progress with court proceedings, further detail on financial consequences, alternative arrangements for customers and staff, and any proposals that may be received from Kier to undertake or meet the cost of remedial works and recompense the Council's costs / losses.

26.24 On **25th January 2013** a letter was received by the Council from Kier offering what was considered by the Council to be only a limited response to the Defects Schedule provided by the Council in June 2012 and unacceptable to the Council.

26.25 This was followed on **15 March 2013** with another letter from Kier, enclosing what was termed as an "Outline Resolution Strategy for DG1". This letter proposed the creation of a Kier Project Team to commence an investigations process and categorise problems found in the building as (a) defects accepted by Kier, (b) defects disputed by Kier as not being their responsibility and (c) design elements which would require input from other parties. Under the proposed strategy unresolved issues would be passed to a proposed combined Management Board with shared membership from Dumfries and Galloway Council and Kier.

26.26 This resolution strategy was also considered to be **unacceptable** to the Council.

26.27 On **9th April 2013**, MacRoberts Solicitors wrote to each of the Council's appointed independent expert advisers, i.e. architectural; mechanical and electrical engineering; and structural engineering; confirming the understanding of the legal team that the 'Schedule of Defects' as prepared by them was;

> *"….. a comprehensive list of (a) the defects at DG One which can be discovered with reasonable diligence and (b) the failures of Kier under reference to the relevant obligations Kier undertook to the Council. We also understand that the remedial works necessary to correct the defects and bring them up to the correct contractual standard have been incorporated into the remedial works costed by (the expert quantity surveying adviser) and Thompson Gray and Partners"*

26.28 Court proceedings were initiated against Kier in the Court of Session on 12th April 2013, in line with the earlier advice from the solicitors that proceedings should be initiated before the expiry of five years from 9th May 2008, the date of issue of the practical completion certificate of DG One.

26.29 The Council had agreed to recruit a firm of specialist Project Managers to provide the necessary technical expertise required for this scale of project (the costs to be recovered from the legal action). An Invitation to Tender for project management services was issued on 26 April 2013 on the Public Contracts Scotland website. Responses were received on 17 May 2013. Three criteria were used to evaluate the submissions; resourcing proposals - 30 per cent; quality - 30 per cent; and price - 40 per cent.

26.30 During May and June 2013 there was a series of further communications between Kier and the Council and between their respective solicitors, Tods Murray Solicitors having been appointed to act on behalf of Kier.

26.31 On **7th June 2013**, following a visit to DG One on **28th May 2013**, the Managing Director of Kier Scotland and North-East wrote to the Council. The final sections of his letter stated;

> *"We can confirm our position that having visited the project, there are clearly issues in existence which require to be rectified and we are committed to working to find long-term solution to these matters".*
>
> *"We would ask that you confirm that in general terms you would be willing to engage with us in meeting to find solutions to the issues at DG One"*

26.32 On **24th June 2013** MacRoberts Solicitors wrote to Tods Murray Solicitors, giving Kier a period of 3 months within which to confirm that it would remedy all of the defects identified in DG One and meet its obligations in relation to the costs and losses to the Council associated with the defects.

26.33 On **26th September 2013**, after a number of further exchanges of correspondence between the parties, Tods Murray Solicitors wrote stating that Kier was not able to give the outright confirmation demanded of it by the Council.

26.34 On **7th October 2013**, in response to this letter, MacRoberts Solicitors advised Tods Murray Solicitors that, in the absence of the necessary confirmation from Kier, that the Council intended to progress with the court proceedings and to employ a third party to remedy the defects.

26.35 On **11th October 2013**, a summons was lodged on behalf of the Council for 'Calling in the Court of Session'.

26.36 On 8th October MacRoberts had been advised that Burness Paull Solicitors had replaced Tods Murray Solicitors and were now acting for Kier in this matter.

26.37 On **16th October 2013** Burness Paull Solicitors wrote proposing a framework to resolve the defects claim.

26.38 The letter from Burness Paull acknowledged the extended length of time it had taken Kier to respond to the issue of the defects schedule by the Council and sought to explain their slow response as being the result of a number of factors including;

> *"(i) internal reorganisation and office moves with the consequential difficulty in the papers and the problem finding their way to the appropriate individual to take ownership of the issue;*
>
> *(ii) various personnel changes within Kier;*
>
> *(iii) these factors contributed to an initial failure to appreciate the extent and gravity of the problems;*
>
> *(iv) perhaps an overly legalistic rather than practical approach to resolving the issues;*
>
> *(v) the time taken to draw together an internal technical team capable of dealing with and proposing solutions to the problems; and*
>
> *(vi) the time taken to appoint appropriate experts".*

26.39 The letter contained a proposal to adopt a form of mediation between the Council and Kier which would allow the remedial work to commence at an early date whilst the mediation process would continue. It stated;

> *"Kier would be willing to undertake to execute remedials to all the defects identified in the defects schedule, in advance of identification of legal responsibility. They would do this without prejudice to their position on liability. However, they would reserve the right to set off, from the Council's financial claims under the Summons, their costs in executing works to remedy defects which were ultimately found or agreed to be not of their making".*

26.40 On **24 October 2013** MacRoberts Solicitors responded to the letter of 16th October from Burness Paull Solicitors, rejecting the proposed approach and setting out detailed reasons why the Council was doing so.

> *"Our client appreciates the difficulties you face having only recently been instructed in the matter in place of Tods Murray, but in the circumstances our client considers that the letter appears to be an attempt to extricate Kier from the difficulty created by its failure properly to address the defects in the last 15 months. The letter also creates the misleading impression that Kier is now able and willing to progress matters associated with remedial works properly and speedily in circumstances where it has not properly inspected or investigated the defects and cannot therefore realistically be able to engage properly and speedily upon a holistic approach to their remediation.*
>
> *Only if the defects had been carefully investigated and analysed could the Council have been satisfied that an appropriate scheme of remedial works could then be put in place. Given the lack of proper expert involvement from the Kier side on site at DG One, the Council is not satisfied that Kier understands (a) the extent of the defects; (b) what is required in order to remedy them; and (c) how the necessary remedial works require to be carried out."*

26.41 On **23rd October 2013**, Kier, as 'Defender' in the case, lodged its defences to the Court.

26.42 On **30th October 2013** a preliminary hearing was held, which allowed further time for adjustments to the initial pleadings by both parties and that the hearing be continued on 6th February 2014.

Appointment of design team for implementation of the remedial works

26.43 On **18th November 2013**, following a short procurement process, Turner & Townsend Project Management Services was appointed to manage the design and procurement of the necessary remedial works to DG One.

26.44 The following appointments were subsequently formalised with the other members of the design team, who would work under the direction of Turner &Townsend in relation to the implementation of the remedial works contract.

26.45 The companies that had already been providing expert architectural advice, structural engineering advice, and mechanical and electrical engineering advice in relation to the litigation process, i.e. Hurd Rolland, Wren and Bell and Morris Engineering Design Services respectively, were appointed to provide as a separate commission, the architectural, structural engineering and mechanical and electrical engineering design services in relation to the implementation of the remedial works contract. Morris Engineering Design Services would subsequently, with the approval of the Council, sub-contract the execution of the design services to K. J. Tait Mechanical and Electrical Engineering Consultants.

26.46 The implementation of the remedial works contract was recognised by the Council and all other participants as a totally separate role from that carried out up to that point by the expert witness colleagues from their respective companies. However, there was no separate Project Initiation Document prepared which would have allowed for a fresh assessment of the objectives of the separate implementation of the remedial contract in respect of the quality of the completed building that would be required and the potential need for additional works to achieve this quality. The brief for the building and the tender documentation simply became the schedule of defects that had been determined as attributable to Kier.

26.47 These appointments did not provide for an assessment of those other defects in the building that needed addressed but which had not been deemed attributable to Kier. Such items included the need to replace virtually all of the low pressure hot water and chilled water systems due to the lack of essential water treatments, which should have formed part of the Council's maintenance regime of the building since its opening in 2008.

26.48 Turner & Townsend's appointment included negotiating the level of fees to be paid to each of the above firms for undertaking these roles.

26.49 The level of fees negotiated at this stage by Turner & Townsend would subsequently prove to become a somewhat disruptive factor to the smooth progressing of the remedial works when over time the amount and cost of the remedial work required, then estimated to be in the region of £3 - £4 million, would increase by a multiple factor.

26.50 The final member of the team, McGowan Miller Partnership, a local quantity surveying practice from Dumfries, was appointed by the Council following a mini-competition to provide cost planning and quantity surveying services in relation to the implementation of the remedial works.

26.51 The relative responsibilities of each of the various members of the team, in relation to the remedial project, were set out in a comprehensive roles and responsibilities matrix document attached to this report as appendix B.

27. The cost estimate for remedial works and the requirement for an OJEU advertisement - November 2013

27.1 In November 2013 an estimate for the construction costs associated with undertaking the remedial work as defined in the 'schedule of defects' and as specified in a document entitled 'DG One Description of Remedial Works' had been produced by Thomson Gray. This firm of quantity surveyors had, with the Council's agreement, been appointed as subcontractors by the Council's expert quantity surveying adviser's firm FTI, to undertake the detailed measuring and rating of the remedial works. The construction cost at November 2013 was estimated to be £3,381,178, excluding the estimated cost of fees and contingencies which when added to this amount gave a total of £4,095,000.

27.2 This figure was used in the initial submission to the Court as an indication of the scale of damages. The detailed make -up of these figures was contained in 'A Report on Quantum' dated 27th November 2013 and signed by the expert quantity surveying adviser to the Council. However, in terms of the legal process, finalising the quantum of cost was not due to be dealt with in the court proceedings until liability had first been clearly established by the Court, so this figure would not yet be regarded as the final amount claimed by the Council.

27.3 This estimate of the cost of the remedial works of £3,381,178 was however also used by the advisers to the Council to determine that the remedial works project would not have to be advertised in the Official Journal of the European Union. The estimate of cost was substantially below the EU threshold of £4,322,012 above which works contracts were required to be advertised in the OJEU.

27.4 Prior to the project manager and design team commencing the tender process, MacRoberts Solicitors had given very clear and accurate written advice to the Council in relation to the threshold requirement for EU advertising. Unfortunately, insufficient attention would be paid by the Council, its project managers and design team members to ensuring compliance with these requirements.

27.5 In the following months before the tender documentation was completed and advertisements for contractors placed, a number of significant additional remedial work items were added, extending the scope of the project. These changes to the extent and specification of work items, particularly work in relation to both the mechanical and electrical services and to the construction of the pool walls, were added to the 'Description of the Works' and the measured Bill of Quantities, key elements of the tender documentation. Despite these additions, no revised costing or, as would normally be expected, pre-tender estimate appears to have been produced to check that the assessed value of the work, after these additions, was still within the EU threshold requiring OJEU advertising.

27.6 The failure to have done so would subsequently require the abandonment of the tender process.

28. Remit for the preparation of the tender documentation - December 2014

28.1 There was considerable focus in the evidence given to the Inquiry, by a number of witnesses, as to the constraints that they understood to have been set in relation to the preparation of the tender documentation to be produced for the remedial works contract.

28.2 This related to the initial underlying purpose of the original documents, which was essentially a 'schedule of defects' intended to assist in establishing the range and quantum of defects to be used as part of the Court proceedings to support the legal case for compensation from Kier.

28.3 It had been agreed tactically that the most persuasive evidence for the Court in support of the quantum of the claim to be made by the Council, would be the results of an actual tendered competition put to the contracting market based on the making good of the specified schedule of defects for which Kier was seen as responsible.

28.4 However, in addition to the defects considered attributable to Kier, for practical reasons it would prove necessary to undertake a range of other items of work, including work to address lack of maintenance in the building and the making good of other defects that were not attributable to Kier, to bring the DG One building to an appropriate condition for use by the public. These items of work, which did not directly arise from defective construction by Kier, would have been chargeable to the Council.

28.5 In evidence, the Quantity Surveyors, McGowan Miller, who prepared the tender documentation, advised the Inquiry that they had been instructed by the Council that it should not include any such items. They confirmed that the bill of quantities and schedule of defects which were prepared reflected purely the content of the schedule of defects submitted to the court. They referred to the court document as their "bible and template" describing their brief as being to translate that schedule of defects into a bill of quantities to be priced by contractors.

28.6 In the context of an action against a contractor for damages for breach of contract because of defective design and/or workmanship, the principal loss or damages recoverable from the contractor will be the cost of reasonable and proportionate remedial works to rectify the defects for which the contractor was contractually responsible. The general rule is that the injured party is entitled to be put in the position it would have been in but for the contractor's breaches of contract. Works to remedy the defects for which the contractor is responsible that exceed what would be considered reasonable or proportionate to do so, are often described in practice as 'betterment', the cost of which betterment is not recoverable in damages from the contractor. Whether any particular item of work, to remedy defects for which the contractor is responsible, is reasonable or proportionate can be the subject of argument.

28.7 There was therefore a legitimate concern on the part of the legal advisers that, in relation to making good the defects attributable to the contractor, the prices received for the remedial works, in relation to their use to support the claim for damages, should reflect only reasonable and proportionate remedial work so as to avoid such argument.

28.8 This understanding was echoed in evidence to the Inquiry by the Expert Quantity Surveying Adviser:

> *"With regard to the question of "betterment" this was a backdrop to the discussions that we had with the legal team and there was a valid concern on their part that we should not have a design which could be accused of securing betterment as opposed to simply putting the Council back in the position it should have been but for any original defects. In that sense, we certainly couldn't have what I would describe as a "sullied package", going into court proceedings.*

28.9 The Expert Architectural Adviser was quite clear to the Inquiry that as far as he was concerned two distinct exercises were being undertaken; one to establish and support a claim for the amount of damages due to the Council as the result of failures of the design-and-build contractor; and a separate exercise to produce a document which would provide for the undertaking of all work necessary for the practical reconstruction of the building to an acceptable operational standard.

> *"The reconstruction of the building was to be a separate exercise to our exercise which was concerned with quantifying remedial works and thereby damages".*

28.10 The senior design team architect from Hurd Rolland, who was part of the design team responsible for the reconstruction of DG One stated in evidence:

> *"The first tender we did was on the basis of the defects list. We were told that we would not be able to tear out and replace items. We had to work with what we had and simply address the defects identified at that point. We were not allowed to do anything which might amount to betterment. To that extent, our instructions from the Council meant that our remit was very, very narrow. However, since then, the Council has allowed us to look at things more widely and since 2015 further improvements have been identified and associated works included".*

28.11 The document that was used to procure the work required for the purpose of reconstruction of the building was therefore a direct translation of the content of the document produced primarily for the purposes of supporting the claim for damages and only described and quantified the remedial work to the known defects attributable to Kier.

28.12 It did not include for the costing and provision of other essential elements of work to the building. The full need for these works were therefore not assessed at the time by the design team but they would eventually have to be added into the remedial contract, unfortunately after it had commenced.

28.13 An alternative arrangement in such circumstances would have been for the tender documentation to include but allow for the separate pricing and identification of any work considered necessary for the effective operation of the facility, the cost of which elements of the returned tender would be excluded from the claim. This approach was not adopted.

28.14 It is recognised that at this stage, as a need to review the overall condition of the DG One building had not been properly considered, the extent of such works was not fully understood at the time. It is also recognised that the Council had no certainty as to the outcome of the legal process and were anxious to limit expenditure to the minimum necessary.

28.15 In the opinion of the Inquiry it was inappropriate and impractical of the Council to seek to proceed with a major contract which did not provide for all the work that was necessary to render the project capable of effective operation, even if the need for this work was not attributable to negligence on the part of Kier.

28.16 Good practice should have required a proper technical assessment of all of the elements in the building and the preparation of a schedule of the non-attributable works necessary, particularly in light of the 2011 reports that had pointed out significant failures of maintenance.

28.17 The result of this approach, had it ultimately been capable of being followed through, would have been a requirement to commence a further remedial project immediately after completion of the first one.

29. Continuation of court proceedings - from November 2013

29.1 On **27th November 2013** on behalf of the Council the following reports from the respective expert advisers to the Council were lodged with the Court:

- a report on the building elements
- a report on the mechanical and electrical installations
- a report on the structural engineering elements
- a report on costs
- a Schedule of defects (revised November 2013)
- a description of the remedial works

29.2 On **8th January 2014**, adjusted Defences produced by their separate set of expert advisers were submitted on behalf of Kier.

29.3 On **21st January 2014**, during this period of developments in the litigation process, it was reported that further bulging of sections of tiling had occurred in the main pool.

29.4 Further adjustments were made to the summons and defences prior to the second sitting of the preliminary court hearing on **6th February 2014**. At this hearing the Court was advised that Kier was considering introducing up to four third parties.

29.5 In light of this proposed intention by Kier to pursue other parties in relation to aspects of these defects, despite the fact that Kier had in their pleadings provided a set of defending responses to the defects, **the Council sought the Court to order Kier to identify in clear and unequivocal terms whether each defect on the schedule was accepted by them as a defect or not**. Kier opposed this proposed requirement, arguing that they were not yet in a position to do this. Kier put forward this argument, despite the fact that at this point in the proceedings, two years had passed since Kier had first received the Schedule of Defects.

29.6 The Court directed as follows:

- Kier were allowed until 6 March 2014 to further adjust their pleadings and response schedule.
- The Council was allowed until 3 April 2014 to adjust its pleadings and defects schedule further in response.
- The preliminary hearing would be continued on 4th April 2014.

30. Decision to provide temporary leisure facilities - March 2014

30.1 At a Policy and Resources Committee on **18th March 2014**, as a result of the forth-coming enforced closure of DG One to allow the remedial works to begin, members had agreed that short-term alternative provision should be made.

30.2 In relation to the provision of temporary accommodation for fitness and training purposes, it was agreed to proceed with the capital development of Loreburn Hall, an existing facility in Dumfries. It was further agreed that, when no longer required for this purpose, the building would be transferred to the Loreburn Hall Community Trust, who would thereafter operate the facility on a full cost lease basis.

30.3 In relation to the provision of temporary swimming facilities, the meeting also agreed that a temporary pool should be erected at Dumfries Ice Bowl for the duration of the closure of the 'wet' side of DG One.

30.4 The respective estimated costs of providing these temporary alternative facilities were £600,000 for the refurbishment of Loreburn Hall and £836,000 for the erection of the temporary swimming pool at Dumfries ice Bowl.

30.5 Sadly, at the end of March 2014, the sudden death occurred of the structural engineering expert adviser to the Council from Wren and Bell Structural Engineers. His role was taken over by a partner in the firm, also a structural engineer.

31. Kier serves third party notices on William Saunders Partnership and Balfour Beatty Engineering Services Limited as third parties in the court action with the Council - March 2014

31.1 On **31st March 2014** an order of the Court was made granting Kier a warrant to serve third party notices on both;

- WM Saunders Partnership (WSP) who had provided Architectural and Civil and Structural Engineering Services to Kier on the DG One project as the first third party and
- Balfour Beatty Engineering Services Limited (BBES) who had provided Mechanical and Electrical Services to Kier as the second third party

31.2 The Preliminary Hearing was rescheduled to continue on 7th June 2014. Pleadings in defence were submitted by WSP and BBES on 4th June 2014. Over the next few months there continued to be a series of requests for and approval to longer periods for preparation and adjustment to pleadings by the parties to the court action.

32. Placing of public advertisement for contractors to undertake the remedial works to DG One - June 2014

32.1 On 5th June 2014 a Contract Notice (advertisement) for remedial works to the DG One building, valuing these works at approximately £3,000,000 was published on Public Contracts Scotland. An advertisement for the construction of the remedial works was not published in the Official Journal of the European Union (OJEU).

33. Continuation of legal proceedings - June 2014

33.1 On **17th June 2014** the Court allowed the Council and Kier to further adjust their pleadings until 29th July, allowed WSP and BBES to adjust their pleadings until 23rd September 2014 followed by a period of open adjustment of pleadings by all parties up to 14th October 2014. The Preliminary Hearing would be continued on 17th October 2014.

33.2 On **26th September 2014** the Court directed on a motion of the first third party, WSP, to extend the period for adjustment of pleadings allowed to third parties until 14 October 2014, to extend the period for adjustment of pleadings to all parties until 4 November 2014 and fixed a new date of **12 November 2014** for a continuance of the Preliminary Hearing.

34. Closure of DG One to the public - October 2014

34.1 On 6th October 2014 the DG One Leisure centre closed its doors to the public for what would turn out to be a period of more than 4 years. It is currently planned to re-open in the latter half of 2019.

35. Reports on maintenance of DG One during its period of operation - October 2014

35.1 In evidence to the inquiry there had been several references made by witnesses to the underfunding of contracts for regular maintenance of the facility. The following excerpts are from a letter that was submitted to the Court as part of the defence submissions by BBES, one of the third parties in the case.

35.2 The letter was sent on 6th October 2014 to BBES, the Design and Build sub-contractors for the mechanical and electrical services installations to DG One, by a representative from ESG Pool Ventilation in St. Ives Cambridgeshire. The letter referred to an inspection by ESG of two of the Air Handling Units that had been supplied by ESG for the DG One project. The inspection had been carried out at the request of BBES on 23rd September 2015. It should be noted that at this stage the building had not been fully operational for almost a year.

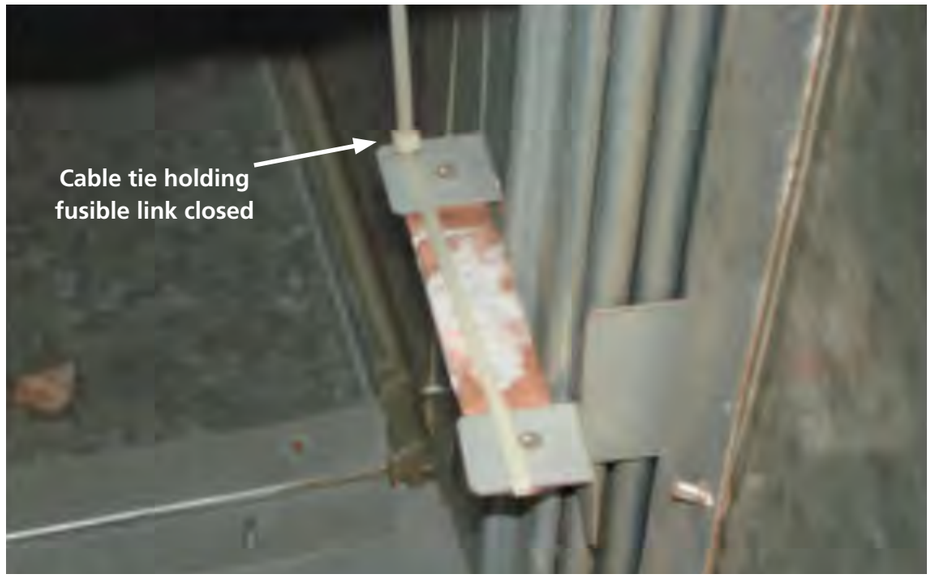
35.3 The ESG report stated;

> *"In summary there were signs of wholly inadequate maintenance such that the ventilation systems were unable to work properly.*
>
> - *Fire damper actuators were no longer working and some had not worked for years*
> - *One of the heating valves no longer provided any control of the Low Temperature Hot Water system, with serious energy loss as a consequence*
> - *One of the dehumidifier rotor drive belts had broken. As a result, it did not work at all".*
>
> *"In the opinion of a colleague who had been maintaining pool ventilation systems for 15 years, these are among the most badly maintained systems he has seen".*

35.4 In evidence to the Inquiry a member of the PMB stated in relation to the approach taken during the development stages of the project to the funding of maintenance for DG One;

> *"For me, the final nail in the coffin arose because the budget had become so stretched at that time that a decision was taken by the working group not to "worry about" the maintenance costs and revenue required of maintaining the facility. At the point when I left the group, effectively zero had been left in to run the site going forward".*

35.5 The above photograph was taken several years after the opening of the DG One building during an inspection by the Council's independent mechanical and electrical engineering expert. It shows the fusible link to a fire damper in a ventilation duct over the spa pool. The fusible link is designed to separate into two parts when exposed to fire or very high temperature. This breaking of the link releases the dampers which shut off the flow of air through the duct thereby preventing the passage of the fire into a separate fire compartment and other parts of the building.



35.6 The photograph shows a cable tie around the fusible link. These are often fitted during transport to site and manufacturers will normally provide written instructions requiring installers to remove them as the cable tie will prevent the link splitting and the fire damper working as intended in the event of a fire. There should be no reason why a cable tie was left permanently in place.

35.7 All fire dampers should be regularly checked as part of a structured maintenance programme as the effectiveness of the fire strategy for the building and the protection of users of the building depends on their satisfactory operation.

35.8 The presence of this uncut tie after so many years would bring into question both the quality of the commissioning of the building by the original installers of the fire damper and of maintenance inspections undertaken by the operator of the building, the Council.

35.9 Concerns had previously been expressed in relation to the maintenance of the building when the building was still operational. Significant criticism was expressed in the 2011 report commissioned by the Council from Hulley and Kirkwood, mechanical and electrical engineering consultants. The following photographs and the attached annotations have been extracted from the 2011 Hulley and Kirkwood report on the condition of the building.

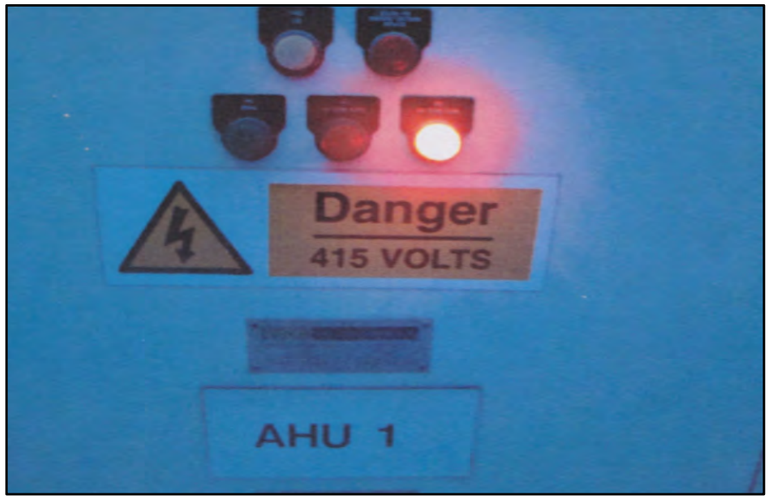
"Plant rooms are not presented in a manner that suggests regular expert attention is provided." H&K 2011

"Temporary repair to valve insulation" H&K 2011

“Electric containment trays are being damaged by foot traffic and should be protected”. H&K 2011

“Damaged insulation and corrosion to pump on roof” H&K 2011 allowing water to pond”. H&K

“Damaged extract fan cover allowing water to pond”. H&K 2011



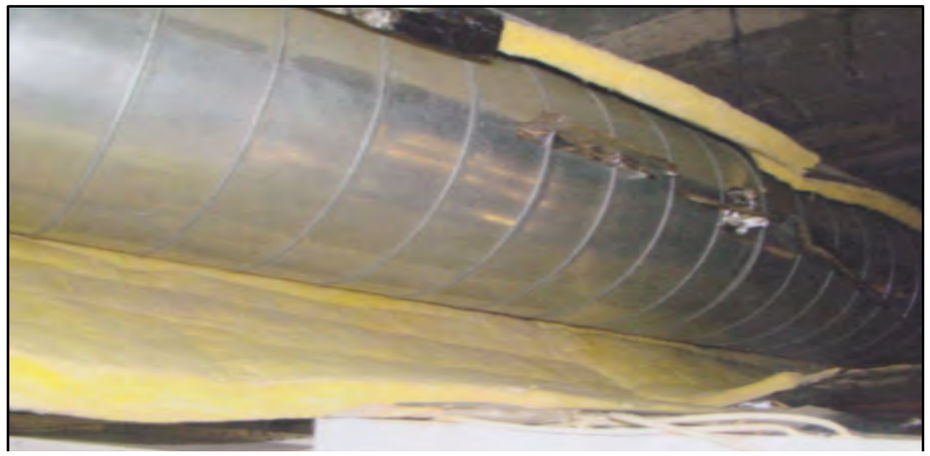
“The system was indicating fault and plant alarms from a variety of points with a host of unacknowledged alarms indicating the building management system is not utilised and operated as it should” H&K 2011

35.10 The following additional commentary in relation to the operational control of the building is also an extract from the 2011 Hulley and Kirkwood report.

> *"The system has many users with registered logon details, the majority of these users appear to have full unrestricted access to the system to change set points and control values. Access to these areas of the system should be limited to specialist users. The extent of training these users have had in the operation of the system is unknown. This should be checked and access rights to the system limited to those who have the relevant need and training to do so"*

"The cold-water tanks show signs of organic matter and should be cleaned at the earliest opportunity and the system sampled for bacteria". H&K 2011

"Severe corrosion evident to electrical and mechanical services from pool chemicals and condensation". H&K 2011



"Example of insulation detached from ductwork". H&K 2011

"Example of a snapped hanger to the pool ventilation duct work". H&K 2011

"Access to boilers for serving and replacement of tubes requires removal of plant. Also, evidence of water leaks from pool plant". H&K 2011

35.11 The regular inspection of fire-stopping should be a standard element of a building maintenance regime. It is difficult to understand how obvious breaches of fire-stopping as shown in the above photograph could have been overlooked both initially by those responsible for the building contract and since opening by those in charge of the building.

35.12 This series of photographs from 2011 would suggest a building which is not receiving due care and attention, but it also identifies inherent deficiencies in the original construction with which those looking after the building had clearly struggled to contend.

36. Return of first set of tenders for remedial works and forced abandonment of this tender process - October 2014

36.1 Four tenders for the remedial works were received on **3rd October 2014**. The last estimate of the cost of the project prior to this point had been prepared in November 2013 by Thompson Gray in the amount of £3,380,178, which figure had been included as part of the Council's submission to the Court. All four tenders received were grossly in excess of the November 2013 estimate. The tender from McLaughlin and Harvey did not appear to be competitive with the rest.

36.2 The following were the tender amounts received;

Clark Contracts	**£6,134, 234**
Ashleigh (Scotland) Ltd.	**£6,619,491**
Grahams	**£7,529,291**
McLaughlin and Harvey	**£9,810,547**

36.3 In checking the received tender documents, the quantity surveyors identified a number of issues and errors which required clarifications and subsequent amendments to the contract sums in line with the established protocol for the return of the tenders. The adjusted tender amounts were as follows;

Ashleigh (Scotland) Ltd.	**£6,967,615.11**
Clark Contracts	**£6,999,143.52**
Grahams	**£7,405,084.43**
McLaughlin and Harvey	**£9,810,547.83**

36.4 Of critical importance was the fact that the adjusted lowest tender was more than 60% higher than the threshold which required public bodies to advertise projects in the OJEU, meaning that if the Council were to appoint a contractor from this tender exercise they could be accused of committing a breach of the European Regulations and the appointment could be challenged by a bidder or even a potential bidder.

36.5 On **3rd November 2014**, the Council received advice from MacRoberts setting out the legal implications attaching to a range of potential courses of action that could be adopted by the Council in response to this situation. They advised that the least risky course of action, but also the one which would have the most undesirable impacts in relation to delaying the time scale for completing the project, was to **abandon the present procurement and re-procure using the 'restricted' process.**

36.6 The Council, having considered the potential implications of adopting the various courses of action available to them, decided to adopt the least risky course of action and abandoned the procurement.

37. Reconciliation of pre-tender estimate with tenders received - November 2014

37.1 On **4th November 2014** a report was produced by the quantity surveying expert adviser to the Council which presented a cost comparison between the tenders received and the November 2013 estimate, seeking to explain the very substantial difference between the two.

37.2 The report set out seven main areas where there were significant price differences between those included in the lowest tender and the prices in the November 2013 estimate undertaken by Thompson Gray Quantity Surveyors. The price variations for each of these seven areas were as follows;

BUILDING PRICING ELEMENT	PRICE INCREASE OVER ESTIMATE
Mechanical and Electrical Services	£1,410,226
Pool Repairs	£ 918,250
Other Additional Items	£ 365,840
Filling voids below floors	£ 187,900
Changing Village (non-M&E issues)	£ 179.806
Provisional Sums	£ 150,000
Roof Repairs	£ 81,789
Total Variation	**£3,294,611**

37.3 The report provided a breakdown for each of the seven areas of price variation with the pre-tender estimate. The largest single increase of £1,410,226 was in relation to remedial mechanical and electrical services work that had been added since the estimate was prepared. This was made up of: additional ventilation ductwork; replacement of and repairs to air-handling units; new heat recovery unit in the spa plant room; additional fire dampers; replacement of electrical wiring and control panels damaged by leaks; relocation of heating and chilling pipework and pumps; pool water treatment works; work to the failed backwash system; and new automatic controls.

37.4 These and the other increases in the cost of the project reflected (a) significant additional work that had been identified as necessary and incorporated into the tender documentation between November 2013 and completion of the documentation in July 2014 and (b) significantly higher rates applied by tenderers for certain elements for example; the independent quantity surveying expert reported a rate of £185 -206/m² for waterproof rendering to the pool compared to £30/m² in the pre-tender estimate.

37.5 Given the passage of time and the significant additions that had been made to the scope of the work from that on which the November 2013 estimate was based, standard practice would have been to have produced a new cost estimate for the works before going out to public advertisement. Unfortunately, this had not been done with the ultimate result that the work had to be retendered to meet the requirements of the EU Regulations, which process would cause significant delay to the project.

37.6 At this stage of the project a professionally qualified internal project manager had still not been appointed by the Project Board to oversee on a day-to-day basis and approve decisions of the external project management and design team. This important interface was being provided by a Leisure and Sports officer acting more in a liaison role than project management role. The officer in question stated I evidence;

"My involvement since that investigation stage has largely been as a point of liaison between the sport and leisure teams and others. I should make clear I am not a construction or a technical expert, but I have liaised with the design team to explain how a particular feature in the facility should work and have generally advised a number of people on how each part of the building would be used in practice such as the pool areas and the sauna room etc.

37.7 In this situation, the Project Board was increasingly reliant on the leadership of the external Project Managers to ensure that all standard professional activities and actions required in relation to the project were undertaken by the appropriate members of the design team.

37.8 The importance had already been expressed by the Council of the need to understand the realistic cost of the project in order to address the funding difficulties that the Council were facing.

37.9 In the circumstances, where an increasing number of elements were being incorporated into the contract documentation, it is surprising that no-one from either the Council or the external project management and design team had identified the need for on-going costs reviews of the implications of these additions as well as to take account of inflation over the interim period since the £3.7 million estimate for design and construction.

37.10 The Quantity Surveyors for the project, MacGowan Miller, advised the Inquiry that there was a major pressure on the design team to get out to tender quickly, and not having been requested to produce a pre-tender estimate as part of their appointment by the Council, their focus was on the preparation of the tender documentation.

37.11 The external project managers, Turner & Townsend, advised the Inquiry that the additional work had been added after the issue of the initial advertisement seeking interest from contractors but prior to the issue of the tender and that the additional works had been captured as part of a change control process and valued at only £200,000, which would have kept the anticipated construction cost at £3.5 million, significantly below the EU threshold of approximately £4.2 million.

37.12 It is difficult for the Inquiry to understand this analysis as the additional work on engineering services alone, added in the period before going out to tender, amounted to approximately £1.4 million and the additional work to the pools approximately a further £1 million. Other additional items included in the Bill of Quantities, together with added provisional sums of £150,000, resulted in the lowest tender received being approximately £6.9 million, roughly twice the anticipated construction cost.

37.13 The Inquiry are of the opinion that given the quantity of items that were added to the original schedule of defects which had been the basis of the £3.3 million November 2013 estimate by Thompson Gray, the Council should have been advised of a likely significant increase in the cost of the project to the Council and the risk of breaching the EU threshold for advertising.

37.14 It is also of the opinion that good practice in these circumstances would have required the preparation of a proper pre-tender estimate and that the Council should have been told that this was necessary.

38. Continuation of legal proceedings and consideration of adoption of an extra-judicial process - October 2014

38.1 On **24th October 2014** Kier, without admitting liability, made an offer into the Court in the amount of £2,185,000 together with expenses in seeking full settlement of the claim. The offer was not accepted.

38.2 Further adjustments were made to the pleadings over the next two weeks. On **11th November 2014** the Court fixed a new date for open adjustment of pleadings of up to 19th December 2014 with the date for the continued preliminary hearing set for 15th January 2015.

38.3 At a meeting of the Policy and Resources Committee on **18th November 2014**, members were advised that the legal proceedings against Kier including WSP and BBES (the third parties) were at a procedural stage. Each party to the proceedings was in the process of investigating and finalising their written pleadings on the defects.

38.4 The Council's legal team advised the Committee that there may come a point in the next few months where it would be worth exploring the possibility of an extra-judicial mediation process between the parties. If this occurred, any meaningful discussions could only take place once the full costs of remedying the defects was known, i.e. after a contract for the remedial works had been tendered and the Council could quantify its costs / losses.

39. Further investigations enabled by closure of building - October 2014

39.1 With the closure of DG One to the public on **6th October 2014**, the Council's independent experts had their first opportunity to have the swimming pools emptied and to gain greater

39.2 access to all parts of the building. On **18th November 2014**, following the completion of a series of more comprehensive testing that was now enabled by the closure of the building, the independent architectural expert wrote to MacRoberts Solicitors advising them of the outcome of these tests.

39.3 A fuller presentation of the findings of these investigations was subsequently made to the Council's Project Management Board at a legal and technical on 8th January 2015. The updated report stated that testing of the building by specialist companies had confirmed:

- *"inadequate lining material provided to the swimming pool tanks and lining channels such that water is permitted to permeate into the tank structure"*
- *"air-tightness of the sports hall falls below the required standard"*
- *"fire escapes are not sealed against migration of fire and smoke"*

39.4 The report further stated that the tests had identified additional defects, the remedial works for which had not previously been included in the claim against Kier;

- *"Inadequate cover had been provided to reinforcement in the reinforced concrete construction of the pool tank walling such that localised corrosion to reinforcement was occurring. Watertight tanks with a life expectancy of 40 years had been required but had not been provided"*

- *"Below floor drainage was required to conform to British Standard 12056 and to the Building Regulations. It does not because the drain pipes are not adequately supported and adequate access for rodding and maintenance at changes in direction and level have not been provided"*

Examples of photographs of inadequately joined, supported and sealed drainage in the voids under DG One

39.5 The implications of the new findings were that additional remedial work was now viewed as necessary to the walls of the main, leisure and teaching pools and to the overflow channels. The concrete in the specified areas would need to be broken out to allow severely affected reinforcement to be replaced. The inadequate cover to reinforcement would also have to be addressed, however, the remedial design for this would have to ensure that the dimensional requirements for competitive swimming were still achieved.

39.6 The additional work to the pool walls was subsequently described in more detail by the expert architectural adviser;

"In summary the additional works found to be necessary during the first phase of investigations are:

- *The main pool tank and the teaching pool tanks are to have their inner rim walls (down to 150mm below the overflow channels) cut out and re-cast, thereby remedying localised but significant instances of rebar corrosion.*

- *The leisure pool tank and overflow channel are to be broken out and reconstructed to remedy water losses and eliminate a reservoir of contaminated water below the floor.*

- *The spa pool tank and overflow channel and the floor slab below these are to be broken out and reconstructed to remedy water losses, remedy leakage through to ground floor by providing effective tanking, and to remedy incorrect waterproofing around pipe penetrations.*

- *The filtration circulation systems, water supply and air supply services to the spa tank and to the leisure tank have been surveyed and photographed and will be reinstalled to meet the contractual standards.*

39.7 The January 2015 legal and technical meeting with PMB was advised that the Increase in the scope of the works associated with these additional remedial activities would result in an increase in both the duration and total cost of the remedial works contract. Concerns were expressed by the Council officers present about the increasing cost of the remedial works and the availability of funding for it.

39.8 They were however advised that the results of further investigations and laboratory tests were still awaited. Further concerns were expressed about the time it had taken from the closure of DG One to complete these investigations given the time pressure to complete the revisions to the tender documentation and proceed with seeking new tenders.

39.9 The further investigations had become necessary as a result of the initial findings after having had access to the emptied pool for the first time, which could only have been facilitated after the closure of the building in October 2014. These would include intrusive investigation into the concrete walls of the swimming pool tanks, investigation of the below-floor and the below-ground drainage, and investigations into a sag which had appeared in the eaves on the east side of the roof.

39.10 The findings from these investigations necessitated additional remedial works which had to be designed, specified and incorporated into the new tender packages that were being produced. In addition, the details of the defects had to be properly incorporated into the Schedule of Defects to add to the legal claim against Kier.

40. Pressure to complete investigations and to constrain the increase in the content of the revised tender documentation - January 2015

40.1 In January 2015, MacRoberts Solicitors, wrote to each of the individual independent technical experts with regard to the finalisation of the schedule of defects and the on-going preparation by the design team of the revised and extended tender documentation.

40.2 The letter expressed "the concern and disappointment of the Council that matters had not been progressed to the extent they anticipated since the closure of DG One".

40.3 The independent technical experts confirmed they could present a report within a period of approximately four weeks setting out their views on the final extent of remedial works required and the impact of any additional items identified on the programme required for the completion of these works. A meeting to present this report to the Council was arranged for the 12th February 2015.

40.4 The letter from MacRoberts Solicitors, dated 20th January 2015, to the independent technical expert from G A Morris and Associates Ltd., mechanical and electrical consulting engineers stated;

> *"For the avoidance of doubt, it is the Council's position that the technical experts should be liaising with the design team for the remedial works in connection with the above, but only as strictly necessary, in parallel with the process above so as to ensure that the Council Is able to proceed with such tendering as will be required as soon as possible after the technical experts have given their final advice to the Council. The Council will make Turner and Townsend aware of the position in order that appropriate steps can be taken to facilitate that with immediate effect.*

40.5 The letter also expressed the concern of the Council in learning of the changing nature, extent and cost estimate of the Mechanical and Electrical element of the planned remedial works. The letter stated that these concerns were expressed *"particularly against the backdrop of the terms of the description of remedial works document lodged with the Court which contains far fewer elements of work"*.

40.6 There were clearly growing concerns within the Council as to the increasing cost of the remedial works and a reinforced desire to limit the work to that directly associated with the repair of the defects attributable to Kier.

40.7 In evidence to the Inquiry a senior professional officer from the Council, who was subsequently appointed to lead the internal Council team in overseeing the implementation of the remedial works contract, commented on this approach of disallowing the inclusion of any non-attributable items in the tender documentation.

> *"I was advised, as I was not involved at the time of the court case, that discussions had been focused on what Kier had done and the cost to remediate. However, there were other issues that were relevant such as aspects of our own original maintenance of certain parts of the building. These were not something for which Kier was responsible, but they would still have cost implications for the final project".*

41. Agreement to adopt mediation as an alternative form of dispute resolution - January 2015

41.1 On **15th January 2015** the Court directed that further adjustments to the pleadings would be allowed up to 30 March 2015 and the date for a procedural hearing was fixed for 16th April 2015.

41.2 Also, on 15th January 2015, Kier withdrew its previous offer of October 2014 in the amount of £2,185,000 made into the Court and lodged a higher offer in the amount of £3,470,000. This revised offer was equally unacceptable to the Council.

41.3 On 19th February 2015, the requested updated reports were presented to Council officers, setting out the latest update of the works to be undertaken under the remedial works contract. The Council were advised that it was estimated that the increased work would require a construction period of 18 months in addition to the time required to undertake the tender process and appoint a contractor in accordance with the time requirements specified in the EU regulations.

41.4 On the **9th April 2015** discussions were held between the two sets of solicitors acting for the Council and for Kier in relation to the possibility of engaging in without prejudice settlement discussions using a form of **mediation**.

41.5 Mediation is a non-binding structured attempt to achieve the settlement of a dispute by setting up an independent third party between the two parties in order to aid them in coming to a negotiated settlement. This proposal was recommended by the legal advisers for adoption by the Council, who subsequently agreed to this proposal as potentially a way of helping to achieve an earlier outcome than would be delivered through the Court process.

41.6 On **16th April 2015** at the Procedural hearing the Court directed that the issue **of liability only, not the quantum or level of damages**, would be dealt with by the Court in a session commencing on **3rd May 2016**, more than a year later. This meant that a decision of the Court as to proof of liability would be unlikely until late in 2016. Only then would the issue of the amount of any claims for which Kier had been found liable be addressed by the Court, any such ruling probably running into early 2017.

41.7 The Court also set an interim series of dates for the preparation, exchange and submission of documents leading up to the Proof of Liability hearings planned to commence in May 2016.

41.8 Under this proposed process, if the Council were unable or unwilling to commence the remedial works contract without having been awarded and having received the necessary funds to do so, the earliest date for completion would have been likely to be in early 2019. This factor was a significant element in the Council's decision to proceed with mediation as an alternative form of dispute resolution.

42. Limited response by contractors to OJEU re-advertisement - April 2015

42.1 On **25th April 2015**, a pre-qualification questionnaire was advertised in accordance with OJEU requirements with a closing date for responses of **22nd May 2015**. To the frustration of the Council, despite having received indications of interest from a range of contractors, only one contractor responded with a completed questionnaire.

42.2 The contractor who responded was McLaughlin and Harvey. The previous tender from this firm had been submitted from the Northern Ireland based contractor, part of a group of companies which for the previous seven years had also included the Scottish building contractor Barr Construction. In the period since the first tender, it had been decided that the two companies should operate under the same 'McLaughlin & Harvey' brand. The pre-qualification questionnaire had on this occasion been submitted by the Scotland-based part of the group that had previously traded as 'Barr Construction'.

42.3 Due to natural concerns as to the potential impact on prices of a lack of competition, over the next few weeks the Council considered their options. They also sought legal and specialist procurement advice in relation to the options available to them in this situation.

43. Advice on the risks inherent in the refurbishment of a building known to suffer from a wide range of defects - May 2015

43.1 On **8th May 2015**, the independent architectural expert in a file note recorded his view that it had been impossible, without taking the whole building down, to determine the full extent of the type of defects discovered, within aspects of the building services, fabric and structure which by their nature were not readily accessible without major intrusive work at a level that was not practical. The potential existence of further defects would only be final apparent when the contractor began stripping down the relevant interior and exterior finishes.

43.2 The note stated;

> *"Examination of construction as it becomes uncovered and gathering of additional evidence during the construction phase is still required for two reasons: firstly, to record the full scope of the defects already identified in the defects schedule; and secondly, to consider whether the exposed constructions reveal or suggest the presence of further, previously unknown defects.*
>
> *Investigation and recording of findings will therefore need to occur as the construction works proceed. During these operations, liaison with the main contractor is required to allow the experts time, opportunity, and on-site access facilities to be able to collect the required information on the construction and materials employed by the original contractor during the construction of DG One. This will be carried out by visual inspection, photographing and video recording, by measured drawing and notation, and by removal of samples for analysis".*

43.3 In evidence to the Inquiry in relation to the potential extent of defects in the building the independent architectural expert, who had the benefit of having had significant previous experience in this type of work, stated;

> *"I would say that in summary, DG One was one of the most spectacularly defective buildings I have ever looked at in the last eleven or so years of practice as an expert witness".*

43.4 This indicated an unavoidable lack of certainty on the part of the expert advisers and design team as to the true extent of defects in the building, the accuracy of their final quantification of defects and the assessment of cost of repairing the defects in relation to both the quantification of the legal claim and the budget that could be required from the Council to complete the remedial works contract.

43.5 In such circumstances, the normal response would be to ensure that the client was fully aware of the extremely high risk-factors associated with trying to accurately measure such work for the purposes of seeking a fixed price from a contractor. The level of contingency, given the concerns expressed above, should have been set at a level sufficiently high to properly reflect this very high level of risk, which should have been quantified in monetary terms through a priced project risk register.

43.6 It should have been clear at this stage of the project that the true amount of remedial work required would only be known once the building had been stripped back so as to reveal what lay behind the various surfaces of building elements and service installations that had not yet been unveiled.

43.7 Subsequently, on 18th May 2016, prior to the final agreement of the contract terms and conditions in the months prior to the appointment of the contractor, the Property and Architectural Services Manager queried the adequacy of the amounts of contingency included in the contract and as part of the client's separately held contingency. The levels were not subsequently changed before the contract was entered into.

43.8 Due to the pressures on time, an increased urgency was being attached to the design team bringing their newly revised and extended tender documentation to a completed stage. There was a strongly expressed reluctance to them undertaking further lengthy investigations. It had been agreed that a copy of the revised tender documentation would be provided to Kier and MacRoberts Solicitors were anxious to ensure that it was complete before doing so.

44. The decision on how to address the failure to attract more than one potential tenderer for the remedial contract - June 2015

44.1 On **25th June 2015** a paper was presented to a Full Council Committee which set out the two options for progressing the project in light of the single response to their request for tenderers. The options presented were;

1. To continue with the current procurement process and negotiate a price with the sole prospective tenderer, taking steps to try to make sure that any final negotiated deal was defensible if it were ever required to be scrutinised by the Court in the case against Kier and putting in place mechanisms to ensure that the Council was achieving the best value-for-money in thee less than ideal circumstances.
2. To start a new procurement process.

   The principal downsides to this second option would be:

   - Significantly more delay in the selection of a contractor and commencement of the works
   - No guarantee that there will be any more interest generated from the market by re-advertising
   - The potential of losing the current single tenderer

44.2 The Committee agreed to proceed with Option 1 and negotiate a price for the remedial works with the single tenderer who had formally expressed an interest, McLaughlin and Harvey. The completed tender documents were issued to McLaughlin and Harvey for pricing on **3rd August 2015**.

44.3 In order to protect the Council's position in the subsequent negotiation phase, it was important that the design team's quantity surveyor, McGowan Miller, prepare a detailed pre-tender estimate based on realistic rates achievable in the construction market-place. This exercise was completed in early September 2015 with the following outcome.

45. Pre-tender estimate for remedial works by McGowan and Miller - September 2015

Estimated cost of construction including contingencies	**£9,578,831**
Estimated cost of project management and design fees	£ 586,492
Total for Design and Construction	**£10,165,323**

45.1 In response to their request the details of this pre-tender estimate were provided by MacRoberts to Kier on 11th September 2015.

45.2 The total fee for the project management and all members of the design team as presented at this stage was 6.1% of the construction cost. This included for the time and expenses incurred by design team members in what would be essential regular travelling between Dumfries from Edinburgh to undertake on-going inspections of the work.

45.3 It is the view of the Inquiry that given the very demanding and detailed nature of this work, particularly on-site, and the prolonged period over which it had been extended, this level of fee was unlikely to provide for the appropriate level of professional resource and input required for a project of this highly complex nature.

46. Separate legal case brought by Kier against WSP seeking completion by WSP of the collateral warranty in favour of the Council - August 2015

46.1 On 20th August 2015, the Council were advised that in parallel with their on-going case with the Council, Kier had raised an action in the Court of Session against WSP seeking to force them to sign the as-yet unsigned collateral warranty in favour of the Council. This collateral warranty had been a requirement of the original contract signed by Kier with the Council, however Kier were seeking its retrospective completion as they had been advised that this might be of assistance in their case against WSP.

46.2 This should have been signed at the outset of the contract and a signed copy should have been sought and retained by the Council as the primary beneficiary of the collateral warranty. The collateral warranty in this case was primarily intended to enable the Council to seek damages for negligence on the part of members of the design team directly from the members of the design team in the event of the contractor, their employer, going out of business or otherwise failing.

46.3 In effect, collateral warranties create a direct contractual relationship that, under this Design and Build form of contract, would not otherwise exist between the Council and members of the original design team.

46.4 Several statements relating to the nature of the services provided on the DG One project are made in the judgement given in favour of Kier expressed on 22nd January 2016 by Lord Woolman, the presiding judge. They are made in reference to the defence put forward on behalf of WSP in their opposition to signing the collateral warranty.

46.5 The following are extracts from the opinion of Lord Woolman;

> *"The broad thrust of WSP's claim is that Kier prevented it from carrying out the Architect's Services in accordance with Schedule 2. In particular, Kier failed (a) to provide reasonable instructions and (b) to arrange for WMSP to carry out the appropriate inspections" and;*

> *"WSP contended that it is impossible for it to represent that the Works have generally been carried out and concluded to the specified standard covered by their design. Essentially, WSP founds this line on the same factors that it relies on in relation to mutuality: (a) Practical Completion has already been reached; (b) Kier did not call for inspections including the final inspection; and (c) Kier did not generally carry out the Works to the standard specified in WSP's design".*

46.6 This defence put forward on behalf of WSP suggests that WSP is acknowledging that in fact it did not undertake the inspections of the work, including the final inspection, in accordance with the requirements described in Schedule 2 of their appointment documents with Kier. They suggest that they did not do so because they were not called upon to do so by Kier. Furthermore, this defence stated that in their opinion Kier did not build DG One to the standard specified in their design.

46.7 Irrespective of the cause, based on these comments offered in defence by WSP, there would appear to have been limited inspection of the works by WSP, the design team members appointed by Kier to undertake the design and inspection of both the architectural and structural engineering aspects of the construction of DG One.

46.8 The Council would have mistakenly assumed that a professional design team was undertaking the on-site inspections that were set out in the schedule of services in the contract between Kier and WSP. This does not appear to be the case.

46.9 Schedule 2 Clauses 59, 64, and 65 of the signed appointment between Kier and WSP respectively state the requirement for WSP in relation to the architectural services to include;

> *"Carry out site inspections in connection with scheduled meetings and comment to the contractor in respect of compliance with the Employer's Requirements; Contractor's Proposals; the Architect's specifications, plans and drawings; and report thereon to the Contractor at the fortnightly site meetings."*

> *"Prior to practical completion of the Works the Consultant shall issue a letter to the Contractor stating that within the scope of his inspection duties under the Agreement, the Works have generally been carried out and concluded to the standard covered by his design."*

> *"Upon Practical Completion of the Works carry out an inspection and assist in the preparation of a schedule of defects (if any)".*

46.10 An equivalent set of three clauses was contained in the appointment document between Kier and WSP in relation to their role as civil and structural engineers.

46.11 In evidence to the Inquiry in relation to the presence on site of WSP personnel, the Council's Employer's Agent stated;

> *"With regard to the William Saunders Partnership (WSP) they were on site fairly infrequently. They would have separate regular meetings with Kier, probably monthly. I would certainly have minimal direct contact with WSP and they had no permanent presence on site. I did not see them inspecting structural engineering issues either which was also part of their responsibility".*

46.12 A key point here is the lack of a direct relationship between the client and the profession consultants or direct knowledge on the part of the client in regard to how they were performing the scheduled services or how they were being instructed, managed or paid during the construction phase. The client would have placed a degree of reliance on the prescribed roles in the consultants' agreements with the contractor being carried out effectively, especially in relation to professional oversight by qualified individuals of the work of contractors and sub-contractors, who are not required to have professional qualifications.

46.13 This is a fundamental characteristic of design and build contracts, where the separation between the client and the members of the professional design team prevents the client having access to or understanding of how their appointment is being managed by the Contractor and to what degree the specified services, aimed at protecting the quality of the construction are actually being undertaken.

47. Deferment of court hearing in light of commencement of mediation process - September 2015

47.1 In **September 2015**, a number of submissions were made to the Court in relation to the degree of agreement as to liability for the defects which had been able to be reached at meetings between the technical experts from both sides. On 25th September it was agreed that the Court hearing should be postponed due to the imminent commencement of the mediation process.

47.2 The mediation process began on **6th October 2015** under the facilitation of an experienced mediator who had been jointly appointed by the parties to act as mediator.

47.3 It is important to point out that this Inquiry was advised by the Council that as part of the agreement between the parties, the details of the mediation process were to remain confidential. As a result, the Inquiry was not provided with information in this regard and is therefore not in a position to describe the process in any detail.

47.4 Later in this report, the information available in the public domain relating to the outcome of the mediation will be discussed.

48. Ancillary costs incurred by the council as a result of the defective construction of DG One - October 2015

48.1 It must be noted that in addition to the cost of the design and implementation of the remedial work, the Council were also entitled to include in their claim against Kier any other reasonable costs, expenses or lost income that they would not have incurred had the DG One building not been defectively constructed by Kier. The Council had appointed a senior representative of BDO Accountants to act as their independent expert in relation to this aspect of the claim.

48.2 The Inquiry sought an assessment of these ancillary costs from the Council, which indicated that, in addition to the cost of the design and construction of the remedial works, over the period from 2011-12 to 2015-16 costs/losses of £4.22 million were incurred by the Council in addressing the problems of DG one. The Council's calculation of these costs is shown below

"Additional Costs Associated with the Closure and Resultant Dispute
This category covers a range of costs including initial repair works, a range of legal and technical costs and additional costs associated with the closure of DG One. The costs totalling £4.220 million to the end of financial year 2015/16 are summarised below. All costs incurred after 2015/16, other than those under the Reinstatement of DG One above, are being met from ongoing, unenhanced revenue budgets and are therefore treated as 'normal running costs' and not reflected below.

	£000s
Legal & Technical Costs	2,403
Closure Losses (Hire of Temporary Facilities etc)	816
Miscellaneous Costs (including initial repairs)	217
Excess Energy Costs	717
Closure Loss (Training Pool Income)	67
Additional Costs Associated with Closure and Resultant Dispute	**4,220**

49. Return of priced tender from the single bidder - October 2015

49.1 On 16th October 2015, McLaughlin and Harvey submitted its priced tender for the updated content of the remedial works contract. Perhaps unsurprisingly, given the lack of competition, the tendered costs were significantly higher than the pre-tender estimate.

ADJUSTED TENDER FROM MCLAUGHLIN AND HARVEY DATED OCTOBER 2015	
Cost of construction including contingencies	£ 10,802,670
Equivalent pre-tender estimate	£9,578,831
Increase in tender over estimate	£1,223,839

49.2 The cost of the Council's project management and design team fees remained set at £586,492 which when added to the tender of £10,802,670 gave a new projected total project cost of £11,389,162.

50. The decision in relation to the outcome of the mediation process - November 2015

50.1 The next Procedural Hearing of the Court had been postponed and rescheduled for **10th November 2015**, at which hearing the Court allowed further time for the submission of reports setting out the areas of agreement or disagreement that had been reached by both sets of experts as to the degree of liability attaching to Kier for the scheduled defects.

50.2 As part of the separate mediation process, a series of meetings and exchanges of correspondence between the parties took place over the following weeks leading up to Christmas. This culminated in the submission of a final offer by Kier in full and final settlement of all claims from the Council in relation to the DG One building.

50.3 During this period the Council received from Kier a copy of the collateral warranty required under the original contract, now signed by WSP. This followed the decision in favour of Kier in a case taken by Kier against WSP requiring their completion of this collateral warranty.

50.4 On 17th December 2015, the Council's QC presented a paper to a full meeting of Council setting out the details of the proposed offer arising from the mediation process. The Council were advised at the commencement of the presentation that they were subject to strict confidentiality obligations under the mediation agreement.

50.5 A challenge to the level of confidentiality applied under the mediation agreement was taken much later under the Freedom of Information Act in response to the Council's refusal on the basis of the confidentiality agreement to provide to a member of the public the requested amount of the settlement reached with Kier.

50.6 On 19th May 2017, the Acting Scottish Information Commissioner wrote to the Council requiring them to disclose the settlement figure. In response to this order, the Council confirmed to the applicant that the settlement figure had been £9.5 million.

50.7 In December 2016, six months prior to this FOI challenge, the figure of £9.5 million had been identified and published by a reporter writing in the Dumfries and Galloway Standard. She had interpreted the following slightly veiled excerpt, from a publicly available report to the Audit and Risk Committee of the Council, as being only realistically applicable to the DG One case, as during the period covered by the report the Council had not been engaged in any other dispute of this scale.

> *"During the year, a settlement was reached with another party in respect of a dispute regarding council property resulting in a receipt of £9.5m".*

50.8 Also, in early March 2016, a joint minute was submitted to the Court of Session in relation to this case. It included confirmation by the legal representatives of both parties that an extra-judicial settlement had been reached and requested that a decree was pronounced by the Court, ordering the payment by Kier to the Council of a total of £9.5 million, made up of £8.7 million in respect of the principal claim and £800,000 in respect of legal and associated expenses.

50.9 The figure of £9.5 million is now considered common knowledge, having been reported in a number of subsequent press and media articles. In these circumstances, and given the nature of this Inquiry, the Council have agreed that the actual amount of the settlement can be contained in this Report.

51. Legal advice to the council members on the full and final offer - December 2015

51.1 In the advice given by their QC to Council members at the full Council meeting held on 17th December 2015, it was pointed out that the offer of £9.5 million would be **in full and final settlement for all defects that had been identified up to that time and any that may be subsequently discovered i.e. latent defects.**

51.2 It was also pointed out to the Council by the QC, that whatever reasonable diligence had been exercised by the Council's independent technical experts in their investigations since their appointments, **the possibility of latent defects manifesting themselves could not be discounted.**

51.3 He also advised the Council that compromising the Council's claim against Kier in relation to latent defects would not necessarily be the norm in circumstances such as were present, and that Council would be taking on the risk of having to pay for the making good of any subsequent latent defects which may emerge.

51.4 However, the level of the offer was seen as a reasonable level of recovery in the context of the estimated cost of the remedial works for the known list of defects.

51.5 Three options for the Council to consider were addressed in the presentation;

1. That the Council take the current negotiations with Kier, based on the £9.5 million offer, to the next level and conclude an acceptable overall settlement.
2. That the Council discontinue negotiations with Kier and continue with the Court action.
3. That the Council try to strike a new form of deal with Kier, possibly including seeking to retain the Council's rights in relation to the potential future discovery of further latent defects.

51.6 The pros and cons of each of the options were presented and later at the same meeting on **17th December 2015,** after this presentation by the Council's QC, the Council was asked to decide on the basis of the information provided as to how it wished to progress the claim against Kier.

51.7 In response Members confirmed that:

> *"The Council would be prepared to accept £9,500,000 in full and final settlement of its Court claims against Kier;*
>
> *The Council would be prepared to enter into an extra-judicial settlement which would cover all known and any unknown (i.e. latent) defects".*

51.8 In this regard the Council delegated authority to the Director of Communities to have further talks with Kier and, with the support of both the heads of Finance and Procurement and Legal and Democratic Services, to seek to conclude acceptable associated terms to the final agreement.

51.9 During this process, the periods granted for lodging documents in relation to the still on-going court action were extended with the agreement of the Court. The court action would continue until formal confirmation that the extra-judicial mediation process had reached an agreed outcome.

52. Request for updating of claim amounts in the court summons - February 2016

52.1 On **4th February 2016** in relation to the Court action, the "conclusions of the summons", i.e. the legal expression for the amounts claimed in the summons against each of the separate areas of claim, were updated by the Council to reflect the current assessment of these costs.

52.2 Prior to this point, the most recent adjustment by the Council, to an ongoing series of adjustments to the case summons submitted to the Court, had been made on 8th April 2015. However, the amounts in the "conclusions" in the summons had not been adjusted since the first estimate for the remedial work to the building which was £3,680.000.

52.3 The intention of the legal advisers to the Council would have been that these amounts would be updated for the Court at the stage that the quantum of the claim was being determined by the Court, which would not occur until proof of liability by Kier had been established, which proof of liability was due to be considered by the Court in April 2016.

52.4 The April 2015 version of the summons had contained six "Conclusions". These were amended in February 2016 and advised to Kier as set out in the table below. It should be noted that the assessed costs of "Conclusions" 1,2, 4 and 5 at this stage amounted to a total of £2,140,788 in addition to those arising from "Conclusion 3", which related to the main area of claim for the combined cost of the design and the construction of the remedial works contract and which in the revised conclusion was assessed at £12,095,812. It is standard practice that the cost of legal and expert technical fees and expenses incurred in taking the action is not stated in the "Conclusions".

52.5 Excluding "Conclusion 6", legal fees and expenses, the total amount of the Council's revised claim in February 2016 was £14,236,600, the elements of which are set out in the table below.

Conclusion Number in Summons	Original Amount in October 2013 Summons	Revised Amount February 2016	Brief Description of Subject Matter of Each Conclusion
1	£97,887	£160,048	The five following separate items of emergency repair / work already carried out at the cost of the Council
			1.1 Emergency repairs to large areas of detached tiles and damaged sections of screed in the pools
			1.2 Emergency fire protection work where fire-stopping was missing or defective causing a major risk to safety.
			1.3 Repairs to high level light fittings over the leisure pool which were inaccessible without scaffolding contrary to the requirements of the contract
			1.4 Replacement of corroding and already failed steel wires supporting the ventilation ductwork over the pool area
			1.5 Replacement of pumps which contrary to the requirements of the contract had been fitted without the required variable speed drives
2	£66,822	No change	Loss of income related to the enforced closure of the teaching pool due to defective construction of pool fittings.
3	£3,680,000	£12,095,812	Costs associated with the design and construction (including contingency) of the works necessary to address the schedule of defects
4	£1,175,628	£1,196,722	Loss of income during closure of DG One, reduced membership, costs to redevelop membership after re-opening, cost of moving and storage of gym and other equipment and fittings
5	£632,288	£717,196	The additional costs arising from the failure of the building to achieve the specified efficiencies in relation to the consumption of electricity and gas
6	Expenses of the action.	No change Amount not stated.	The payment of fees and expenses due to legal and technical experts for work in preparing and pursuing the claim.

Table of original and revised amounts of claims (Conclusions)

53. Full and final settlement of claim against Kier - February 2016

53.1 On 26th February 2016, following a series of exchanges of communications between the parties, MacRoberts Solicitors received from Burness Paull Solicitors, confirmation that Kier were willing to offer an amended settlement, still in the previously offered amount of £9.5 million but with revised terms that were acceptable to the Council.

53.2 At a full meeting of Council on 3rd March 2016, the Council formally agreed that this amended settlement should be accepted, and a minute of the meeting authorising the Head of Legal and Democratic Services within the Council to sign the agreement was sent to Burness Paull.

53.3 On 4th March, MacRoberts Solicitors wrote advising the Court of the settlement. On 8th March the settlement was executed and a cheque from Kier for the settlement sum was received by Mac Roberts Solicitors.

53.4 On 19th March the Court action was brought to a completion by the grant of a decree by the Court in favour of the Council all pursuant to the terms of the settlement agreement in the amount of £9.5 million.

53.5 After this settlement a separate case continued between Kier and William Saunders Partnership, their design team architects and civil and structural engineers. The Inquiry believe that this case was eventually settled in 2017, however the details of the settlement were not made known.

Section 7 – Chronology 4

The Remedial Works Contract

The period from the appointment of McLaughlin and Harvey as main contractor to undertake the remediation contract in 2015 up to December 2017 when the inquiry completed its formal taking of evidence.

1. The negotiation of the contract sum with McLaughlin and Harvey - October 2016

1.1 As only one contractor had expressed an interest in being considered for the execution of the remedial works, it had been decided by the Council that they would seek to negotiate an acceptable tender with the single contractor, Mc Laughlin and Harvey.

1.2 On 16th October 2015, McLaughlin and Harvey had submitted its priced tender of £10,864,810 for carrying out the revised content of the remedial works contract. This exceeded the pre-tender estimate, prepared by McGowan and Miller Quantity Surveyors in September 2015, by £1,223,839.

1.3 In order to maximise competition as far as possible, the contractor had been required to seek competitive tenders on an open book basis for all subcontracted packages of remedial works. Copies of all successful and unsuccessful tenders for subcontract packages had been provided on request by McLaughlin and Harvey.

1.4 They provided the Council with a list of subcontractors who were invited to tender, together with details of those that had submitted a tender and those who had declined to tender. The list showed that 235 subcontractors were approached by the main contractor in relation to 47 work packages (i.e. an average of 5 subcontractors for each package of work) and that 72 subcontractors responded positively with a tender (i.e. an average of 1.5 tenders for each package of work). McLaughlin and Harvey had advised the design team that the prospect of working on this remedial works contract was not particularly attractive to subcontractors, especially given the buoyant market for construction work at the time.

1.5 In many instances, only one tender for sub-contracted elements was received by the main contractor. These included significant elements of the work, namely wall cladding, roofing, Kalwall panels, pool tiling, pool waterproofing, drainage, sprinkler systems, and mechanical services.

1.6 Whist the paucity of willing bidders and the resultant reduced level of competition would have undoubtedly contributed to the increase over the pre-tender estimate of the overall tender submitted by McLaughlin and Harvey, the principal area of increase over the pre-tender estimate was in relation to the amount allocated to preliminaries by McLaughlin and Harvey themselves.

1.7 In a report on the tender dated 13th November 2015, the independent quantity surveying expert concluded that both the Council and the main contractor had done as much as they could to introduce competitiveness amongst subcontractors in the prevailing tendering climate.

1.8 In relation to the overall level of preliminaries as priced by McLaughlin and Harvey, the report stated that it was at least £1 million higher than would have been expected, however, it concluded that with only one main contractor tendering for the works, there was little that could be done to reduce the cost of preliminaries, without the agreement of the contractor, which agreement was not forthcoming.

1.9 The report identified that in a small number of instances, the subcontractor proposed by Mclaughlin and Harvey had not submitted the lowest tender to them, and, whilst explanations had been offered by the main contractor to justify these selections, further inquiries into the detail might prove beneficial to the client.

1.10 The report also commented on a number of contractual aspects of the tender response including; (1) the contractor's proposed programme did not show a phased completion with an earlier handover of the dry side, as had originally been requested in the tender documentation and (2) an unwillingness on the part of the contractor to accept changes to the standard form of contract which had been proposed by MacRoberts.

1.11 These issues were subsequently resolved in further negotiations between the parties.

1.12 Despite expressing a number of reservations, particularly in relation to the level of preliminaries, the author of the tender report concluded that the tender of £10,864,810 fairly represented the cost of remedying the scope of defective works set out in the Schedule of Defects and the tender documents.

1.13 Over the following months, in parallel with the final phases of the mediation and court resolution of the claim, the quantity surveyors, supported by the other members of the design team, engaged in a process of negotiation, value-engineering and review of the brief, in an attempt to achieve a contract figure closer to the level of compensation they were now expecting to receive from Kier.

1.14 In summer 2016, a reduced figure of £9,898,984 was agreed as the basis of a contract to be entered between the Council and McLaughlin and Harvey. On 16 June 2016 the Policy and Resources Committee approved the new funding amount required for the remedial works contract.

2. Revised internal Council project management arrangements - July 2016

2.1 The Chair of the Project Board for the DG One project, then Director of Community and Customer Services, retired from the Council in July 2015. The last meeting of the Project Board which he attended was held on 31st July 2015.

2.2 At this stage of the project there was still no appointment of an internal project manager to act on a full-time basis in relation to the required executive role in the project. The absence of this key role had been noted by a member of the Project Board in an e-mail referring to a meeting of the 'Project Team' in November 2014.

> *'I refer to the Project Team meeting held earlier today 6/11/14. The minute of that meeting will follow but I think we did manage to clarify a number of issues….On that basis those members of the Board present agreed that we need to review the project management arrangements which we have put in place, not solely for the remedial works, but also for all elements of the case against Kier, with specific reference to managing technical, legal, procurement, finance and operational arrangements. My own view is that we may very well need to appoint an internal Project Manager to manage these, given the pressures on Board members who are not in a position to provide the management which we originally discussed at our meeting on 14/8/14.*

2.3 Up to this point, from its establishment in 2011, the records of meetings of the Project Board would indicate that meetings had been held relatively infrequent, apparently with much of the key business being undertaken outside of formal Board meetings by the chair and other individual members of the board.

2.4 After the retirement of the Chair in July 2015, there appear to have been only two further meetings of the Project Board under a new temporary chair, one in September 2015 and the final meeting of the Project Board on 28th April 2016.

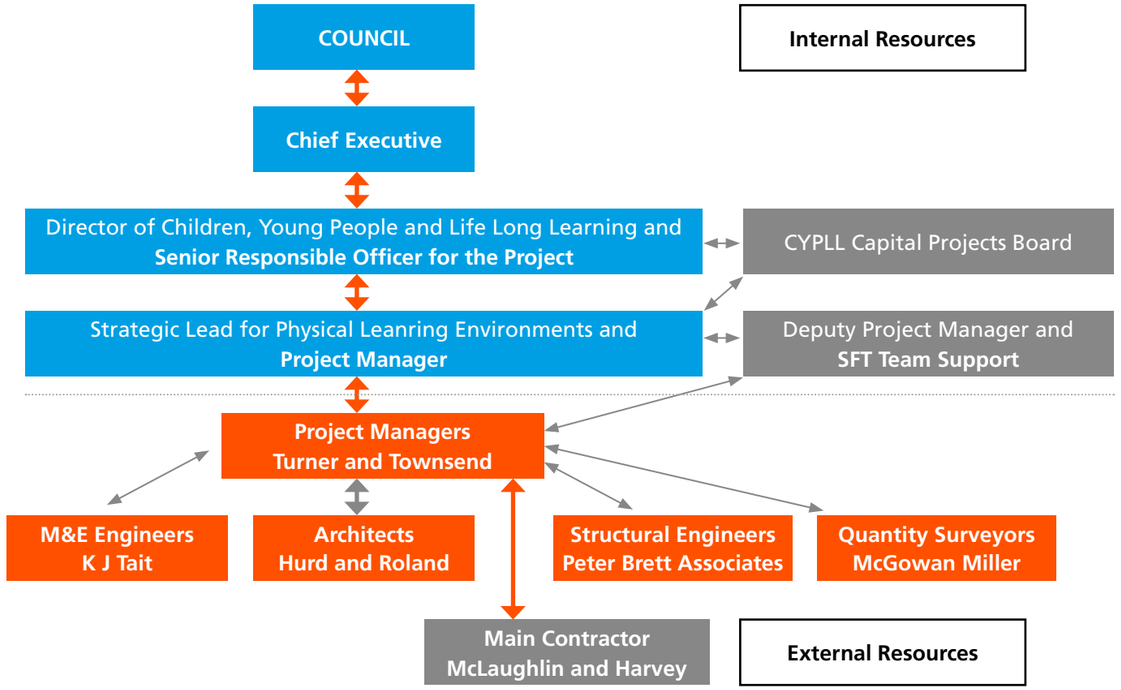
2.5 The Inquiry is of the opinion that the activities of the Project Board were largely focussed on the on-going legal process, the progress of which seemed to act as the main driver of the project. There is little evidence of a sense of ownership of the future of the DG One building or any strategic review of what aspirations the Council had in relation to its future.

2.6 Rather the focus would appear to have been on simply fixing the defects identified as attributable to Kier, without forming a bigger picture as to the condition of the rest of the building and its functionality going forward.

2.7 With the standing down of the Project Board in April 2016, it was necessary for the Chief Executive of the Council to determine how the remedial project would be best managed from the perspective of the Council. The Council had relatively recently established in 2015 a new Directorate under the title Children, Young People and Lifelong Learning (CYPLL). This Directorate's remit included Education, Social Work, Children's Services, Adult Services, Lifelong Learning and Leisure Services.

2.8 With approximately 3,500 staff, it represented the largest grouping of staff in the Council. A section of this Directorate was responsible for the Schools for the Future Building programme, which was led by a qualified building professional, the Strategic Lead of Physical Learning Environments. The Schools for the Future team had recently successfully delivered a number of sizeable school projects.

2.9 On the basis of the Directorate's newly allocated responsibility for Leisure Services and an assessment of the skill sets in the Schools for the Future team, in early Summer 2016 the Director of CYPLL allocated responsibility to the Schools for the Future team within CYPLL to act as the client representative and interface with Project Managers Turner & Townsend. It was agreed that the CYPLL Project Board would receive project reports on the progress of the remedial works on a bi-monthly basis. The following diagram shows the project management structure adopted.



2.10 The CYPLL Capital Projects Board was simultaneously responsibility for a wide range of projects. As a Board it could therefore not provide the individual focus and attention to the DG One project that could have been provided by a properly resourced and dedicated DG One Project Board.

2.11 There was perhaps an assumption at that time within the Council that the delivery of a remedial project should be relatively straightforward and that the complicated aspect of the project had been achieved with the £9.5 million settlement. There was little awareness of the problems that would subsequently emerge.

2.12 Given the project's complexity, and the strategic and reputational importance of the DG One project to the Council, it is the opinion of the Inquiry that the circumstances merited the establishment of a dedicated and properly resourced Project Board to oversee the restoration of DG One.

2.13 The two key regular interfaces with the external project management and consultancy team were the Strategic Lead of Physical Learning Environments, effectively the Council's Project Manager, and her deputy, both of whom were experienced and well-regarded professionals. However, both of these officers were also simultaneously carrying very significant workloads in relation to the implementation of a sizeable school building programme. As a result, they could only spend a percentage of their time on the DG One project.

2.14 In this regard the Council's deputy project manager stated in evidence to the Inquiry:

> *"From my perspective I believe we need somebody from the Council on site full time to oversee the work. The need for them to be there would be particularly acute now and also towards the end of the project. At the moment, we go on site on a Wednesday for a lengthy process meeting. We do have other commitments. But we do need to make changes to that and be on the site more. Our credibility in some ways is at stake".*

2.15 It is the opinion of the Inquiry that the project was not sufficiently resourced internally at all levels by the Council to properly reflect its nature and complexity. This unfortunately repeated one of the key problems associated with the original construction of DG One.

3. External consultancy role in management and direction of the project - September 2016

3.1 The form of contract chosen for the remedial project, the Scottish Form of Building Contract, SBC/Q/Scot Standard Building Contract (with Quantities) 2011 edition, requires an organisation or individual who will undertake the role of 'contract administrator' to be formally named in the contract. On 11th March April 2016, a Senior Manager from Property and Architectural Services, wrote to senior colleagues in the Council in relation to what organisation should best fulfil this role. A number of options were presented in her paper;

1. To continue with Turner &Townsend in the role
2. To appoint Hurd Rolland, the firm of architects who had provided the independent architectural expert for the litigation phase of the project
3. To appoint someone from within the professional grouping in the Council
4. To second someone with the necessary skillset from another body into the Council to undertake the role

3.2 For Option 1 the view expressed in the communication was that there was no longer a need for a distinct Project Manager role in relation to the delivery of the Works and that the skillset required would be different to that of the current Project Manager.

3.3 For Option 3 the brief analysis expressed concerns about being able to find someone available with the right skillset in the Council employment and about the Professional Indemnity risk that would be taken on by the Council. The latter point was seen as also applying to Option 4.

3.4 It recommended that the Council pursue Option 2, the appointment of the architects Hurd Rolland as contract administrator, particularly in light of the specific detailed technical knowledge and familiarity Hurd Rolland had in relation to the building and its defects, which would be beneficial for this very technically-based project.

3.5 This recommendation was not accepted for reasons which the Inquiry have not been able to identify.

3.6 Turner & Townsend Project Management Ltd were subsequently named in the contract as the 'contract administrator'. Prior to the commencement of the construction phase the firm replaced their representative on the project with another member of their staff with more relevant experience to undertake the formal contract administrator role.

3.7 All formal communications from the Council in relation to the contract with both design team and construction team were directed through Turner & Townsend as project managers. All instructions for additional work could only be approved by Turner & Townsend, with the prior approval of the Council if the amount in question exceeded their delegated authority.

3.8 A very comprehensive responsibility matrix was produced by Turner & Townsend setting out the respective roles of the Council's Project Manager, of Turner & Townsend Project Management and of the various members of the design team. (See Appendix 2)

3.9 This project was very complex in terms of the highly technical range of defects in the building that needed addressed, both known and unknown, and the critical interfaces between defects in building elements and services installations in relation to the impact on phasing and cost.

3.10 This was not a new-build where every aspect of the design solution could have been determined accurately in advance. As predicted in the independent architectural expert's file note written on 8th May 2015, for a project of this type the design team would have to be able to respond continuously to what was being discovered on site by the contractor and rapidly evolve their detailed design responses to reflect those discoveries.

3.11 This required a highly technically aware and proactive interface between the contractor and the design team. Such a role on a project of this type would normally be allocated to a lead designer, normally the architect, who would have responsibility for coordinating the inputs of the other designers and for providing effective proactive technical design leadership to the project.

3.12 The project management and contract administrator role as undertaken on the project was described by several witnesses as appearing to be being competent but predominantly focussed on the administrative aspects of the contract.

3.13 It is the opinion of the Inquiry that the proactive strategic and detailed technical design leadership role demanded for a project of this type was not properly provided for as a result of the way in which the consultant team management arrangements had been set up.

3.14 Significant variations to a remediation contract of this type and scale were inevitable and predictable. Given the nature of the contract and the high level of preliminaries agreed as part of the contract, any delay in the development, costing and agreement of variations or design changes, which would in turn delay providing the necessary instructions to the contractor, could result in heavy additional charges to the Council.

3.15 Several members of the design team expressed the view that the governance, management and approval procedural requirements in place were not conducive to facilitating either the required timely level of input from the design team members or the necessary speed of response by the Council in providing approval to essential design changes.

3.16 Technical Meetings chaired by Turner & Townsend and attended by the contractor, design team members and representatives of the Council's project management team were held weekly on site in Dumfries.

3.17 With the initiation of these site meetings, which were also attended by the contractor, the Inquiry was advised that separate design team meetings, which had previously taken place, were no longer held. A member of the design team expressed the opinion that this decision *"had been detrimental to the project"* as this was the natural forum for shared technical analysis between members of the design team on the design responses required to address the constantly changing information emerging from the site.

3.18 Several members of the design team expressed significant concerns to the Inquiry in relation to the level of fees that they were being paid by the Council and the delaying impact on their work of the process required for approval of additional design fees before additional design work could be undertaken.

3.19 The fees had been originally negotiated by Turner & Townsend with each of the design team members when the project was estimated at £3.3m and at a time when the dramatic increase in the scope of the project and its extended prolongation, due to the requirements of the parallel legal process, the need for retendering and related legal and procurement issues, had not been envisaged. The original negotiation of fees was described as difficult by members of the design team with the result that the agreed outcomes that had been considered by them initially as just about sustainable were quickly eroded by the demands of the project.

3.20 Whilst there had since the start of the project been some increases to these fee levels, the Inquiry was advised that approval was required in advance from Turner & Townsend for each extra piece of design work that design team members were having to undertake, although these were required in direct response to information emerging from the opening up of the building.

3.21 The responsibility matrix described the duties of each of the architectural, structural engineering and mechanical and electrical engineering consultants in relation to their required attendances on site as follows;

> *"Periodic Site Inspection (Quality Benchmarking, Inspection and Observation)"*

3.22 The central focus of this remedial project was to address both already identified and still hidden deficiencies in the original construction of the building elements and services installations, some of which would only become fully apparent when opened up by the contractor. In these circumstances a single visit to the site each week by design team members to attend a technical meeting might not be considered sufficient to meet the needs of the project, particularly given the constantly changing situation in relation to the discovery of defects.

3.23 It is the opinion of the Inquiry that the Council officers or their advisors should have considered the employment of a resident site architect or engineer to be appropriate in the circumstances.

3.24 The remedial project should also have justified the full-time presence of experienced clerks of works, from building and mechanical and electrical backgrounds, in relation to both, (i) the necessary identification, quantification, recording and direct reporting to the design team of any newly exposed defects, and (ii) the on-going independent inspection of and reporting on the quality of the remedial works being undertaken.

3.25 The Council did allocate Clerks of Works to the project but at the critical phase of the contract in the early months when opening up of the defective areas was happening, their presence was only on a part-time basis as they were deeply involved in carrying out similar duties on a series of major school projects for the Council.

3.26 The evidence provided by several witnesses to the Inquiry included their views that they perceived the relationships and communication within the project management and design team to be somewhat lacking in energy. The following individual comments were each made by different witnesses to the Inquiry;

> *"The quality of communication between the different parties could be much better. It is however, a difficult project. The design team when we came on board were exhausted and not well motivated. However, I am conscious that we are getting more from them than what we are actually paying for, so we do have to be careful.*
>
> *We have offered flexibility for our regular meetings so for example we have offered to meet people in the central belt rather than expecting them to come all the way down to Dumfries for every meeting. We have certainly appreciated their stamina on what has been a very difficult project"*
>
> *"Motivation and leadership are very important in a project like this particularly where it has had a difficult history. I have certainly felt very frustrated that deadlines have been missed, particularly on the part of the design team".*
>
> *"What we found when we went out on site and spoke to those involved was a degree of project fatigue and defensiveness. There was also an unwillingness to look at new options. There was a sense in which those involved had become jaded about the process and they needed a further push to get things moving again".*

3.27 In early evidence sessions with witnesses the Inquiry repeatedly gained a perception of a project, in which any previously felt enthusiasm had been worn down by events and was largely missing. It appeared to be now viewed more as an endurance test in which remaining barriers had to be surmounted to get it over the finishing line. There was little evidence of appropriately dynamic design leadership but evidence of considerable frustration on the part of participants.

Appointment of principal designer under CDM (2015)

3.28 Unusually the Quantity Surveyors, McGowan Miller Ltd. were named as Principal Designers under the Construction (Design and Management) Regulations 2015.

3.29 One of the key changes to the CDM regulations introduced in 2015 was the replacement of the role of CDM co-ordinator (CDMC) with that of a Principal Designer (PD). This new principal designer role is required to take responsibility for the

co-ordination of health and safety during the pre-construction phase. The reason for the change was to give this responsibility during the design phase to an individual that has ability to directly influence the design. Under the 2007 regulations, this role was often contracted out but the individual appointed was rarely properly embedded in the project team and had little opportunity to influence the design.

3.30 While quantity surveyors play a key role in the cost-planning and measurement of projects, they are not centrally embedded in the design development process, are not designers and therefore are not ideally placed to satisfy the intention of the change to the regulations. This in no sense questions the profession ability of the Quantity Surveyors but rather the strategic understanding of the new regulations by those appointing them to this role.

Choice of form of contract for the remedial works

3.31 McLaughlin and Harvey commenced work on site on **Monday 5 September 2016** on the basis of a letter of intent from the Council. This was followed up with a formal signing of the contract on **28th November 2016**. The form of contract used was the Scottish Form of Building Contract, SBC/Q/Scot Standard Building Contract (with Quantities) 2011 edition. The period of the contract was **78 weeks**, giving a contract completion date of **5th March 2018**. The Contract Sum was in the amount of **£9,898,984**.

3.32 Whilst the use of a letter of intent is not uncommon in the Industry as a way of getting the contractor earlier on-site, its use is not generally viewed as good practice and is frowned upon by auditors. In the case of the remedial works contract it was reported that some errors in the priced documents had still to be resolved at the time that the letter was issued, increasing the risk associated with the use of a letter of intent.

3.33 It should, however, be recognised that the Council had expressed a strong desire for the contract to commence as soon as possible, and this approach facilitated an earlier start.

3.34 The form of contract chosen for the remedial works project is more generally used for work where there is a high level of certainty of final design layout, detailed design solutions for all aspects of the project and full specification and quantification of materials required. These are then translated into a comprehensive measured Bill of Quantities requiring pricing and rates for everything envisaged as being necessary to complete the fully designed project. This is intended to provide a reasonable degree of price certainty for the client.

3.35 Support for the decision to use this contract form for the remedial works project was apparently not unanimous amongst the members of the design team.

3.36 In support of the choice of the *"With Quantities"* form of contract the independent quantity surveying expert stated in evidence to the Inquiry;

> *"The intention from the outset was to have a traditional JCT type contract which would provide certainty on costs as far as possible for the then known scope of works and agreed rates for any variations thereto. This was better in trying to pin costs down and was appropriate bearing in mind that we had had this huge growth in the costs up to that point. A cost reimbursement type contract would be abused by the sole main contractor. I built in a 7.5% contingency on my own estimated figures which I thought was also appropriate, given that by that stage we had still not been able to open everything up".*

3.37 The views of the independent architectural expert and the other expert advisers appeared to differ somewhat. The former stated in evidence to the Inquiry;

> *"I recall that the other independent experts argued with the Q.S. expert in relation to the remediation works because he favoured a lump sum type contract and fixed price procurement method. We argued for some form of more open-ended procurement method such as approximate quantities allowing for re-measurement or a "cost plus" form of contract. That would enable variations, arising from what we felt would be inevitable unexpected discoveries on site, to be costed at agreed rates rather than to become a source of disagreement and dispute over the Contractor's entitlement to payment. I argued that based on previous remedial works contacts, this offered a better solution to ensure the high quality that the building type and the client needed. My concern on this was that we simply did not know everything that we would find at that point in time".*

3.38 The differences in analysis and preferred approach to contract form expressed above perhaps reflects the concerns on the part of those expert advisers and design team members, who had been more directly involved in and been more direct observers of the intrusive investigations, all of which had suggested to them a risk of further undiscovered inadequate construction. Without virtually taking large parts of the building fabric, services installations, drainage and pipework apart, as would subsequently come to be necessary as part of the extended works, the ability to accurately define and quantify the remedial work in advance so as to allow a reasonably fixed price to be determined would prove to have been impossible.

3.39 This would in turn create major budgetary difficulties for the Council, who had considered the tender price of approximately £10.8 million, that they had received on the basis of the priced bill of quantities, to be a reliably accurate indication of the cost they would actually incur in repairing the building. It was also against this estimate of cost that they had assessed the offer of £9.5 million from Kier to be a reasonable offer.

3.40 At this stage of the process, there had been no updated detailed assessment produced by the Council of the overall condition of the building, which had now been closed and sat unused for over two years. This would have been necessary to prepare a schedule of work to help establish the inevitable and unavoidable additional budget that would be required to bring up to a satisfactory standard all those unmaintained, damaged or dilapidated elements within the building that were not considered attributable to Kier and therefore had not been included in the tender documentation.

3.41 As a result, the Council, when they entered this contract, were not in possession of the full information they would have required to understand the total costs that would be incurred in refurbishing the building to an acceptable standard.

3.42 It was only in the period leading up to the commencement of the works on site that a firm of specialist consultants, MAMG Limited, were brought in by McLaughlin and Harvey to produce a schedule of dilapidations and condition survey.

3.43 This was primarily to establish the condition in which the building had been handed over to McLaughlin & Harvey and was a requirement under the contract so that responsibility could be established for the costs of any repairs required to existing defects not covered in the contract and for any subsequent damage caused during the construction period. This was not costed at the time.

3.44 It is a finding of the Inquiry that there was an absence over the prolonged period since 2011, when it was first recognised that a major remedial contract would be required, of a necessary holistic and informed strategic overview and project implementation plan as to how to deliver the totality of a flagship facility restored to an appropriate level of finish to meet the expectations of the public.

3.45 The focus of the Council on recovering the full amount of damages to which the Council were entitled, appears to have to some extent diluted the appropriate focus and attention on re-providing a new facility fit to serve the Community for the next forty years.

4. Additional post- contract client requirements - September 2016

4.1 Despite the previous basis on which the tender document had been produced, i.e. only including for remedial work that was perceived as directly attributable to the actions of Kier, there was now a fuller realisation by Council officers of the need to incorporate all work considered necessary to achieve the full operational effectiveness of the facility. This included necessary work items that had been assessed as arising from lack of maintenance over the period since the building had opened and that had not been categorised as defects.

4.2 In evidence the Inquiry has been repeatedly advised that the design team had been instructed that no such elements could be included in the original tender documentation. The extent, design and material content of these works had therefore not been included in the negotiations leading to the contract sum agreed with McLaughlin and Harvey, nor had rates been negotiated to cover the potential inclusion of such works, which at the time were still not fully defined.

4.3 On **29th September 2016**, at a meeting of the Children, Young People and Lifelong Learning Committee, it was reported that officers had been working with the appointed contractor, McLaughlin and Harvey, through a negotiated procedure to prioritise those additional works considered necessary to make DG One fully and effectively operational.

4.4 Based on the Council's previous experience of operating the facility, they had examined how these necessary further works could be implemented as part of the contract so as to optimise the design of the building.

4.5 The report to the Committee included a list of proposals for design changes as follows;

- *"Reconfiguration of the Leisure Water area through removal of the original flumes and lazy river and their replacement with significant interactive children's play structure to allow an improved experience focussed on this key user group. Also to increase its operational efficiency.*
- *Removal of the permanent bar provision and its replacement with temporary 'pop-up' bars to be erected when service need demands. Options for use of the current bar area will be informed by future engagement with partners and users.*
- *Redesign of the existing health suite to accommodate future Health & Wellbeing initiatives with corporate and external partners.*
- *Relocation of the existing sauna and steam provision onto the poolside area to create a unified wet side experience for users.*
- *Options are being reviewed across the Council and NHS to establish how the second-floor office accommodation could best be used*
- *Changes to be made to the current layout of the catering facilities.*
- *Staff accommodation to be relocated to the ground floor near the main entrance which will result in improved operation of building and a better integration with customers.*
- *Review and rationalisation of wet facilities to respond to comments from users.*
- *The Sustainable Development team have been conducting surveys of the building to determine where tangible benefits could be realised in terms of energy savings and cost reductions. Items such as replacing light fittings with LED bulbs and improved efficient solar panelling could provide significant possible savings. Funding streams are being investigated to support this work."*

4.6 The Committee report stated that events would be organised for elected Members and users to review the plans during the design development process. The client variations also included works required to address perceived inadequacies in the maintenance of aspects of the building since its opening.

4.7 The fact that this level of design development and variation to the contract was happening at this stage, when the Contractor had already agreed a price based on a defined content and measured bill of quantities and commenced work on site, raises a number of questions as to;

1. **Why these issues had not been considered by the Council, costed and confirmed or otherwise as part of the brief during the 5-year period since the need for a remedial works contract had been first established in 2011 or at least since closure of DG One in 2014;**
2. **The continued appropriateness of the use of the fixed price fully measured contract form when it was recognised that significant additional works that had not been included in the documentation would need to be undertaken.**
3. **The appropriateness of the instructions by representatives of the Council not to allow the inclusion of any such work for pricing within the tender documentation**

4. **The impact on the contract of not being able to provide the contractor at the commencement of the contract with a finalised comprehensive set of design information for the planning and implementation of the totality of the works.**

4.8 The Inquiry is not questioning the appropriateness of the need to consider additional client changes to address operational aspects of the building, as given the level of additional investment being made in the building, it was important that when finished the building would be fully operational and fit for purpose. This was totally appropriate. It is the timing of such necessary considerations by the Council that was inappropriate.

4.9 It is the view of the Inquiry that the production of a considered brief covering all aspects of work required to be carried out to the building and the development of agreed design solutions that reflected that comprehensive brief should have been completed much earlier in the process and allowed to be incorporated into the tender documentation for the project. There was more than ample time for the Council to have properly considered these needs in the several years from when they first realised that a remedial works contract would be required.

5. Governance of the remedial works contract - Sept 2016

5.1 In relation to the project management and governance of the on-going remedial works contract, the September 2016 report to the CYPLL Committee stated;

> *"The team that will oversee the delivery of this project has an established set of procedures and benefit of a multidisciplinary team comprising of technical, legal, financial and operational expertise.*
>
> *Turner & Townsend has been commissioned as project managers for the project, who will alongside the in-house team, coordinate the work of a range of external specialists that have been involved in the project since the defects were discovered.*
>
> *Two Clerk of Works have been appointed with Mechanical Engineering and Building expertise to work on all the capital projects within the Schools for the Future Team. Both Clerks of Works have been employed with the remit to review the execution of the works within DG One.*
>
> *The Schools for the Future team have been engaged to deliver this project as part of the new CYPLL Directorate; in taking this project over a due diligence exercise was undertaken. The CYPLL Project Board will have this project reported to them on a bimonthly basis.*
>
> *This project will be delivered with key professional advisers ensuring there is an effective programme, risk and cost control in place. Roles and responsibilities are important along with essential documentation including risk register, comprehensive programme, cost control procedures and expenditure profiles.*
>
> *It is also important to engage stakeholders effectively and a communications strategy has been prepared with the Communications Unit.*
>
> *There will be progress meetings held fortnightly to review and assess progress, cost and adherence to ensure that any issues are identified and addressed promptly with technical meetings held fortnightly on site".*

5.2 Although the focus of the new team was now purely on the actual practical refurbishment of the DG One facility to meet the needs of the community, the contract documentation they had inherited to deliver this had been largely shaped to meet a different purpose, the justification of the claim against Kier.

5.3 In this regard the Council's project manager stated in evidence;

> *"By the time I came on board, McLaughlin & Harvey were already in place as the main contractor. Their package was there and, I was advised, ready to go at that point. I understood that I was taking on a ready project and would only be required to focus on the delivery of the package as presented"*

6. Escalation of the scope of defects to be addressed by the remedial works contract - January 2016

6.1 Within a short period of time after commencing the opening up of defective areas of work in the building, it was becoming clear to the design team that the range of defects was dramatically greater than that included in the Bill of Quantities. Together with the proposed client changes, these factors would serve to increase significantly the scope and required duration of the contract.

6.2 The Council's Project Manager stated in evidence;

> *"For me the key issue is one of budget. I can only approve up to agreed limits. The wider challenge has been prioritising things, now that we are discovering all these extra items. I personally found it hard, as we have highlighted issues since autumn last year, that it has taken twelve months to get decisions made. Elections midway through that process has not helped matters but this is a peculiar project and it has been challenging to expedite it in a very politicised environment".*

6.3 With the increasing revelations of further defective work requiring new design responses, the Council's Project Manager realised that the allocated budget would be insufficient to cover the required work and that under current procedural arrangements, formal approval would be required from the Council to authorise additional expenditure if the project was to proceed.

6.4 Without such approval, the project manager was not authorised to instruct any additional necessary work that might mean exceeding the current Council-approved project budget.

6.5 The revelation that the rotunda would have to be demolished and rebuilt due to defective blockwork construction, meant that much of the building would be wide open to the external environment until this rebuilding work was undertaken. This impacted on the sequencing of other work required, much of which could not progress until the building was closed in again.

6.6 The cost of this one item was estimated at £1.3 million and as it would bring the expenditure beyond that authorised by the Council, the Council's Project manager was unable to proceed with an instruction to the contractor to commence this work, which was

on the critical path for the completion of the project This information was reported to the Senior Responsible Officer, the Director of CYPLL, who in turn reported this to the Chief Executive and relevant senior officers of the Council.

6.7 As new defects continued to emerge, the estimated outturn cost of the project continued to rise at a significant rate. The Council's Project Manager advised the Inquiry as follows;

> *"As we got into the site and further intrusive investigations were done, some of the project assumptions that were inherited were called into question"*

> *"As time went on and further information came to light, the true scale of the remediation became much more apparent. However, this would have been too late to inform much of the negotiation. ..... I highlighted these issues to the governance team."*

6.8 On **17th February 2017**, as a result of receiving information relating to the escalation of the scope of the project and the associated major increase in costs, the Head of Legal and Democratic Services, who also fulfilled the role of Monitoring Officer within the Council, was sufficiently concerned that she felt it necessary to write to the Director of CYPLL and copy the communication to the Chief Executive and Head of Finance in the Council.

6.9 The letter expressed concerns about the quantity of additional defects that were being added into the scope of the contract and frustration that the Council had been led to believe that the schedule of works in the tender was comprehensive, based on the high degree of assurance they believed they had received from their expert advisers. Assurance was sought that the additional surveys being undertaken under the contract had been actually required and that the additional work being identified as a result was essential rather than discretionary. There were also concerns expressed as to the damage to the reputation of the Council if this project were to fail to be delivered broadly within the set budget.

6.10 The letter also sought assurances as to the resourcing and effectiveness of the Council's internal management and monitoring of the contract and as to the performance of the external project management and design teams in relation to the administration of the contract and the protection of the Council's interests.

7. Interim report on cost escalation of remedial contract - April 2017

7.1 On **24th April 2017** the Director of CYPLL met with the Chief Executive of the Council, the Head of Legal and Democratic Services and the Head of Finance. He presented an 'Interim Report' to the meeting in which he described the range of additional work items that had arisen as coming under one of the following four headings:

- Additional defects not previously identified
- Additional complexities to previously identified defects when opened up
- Solutions to previously identified defects that did not prove to be deliverable
- Issues relating to the reinstatement strategy

7.2 The Interim Report identified four areas as examples of these additional defects; (1) very significant newly discovered problems with masonry construction throughout the building, (2) previously unknown corrosion of below ground structural steel stanchions, (3) the quality of mechanical and electrical installations and (4) new defects that had been identified as a result of the completed dilapidations schedule produced by the Contractor in line with a specific requirement of the contract to do so.

7.3 Whilst all of these issues had significant implications for the project, the defects found in the blockwork to the large and dominant rotunda feature of DG One, served to fundamentally change the nature of the project. The defects discovered were similar to those that had been identified as the cause of the collapse of the wall that led to the Edinburgh Schools Inquiry.

7.4 As previously stated, it had been determined by the design team that the only safe structural solution, given the level of inadequate construction now discovered to the blockwork walls, was to effectively demolish the external walls of the rotunda and rebuild them properly from their foundations. Without extra funding approval from the Council, it was beyond the authority of the Council's project management team to instruct in terms of either additional design fees or construction. The decision to proceed with this work would eventually not be given until more than six months after discovery of the defect, during which time the project would only be able to tick over.

Before

After

7.5 The photographs below show the rotunda before the demolition of the walls on the left and after their necessary demolition on the right, unfortunately the reverse of the more usual before and after shots.

7.6 The Interim Report gave a preliminary estimate of £5.7 million as the extra cost of dealing with all the additional defects that had been found, including those to the blockwork. The preliminary assessment of the impact on time was a twelve months delay to the contract completion date, which would attract significant prolongation costs.

7.7 The Director of CYPLL reported that since these issues had emerged he had (1) carried out internal inquiries with the project management and design team, (2) sought a preliminary independent view on the difficulties being experienced with the project from the Chief Executive of the South-West Hub and (3) consulted legal advice as to any options that might be available to the Council.

7.8 The following is a precis of the key findings of his Interim Report;

- All opening-ups and surveys that had been carried out by McLaughlin and Harvey had been in accordance with the requirements of the contract. Unfortunately, these had revealed the presence of significantly more defects than had been quantified in the contract documentation
- Under the form of contract used the Council was responsible for the cost of any work found to be required that was additional to that included in the quantities in the contract documentation.
- Instructions from the Council had been that the scope of the contract should be restricted to the resolution of the defects attributable to Kier. It had been suggested in the recent independent advice received by the Director of CYPLL that the scope of the contract should have been reviewed after the claim had been settled to cover all work necessary to deliver a project to the standard required.
- There was now a realisation that whereas the content of the project had been based on remediation of a specific range of defects, the practical realities of the construction process meant that the project was unavoidably having to address the work necessary to refurbish the building to an acceptable standard.
- Due to the cautious piecemeal approach adopted to the project, the current contract as being implemented did not represent the most efficient way of undertaking the proper refurbishment of the building.
- The consequential impact of the remedial works would appear not to have been fully considered in relation to all aspects of the works. One example of this was the amount of down-taking of existing installations (ceilings, services etc.) that was actually being required to access the structural steelwork to apply the necessary remedial fire protection.
- Additional pre-tender inspections and tests may have identified some of the additional defects now being identified, including the defects associated with the masonry panels, but the full extent of these defects could not have been established without the major intrusive inspections that could only now be facilitated by having the contractor on site.
- The delay in starting the project, the risk of cost inflation, the potential loss of the single tenderer and the impression that all major defects had been identified, had brought pressure on the Council to discontinue further exploratory investigations by the independent experts and proceed with seeking a tender from the sole tenderer based on the information available at that time as to the extent of the defects.
- The Council's risk under the current contract is uncapped and costs could still rise significantly above the newly estimated outturn cost
- The priority should be to seek to mitigate the Council's financial exposure and to achieve a position where there is a reasonable degree of assurance as to the extent of the full liability that will fall to the Council.
- It was critical that any required outstanding investigations of the building were brought to a conclusion as soon as possible to enable the finalisation of accurate outturn cost predictions to inform decisions by the Council as to the how they wished to proceed.
- The legal advice received had confirmed that given previously to the Council that under the settlement there had been no assurances provided that further defects would not emerge. The nature of the settlement with Kier was such that the risks associated with any defects that did emerge, with minor exception in the case of the foundations, would rest with the council.

The inquiry fully concurs with the analysis provided above.

7.9 The Interim Report also contained the recommendation of the Director of CYPLL that an urgent independent review of the project be undertaken to provide the necessary assurance to the Council as to the current management, resourcing and organisational arrangements; to advise Council as to any alternative courses of action that should be considered; and to address the issue of the extent of the financial liability that the Council could face in completing the project.

8. Independent review of project commissioned from Gardiner and Theobold by the Council - May 2017

8.1 It was agreed that the proposed independent review of the DG One Leisure project should proceed and the Council subsequently appointed Gardiner & Theobald LLP on 26 May 2017 to carry out this review. Given the urgency of the situation they were requested to have their review completed and a report prepared for presentation at the meeting of Council in July 2017.

8.2 The following are a summary of the key findings and recommendations of the Gardiner and Theobold review as contained in a report dated 27th June 2017. The items marked in bold below were not marked so in the original report;

Findings

- *"The extent of reasonable diligence and investigative work carried out during proceedings against Kier Northern was considered proportionate in relation to the information available at that time. However, with the extent of defects being significantly greater than was reasonably anticipated, this resulted in an insufficient scope of remedial works being assembled. This resulted in the contract sum of £9,898,984 with McLaughlin & Harvey being undeliverable.*
- *Following a review of the original contract requirements and latest cost report, the original scope of works needs to increase to allow for a safe, functioning and durable facility at the end of the project, which results in additional cost and time. The potential revised scope of project would address the full range of defects and provide an appropriate functional and safe environment.*
- *The approach to re-use materials and equipment that has been adopted by the project team has been sensible, however this has often been to no avail, for example the majority of ductwork is now to be replaced as opposed to left in-situ.*
- *There remains significant risk in relying on building components that were originally installed by Kier Northern only to find that they do not function at the end of the project. The professional team have made a cost allowance for this eventuality, however the operational and time consequences cannot be ascertained at this time*
- *The assessment of the extent of remedial works and reporting undertaken by the design team has been sound.*

- *The approved construction budget is currently £9,985,685, with an original outturn project cost of £10,747,627. Based on the available information, the Council's professional team's opinion on the construction cost is* ***£15,567,229****, outturn cost of* ***£17,677,679****, versus a McLaughlin & Harvey construction cost of* ***£16,333,372,*** *with an outturn cost of* ***£18,543,722****. It is important to note that these costs are not fixed and do not reflect the final design solution.*
- *It has become apparent during our review (from site inspections and discussions with the team) that the extent of defects now encountered is significantly greater that could have been anticipated. It is clear from the strip out and dismantling over the 6-month period that a large proportion of the building is not fit for purpose.* ***In our experience these defects are exceptional.***
- *The methodology and processes adopted to date in agreeing costs with the Contractor have been acceptable. Whilst the extent of costs actually formally signed off could be greater (and steps have been put in place to address this), those that have been approved have been agreed at the correct level.*
- *The professional team are experienced, competent and more than capable of delivering this project upon confirmation from the Council of any revised budget parameters. The professional team have undertaken their role and in doing so have sought to safeguard the Council's position*
- *The project management and quantity surveyors, Turner & Townsend and McGowan Miller, appear to have competent and dedicated professionals as part of the day to day project team. They are more than capable of delivering this project, however the ongoing 'unknowns' have clearly inhibited their ability to deliver a first-class project for the Council, with both theirs and the design team's roles moving from proactive delivery to reactive site delivery.*

GARDINER & THEOBOLD RECOMMENDATIONS

- *The final design solution that takes into account the additional defects and building issues has not been priced by McLaughlin & Harvey. The professional team are working to have the design information issued to them on 30 June 2017 for pricing. There will remain a significant cost risk to the project until this process is complete, whereby there will be a Council approved design, a robust lump sum and a credible delivery programme.*
- *The professional team and Client group must engage with the main contractor team to expedite this process by answering technical queries expediently. The Council must also engage with McLaughlin & Harvey at a senior level to ensure that the necessary pressure is brought to bear to conclude this costing and programming exercise as soon as is reasonably possible.*
- *The professional team should set up a series of meetings with McLaughlin & Harvey to address the outstanding issues where information is available with costs not yet being agreed. This will assist in providing the Council with a greater degree of confidence in the outturn costs at as early a stage in the costing process as possible.*
- *The remaining contingency in the project at £312,491 is insufficient. The project team should convene a risk workshop to allow a realistic contingency level to be established*

8.3 The report emphasised that most of the items included in the predicted outturn costs report prepared by McGowan and Miller were their own assessments of these costs and **had not yet been agreed with McLaughlin & Harvey**.

8.4 Gardiner and Theobold also observed that in their opinion the variation process was reactive and not being managed through a formal change control process where costs were agreed in advance of the work being instructed.

8.5 In the opinion of the Inquiry, the process that had been established for dealing with variations was undoubtedly tortuous and in particular was not sufficiently flexible to respond to the practical needs of the situation that had arisen on this contract, where a process facilitating more rapid and pragmatic decision-making was required.

8.6 The Inquiry are also of the opinion that this project would have justified the full-time employment on site of either a design team resident architect or engineer, at least during the exploratory opening up stage of the contract to facilitate a more responsive process.

8.7 The significant additional unplanned works that were now to be added to the contract would require the preparation of considerable additional design drawings and specifications by the various members of the design team.

8.8 The procedural arrangements in place were described in evidence to be as follows.

- a new defect requiring a design solution and client instruction would be initially identified by the contractor and reported;
- the need for additional involvement of the designer would be confirmed with the project manager Turner & Townsend;
- the fees for each extra element of design work would have to be agreed and any additional investigation and design work instructed to the designers by the project manager;
- these designs had to be completed in sufficient detail to allow the nature and extent of these works to be properly defined;
- this information had to be sent to the contract administrator Turner & Townsend for issue to McLaughlin and Harvey;
- prices had then to be sought by them from existing or a from a new list of sub-contractors depending on the nature of the work;
- the prices received back had to be assessed and agreed as acceptable or re-negotiated by McGowan and Miller;
- the finalised priced instruction had then to be approved by the Council's project management team before it could be formally issued as an instruction to the contractor.

8.9 There was considerable evidence of delays in this process and in the approval of additional expenditure to allow the issue of the necessary instructions to the contractor. These delays would prevent McLaughlin and Harvey from proceeding with the planned works in an efficient manner, with expensive resources on-site not being fully utilised. This would prove to be particularly costly to the Council because of the high level of preliminaries attached to the contract. The Gardiner and Theobold report stated;

"McLaughlin & Harvey continue to accumulate a weekly preliminaries cost, with the level of site productivity at this time being disproportionate to the costs being incurred; therefore it is imperative that a robust design solution aligned with cost and programme is agreed as an absolute priority

In the short-term, McLaughlin & Harvey are running out of work elements to progress on site to maintain productivity. They are far from being in a position to bring the building back to an acceptable standard and are not able to complete their original scope as there are significant variations that need to be instructed to allow the original contract works to be completed.

Turner & Townsend have advised that there are a number of packages on the critical path that need to be instructed to the main contractor in advance of the lump sum price being confirmed, such as general blockwork repairs and works required to be carried out to allow the original scope to be completed.

Instructing these works at the earliest opportunity, whilst at risk in terms of not having the lump sum from the main contractor, would allow for continuity on site, would mitigate the outturn programme and would show a level of return on the preliminaries that are currently accruing".

"Information Release dates have been missed by the design team, albeit Gardiner & Theobold believe that this may be due to the lack of instructions coming through to McLaughlin & Harvey. The technical queries following issue of the design information on 30 June 2017 must be responded to swiftly to allow the project to get to a robust design, cost and programme position at the earliest opportunity".

8.10 The Council naturally felt required to understand fully the basis of the dramatically rising project costs, to consider alternative options and to confirm sources of additional funding before being able to approve further expenditure on the project. The inevitable delay in producing this information attracted large prolongation costs and inefficiency in the use of the contractor's site resources during the late spring and summer months of 2017.

8.11 The timing of Council elections during this period had added an unfortunate further complexity to these processes, given the key decisions required of the Council Members in relation to the project.

9. The paper on options as to how to proceed with the project in light of the projected major increase in costs - June 2017

9.1 An options paper was prepared by the CYPLL Team for the July 2017 full meeting of Council to inform the decisions of the Council in relation to the options available to them.

9.2 The option appraisal identified three options;

- Option 1 - Demolish the existing building and continue with the current temporary facilities as the permanent service with a view to long term delivery;
- Option 2 - Address the additional defects to return DG One to an operational facility;
- Option 3 - Demolish DG One and build a new facility on the same site

9.3 The positive and negative aspects of each option was considered in terms of financial, services, public and programme considerations. The financial considerations only for each option as contained in the options report were as follows;

Option 1 – Financial Implications
This would not require the identification of additional funding but would result in very significant abortive costs and a continuing reliance on temporary provision with no new facility. There may be some release of funding from the existing agreed budget, but the extent of this release is uncertain and would be subject to the details of contract termination.

Option 2 – Financial Implications
It is important to recognise that accommodating the extent of the cost increase on this project would have a significant impact on funding available to support other capital investment needs and priorities (e.g. schools, roads, other facilities). This decision should not be taken in isolation and should recognise the impact on Members ability to progress future capital investment priorities. (An appendix to the report provided Members with an indication of how this might be accommodated and the resultant impact on funding available for other investment priorities).

Option 3 – Financial Implications
This would not require the identification of additional funding in the immediate term but would result in very significant abortive costs. There may be some initial release of funding from the existing agreed budget, but the extent of this release is uncertain and would be subject to the details of contract termination. The funding of a new build project would be extremely difficult to accommodate in the Capital Investment Strategy in either the short or medium terms.

9.4 The options report itself did not offer a conclusion or recommendation leaving this decision to the Council members but identified that the separate independent review that had been commissioned from Gardiner and Theobold had concluded that the course of action described in Option 2 above represented the most beneficial way forward on the project. The Gardiner and Theobold report had stated:

"Gardiner & Theobald's recommendation is to conclude the pricing exercise with McLaughlin & Harvey and, concurrently, instruct packages of works that will mitigate the outturn programme and resulting cost. This will ultimately prove best value. It will deliver the finished building in the most time efficient manner and makes best use of current site resources that are accumulating preliminaries on a weekly basis. There will, however, remain an element of risk to the Council in proceeding with authorising further works without having the lump sum price agreed".

9.5 The option appraisal paper did not present costs for the third option of demolition and rebuilding on the same site. The Inquiry sought from McGowan and Miller an estimate of the cost of rebuilding DG One to the same design on the same site.

9.6 Assuming tendering in the final quarter of 2017, the estimate was £26.2 million, including fees and a risk allowance of approximately £3 million.

9.7 It would have been highly unlikely that such an early tender date could have been achieved as the Council would almost certainly have wanted a different functional content design to that of the original building, which would have required additional time to prepare and approve. However, the indicative costs of rebuilding the same building, are unsurprisingly not much more expensive than the predicted outturn cost of the current project.

9.8 The Inquiry was also advised that the Council's brief for a new building would probably be significantly smaller than the current facility, as life-style trends in fitness and exercise have seen a considerable move over the last ten years towards more fresh-air rather than gymnasium-based activities. In these circumstances the estimated construction cost would have been significantly lower than that indicated above.

9.9 A further argument in favour of a new building would have been the fact that the remedial contract as currently being implemented will not provide the equivalent of a new building, as significant areas of finishes and fittings of the 10-year old building are not being fully refurbished.

9.10 At the time of the above options analysis, considerable expenditure had already been incurred on the project and withdrawing from the contract would have incurred significant additional costs in compensation for the builder.

9.11 Unfortunately, at the time of commencement of the remedial project, the Council had not been aware of the real cost of restoring the building to a fit-for-purpose condition, otherwise their whole strategy for the project may well have been significantly different.

10. The discovery of previously unidentified masonry defects in DG One - February 2017

10.1 A major aspect of the previously undiscovered defective work was related to the quality and safety of construction of external brickwork and blockwork walls. The defects discovered in the DG One building followed opening up of the walls by the main contractor at the request of the Council's project management team.

10.2 The defects discovered were largely similar to those that had been identified across many relatively recent buildings in Scotland as a result of the findings of the Independent Inquiry into the Construction of Edinburgh Schools, the report of which had been published in February 2017.

10.3 The report of the Edinburgh Inquiry had identified missing or inadequately embedded wall ties, missing head and lateral restraints, missing bed joint reinforcement and missing wind-posts in the walls of 17 schools in Edinburgh. The report provided evidence of similar defects in a significant number of school buildings across Scotland and suggested that these defects would not be restricted to school buildings but may be indicative of a systemic failure in quality management within the Industry in Scotland and possibly the rest of the U.K.

10.4 On the basis of the findings of this report the Scottish Government wrote to all public bodies requiring then to undertake appropriate checks in line with the recommendations of the report.

10.5 At an earlier stage in late March 2016, following preliminary investigations of the collapse of the school wall in Edinburgh, all Local Authorities were advised from central Government that they should undertake precautionary checks on the construction of the external walls to their schools.

10.6 On **18th April 2016** the Property and Architectural Services Manager with the Council wrote in the following terms to the Leisure Services officer who was then acting as the main liaison with the external project manager and design consultants.

> *"In light of the issues which resulted in Edinburgh School Closures, we have also reviewed other properties built in the past few years by the Council. Amongst those identified that would be worthy of reviewing in further detail is DG One. I appreciate that it is highly likely that the potential problems per Edinburgh would have already been identified at DG One were they to exist, however, I would be grateful if you could confirm this with the technical experts who were engaged on the project".*

10.7 On **10th June 2016**, the Property and Architectural Services Manager wrote again to the same officer seeking a response. The officer responded to say that he had not yet an answer for her and confirmed that the matter would be pursued. The Property and Architectural Services Manager replied to this e-mail stating that it was important that there should be an audit trail maintained on this issue.

10.8 All of this communication happened several months in advance of the completion of final contract documentation and the appointment of the McLaughlin and Harvey as contractor in September 2016. However, it would appear that no such investigations as requested by the Property and Architectural Services Manager were carried out prior to the appointment of the contractor.

10.9 On 2nd February 2017, the Council's Project Manager wrote to the Director of CYPLL and the Director of Corporate Services with copies to other senior colleagues advising them as follows;

> *"As Directors with respective areas of responsibility for the project and for health and safety, I am contacting you to advise you that during the planned investigations works as part of the project it has been identified that it is believed that head restraints and wall ties are not in place"*

10.10 The extent of these defects in the external walls of DG One will be described in the following section of this Report.

10.11 If at the time of the original request in April 2016, the required actions had been properly pursued and the extent of this problem properly identified, the appointment of the contractor could have been delayed until the necessary course of remedial work had been determined, designed and specified and the cost of this negotiated in advance of contract signing with the contractor.

10.12 This information could then have been advised to the Council for a decision and the granting of approval or otherwise for the necessary additional funds required to allow the work to be undertaken as part of the contract.

10.13 This would have prevented; (1) this aspect of the work leading to a major delay during the period of the contract while funding approval was being sought; (2) the resultant disruption of the planned work flow of the contractor; and (3) the attraction of the resultant significant prolongation and related costs.

10.14 In compliance with the requirements of central Government, the Council had, since receiving the alert in early 2016, carried out investigations on a prioritised list of their completed building projects, particularly those built under a design-and-build procurement route or those where properly experienced and resourced clerks of works had not been employed. The discovery of masonry defects as a result of the investigations undertake by the Council were not restricted to the DG One building.

10.15 Dumfries Ice Bowl, as a design-and-build project, had been one of those buildings selected for investigation. The inspections had uncovered the same range of masonry wall defects in this second leisure facility in the Council area to those found in in the DG One building, also having been procured using design-and-build.

10.16 Nine areas of walls of the Dumfries Ice Bowl had been opened up for inspection. The findings of the inspection included:

- Eight areas where the inner and outer leaves of the wall did not have level coursing in one instance the level difference being as much as 120mm. (the mortar courses in the inner and outer leaf should have been level with each other to allow the wall ties to be embedded in each leaf);
- Areas where there were insufficient wall ties compared to the number required
- Areas where wall ties were not embedded to the full depth required
- Areas where wall ties were only embedded in one leaf, and then bent down into the cavity
- Throughout all exposed high-level areas of brickwork raked to follow the slope of the roof, open cavities and partially incomplete internal leaves of brickwork were uncovered with no evidence of wall ties in these areas

10.17 The discovery of these same defects in the Dumfries Ice Bowl and the DG One building was further evidence, to that produced in the case of the Edinburgh and other Scottish schools, that the problem of unsafe blockwork construction was not restricted to poor performance in individual buildings. It lent further weight to the finding that this was a systemic problem relating to lack of proper quality control in at least this aspect of the work of the industry.

10.18 Following the appointments of the members of the independent technical experts in 2011 -12, there had clearly been restrictions as to the level of intrusive investigations that could practically be carried out on the building during the period when it remained fully operational.

10.19 At that time, prior to the occurrence of the wall collapse at the Edinburgh School, the issue of a potential systemic failure in the construction industry in relation to the quality of construction and the structural integrity of masonry wall panels due to the inadequacy of wall-ties and related components had not yet been high-lighted within the Industry. The antennae of the inspection team would therefore not have been particularly focussed on this as an issue for checking.

10.20 At that time small sections of the external wall were opened up, primarily to facilitate inspection of the potential omission of sections of insulation, which omission had been suggested following infra-red photography of the walls. A major concern of the Council at the time was in relation to the energy performance of the building.

10.21 However, inspection of the photographs of the interior of the walls taken at the time, in addition to confirming the absence or poor quality of installation of insulation, would also appear to indicate a potential lack of visible wall ties, which perhaps might have warranted further investigations by the technical experts at the time.

10.22 It is recognised that these photographs were not originally intended to examine wall ties and in this regard are also not sufficiently clear to provide confirmation in relation to compliance or non-compliance with the required specification for wall-ties and head and lateral ties. Any such suspicion at the time would have required further intrusive investigations before being able to confirm the subsequently identified inadequacy of ties. As these investigations predated the Edinburgh schools report, there was little cause for such suspicion at the time.

10.23 Photographs were also taken at the time of internally visible cracking to the blockwork encasement around the columns in the rotunda, which during the McLaughlin and Harvey contract would also subsequently be found to have been built without having been adequately tied back to the structure. This cracking occurred at the interfaces between steelwork and blockwork, at internal corners of the blockwork encasements, and at movement joints where joint sealant had split.

10.24 The presence of these cracks was raised in 2011 with the independent structural engineering expert. The cause was assessed at the time as potentially the result of thermal differential movement between the structural steel and the concrete blockwork, exacerbated by the internal temperature in the pools area which at higher levels in the space could reach 40° centigrade. The independent structural engineering expert did not at the time suspect that inadequate installation and omission of wall ties was the cause, therefore no further investigations were undertaken.

10.25 The following are examples of photographs taken at these early stages of the investigations:

NOV 2011 PHOTOGRAPHS – NO VISIBLE EVIDENCE OF WALL TIES

NOV 2011 PHOTOGRAPHS – NO VISIBLE EVIDENCE OF WALL TIES

Photographs taken in Nov 2013 of cracking to blockwork encasement of columns in the Rotunda

10.26 The inadequate incorporation of wall ties would not be fully reported on until April 2017, some eight months into the construction of the remedial works contract.

11. Report by Peter Brett Associates on the original construction of the masonry walls in the DG One Building - April 2017

11.1 Following the discovery by the main contractor of previously unidentified defects in the masonry construction of the DG One building, in late 2016, the design team structural engineers, Peter Brett and Associates (PBA) were asked to produce a report on the condition and structural integrity of the walls.

11.2 The report confirmed that the same defects that had been identified in the Edinburgh Schools Report were evident throughout the construction of the walls. These conclusions are set out in the executive summary of the PBA report, which due to its important content is repeated below:

> *"During works to remediate defects within the DG One Leisure Centre building, previously undiscovered defects within the blockwork walls were noted. Further investigation has been carried out to determine the extent of any defects within the blockwork walls of the building.*
>
> *The investigations have been carried out with assistance from the main contractor on site and have included removal of sections of walling to allow inspection of wall cavities for presence of ties, confirmation of bed joint reinforcement and general adherence to the original construction detailing as indicated on the original construction drawings, which were contained within the Health and Safety Files for the building.*
>
> - *Restraint ties between walls, between walls and floors, and between walls and the roof have been found to be missing in many locations throughout the building.*
> - *Walls which were noted on drawings within the Health and Safety file to contain bed joint reinforcement have been found not to contain such reinforcement, or to contain less reinforcement than was indicated on the Health and Safety file drawings*
> - *Within the changing village several walls were found to have been built off insulated floor screed containing underfloor heating pipes that were planned to be replaced. This has required that these walls be demolished.*
> - *Replacement of external cladding panels exposed areas of blockwork in the external walls that had been used to support fixings for the cladding panels. Some of these panels were of large spans between columns and required a design check to confirm whether any additional strengthening was required.*
> - *Several areas of blockwork walling which had been used to provide support to the external cladding panels were found to have been constructed without adequate ties to the steel frame.*
> - *Deficiencies in the presence of wall ties to the leisure pool rotunda, in particular, required a decision to be made to replace the blockwork walling in this area completely. It was considered that re-building of the*

wall after demolition of the blockwork could be more effectively and more rapidly carried out using metal stud and dry lining techniques. This principle has also been applied to other wall panels where there were similar deficiencies.

This report includes a description of the defects encountered and provides an indication of the remedial work that will be required in each location including.

I. demolition and re-building of sections of walling

II. demolition and replacement of sections of walling using metal stud and drywalling methods

III. Installation of wall head restraint angles where these were found to have been omitted

IV. Installation of remedial wall ties to cavity walls where existing wall ties were found to be deficient in number or deficient in any other way

V. Installation of additional restraints to the edges of wall panels where these panels were found to be lacking satisfactory connections to the supporting steel frame.

VI. Installation of ties between walls and floors or roof elements.

VII. Strengthening of large masonry panels by introduction of additional steel support members to resist lateral wind loading where these panels have been found to be lacking in satisfactory lateral support.

Due to the widespread nature of the defects and the fact that work is continuing on site there may be further locations where defects exist, but we consider that those areas of major risk regarding any defects within the blockwork walling have been identified and addressed within this report.

The new remedial measures identified within this report have been recommended primarily to address safety concerns. Defects within the blockwork walling construction include incorrectly installed or missing cavity wall insulation. Defects of this nature do not affect the structural integrity of the building but will compromise the performance of the building in other ways".

11.3 One of the defects discovered, the lack of provision of restraints to the walls of the changing areas, had significant relevance due to a recent tragic incident in Scotland. It is not specifically mentioned in the above executive summary but is included in the body of the report. The requirement for these restraints had been shown on the design drawings prepared for Kier but had not been implemented on site. The PBA report stated;

"Blockwork walls around the perimeter of the changing village are approximately 3800mm high, and there were no restraints provided at the heads of these walls.

It is recommended that restraints are fitted to the heads of all walls of this nature within the building, in line with the typical detail that was indicated on the original construction drawing by WSP."

11.4 The PBA report provided the following explanation as to how these particular masonry defects had only been identified during the construction stage. It stated;

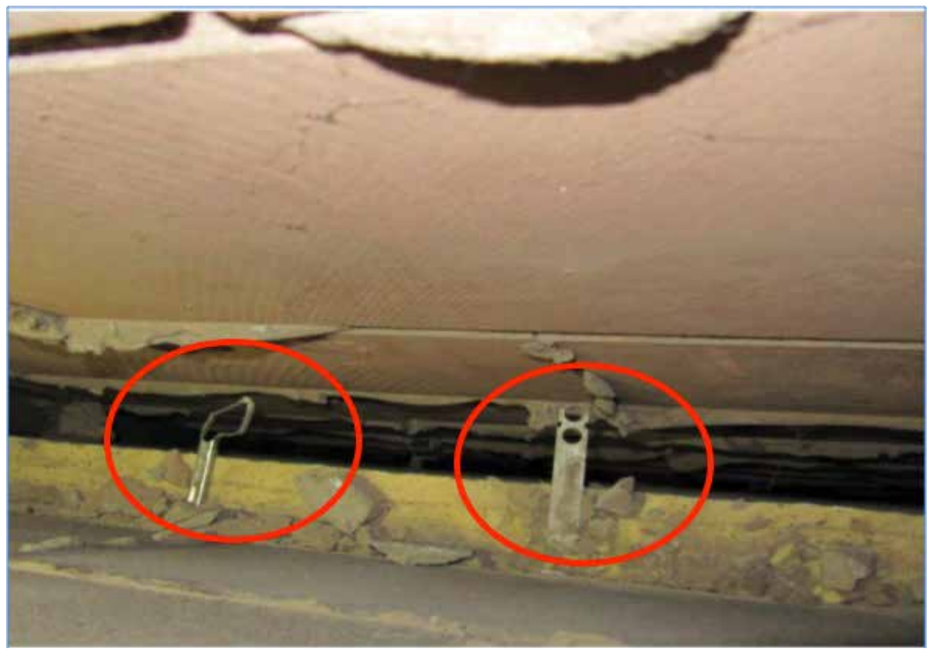
"Demolition of some walls within the building was required as part of the work necessary to address other defects, and when this demolition was carried out defects in the blockwork became apparent, mainly in the form of a lack of wall ties at junctions. This lack of wall ties could not have been discovered without demolition of the walls, at least in part.

As a separate exercise the Council instructed sections of blockwork cavity walls to be opened up in order that presence of wall ties and wall head restraints could be investigated. The areas that were opened up revealed a likelihood of defects but were not sufficiently large to allow a reasonable opinion to be formed as to the overall condition of the blockwork. Consequently, PBA were instructed to carry out further investigations regarding the stability of the blockwork walls. PBA have since instructed additional opening up to be carried out and final recommendations have been developed as more information was gained.

In addition, the remedial work to the building required taking down of ceilings, removal of roof sheets and removal of external cladding panels. As this work has been carried out additional areas of blockwork have been exposed, and further defects have been noted relating to fixing of the cladding panels and to provision of fire stopping".

11.5 The following are some of the photographs and associated annotations included in the April 2017 report by Peter Brett Associates. They show examples of widespread defects to masonry construction and related defective installation of insulation throughout DG One.

Wall to east of reception. No ties at wallhead



Fitness Suite Ties. Ties too short.

Quarter Landing 7. Ties too short. Insulation missing

Piers 2. Block encasement removed. No ties in bottom 10 joint to left sides. No ties at all in right hand return. No ties to RHS of column in top section

Piers 12. No inner leaf blockwork between Kalwall glazing and column. External brickwork has no tie back. Insulation bodged.

Piers 6. Wall panel in course of break out - inadequate wall tied to column and between external and internal leaf. External timber studs show fixings to single block leaf..

Exposed masonry. No shot fixing from tie to steel.

Improperly installed insulation

Scaffold tube remaining from original construction revealed on removal of external cedar cladding. Timbers and insulation bodged around scaffold tube.

South Wall Main Pool. No supports to head of blockwork. Inadequate supports for external cladding panels.

Bent wall tie, missing insulation and unfilled perpend joint.

South Wall Main Pool. Unsealed and unfilled gaps at head of block panels.

11.6 The report concluded with the following statement;

"Due to the widespread nature of the defects and the fact that work is continuing on site there may be further locations where defects exist, but we consider that those areas of major risk regarding any defects within the blockwork walling have been identified and addressed within this report".

12. Previously unidentified need to demolish and relocate the end wall of the main pool - January 2017

12.1 As previously covered in this report, under the Design and Build contract with Kier for the main pool, the original design intent was as detailed on construction drawings produced at the time by Harris and Taylor Structural Engineers. This design showed a 35mm thick finishes zone for a tile and render finish to the inside faces of the main pool walls and a length dimension of 25.010m (+0.010m) between the finished face of the tiles. This equated to a finished concrete to concrete dimension of 25.080m (25.090m) for the length of the pool.

12.2 The concrete walls to the pool were not constructed to the standard required to provide a waterproof shell, thereby failing to comply with relevant British Standards guidance. The contractor was therefore relying solely on the applied internal finish layer to provide the essential waterproofing to the pool. The applied waterproofing element used was not the render itself but a rubberised proprietary paint finish that as a result of its inadequate application had failed to provide an effective waterproof seal resulting in widespread leakage through the pool walls.

12.3 The Council's Project Management Team, together with the independent technical expert and design team architects, were anxious that given the underlying lack of water resistance provided by the existing concrete walls of the pools, the new water-proofing treatment to be applied to the walls had to be to a high-quality specification that would give the Council the re-assurance necessary for this critical element. Following considerable research and expert advice it was determined that the most reliable form of waterproofing would be a system provided by one of the leading manufacturers of waterproof renders.

12.4 The system required;

- All joints, cracks and corners that might be subject to movement to be treated with a specified jointing system
- The prepared surface of the existing concrete substrate to be dubbed out as necessary to level it and then treated with a specified specialist epoxy adhesive prior to the application of the first waterproofing render coat
- A thickness of at least 18 mm of waterproofing render to be built up in three coats

12.5 After a specified curing period, the pool would then be tested under full water load. Only when the water-tightness had been proven would the final 9 mm thick layer of adhesive and tile be able to be applied.

12.6 In total the thickness of the required finishes makeup to each wall would therefore be 18 mm plus 9 mm i.e. 27 mm plus the thickness of the initial wall preparation and epoxy adhesive layer. The combined thickness of this preparatory layer would vary given the uneven condition and lack of squareness of the existing concrete wall surfaces. If built in accordance with the details shown on Harris and Taylor's drawing, the finishes zone of 35 mm thickness, would have allowed only up to 8 mm provision for the thickness of the preparatory layer needed under the 18 mm waterproof build up.

12.7 The accuracy of the dimensions of a swimming pool to be used for official competitions, as was the requirement for the DG One pool, is critical, particularly the length. Recommended International standards are that designers should work to a maximum dimensional tolerance between the finished wall surfaces of pool tanks of + 0.030m. This assumes that there will be two 0.010 m thick timing touch pads (one at each end) and an allowable construction tolerance of + 0.010 with no minus tolerance. Given that there were only plans to have a touch pad at one end of the pool, the dimension from finished tile to tile for the length of the main pool was required to. be 25.010m with a tolerance of + 0.010m.

12.8 When one adds the minimum thickness of wall finish make-up as indicated on the original Harris and Taylor drawings, the length from concrete face to concrete face should have been a minimum of 25.080m.

12.9 As reported earlier, the tile and render layer as originally applied was found to vary in thickness around the pool. In some areas it was relatively thick but was generally found to be less than the specified 35 mm thickness, the render behind the tiles having been recorded as being only 5 mm thick in some places. The detailed measurements of the thickness of the render around the pool and of the actual built dimensions of the pool were only able to be established once the existing render had been stripped back as part of the McLaughlin and Harvey remedial contract.

12.10 When the existing render layer was stripped back, it was discovered that under the original contract with Kier the concrete walls of the pool had not been set out precisely in accordance with the Harris and Taylor as-built drawings. Instead of the length being 25.080m from exposed concrete face to exposed concrete face, it was measured on one side as being 25.046m and on the other as being 25.052m. In the middle of the wall through variation in the straightness of the wall there was a further reduction in the clear length of the pool of up to 12mm, reducing the clear length from concrete face to concrete face that could be accomplished in a squared-off rectangle to 25.034m.

12.11 To achieve the essential 25.010m length, the thickness of tile and waterproof render finishes make-up that the position of the existing walls would allow at this point would therefore be a total of 24 mm, only 12 mm on each side as opposed to the minimum of 35 mm required on each side.

12.12 This would not comply with the specialist manufacturer's recommendations and was considered by the design team to be inadequate to provide the type of waterproofing treatment required.

12.13 The Inquiry noted that the Employer's Agent wrote on this matter to Kier in February 2007, expressing concerns about the accuracy of the geometry and dimensions of the pool tank and being able to facilitate the required thicknesses of finish to the pool tank walls whilst still achieving the specified 25.010. The failure by Kier to properly address these concerns resulted in the need for the following work to be undertaken.

12.14 The decision was taken by the Council that it was essential that the finished pool should comply with the requirements to allow it to be used for formal swimming competitions. In order to achieve both a satisfactory waterproofing solution which the design and construction teams were prepared to stand over as well as the required critical

pool dimension of 25.010m, it was decided that the existing concrete wall at the shallower end of the pool should be demolished and rebuilt slightly further back to accommodate these requirements.

12.15 Further checks on the setting out of the pool indicated that adjustments to the level of the pool surround were also necessary to make the depth of the pool compliant with competition regulations. This was more easily accommodated by introducing a slight fall to the new replaced screed and tile makeup to the walkway areas around the pool.

13. Discovery of previously unidentified underfloor defects - March 2017

13.1 A second area of additional structural defects identified following opening up of the concrete floor slab by the main contractor, was the presence of severe corrosion to the sub-floor sections of a line of 18 steel columns which had not been properly protected by concrete encasement or the application of bituminous paint. This corrosion could not have been detected or predicted by the design team in advance of this level of opening up taking place as part of the works. The following photographs show two of these columns as examples.

Corroded underfloor sections of steel columns

13.2 A second major aspect of additional underfloor defects discovered was in relation to the underground drainage system. The tender documentation had allowed for remedial work to 67 defects in the drainage system, however, following the more intrusive investigations facilitated by the contractor, the number of defects identified had grown to 250.

An example of the condition of underfloor drainage found

14. Additional post-contract mechanical and electrical issues from September 2017

14.1 As previously stated, the defects to the masonry construction and column bases would unfortunately be only one of a number of previously unidentified defects that were emerging post-contract with the further opening up of the fabric of the building. A significant range of additional issues would also be identified in relation to the mechanical and electrical installations.

14.2 Assumptions had been made by the design team in relation to the ability of the contractor to carefully take down a range of components and services in order to gain access for remedial work, store them safely on site and re-instate them when the remedial work was complete. There were some risks associated with the practicality of these assumptions, particularly when there were already considerable concerns about the quality and condition of many of the existing installations, however this would be relatively normal practice when seeking to minimise the need and therefore the cost to replace these elements.

Enforced replacement rather than re-use of ventilation ductwork

14.3 It had been planned to take down and subsequently reuse the existing ventilation ductwork and associated elements such as fire dampers rather than replace them. This would not be an unusual approach in such circumstances. However, the quality of installations generally had been poor and the maintenance of these systems less than ideal, which would have increased the risk associated with this strategy.

14.4 The Building and Engineering Services Association provides guidance on the lifetime expectancy of galvanised steel ventilation ductwork of varying grades in different environments including for enclosed swimming pools. For ventilation ducts made of the highest of the three grades of galvanised steel, the lifespan in a swimming pool environment is assessed as 10 – 20 years. The ductwork was already 10 years old and would be 12 years old by the time the building was due to re-open.

14.5 In practice the strategy in relation to the reuse of existing ductwork proved to be undeliverable and had to be abandoned in favour of replacement with new ducting. In evidence to the Inquiry the site manager from McLaughlin and Harvey stated;

> *"Ductwork was taken down but on inspection it was found that the flanges weren't joined properly as they had been bonded using mastic or glue. They wouldn't come apart and when they were broken apart they could not then be reused".*

14.6 in March 2017 the Chief Executive Officer of the South-West Hub had been invited by the Director of CYPLL to visit the site to provide an independent professional view on the project. In evidence to the Inquiry the South-west Hub CEO commented as part of his observations on site;

> *"The ducting was so damaged and corroded it could not have been re-used. They would have been far better to get rid of all of it and start again but the nature of the contract and their instructions were such that they needed to go through a much more time consuming and in my view, inefficient process".*

14.7 It would have been difficult for the design team to have foreseen the fact that the duct sections were glued to each other without actually having tried to take down a sample section of ductwork, however while there were risks associated with the adoption of this strategy, the taking down and reassembling of the same ductwork would not be unusual.

14.8 The need to replace this ductwork would add significantly to the time and cost of the project.

Discovery of corrosion in existing pipework

14.9 The need to replace, as opposed to reuse, ventilation ductwork, had arisen partly as a result of the practical limitations of examining the construction of the ducts in advance. Similar issues arose in relation to the existing low temperature hot water (LTHW) and chilled water installations.

14.10 In September 2016, shortly after they had commenced work on site, Mclaughlin and Harvey reported indications of the presence of corrosion on the external surfaces of areas of the insulated pipework serving both these systems. They advised the design team's mechanical and electrical engineering consultants, K J Tait Engineers, of these discoveries.

14.11 The original LTHW and chilled water installations in DG One were a mix of Xpress carbon-steel pipework for the smaller diameter pipework and mild steel for the larger diameter pipework. At the time of this discovery by the main contractor both installations were still operational, full of water and pressurised. Water samples were taken from each system and tested.

14.12 The test results indicated that there was no evidence of protective water treatment having been applied to either system. **The dosing of such systems with protective chemical treatments would be a normal requirement of an effective maintenance regime.**

14.13 It would have been the responsibility of the Council to ensure that appropriate preventative maintenance was undertaken from the original opening of DG One in 2008 up to the point of handover of the building to the contractor in September 2016.

14.14 A number of samples of the carbon-steel pipework were cut out from the installations and analysed by the manufacturer, a company called Pegler Yorkshire. A water treatment regime was introduced by a water treatment specialist to seek to prevent any further internal corrosion and preserve the system until feedback from the manufacturer could be provided.

14.15 The results indicated that corrosion was widespread in the carbon-steel pipework. A decision was taken by the Council representative that the only practical long-term option was to replace the affected carbon-steel pipework on both the LTHW and chilled water installations.

14.16 External corrosion had also been found on the mild steel pipework of the chilled water installation. Prices received by the Contractor indicated that it would not be cost effective to try to test and remedy the corrosion, therefore it was decided by the Council representative that this pipework should also be replaced in its entirety.

14.17 There was generally no external corrosion found on the mild steel pipework to the LTHW system. This part of the installation, (as of February 2018), is still filled with water, now with the addition of chemical treatment introduced to prevent any further corrosion. Once it is practical to drain down the system, (after a decision is made by the Council on whether or not there is a need to replace the boilers which are part of this system), it will be possible to carry out inspections of the internal condition of the mild steel pipework to ascertain if there is any internal corrosion.

14.18 This corrosion to the pipework is more likely to be the result of inadequate maintenance over recent years rather than arising from any original defect in the manufacture or installation of the pipework.

Additional previously unidentified defects associated with the heating and energy systems

14.19 The following are brief descriptions of two further examples of additional previously unidentified issues associated with the heating and energy systems in DG One that have still to be finally resolved. These two issues arose as a result of inadequacies in the original design and construction of the building.

14.20 The exhaust gases from the three, large gas-fired boilers serving the DG One building, are discharged using a fan-assisted flue. The fan is installed in the horizontal section of the flue before the vertical flue stack. The Inquiry sought an opinion from K J Tait Engineers on the appropriateness of the use of this approach by the original design and build team. They responded in a written submission which stated;

> *"It should be noted that a natural draught flue system is the first choice in any flue system design. Application of a mechanically assisted flue system is the last resort and only considered if a natural draught flue system design is not possible"*

"Under this contract, (the remedial works contract), no design checks have been carried out by a flue specialist. Having said that, normally mechanical extract fans are introduced to try to overcome resistance to flue gas flow caused by either flue dimensions (for example the flue diameter being too small) and / or a complex flue route.

As the existing flue diameter is just under 600mm and the single largest boiler flue outlet is 400mm, the suspicion would be that the flue size diameter (rather than the height itself) might be too small for the natural draught flue to operate correctly. As noted above this is only KJ Tait Engineers' observation, and design calculations by a flue specialist would be required to confirm that".

14.21 The Inquiry sought views from K J Tait Engineers on the adequacy of the existing flues, on the fact that this single fan was required to run constantly in order for the boilers to operate and on the impact of failure of this constantly running fan.

"It is correct that the flue fan is a single point of failure and in case of fan failure, the boiler plant would need to shut down. Boiler plant shutdown would not necessarily mean in all cases an immediate building closure however boiler plant shut down at any point of the year (winter or summer) would likely mean closure of the building wet side/ swimming pools".

"In terms of remedying the situation, KJ Tait Engineers or a flue specialist have not carried out any design work yet as D&GC is currently considering if the existing boiler plant will be retained or replaced with new boilers.

KJ Tait Engineers however did carry out an initial review of the existing flue arrangement (prior to receiving the DG One Inquiry information about flue issues coming to light) where it was found that the height of all three flues does not comply with the current industry guidance and regulations in that they are too low.

Therefore, regardless of whether the existing boiler plant will be retained or replaced, ***a new flue system should be provided****".*

14.22 The second example of still to be resolved mechanical and electrical issues is a question over the operational effectiveness of the Combined Heat and Power(CHP) Unit, which was specifically included by the Council in their original specification for DG One for reasons of energy efficiency.

14.23 Evidence to the Inquiry suggested that the CHP Unit, installed as part of the original Design and Build contract with Kier, had never actually operated as intended. The Inquiry asked K J Tait Engineers for a report on this issue.

14.24 In a written response K J Tait Engineers advised that on a site visit they had noticed that the pipework to the CHP seemed to differ from industry guidance. A review showed that several aspects of the installation were not in compliance with the manufacturer's requirements as contained in the O&M manuals. There were differences in the CHP pipework connection to the heating system in that the CHP manufacturer drawing showed the CHP connection to be in series with boilers and before the first boiler, whereas on site the CHP was connected in parallel with boilers and after the last boiler.

14.25 In addition to a number of further technical defects and omissions in the installation, it was clear that the CHP had never been connected to the Building Management System (BMS) in DG One. The BMS software in DG One was checked by a specialist who could find no evidence of the existence of any control interface with the CHP.

14.26 A BMS is a computer-based system used to centrally monitor and control building services such as lighting, heating, power, ventilation and air conditioning.

14.27 In November 2017, in light of the observed differences and omissions, KJ Tait Engineers recommended to the Council that the CHP manufacturer, Ener-G should be asked to visit the site, review the CHP installation and provide written feedback about any deficiencies and any required remedial works to ensure the effective operation of the CHP unit.

15. Combined list of defects not previously identified and other changes required to the content or scope of the project - June 2017

15.1 The following is a list as produced in June 2017 of all the items in each of the three following categories that had been identified at that time as contributing to the major increase in the cost of the project.

1. NEW DEFECTS NOT PREVIOUSLY IDENTIFIED

- Extensive blockwork wall defects (including full replacement of rotunda)
- Ductwork installed with heavy use of adhesive requiring replacement
- Corrosion to steel columns in rotunda
- Fixing and replacing insulation in external wall cladding
- Defective above ground drainage to Ground and First floors
- Extensive corrosion to LTHW and chilled water pipework requiring its replacement
- Replacement of stone cladding
- Extensive remedial works including screed to Bison slabs
- Punctured ductwork and pipes below ground level

2. ITEMS IDENTIFIED AS PART OF THE ORIGINAL WORKS BUT INCREASED IN QUANTITY

- Significant additional below ground drainage repairs
- Increased wet side floor screed/build up
- Significant increased foam insulation beneath ground floor
- Air Handling Units being replaced as these cannot be refurbished
- Removal or replacement of items for fireproofing

3. ADDITIONAL ITEMS NOT INCLUDED IN ORIGINAL WORKS

- New Fire strategy
  - resolution of escape distance issues,
  - rectification of sprinkler system and fire stopping / compartmentation
- Replacement of hoists for users with disabilities

16. Full council meeting to receive initial report on major escalation of scope and cost of the remedial contract - July 2017

16.1 On **4th July 2017** the main agenda item was the presentation by the Director of CYPLL of his report also dated 4th July 2017 as to the nature and extent of the previously unidentified additional works now required.

16.2 Council were advised how during the initial period of the current remediation project a full strip back, survey and breakout of the building established that previous actions to identify and rectify issues with the facility and bring DG One back into operation had not exposed the scale and extent of building safety and construction issues present in the building. It explained how the opening-up works had revealed the defects to be much more pervasive than was originally advised and reflected in the contract for remediation works, and that the building was in a significantly worse condition than had been assumed.

16.3 The report identified the main newly discovered defects including the inadequately constructed blockwork walls, incorrectly installed ductwork, issues with the fire protection of steelwork, and corrosion to steel columns. The findings of the report by Peter Brett Associates on the structural defects to the blockwork were also presented.

16.4 The Director of CYPLL's report also covered the findings and recommendations of the Gardiner and Theobold review of the project in relation to the management of the project and the performance of the participants.

16.5 The Council Members were advised of the very significant increase in the projected outturn cost of the project, including the two divergent estimates of the final outturn cost for the project, **£17,677,679**, based on McGowan Miller's analysis versus **£18,543,722** based on the assessment of McLaughlin & Harvey.

16.6 Finally, the analysis of the pros and cons of the options available to the Council were presented in relation to the decision required from them as to how they might wish to proceed with the project.

16.7 After lengthy consideration by the Members the following was agreed:

- It was essential that Dumfries should continue to have a competition pool that complied with national standards;
- That all necessary required works be finally identified, and negotiations be undertaken with the contractor to seek to achieve a final price to achieve a safe, functional, and durable facility;
- That additional funding of up to £500,000 be authorised to allow the Contractor to continue with some packages of work that would help mitigate the impact in cost and time of the delay in issuing the larger instructions required
- That officers as soon as possible bring back a report to full Council on the projected cost and time required to complete the current project to enable Council to make a final decision as to whether or not they should proceed with the project.

16.8 The Council in considering these matters also decided to commission an Independent Inquiry, for which this is the Report, and agreed its broad terms of reference, which are set out in the early sections of this Report.

16.9 It was also agreed that delegation of decisions on the project should be withdrawn from the Policy and Resources Committee and the Children Young people and Lifelong Learning Committee and return to the full Council.

16.10 The decision to allocate only a further £500,000 to maintain some momentum on the project until the Council would make its final decision, would mean that the Project manager could not instruct the Contractor to proceed with the rebuilding of the rotunda, the cost of which significantly exceeded £500,000.

16.11 The rebuilding of the rotunda was now on the critical path for the project. In the intervening 5 months waiting for approval from the Council to proceed, the productivity of the Contractor was greatly reduced. The Council would incur very significant costs for the inefficient use of expensive site overheads during this period and for the resultant prolongation of the project.

16.12 Over the summer period, the Council's in-house project management team in collaboration with the external project management and design team, together with support from Gardiner & Theobold and McLaughlin and Harvey, finalised the required report for presentation to the full Council meeting to be held on 26th September 2017.

17. Full council meeting to receive the final report on the major increase in scope and cost of the remedial contract and to provide a decision on whether or not to proceed with the project - Sept 2017

17.1 On **26th September 2017** the completed project update report, also dated 26th September 2017 was presented to a meeting of Council.

17.2 The following is a precis of its findings and recommendation;

- The £500,000 amount of additional approval expenditure had been allocated across a range of the additional items to allow the contractor to proceed with some work over the summer months
- The report advised Council that, despite their wish for a final guaranteed maximum price to complete the works as sought at the last meeting, there was no guaranteed maximum price provision with the form of contract being used. The team had explored this possibility, but Turner & Townsend had reiterated that it was not feasible to achieve a final price at this stage of the contract without the contractor accepting a full transfer of risk, the cost of which would not represent value-for-money for the public purse.
- In light of the additional works, **the projected completion date had moved from March 2018 to October 2019**, an extension of some 21 months.
- In the absence of a guaranteed maximum price, the team had sought to establish the most realistic estimate of outturn cost for the Council by developing design and specifications for the known additional work and sought prices or price estimates for them from the contractor. Many of these prices would be subject to the contractor finalising prices with his supply chain and further negotiation with the client team. For those areas of work for which the detailed solutions were not yet fully determined, provisional sums had been included by the design team.

17.3 The report provided details of the main items of additional cost as set out in the following table which showed a gross additional funding requirement of £8,234,000.

18. Cost breakdown of additional items not orginally included in the remedial contract and of the resultant prolongation of the contract period - September 2017

18.1 The following is a more complete list of cost items added to the original contract. Those coloured blue in the following list are those for which the contractor had given estimated prices. The remaining figures were still provisional estimates provided by members of the design team.

Description of Additional Items	Additional Cost
Prolongation costs, contractors' preliminaries and overheads for the extension from Mar 2018 to Oct 2019	£1,739,000
Blockwork remedials	£600,000
Rotunda demolition and reinstatement	£610,000
Additional work required in reinstating of leisure pool	£375,000
Potential replacement of boilers	£350,000
Fire strategy and associated works	£202,000
Additional work to air-handling units	£432,000
Main pool timing-blocks and ladders	£140,000
Staff accommodation fit-out following the remedial works	£200,000
Additional areas of replacement of floor finishes	£134,000
Additional areas of replacement of ceiling finishes	£100,000
Client direct costs including Clerks of Works services, etc	£300,000
Revised water-proofing to treatment to changing village	£150,000
Demolishing and rebuilding end gable wall of the main pool	£150,000
New chilled water and heating pipework	£285,000
Additional work to defective underground drainage	£270,000
Additional shot blasting and fire protection treatment to steelwork	£150,000
Remedial works to corroded underground steel columns	£100,000
Mechanical and electrical operational issues and defects	£195,000
Removing and replacing of existing mechanical and electrical services to carry out rectification works	£300,000
Additional access scaffolding for fireproofing works etc	£150,000
Provision of new training floor moveable pool	£102,000
Replacement of defective ventilation ductwork	£220,000
Mechanical and electrical issues that may need replacement or prove non-operational once reinstated	£300,000
Removal of large mechanical and electrical plant to allow fireproofing of steelwork to be carried out	£100,000
Decommissioning/removal of all plant in the lower plantroom to allow fire protection works to be carried out	£250,00
Provision of new doors to front of house areas only	£100,000
Ancillary items for opening	£100,000
Sundry variations below the threshold of £100,00	£129,000
TOTAL	**£8,234,000**

18.2 Of the above total amount, **£5,303,000** had been based on contractor's pricing and **£2,931,000** on provisional sums determined by design team members. When the total additional amount of **£8,234,000** is added to the original contract sum of **£9,898,984**, the estimate of the final outturn contract sum was now **£18,132,984**, **almost a doubling of the original contract value.**

18.3 Both the work originally specified in the contract and the additional work identified or instructed after letting of the contract would always have been needed to have been carried out to provide a fully fit-for-purpose building, and the appropriate funding would have had to be found by the Council as long as it decided to continue with the project.

18.4 In the opinion of the inquiry, however, as a result of the stage at which the need for the additional work was discovered and the time taken for it to be approved and subsequently instructed, the Council paid a significant premium on top of the actual cost of the work.

18.5 The additional items arising from lack of maintenance to the building and other client changes or upgrading required should have been inspected, identified and included in the tender documentation before it was issued to the contractor for pricing.

18.6 It is the opinion of the Inquiry that there was an apparent failure of informed leadership amongst the various parties involved in the development of the project to take a much-needed holistic view of the project. This should have identified the need for a clear separation between the approach required in relation to justifying the level of damages being sought from Kier and the quite different and much more comprehensive approach required in the compilation of a tender document for the restoration of a sub-standard and poorly maintained building.

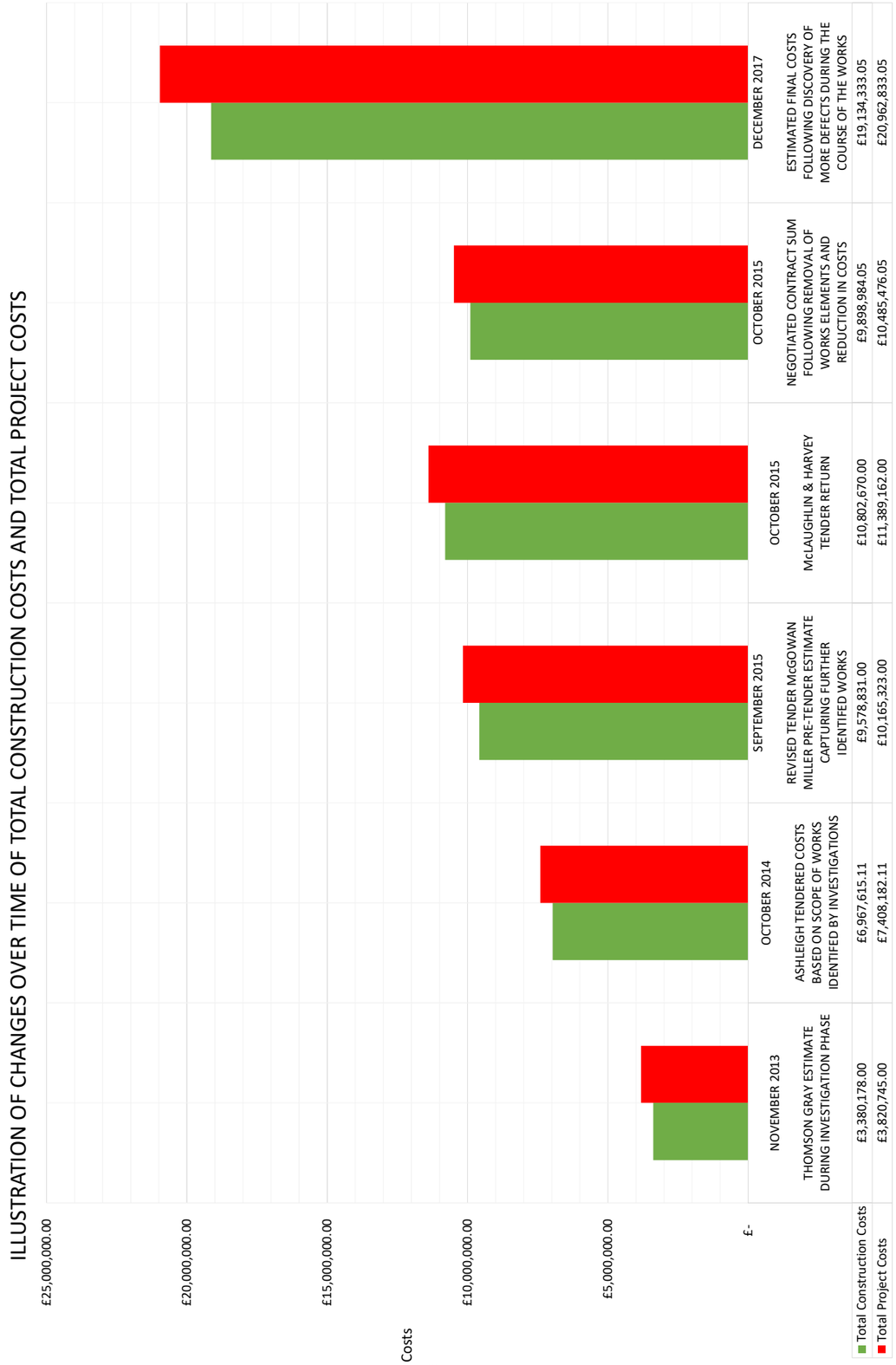
18.7 Unfortunately, the same document was used for both purposes and there was no necessary review of the strategy in the transition from the legal phase to the implementation phase and from independent expert witnesses to design team. Such a review would have facilitated a fresh assessment by the design team of what was actually needed to restore the building to an acceptable standard and the identification to the Council of the need for a larger budget for the project.

18.8 The **September 2017** report to Council also proposed an adjustment to the level of fees to reflect the additional work involved, thus bringing the total for fees for the team to £896,942. This equated to combined external project management and design team fees and expenses of less than 5% of the predicted construction cost.

18.9 The Inquiry is of the opinion that this level of fee, when distributed to the various members of the team, would be insufficient to properly resource a project of this complexity to the level that it demanded over the extended period of this project.

18.10 Additionally, the report identified a need for an **additional £270,000** for the professional and technical input to the management and inspection of the project by employees of the Council.

18.11 The following diagram indicate the variation in the cost of the remedial project from the initial assessment in 2013 through to the latest cost projections in 2018.



18.12 It should be noted that even with the currently predicted level of construction expenditure, which at approximately £19.1 million equates to approximately 150% of the original total construction cost of building DG One, the remedial works contract does not include for the refurbishment of a significant portion of the existing fittings and finishes throughout the building.

18.13 In evidence to the Inquiry the Chief Executive of the South-West HUB, who had been invited in March 2017 by the Director of CYPLL to give his views on the project, also suggested that the Council should have at a much earlier stage in the process taken a more strategic perspective in relation to its approach to the project;

> *"I did have a walk around the site at the request of Dumfries & Galloway Council some time ago. I would describe the site as a "car crash". It was a perfect storm resulting from a dispute with the main contractor (Kier). In my view, Dumfries & Galloway Council should have paused after the settlement was reached and taken stock of what they had. Rather than ploughing ahead with the remediation they should have looked at what the money would allow them to build. It was also very unfortunate that they were only able to secure a bid from a single contractor."*

18.14 The approach within the Council seemed to have been focussed on trying to undertake the remedial project within the level of the settlement received from Kier, which was never going to be achievable, but which significantly influenced the approach taken in relation to the original brief to the design team for the project.

18.15 Given the nature of the project and the requirement in the tender documentation for further investigations that could uncover additional unquantified defects, it would not have been unusual for a commercially astute contractor in a negotiated tender situation to maintain a relatively high-level of preliminaries in expectation of the scope of the contract increasing.

18.16 The largest single cost item of £1,739,000, as listed in the latest projection of cost given above, relates to the prolongation of the contract due to the projected extension of 21 months to the original 18 months contract period, coupled with the relatively high level of preliminaries in the accepted McLaughlin and Harvey tender.

18.17 Despite the opinions in the report to Council suggesting the reasonableness of the extension, the Inquiry is of the view that an extension of 21 months is overly generous and that the project could be completed within a significantly shorter period, provided that there are improvements to the current inappropriately prolonged processes of issuing the necessary client decisions, design information and instructions to the contractor.

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19. Proposed provision of a larger contingency allowance - September 2017

19.1 The report also proposed that a significant contingency amount of £1,662,988 be allocated by Council to reflect both the nature of the project and the fact that there was still two years of construction works until the currently revised completion date. The proposed amount of contingency had been based on discussions within the project team and the experience of the project to date. Both Turner & Townsend and Gardner & Theobold had indicated their comfort with the level proposed.

19.2 However, the report also proposed that the use of the contingency sum should be overseen by Members and that officers should only have the delegated authority to spend up to 50% of the proposed sum, any amounts above this requiring the formal authority of Council before instructions involving its spend could be issued.

19.3 This latter proposal would again seem to have introduced a somewhat unnecessary constraint on the effective and expeditious management of the project. The Council should certainly be kept regularly advised on an on-going basis of the rate of expenditure of any additional construction contingency and be able to insist on proper control thereof.

19.4 However, at this stage, having committed to complete the project, all further delays to the issuing of instructions that might inhibit the efficient flow of the project, such as that already caused by the delay on the decision on the rotunda, would in themselves add to the cost of the project.

19.5 Decisions on the expenditure of contingency in relation to detailed technical decisions should be delegated to officials and professionals close to the project, who have the confidence of the Council, and who can be held to account for their decisions by the Council. A Council should not be expected to take such technically-based decisions particularly during an active contract process where time means cost.

19.6 When the additional amounts for external and internal project management and design team fees and for the increased level of contingency were added to the projected costs of construction, **the current total approved budget requirement for the DG One remedial project came to £20,962,834.**

20. Update on proposed client changes to the brief for the project - September 2017

20.1 The report to Council briefly discussed the two main areas of change to the functional content of the building that had not been instructed and were not included in the previously provided updated budget for the project. These were:

- The adaptation of administrative accommodation within the building to create a Health and Well-being Centre providing NHS integrated services including cardiac rehabilitation, heart failure specialist nurse service, stroke services, pulmonary rehabilitation, managed clinical networks and related support groups. The estimated cost of this proposal was £403,000. However, this work would only proceed if the NHS were willing to fund the required capital cost.
- The provision of catering services in the facility through a food-franchise arrangement. The expected cost of the necessary fit-out to facilitate this was reported as in the region of £102,000. Again, this additional capital would be expected to be funded by the franchisee.

20.2 The report stated that the revised programme date for the project had been determined excluding these two items of additional work. Decisions were required by December 2017 as to whether this work was to be included.

20.3 The final part of the report included commentary from the Head of Finance and Procurement, which pointed out **that there was still a lack of certainty in relation to the projected final cost due to the number of provisional allowances and estimates included in the make-up of the revised budget.**

20.4 Given the rate of increase in project costs since the award of the contract in September 2016, and the continuing need for reassessment of these costs, he expressed concerns regarding the potential for further upward movements to the level of funding required.

20.5 His commentary included a recognition of the difficult position the Members found themselves in, having to decide whether proceeding with the project would represent best value-for-money based on the current estimates, taking account of the risks associated with these estimates or alternatively not proceeding with the contract and writing off significant abortive costs.

20.6 The Head of Finance's report confirmed that the additional funding requirement of approximately £10 million could be accommodated within the Council's Investment Strategy, however this would mean that **no significant further investment could be progressed until at least 2020-2021 without further borrowing.**

21. Decisions of the September 2017 Council meeting

21.1 Following a vote, Council agreed to proceed with the present DG One contract, to award the identified additional funding required and to require that reports on the project be submitted every full meeting of Council for monitoring and scrutiny.

21.2 As the variations to the scope of the contract exceeded the 50% provision set out in EU regulations the Council placed a VEAT (Voluntary Ex-Ante Transparency) notice in the OJEU identifying their intentions in this regard. No objections to the proposed course of action by the council were received.

22. Changes to the internal project management and to membership of the design team - October 2017

22.1 In the weeks following the September Council meeting, the Chief Executive of the Council instigated changes to the Council's internal project management arrangements.

22.2 He decided that given the recent dramatic increases to the cost and time of the contract that he would wish to be more directly involved in the on-going strategic and executive management of the project.

22.3 He also decided to appoint a full time dedicated senior professional resource to the project as Internal Project Manager, who would be released from other duties in the Council to provide a constant monitoring, communication and instructing interface with the external project management and design team.

22.4 The revised reporting arrangements put in place required regular direct reports from the newly appointed Project Manager to a smaller group consisting of the Leader, Deputy Leader, Chief Executive and the Director of CYPLL.

22.5 Evidence provided to the Inquiry suggested that at this time there were on-going tensions in relation to the slow production of information requested by the contractor as well as on-going concerns on the part of members of the design team in relation to inadequate levels of fees to cover the additional work being sought from them.

22.6 On 3rd October 2017 the Chief Executive called a Principals' Meeting attended by the leads from all the project management and design team organisations involved in the project to reinforce the need for a renewed focus by them on delivery and to address all concerns.

22.7 In the following weeks, the role of design team structural engineer was taken over by Cundall Consulting Engineers from Peter Brett Associates.

22.8 The formal taking of evidence in relation to this Inquiry ended in December 2017, although further relevant documentation was provided to the Inquiry in January and February of 2018.

22.9 It is an unusual situation for an Inquiry to complete when the main subject of the Inquiry, the refurbishment of the DG One building, is still far from completion. The findings and conclusions in the next Chapter of this Report are based on the evidence taken to date and hopefully will influence the planning, procurement and management approaches adopted for future Council projects.

Section 8 – Findings in Relation to Each of the Points of the Remit Set for the Inquiry

This section will present the findings of the Inquiry in relation to each of the questions posed in the remit to the Inquiry.

Due to the nature of the remit set for the Inquiry, reflecting a strong desire on the part of the Council to identify any areas which it needs to address in terms of its own execution of future projects, many of the questions posed relate to the decisions, actions and performance of the Council and its staff.

It is important therefore that the Inquiry, before providing the following detailed responses to each point in the set remit, again reminds the reader that the primary and fundamental responsibility for the problems encountered lie with the design and build contractor for the original project and the failure to deliver a building to the required standard.

The actions of the Council throughout the various stages of this project, while they may not always have represented best practice, were very much a secondary contribution to the original failures in the quality of the original construction.

In evidence to the Inquiry, part of the reason for the selection of the Design and Build contract was reported to be some lack of confidence as to the ability of in-house staff to effectively manage a traditionally procured project of the size and complexity of DG One.

The Council had assumed that instead they could place a greater reliance on the ability of a large national contractor to take responsibility for both design and construction and to deliver a high-quality building, an assumption that proved not to be soundly based on this occasion.

1. Remit Item 1.

'The leadership and project management applied by the Council for the duration of both the original project and the remediation project and the due diligence undertaken internally in assigning responsibility for the remediation project'

1.1 The Inquiry has identified significant weaknesses in relation to the resourcing of the internal leadership and project management functions throughout the various phases of the project.

1.2 The DG One project was first conceived by the Council in 1998. Construction did not begin on site until 2006, and the finished building first opened to the public in 2008, some ten years later. This length of time required to deliver a project of this size was excessive and, despite difficulties in the finally determination of the chosen site, reflects the lack of a sufficiently structured and planned approach to the management and resourcing of projects of this type by the Council.

The lack of a comprehensive business case

1.3 The original development of this project was not based on a comprehensive business case in line with the general requirements on all public-sector bodies to ensure that there are clear strategic and operational objectives for every project and to establish and assess in a structured manner the best options for meeting these objectives.

1.4 A business case should have been produced to include the following;

- A strategic context for the development
- A list of defined objectives for the project and any constraints
- An assessment of the need to be met by the development
- The establishment of a comprehensive brief for the functional content of the project
- The identification, assessment and shortlisting of site options and their scoring against a set of predetermined assessment criteria
- Estimates of both capital and revenue costs over the whole-life of the project for each short-listed option
- A cost-benefit analysis of the short-listed options and appropriate sensitivity analysis to identify the preferred option
- A series of metrics by which the realisation of the benefits will be measured after completion
- The most appropriate procurement route to deliver the required benefits
- The proposed funding arrangements
- The proposed governance and project management structures
- An assessment of the professional skills and expertise required to deliver the project

1.5 It is the opinion of the Inquiry that If a structured business case to this standard format had been produced and acted on, many of the problems encountered on this project, as the result of a much more ad-hoc and disjointed approach to its planning, may have been averted.

Project governance

1.6 As part of the governance structure put in place by the Council, an Ad-Hoc Sub-Committee of Elected Members was established to provide oversight and scrutiny of the project on behalf of the full Council. As the project proceeded, this Sub-Committee was asked on several occasions to take key decisions of a technical or contractual nature that might more normally be taken by a Project Management Board.

1.7 The Inquiry is of the opinion that there is need for a clearer delineation between issues that are required to be referred to Committees of the Council for decisions and those which can be taken by professional officers of the Council in relation to the executive management of capital projects.

1.8 A protocol should be established so that for all projects there is set out in advance a clear understanding of the level and purpose of reporting required from officers so as to enable Committees of Council to provide the appropriate level of scrutiny of projects.

1.9 The strategic management of the development and delivery of the project was provided by a Project Management Board of council officers, that reported to the Ad-hoc Sub-Committee. Such a Board would normally be expected to have a membership with significant experience in the strategic and executive delivery of major projects.

1.10 The allocation of responsibility for the executive planning, procurement and project management of a complex project to a Project Management Board (PMB), which did not have that experience, exposed the Council to inappropriate risk.

1.11 The Head of Architectural Services within the Council, who would have had relevant experience, was very briefly both a member of the Project Management Board and the appointed Project Manager for a two-month period from the establishment of the PMB in October 2003 until his retirement in December 2003.

1.12 Whilst the remaining membership of the Project Management Board included representatives with a range of operational, legal and financial skills from departments across the council, there was an absence of the specialist knowledge and skill sets required for the strategic and executive management of construction projects of the type, scale and complexity of DG One.

Appointment of project manager and employer's agent

1.13 At an early stage of the project, there was recognition of a lack within the project group and more generally within the Council of the project management skills necessary to deliver the project. This was specifically identified at an early stage of the development by the PMB at a meeting of the Corporate Policy Committee of the Council. At this meeting a proposal to recruit a full-time project manager with relevant experience, whose first responsibility would be to lead on the DG One project, was approved.

1.14 Since the retirement of the Head of Architectural Services, a member of staff of the Council, who was a civil engineer, had been invited to act in a support role to the PMB. The meeting approved that he should undertake the role of project manager on an interim basis, until the new permanent project manager post had been filled.

1.15 The approved recommendation to create a permanent post was not acted upon. The interim project manager continued in this position until the completion of the project. In addition to the role of client project manager he would be asked to undertake the formal role of Employer's Agent on the Design and Build contract, a demanding and technical role in a major building project, a role which he had not previously carried out and in an area of construction in which he had limited relevant previous experience.

1.16 It is the view of the Inquiry that the Council's failure to implement the approved recommendation to recruit and appoint an experienced building construction project manager to oversee the development of the DG One project was a contributory factor to subsequent failures in the project.

1.17 Throughout the pre-tender stages of development of the brief and completion of the Employer's Requirements, evidence would also suggest that the professional and technical resources available to assist the Project Manager were insufficient for a project of this complexity and type, resulting in excessive demands on the Project Manager, delays to the programme and the failure to produce a realistic cost estimate, which would have shown the need for a significantly higher budget for the project.

1.18 The Inquiry was surprised that throughout the planning and execution of the project no professional quantity surveyors or construction cost experts were appointed to undertake what would normally be regarded as essential cost-planning functions in a project of this type.

1.19 Given the importance that was being attached to the affordability of the project, and the role that this would subsequently play in relation to key decisions as to the method of procurement chosen for the project, the Inquiry would have expected a much greater focus by the Project Management Board on the professional preparation and on-going review of accurate cost estimates for the project.

1.20 Once the contract had been let, the Inquiry is of the view that the Project Manager in undertaking the responsibilities of the Employer's Agent role, acted in what he considered to be the best interests of the project. However, his position as the single representative of the Council in dealing with the Contractor's much larger and much more experienced contract management team was both isolated and inadequately supported.

1.21 He was also at the time being required to simultaneously undertake a range of time-consuming responsibilities not directly related to the construction contract, such as the coordination of the provision of ancillary services for the facility when it opened.

1.22 In the opinion of the Inquiry it was inappropriate of the Council to appoint an officer to undertake a demanding formal contract administration role in an area of construction which was largely outside his professional field, and a role in which he had no previous experience of undertaking, especially as this was in addition to other project management duties and ancillary functions he was expected to undertake.

The appointment of support for the employer's agent

1.23 It is acknowledged that the PMB did seek to put in place resources to provide additional internal and external professional and technical support to the Employer's Agent, reflecting his lack of experience in building as opposed to civil engineering projects.

1.24 However, it is the view of the Inquiry that the level of involvement of the resources provided and the manner in which they were utilised on site were insufficient to adequately protect the quality of the project.

1.25 Given that the civil engineering background of the Employer's Agent was mainly associated with roads projects, the provision of a full-time experienced building clerks of works would have been essential to provide the Employer's Agent with the necessary support in monitoring the on-going quality of detailed building construction.

1.26 The appointment by the Council of a self-employed Clerk-of works on a part-time basis, whose previous experience was also largely associated with roads contracts, neither provided the level of expertise or the time resource necessary to properly support the Employer's Agent.

The contractor's responsibility for the defects

1.27 It is important throughout this report that it is remembered that, whilst the Council had a duty to seek to ensure that the quality of the building it was procuring was to the standard required in the contract, the defects in the building were the direct result of inadequacies in the execution of the responsibilities of the main design and build contractor.

1.28 Kier were fully responsible for designing and building the project to the required performance and construction standards and to fully comply with building regulations. They clearly failed to do so.

1.29 Where possible, failures on Kier's part to do so should have been identified by the Employer's Agent and Kier should have been required to remedy them. However, any failure on the part of the Employer's Agent to identify defective work did not in any sense dilute the fundamental responsibilities of Kier to deliver a building in accordance with the contractual requirements.

Failures to act effectively to emerging reports of defective construction

1.30 It is clear from the reports of those who were assisting the Employer's Agent in monitoring compliance on site that from an early stage in the project there was mounting evidence of defective construction.

1.31 These reports of defects and omissions were provided to the Employer's Agent who in turn, in his role as the formal point of contact with Kier, advised the contractor of the need for remedial action in relation to these items.

1.32 Unfortunately, as previously described in this Report, many of the issues identified appeared to those who had reported them to have remained largely un-remedied. Indeed, some of these same reported and unaddressed defects would form part of the legal proceedings taken against Kier several years later.

1.33 In evidence to the Inquiry, concerns as to the on-going poor quality of construction, including the sharing of photographs, were reported at senior officer level within the Council, however, the Council did not seem able or willing to take effective action in this regard.

1.34 Repeatedly the Inquiry was advised that there was a perception amongst some Council officers that as this was a design and build contract, their ability to address defects such as these was limited but that the contractor could subsequently be held liable for them.

1.35 It is disappointing that, despite awareness of the unaddressed presence of defective work in the on-going construction of the project, and the fact that this information was being shared at senior levels throughout the Council, there appeared to be no corporate action taken by the Council to more effectively address this situation at the time.

1.36 The building was eventually accepted as practically complete by the Council, despite the continued presence of significant defects including most notably from a public safety perspective, major omissions in the fire-proofing of the building.

1.37 The Inquiry was advised that due to the continuing increase in the delay by Kier to bring the building to an acceptable state of readiness for handover, a delay already in excess of seven months beyond the contractual date for completion, there was a growing pressure both from the Council, and on the Council from the public, to achieve practical completion and the opening of the building.

1.38 It is the view of the Inquiry that fundamental issues, such as the wide-spread failure to properly install fire-proofing, should have been properly checked and the building should not have been accepted as practically complete until these had been satisfactorily addressed.

1.39 In the opinion of the Inquiry the Council failed to provide effective strategic and executive project and contract management to the level that would be normally expected of an informed client body, primarily through a failure to allocate appropriate resources to the project and to respond adequately to evidence of sub-standard work by the contractor.

Strategic project management following the discovery of major latent defects

1.40 Early into the occupancy of the building with the increasing discovery of the extent of problems impacting on the satisfactory operation of the building, it became apparent that the on-going piecemeal approach to dealing with these defects was no longer sustainable.

1.41 In early 2011, in light of the reported range of problems with the building, the Council's in-house design services group DG First, supported by a range of external specialist consultants appointed by them, undertook a technical appraisal of the building.

1.42 This positive intervention by this team, which had not had responsibility for oversight of the delivery of the project, identified, in a comprehensive report, the range and serious nature of problems in the building and stated that there was a strong likelihood of the DG One building having to be closed for a considerable period of time in order to allow the defects to be properly addressed.

1.43 In addition to the lack of fire-proofing, one of the main problems identified was the extent of leakages from the swimming pools and the damage being caused by these leaks to other areas of the surrounding structure, fabric and services within the building.

1.44 As well as identifying defects, a significant section of the 2011 report identified concerns as to evidence of a lack of adequate maintenance by the Council since the building had come into use in 2008, particularly in relation to the services installations within the building. This lack of maintenance would subsequently result in a requirement for significant and costly additional works to be undertaken as part of the remedial contract.

1.45 In 2011 the Council put in place a new Project Board with a remit to develop and implement a corporate strategy to address these issues. Acting on independent specialist advice, the new Project Board appointed legal advisers who in turn appointed independent experts to undertake appropriate investigations and produce the necessary technical reports on the cause and remediation of the defects to the building.

1.46 Once it had been decided that litigation was the only effective way to proceed, the focus of the new Project Board was very much on the emerging needs of the legal process and the identification and pricing **of only those defects in the building that were attributable to Kier for the purposes of justifying the amount to be claimed.**

1.47 The Council subsequently appointed an external project management and design team, with the remit of producing the necessary tender documentation for implementation of the remedial works contract.

1.48 However, their brief from the Council only permitted them to include in the tender documentation the remedial works directly arising from defects attributable to Kier and to exclude any other work identified as necessary but not attributable to Kier.

1.49 There was clearly a concern on the part of the Council to seek to contain the cost of the remedial works as there was little certainty as to the amount and timing of any award that might be made against Kier. There was also a concern on the part of the legal advisers that any betterment, or non-attributable work included in the tender, would complicate the case being made to the Court. Both motivations were understandable.

1.50 However, the Council had already received a report in 2011 which had identified that the maintenance of the services installations in the project to date had been inadequate.

1.51 It is the view of the Inquiry that this report should have highlighted the need for an in-depth survey and review of all of the existing building and its services to determine the full scope of additional work, other than the Kier-related defects, that might be necessary to ensure the effective operation of the building and its restoration to an acceptable standard of finish.

1.52 This unfortunately was not done nor was the need for it recognised by the Council. In evidence to the Inquiry the design team reiterated that they were instructed not to include any such work in the tender.

1.53 It would subsequently be found that much of the pipework in the building was heavily corroded, most probably as a result of a lack of regular treatment of the water systems which should have been carried out as part of a normal maintenance regime during the period since the building's opening in 2008.

1.54 With this discovery there was no option for the Council but to have it replaced. This work, which was not attributable to Kier, would require significant down-taking of ceilings, disruption of finishes and adjustments to fire-stopping etc. throughout the building, and could only practically be carried out as part of the remedial works contract.

1.55 Other significant additional works to those on the 'Schedule of Defects' used to produce the tender would also be found to be unavoidable and require to be undertaken as part of the remedial works contract.

1.56 Unfortunately, the original strategy adopted by the Council of not allowing such work in the tender documentation would mean that these works were not included in the price agreed with the Contractor. Unfortunately, they would only be properly identified and recognised as unavoidable after the contract had been let and work had commenced on site.

1.57 Within months of its commencement, the subsequent late instruction of these additional works would be a contributory factor to the major escalation of the cost and prolongation of the remedial contract.

1.58 In terms of the overall governance and project management by the Council, it would appear to the Inquiry that there was an absence of a properly informed strategic overview of the overall condition of the building.

1.59 The focus on the legal case had not been matched by an equal focus on what was required to make the building fully operational and completed to an acceptable standard. This would have required a full survey of the building, which was not carried out until after the commencement of the project on site.

1.60 This could have influenced the form and content of the contract that was tendered to better reflect what was actually needed; as opposed to being restricted to repair only those defects for which the Council had sought compensation.

1.61 The Inquiry is of the opinion that the internal structure of the Council, its staffing resource and its approach to the allocation of responsibility for the strategic oversight and delivery of major projects, was not effective and did not in the case of DG One adequately provide for its effective delivery.

Reliance on Prince2 project management

1.62 The following few paragraphs were consistently found to be restated in the opening sections of the records of meetings of the Ad-Hoc Sub-Committee

> *"The Dumfries and Galloway Leisure Complex Project is being managed by the Council through a structured process following the PRINCE2 Project Management System, which has been adopted by the Council as the model for efficient project management.*
>
> *Risk Management is an integral part of the project management process. There are a wide range of risks facing a project of the scale and complexity of DG1. Under the PRINCE2 system, a Project Risk Register is maintained by the Project Manager indicating all the risks, together with an estimate of the probability and impact of these risks. For each risk an appropriate management response is identified.*
>
> *The updated Risk Register for the project is the subject of separate reports to this Ad Hoc Sub-Committee on a bi-monthly basis".*

1.63 In evidence to the Inquiry regular reference was made to the fact that Prince2 was being used. It appeared to the Inquiry that unfortunately, the adoption of the use of and compliance with Prince2, which is simply a disciplined framework for project management organisational structures and processes, was in itself seen by many, and presented by some, as a form of assurance that the project was being managed effectively.

1.64 While providing a useful basis for projects, it is essential that Prince2 is not applied dogmatically to projects; that it is tailored to reflect the nature, context and contractual relationships within projects and that it in no way is seen to replace or compensate for the need for relevant experience, knowledge, informed decision-making and appropriate resources.

1.65 In the case of DG One, it was the nature of the building contract used that established the core relationship and procedural arrangements between the parties to the contract during the most significant phase of the project. The influence of the Council's use of Prince2 processes effectively stopped at this contractual interface and an assumed reliance on its use as a safeguard of the quality of the project was misplaced.

2. Remit Items 2 and 3:

'ITEM 2: The rationale for the Council entering into the original design and build contract for the facility and the effect this arrangement may have had on the construction process'

and

'ITEM 3: The contractual arrangements between Kier Northern and Dumfries and Galloway Council '

2.1 The original underlying concept behind this project as expressed by the Council brief was to create a new flagship building for Dumfries that would act as a catalyst for the regeneration of the town, be a building of real quality and *'grow old gracefully continuing to serve the community over the following 40 years'*. In relation to this ambition the Council could only be applauded.

2.2 Before considering these two remit items, it is perhaps interesting to compare the two buildings facing each other at either end of Hood's Loaning, the DG One Building and County Buildings, the current head-quarters of the Council.

2.3 The latter was completed in 1914, designed in the Edwardian Renaissance style of the period by architects J M Dick Peddie and Forbes Smith, an Edinburgh based practice, built in local red sandstone, set out in a well-proportioned central block framed by matching wings, high-ceilinged and airy inside, using high quality durable external and internal finishes, and evidently built by builders who took a pride in their work and were well supervised.

2.4 This listed building still sits elegantly in its place, having indeed grown old gracefully over more than one hundred years, and today still effectively serving the needs of the community. The Council at the time of its construction had clearly understood the value of investing in quality and how to achieve it. Their investment has served the town well, paid for itself many times over and undoubtedly will continue to do so for many more years.

2.5 At the other end of Hood's Loaning stands DG One, a building for which the initial stated ambition of the Council was equally and appropriately high, completed in 2008, the exterior and interior of the building were already looking somewhat tired before the enforced closure of the building in 2014, since when much of it has had to be virtually taken apart and rebuilt.

2.6 This building clearly failed to achieve the quality objectives set for it by the Council. It also exceeded the original budget set by the Council by approximately thirty per cent, although the budget set for it was never going to be adequate, and it exceeded the contract construction period of eighteen months by more than seven months, a delay of approximately forty per cent.

2.7 To achieve the longer term strategic objective for the building and for the town of Dumfries, the DG One building, as no doubt was the case of the County Buildings more than a hundred years earlier, would have required a procurement strategy that was designed to support the achievement of the Council's aspiration for a building of high design quality, together with a properly calculated estimate of the cost for such a facility, to allow an appropriate budget to be set by the Council.

2.8 Such a strategy would also have needed the identification of a group or a number of key individuals within the Council with the professional knowledge and skills to act as design champions for the project and maintain the required focus on the importance of these quality objectives.

2.9 It would also have required the use of a procurement model that would ensure that the Council retained control over the development, refinement and approval of the final design of the project and in which the control of design and construction quality was not delegated away from the Council to a contractor, whose objectives were not the same as those of the Council.

2.10 In the case of the DG One Building, the initial articulation of strategic long-term quality objectives for Dumfries appears to have become quickly diluted, and largely replaced with a focus on the achievement of demanding short-term cost and time objectives increasingly being given precedence over the pursuit of the design quality worthy of an intended '40-year flagship' project.

2.11 The Project Management Board had initially put forward a strong recommendation to the Ad-Hoc Sub-Committee that the traditional model should be used for the procurement of the DG One project, whereby the Council would through an appropriate procurement process select, employ and direct an external design team, who would in liaison with the Council produce an approved design to the required high standard, and manage the appointment of a contractor to build this design to the required standard under their direction.

2.12 This initial recommendation from the PMB to the Sub-Committee had been based on a structured analysis, the results of which had been submitted as a report which had concluded that Design and Build as a procurement methodology offered the greatest risk, amongst the four different procurement methods assessed, of not achieving the required quality. Design and Build had also received the worst overall score when the combined scores of all listed criteria were considered. Traditional procurement had achieved the best overall score as well as the best individual score for the quality criterion.

2.13 This recommendation of PMB was not accepted by the membership of the Ad-hoc Sub-Committee, which instead required that tenders should simultaneously go out in separate exercises to design teams and to design-and-build contractors, the latter of which would select, employ and direct their own appointed external design team. It is clear that several more experienced members of the Committee expressed concerns about the potential use of design and build based on their awareness of major problems with other projects for the Council that had used this model.

2.14 It is the opinion of the Inquiry that the proposal of the ad-hoc Sub-Committee of advertising for design teams to submit fee bids for the project, while simultaneously seeking design and build proposals with full designs and tender prices, could not be considered as good practice. There were no realistic criteria against which these two types of proposals could be fairly compared, given the very different levels of information provided in each type of tender.

2.15 The design only submission was not required to submit an estimate of the construction cost of the building or a design of the building other than a site layout. It would be assessed only on the relative level of design fees submitted. There would therefore be no basis for fair comparison between the submissions received for the two different approaches.

2.16 The inherent characteristics of the two procurement approaches were fully capable of having been assessed without a tender. The Sub-Committee had already had a presentation from Anderson Strathern solicitors, proposing that design and build could deliver buildings in a shorter period but highlighting the increased risks to quality associated with this procurement method.

2.17 The Inquiry was surprised that an issue such as the decision between the use of design and build and traditional procurement models for a project was brought to a Committee of Council and had not been seen as a fully delegated responsibility of the Project Management Board in exercising its executive functions in relation to the project.

2.18 In this regard the previous Chief Executive of the Council in post at the time of the decision stated in evidence to the Inquiry;

> *"In this situation, the elected members who were involved probably had a greater degree of involvement than may have been the case on other projects"*

2.19 The Inquiry acknowledges that high quality buildings can be and have been built using design and build, but this is most likely to be achieved only when (1) the client has produced a fully comprehensive and detailed specification defining all aspects of the quality required, frequently including exemplar designs and sometimes novation of design teams with their agreed design; (2) there has been a rigorous and informed examination of the architectural merit of the contractors' proposed designs and specifications, with an unwillingness to accept any that are not up to the required standard; and (3) there is a rigorous enforcement on site using skilled professionals in the application of the contract terms to ensure that the design and specification as built matches the contractually agreed design and specification.

2.20 It is the opinion of the Inquiry that the procurement of DG One failed to adequately address these three aspects of good practice.

2.21 All three aspects require the client to have a fully knowledgeable, experienced and properly resourced Employer's Agent and support set of professional advisers to carry out these duties.

2.22 Under design and build, only the Employer's Agent has the authority to require defective work to be removed. There is no formal recognition of the role of Clerk of Works, or ability to issue Clerk of Works directions in relation to the quality of the work, which facility is included for in the traditional model. (These directions require subsequent confirmation by the architect/contract administrator).

2.23 There is also no independent assurance for the Client that the professional duties of the design team employed by the contractor, are actually being carried out, including the inspection of the works by those who designed it so as to ensure that the design intent is being followed. Evidence already provided in this report suggests that some of the key specified and required inspections by the design team did not take place.

2.24 The relationship between design team and client is seen by many as a key to successful projects. In the DG One project there was effectively no relationship and little contact between the Council and the design team members employed by Kier.

2.25 The client cannot therefore rely on the work being inspected by the professionally qualified design team employed by the contractor. Even if such inspections did take place, the client would not normally be advised of their outcome and could not be assured that the contractor addressed any defects identified.

2.26 All of these facts, place a major onus on the Employer's Agent, in protecting the client's interests, to ensure that the contractor is delivering the specified quality of the constructed project.

2.27 One reason why it is claimed that design and build can deliver buildings more quickly than in the traditional fully designed and measured form, is that significant amounts of the detailed design does not have to be completed prior to tender or even at the time that the building starts on site.

2.28 Whilst this may allow for an early start, it also means that there has not been the opportunity for full coordination of all the elements of the design, particularly in relation to the many changes that are often proposed or simply implemented as part of the work of specialist sub-contractors. Failures in the proper coordination of the interdependencies and interfaces between construction elements are often the underlying cause of building failures and that is evident in the DG One building.

2.29 The evidence shows that, in many key areas of the DG One building, what was constructed was not in accordance with the drawings submitted as part of the tender or even with those submitted by the Contractor as part of the as-built documentation. Records also show that decisions on key aspects of the design and construction of the swimming pools were not in place until very late in their construction and accurate information describing their specification and construction was missing from the as-built information.

2.30 The records in several reports and minutes of meetings show that considerable concerns had been expressed about the quality of design originally submitted in all three of the design and build tenders. Despite this, the PMB, following an appraisal of design and build against the traditional model, and contrary to its previous advice to the Ad-hoc Sub-Committee, concluded an analysis indicating that a design and build solution was the preferred option. Much of the consideration in the meetings of PMB referred to a perception that the traditional model would take longer to complete.

2.31 This analysis by the PMB was put to the Ad-Hoc Sub-Committee for a decision by the Members. Their decision was in favour of design and build as the preferred procurement model and for the appointment of Kier as the preferred contractor. No serious consideration was given to the design only submissions.

2.32 Given the size of Kier and their experience as a major U.K. building contractor in delivering similar projects, the evidence suggests that the Ad-hoc Sub-Committee and PMB assumed that they could largely rely on this company to proceed with the delivery of a good quality building and that the responsibility and risk in doing so would be passed over to Kier from the Council.

2.33 It is clear from both the evidence and the records that the two main factors in the minds of those making this decision were the assumed shorter length of time to complete the project under design and build and an assumption that the design and build solution would be less expensive than a solution procured under the traditional model.

2.34 Several witnesses to the Inquiry stated that the focus on the date for completion was the single most dominant factor in the decision in favour of the design and build procurement model.

2.35 It is the opinion of the Inquiry that the importance attached to the completion date as a factor seems both disproportionate and inappropriate. A completion date of a few months later would have seemed a reasonable compromise, if this was more likely to achieve the required quality in a building that was intended to be a catalyst for regeneration and to serve the community for the next forty years.

2.36 As events turned out the design and build contract completed over seven months late, which would have allowed more than sufficient time for a fully developed design to have been produced and completed under a traditional model and would have had the added benefit of allowing for professional oversight of the construction by a professional design team working on behalf of the Council's interests rather than by a design team employed by and reporting to the contractor .

2.37 There appeared to be a highly prevalent but misconceived view within many of those associated with the project, including the Clerk of Works, that as this was a design and build contract, the Council had very limited rights to question the design and construction processes, as these were the responsibility solely of the contractor. This approach was undoubtedly an influencing factor in the execution of the project and the lack of appropriate actions on the part of the Council's representatives.

2.38 An argument, often put in favour of design and build, is that if the building is badly built the client can subsequently pursue the contractor as a single point for damages, as both design and construction risk lie with the contractor.

2.39 However, as events have shown in the case of DG One, the ability to sue is no recompense to the public for being deprived of the amenity in question for several years, and the process of suing is often prolonged, complex and expensive, and offers little assurance that a client will recover all costs incurred, both as a result of having to undertake the remedial works to the building and in pursuing this legal route. In this case significantly less than half the costs incurred by the Council as a result of the defects in the design and build contract were recovered by the Council.

2.40 All experienced client bodies in seeking to construct a facility to provide services to the public should have in place the necessary properly resourced, appropriately experienced and relevant professional expertise to seek to ensure that the building is being constructed correctly in the first place rather than seeking to rely on the right to sue if things go wrong.

2.41 It is the opinion of the Inquiry that the choice of design and build for a flagship project was not in the best interests of the Council, particularly in light of having a poorly resourced and relatively inexperienced client interface with the contractor, which together resulted in a situation where the quality objectives for the project and the wider interests of the Council were not adequately protected.

2.42 It is also surprising that the independent commentary on the architectural quality of the design proposal from Kier, in which it had received the lowest marks and most critical comments of the three design and build submissions, was not considered in the decision to proceed with design and build as the preferred procurement model.

3. Remit Item 4:

"The role of the Council, professional consultants appointed to act for the Council and Kier Northern and their supply chain in relation to the quality assurance of the construction of the original building including the inspection process, granting of completion certificates for practical completion, possession certificates and building control to allow the building to be occupied and to become operational in 2008".

3.1 As previously stated, it is the view of the Inquiry that there were significant weaknesses in relation to the level and expertise of professional resources applied by the Council in the planning, procurement and administration of the project. It is essential that public bodies are adequately equipped to act as intelligent customers in such projects.

3.2 Being an intelligent customer requires; having sufficient knowledge to understand what type and level of professional expertise is required in the delivery of different projects; understanding the capabilities or otherwise of internal resources in relation to undertaking such roles; and an ability to determine the level and type of support that is required to supplement any recognised lack of internal capacity either through direct recruitment or by the appointment of external consultants as judged appropriate in the circumstances.

3.3 It is the view of the Inquiry that the Council failed to demonstrate its capacity to properly assess these needs in relation to the DG One project and left itself under-equipped to provide a sufficiently robust, informed and resourced interface with the major contractor undertaking the project.

The independent monitoring of the on-site engineering work of the contractor

3.4 Following commencement of the project the Employer' Agent approached the Engineering Services section of the Council and requested provision of structural engineering support to monitor the work of the contractor. Later into the project, support was sought from the Architectural Services Manager for the provision of monitoring input of the mechanical and electrical installations.

3.5 However, as there were internal trading arrangements in place in the Council at the time, these services had to be negotiated and bought by the Employer's Agent from the project budget. This resulted in only a limited allocation of these resources to the project.

3.6 The mechanical and electrical site monitors who were appointed by the Architectural Services Group, advised the Inquiry that in their opinion the four hours per week that had been allocated for their monitoring role did not do the job justice. They described the building as probably one of the most heavily serviced and complex within the Council's estate.

3.7 They confirmed that they hadn't witnessed testing of systems or commissioning of the plant on site, not having been advised of when these events were happening. Their role in monitoring the work was made more difficult as they were also not being informed as to whether changes to the design being implemented on site by sub-contractors had been checked or approved by anybody in authority.

3.8 They were aware that Desco had been appointed to provide support to the Employer's Agent on mechanical and electrical issues but were unsure as to the exact nature of their role. Other than attending one meeting at the beginning of the project, which Desco had also attended, there was no coordination between their role and that of Desco. They were not invited to attend site technical meetings on the M & E services or advised of the outcome of such meetings.

3.9 The site monitors for the structural engineering elements of the work visited the site generally once a week and produced comprehensive weekly reports including details of defects identified during their visits. They had no direct contact with the main contractor nor did they ever have a meeting with the structural engineers WSP, who designed this element of the building. They also struggled and failed to get details of technical specifications for elements of the work.

3.10 The site reports and notice of defects, prepared by both the mechanical and electrical and by the structural engineering site monitors were forwarded to the Employer's Agent for him to provide appropriate instructions to the contractor.

3.11 As previously described in this Report, both these sets of engineering site monitors stated in evidence that in many cases the necessary remedial works to address the defects they had identified, did not appear to have been implemented, rendering much of their already time-limited monitoring roles ineffectual.

The site monitoring role of the building work

3.12 DG One was one of the most prestigious and complex projects that the Council has undertaken. Such a project required that the Council invest in properly resourced inspections of the work, both in terms of the range, level of expertise and time allocation. In these circumstances it is disappointing that there was no permanent full-time on-site presence representing and protecting the Council's interests for such an important project.

3.13 The Inquiry views as inadequate, the arrangements made for the monitoring of the quality of works on site from a building perspective, particularly in relation to the decision to proceed with the part-time appointment of a clerk of works from a civil engineering/ roads background as opposed to a full-time building clerk of works with experience in the construction of complex buildings.

3.14 It is also particularly surprising to the Inquiry that a requirement for at least weekly written reports from the building site monitor/clerk of works as to the on-going quality of workmanship and materials and the general progress of the works was not required. No such reports were produced. This should have been a standard requirement for such a role.

3.15 The inquiry was advised by the site monitor/clerk of works that he felt, due to the design and build type of contract, that the Council and its representatives had little power to influence the quality of the work by Kier. It also appears that he only had a limited set of construction documentation for the project, greatly compromising his ability to undertake the role, and, as in the case of the structural and M&E site quality monitors, he was not invited to attend meetings between the Employer's Agent and Kier, where the quality of work and any defects identified would have been discussed and any agreements reached as to their resolution.

3.16 From the evidence provided to the Inquiry by the clerk of works it is clear that the role, as implemented on site, did not entail adequately informed inspection of a number of key aspects of the construction of the building.

Architectural and Mechanical & Electrical consultancy support to the employer's agent

3.17 As previously stated in this Report, two external firms, Hypostyle Architects and Desco Mechanical and Electrical Building Services Consultants had been appointed to support the Employer's Agent in relation to their respective disciplines during the implementation of the construction phase. Their original appointments included the following requirement;

> *"Visiting the Works, or other premises in relation to supplies or provisions for the Works, at routine intervals to inspect and report on design and specification compliance, appropriate working practices, extent of completion relative to milestone payments, and other issues pertinent to the Client's interests regarding the Works. Attendance at site meetings with the Contractor as appropriate, normally coincident with routine inspection visits. Providing guidance to the Clerk of Works and Employer's Agent in day to day monitoring of the Works"*

3.18 Hypostyle were not willing to attend the Inquiry to give evidence. However, the Inquiry received a letter from them stating that during the contract period the manner in which they were required to discharge the above services had been adjusted on the instructions of the Employer's Agent. This had resulted in a reduction in the regularity and frequency of their attendances on site and in a significant percentage of their professional advice from that point on being provided by email or telephone discussions. The letter also stated that they did not attend monthly progress meetings nor receive minutes of these meetings or contractor's reports.

3.19 The Employer's Agent in evidence suggested that he had perceived some reluctance on the part of Hypostyle to attend the site as frequently as he would have liked them to but had frequently sought and received advice from them through email and telephone communications.

3.20 The Inquiry could only identify in the project records, three formal reports from Hypostyle, one produced in each of the months of May, June and July of 2007, which had been provided to the Employer's Agent to issue appropriate instructions to Kier. It is assumed that Hypostyle's more regular visits to site and production of such reports ceased around this time.

3.21 Each of these three reports identified a different fundamental defect in the on-site construction amongst the other defects listed. The respective key defects identified in the reports were (1) the absence of a damp proof membrane in the ground floor slab, (2) the rusting of steel sections in the rotunda and (3) the poor quality of blockwork construction. These defects were not adequately addressed by the contractor at the time and subsequently required considerable expenditure by the Council as part of the remedial works contract.

3.22 In relation to the use of Hypostyle as a resource, the Inquiry was advised by the Council that the amount of fees claimed by Hypostyle was less than half of their tendered price for the services, which would align with a reduction in the level of input in the services provided compared to that originally described in the appointment document.

3.23 Desco, who were appointed under similar terms to those of Hypostyle but in relation to the mechanical and electrical engineering services, did give evidence to the Inquiry.

3.24 In this evidence, they also advised of a change as agreed with the Employer's Agent to the manner in which they were required to discharge their services. As the Employer's Agent had, since the appointment of Desco, sought alternative site monitoring input from the Council's in-house team in relation to the mechanical and electrical engineering installations, Desco were advised that they would not be required to undertake the originally envisaged number of visits to site to check the quality of site installations.

3.25 They were instead advised that the focus of their work should be in relation to the reviewing of the detailed mechanical and electrical drawings for the project as these emerged from the contractor's supply chain and in answering technical queries from the Employer's Agents.

3.26 Council records demonstrate extensive analysis and commentaries by Desco on the technical aspects of design drawings and specifications submitted by Kier's supply chain. The comprehensive reviews by Desco identified potential inadequacies in the design and specification of the proposed installations and requested numerous clarifications and the provision of further information from the Contractor's designers.

3.27 The Inquiry was advised that several of the detailed design proposals from the contractor that had been marked as unacceptable or even critical by Desco as part of their review, were nevertheless issued for construction by the contractor without change. Desco also advised that, following site visits, the defects they reported in the on-site installations of mechanical and electrical services, were not adequately addressed.

3.28 The Inquiry was advised that these issues, as in the case of Hypostyle, had been referred to the Employer's Agent for issuing of appropriate instructions to the contractor.

3.29 Some of the major issues identified by Desco both in reviews of the design drawings submitted and in inspections of the on-site installations were not addressed at the time and also have required significant expenditure by the Council as part of the subsequent remedial works contract.

3.30 The fees claimed by Desco from the Council, as in the case of Hypostyle, were significantly less than the amount in their original accepted tender for the work, reflecting a reduction by the Council in their use as a resource compared to that originally intended.

3.31 The Inquiry is of the opinion that there was a failure to adequately utilise the resources of the professional advisers appointed to support the Employer's Agent.

3.32 The Inquiry finds that despite the identification of concerns by these professional advisers as to key aspects of the design and construction of the building and services installations, no effective action was taken by the contractor to address many of them.

3.33 It is the opinion of the Inquiry that there was a lack of coordination of the various inputs from those undertaking monitoring roles, who appeared to have limited contact if any with each other or with the main contractor and supply chain. There was also a dis-connect between their identification of defects in design proposals and work on-site, and subsequent checking of the effectiveness of follow-up actions, if any, taken by the contractor.

3.34 It is the opinion of the Inquiry that the Council did not adequately enforce their rights as laid out in the terms of the design and build contract in relation to both identification of sub-standard or defective construction, the issuing of instructions to the contractor to remove defective work, and the use of the powers of the contract in situations where the contractor failed to do so.

The role of the contractor and their supply chain

3.35 The lists of defects in the design and construction of the DG One building as based on the technical reports produced by the independent experts is hugely extensive and permeates most of the areas of construction of the building. The diagrammatic section of the building on page 20 of the Executive Summary illustrates the range and spread of defects that required to be addressed as part of the remedial works.

3.36 A significant element of the damage to the building originated in the failure to construct water tight tanks to the swimming pools and spa, and the resultant impact of constantly leaking chlorinated water on the structure, fabric, finishes and services within the building.

3.37 The most fundamental requirement of constructing a building with three internal swimming pools and a first-floor spa pool is to ensure that their enclosing tanks and the drainage connections to them are fully waterproof. The quality of detailed design and the level of detailed supervision of the construction of these elements should have been given the highest priority. It is evident from the records available that there was poor coordination of the design development for these areas and of the work of the various sub-contractors involved.

3.38 Whilst the lack of adequate water-proofing and the constant failures to the tiling of the pools were initially seen as the main problems with DG One, the investigations of the building revealed ever-increasing evidence of the presence of sub-standard construction.

3.39 The unacceptable standard of so many different aspects of the project was the work of individual tradesmen and teams of workers, who were supposed to be supervised by sub-contractors and by the main contractor, and which work was supposed to be subjected to the extensive quality management systems as contained in the initial submission to the Council from Kier. All these activities were overseen and directed by the on-site and headquarters-based management staff of the main contractor.

3.40 In the opinion of the Inquiry the extent and nature of the defects discovered are evidence of a lack of care, attention, basic construction skills or understanding of some of the fundamental principles of good construction on the part of those who built this building and those who supervised them.

3.41 The DG One project is an extreme example of the failure of quality management functions throughout all levels of site operations and management in the execution of this design and build contract which has led to Dumfries & Galloway Council incurring major costs in remedying the extensive defects within the building

3.42 During the course of the contract Kier had five different project managers on site running the job, some of them only remaining for a short period of time. Evidence to the Inquiry has also shown that there were considerable tensions between Kier and members of their supply chain, most notably with the sub-contractors undertaking the pool design and construction work and the sub-contractor supplying the steelwork on the project.

3.43 Evidence to the Inquiry also showed a lack of design coordination at critical stages in the construction process and indicated that changes to specifications and details were continuously being made during the construction phase, which is likely to have contributed to the cause of some of the key defects in the construction of the building.

3.44 The inquiry received a letter from Kier immediately prior to the completion of this Report which stated that as they had now limited access to personnel with any involvement in the project, they felt that their attendance at the inquiry would be of limited value.

3.45 The letter acknowledged the presence of areas of inadequate design and workmanship in the DG One building and failure on Kier's part to respond adequately to the requests of the Council to address them. The letter, however, did deny contractual responsibility for the full extent of defects identified by the Council's independent experts.

3.46 In closing the letter expressed disappointment that their company had been involved in a project such as the DG One which had clearly not met the standards that they, nor the customer, expected.

3.47 It is a finding of the Inquiry that there were multiple failures on the part of Kier in relation to their management of the project, their approach to quality, their lack of supervision, their inadequate coordination and quality assurance of the design and construction work of sub-contractors, their employment of inadequately skilled tradesmen, and their failure to deliver a building that was properly fit-for-purpose.

Inspections of the quality of work by the design team appointed by Kier

3.48 It is disappointing that Kier and members of their design and contracting supply chain did not give evidence to the Inquiry. Accordingly, the Inquiry is unable to provide the detailed views or perspective of Kier or the members of their supply chain that they may have had to offer on the poor quality of construction that was delivered.

3.49 There was little information available to the Inquiry as to the level of involvement on site by the professionally qualified members of the design team employed by Kier in relation to their inspection of the implementation of their designs and their views on the quality of workmanship being achieve

3.50 The Employer's Agent stated in evidence that he had minimal direct contact with the members of the design team but felt that visits by them to site had been fairly infrequent. The site monitors echoed the fact that they too had virtually no contact with or even sight of the design team.

3.51 Part of the published judgement in a related legal case taken in 2015 by Kier against WSP stated that as part of their defence WSP had argued that Kier failed to provide reasonable instructions to them and failed to arrange for them to carry out the appropriate inspections of the construction of DG One.

3.52 WSP, in a letter sent to the Inquiry immediately prior to the completion of this Report, restated this position and confirmed that as a result of the arrangements between themselves and Kier visits to the site to carry out inspections had been limited.

3.53 Furthermore, the letter stated that on the occasions when they had attended the site they had drawn the contractor's attention to variances from good practice in the work underway but due to the nature of the contract had no authority to instruct rectification of defects that they had identified to the contractor.

3.54 The letter stated that they had not been kept advised of on-going concerns as to the quality of construction that were raised by the Council with Kier at the time nor

had they been invited to attend periodic meetings held between Kier and the Council to discuss quality issues.

3.55 The requirement for regular inspections by professionally qualified members of the design team appointed by Kier had been included as part of the collateral warranty documentation provided by Kier to the Council. The Council would have gained some assurance from the fact that professional inspections of the works were supposed to happen.

3.56 Unfortunately, in the design and build form of contract used, there can be only be limited assurance to the client as to the nature of the on-going contractual relationship between design and build contractors and their design teams. The Council was not privy to how these services were or were not being performed, having through the use of this contract form, delegated responsibility for managing the design team to the contractor.

3.57 In a design and build contract the design team are not there to protect the interests of the client for the building. They are there to carry out the services as agreed and instructed by their client the Contractor, whose objectives are not those of the client for the building.

3.58 For this reason, clients need to ensure that they are independently represented by appropriately qualified building professional advisers supported by appropriate on-site inspectors.

Comparison of defects in DG One and those Identified in the Edinburgh Schools Inquiry

3.59 It would be inappropriate in considering the failure of the contractor to adequately supervise and inspect the quality of the construction work not to draw parallels with the findings of the 2016-17 Edinburgh Schools Inquiry. Amongst all the other identified failures in the construction of DG One were widespread failures in the same two fundamental areas of construction identified in the Edinburgh Schools Inquiry.

3.60 These two areas had the potential to impact on the safety of users of the buildings, i.e. inadequacies in the structural integrity of the external masonry walls and in the failure to incorporate effectively, or to incorporate at all, essential fire-stopping throughout the building.

3.61 It is the view of the Inquiry that the widespread presence of these same failures in the DG One building lends further support to the finding of the Edinburgh Schools Inquiry that these failures are indicative of systemic problems in the quality of work provided by the Construction Industry.

3.62 In the view of the Inquiry, the contractor and their construction supply chain failed to properly supervise and inspect the construction of DG One or to effectively apply appropriate quality management systems to its construction, with the result that the completed building suffered from significant defects, failed to comply with the building regulations in a number of key areas and failed to provide a facility of the standard required by the contract.

3.63 It is also a finding of the Inquiry that the Contractor, subsequent to the practical completion of the building, failed to respond adequately in relation to undertaking effective permanent remedial works to the discovered defects in the building.

Compliance with building standards

3.64 In relation to ensuring compliance with the building regulations, the Contractor had only received an approved stage 1 building warrant to cover foundations etc when work commenced on site.

3.65 Approved stage 2 and stage 3 building warrants for the above ground elements of the building were not granted in advance of the carrying out of these aspects of the construction, thus there were no approved drawings against which what was actually being built could have been checked for compliance during its construction.

3.66 The required approved stage 2 and 3 warrants were eventually issued on 28 March 2008, at a stage when the building was within a few weeks of being granted practical completion.

3.67 The application for these stage 2 and 3 warrants had been made to the Building Standards Department of the Council in 2006. The Inquiry was unable to ascertain from the Council the reason for the prolonged delay of nearly two years in processing the applications and its failure to have issued the warrants in time to meet the needs of the project.

3.68 Evidence to the Inquiry suggested that at the time there was a lack of sufficient qualified staff within the Building Standards Department to meet the then heavy demands on their service. The evidence to the Inquiry also suggested that this issue may still be a problem in the Department.

3.69 Both the Contractor and representatives of the Council on the project must also have been aware that the construction of the project was proceeding without warrants having been approved for its design and that this amounted to a breach of the requirements of the Building (Scotland) Act 2003, which Act the Council were charged with administering.

3.70 Additionally, during the construction of the project, significant changes had been made to the design and form of construction, which required the contractor to seek approved amendments to the building warrants issued. Submissions of these were not completed by Kier and approved until several months after the building had been occupied.

3.71 The failure to have approved warrants covering the amendments to the building meant that at the same time as the Council, in its role as client, had issued a contractual statement of practical completion, the Building Standards Department of the same Council could not issue a Notice of Acceptance of Completion Certificate, the issue of which is a legal requirement before a building can be occupied.

3.72 It is also evident from an inspection of photographs taken of the building that even a relatively cursory inspection could have identified some of the major failings of fire-stopping, which completely compromised the integrity of the fire protection strategy for the building.

3.73 Had proper inspections on behalf of the Council's site representatives or Building Inspectors identified these defects, this discovery alone should have prevented the issue of statements of Partial Possession and Practical Completion by the Council and of Temporary Occupation Certificates or Acceptance of Completion Certificates by Building Standards.

3.74 It is the opinion of the Inquiry that the widespread failures in the application of fire-stopping would have been discovered if the appropriate levels of quality inspections had been carried out in accordance with both the requirements of the administration of the contract by the representatives of the Council and the requirements of the inspection regime expected from Council Building Standards inspectors.

3.75 Despite these failings on the part of representatives of the Council, the ultimate responsibility for failing to undertake proper inspections and for failing to build a building that complied with the building regulations, however, must rest with Kier.

3.76 The records provided to the Inquiry were only able to indicate confirmation of five visits to the site by Building Standards Inspectors during construction. The notes of these visits suggest that three of these five visits were in relation to inspection of drainage and two were in relation to inspection of fire-stopping.

3.77 It would therefore appear that Building Standards inspections were not undertaken to check compliance with building standards of any of the remaining elements of this major project, many of which were subsequently found not to comply.

3.78 However, even the two areas of construction that were inspected in the five visits by a building standards inspector, and supposedly accepted as compliant, i.e. drainage and fire-stopping, would be identified as containing significant defects requiring major and expensive remedial works.

3.79 At the time that the Council issued the statement of practical completion for the building, due to the lack of submission by Kier of amended warrants to reflect what was actually built, Building Standards found themselves unable to issue a Notice of Acceptance of Completion Certificate.

3.80 They were, however, prepared to issue a Temporary Occupation Certificate (TOC), which temporarily allowed the occupation of DG One for the very limited period of two months from **18th April 2008 to 18th June 2008**, by which date the full Building Standards Notice of Acceptance of Completion Certificate would have been expected to be issued to allow the legal use of the building by the public.

3.81 No such certificate or extension to the TOC was issued on the expiry of the TOC on 18th June 2008, however the new building remained in full public use from its opening on 28th May 2008. It would not be until 11th June 2009, that a Notice of Acceptance of Completion Certificate for the building was approved by the Building Standards Division of Dumfries and Galloway Council.

3.82 This in effect meant that the on-going use of the building by the Council, during the period from 18th June 2008 until 11th June 2009, had been in contravention of the requirements of the Building (Scotland) Act 2003.

3.83 It is the finding of the Inquiry that there were multiple failures on the part of the Contractor to adequately comply with the requirements of the Building (Scotland) Act 2003.

3.84 The Inquiry also finds that there were significant failures in the administering of the Building (Scotland) Act 2003 by the Council's Building Standards Department in relation to both the response times in issuing approved warrants and to the inadequacies in the inspection of the works to confirm reasonable compliance with the regulations.

3.85 The Council's Project Management Board should also have taken reasonable steps to ensure that statutory requirements in relation to the granting of warrant approvals had been satisfactorily complied with in accordance with the requirements of the contract and the law of the land.

3.86 The Inquiry does not consider that there was any special consideration afforded to the project by Building Standards due to the project being for the Council of which it formed a part. However, it is the opinion of the Inquiry that, given the potential for a conflict of interest in the processing of major applications of this sort for itself, the Council should consider requesting an adjacent Local Authority to undertake this function for projects over a certain size, for which the Council is the client.

The granting of practical completion certificates

3.87 The granting of statements of practical completion and partial possession for DG One were unusually, but as allowed for in the Contract, issued by the Chair of the Project Management Board.

3.88 These would normally have been issued by the Employer's Agent whose duties in undertaking that role would include the oversight of sufficiently comprehensive informed inspections of the building, witnessing of testing of the satisfactory performance of its installations and confirming the adequacy of the preparation of as-built and health and safety documentation. Unless satisfied with all of these issues and that the requirements of the contract have been fully met, a statement of practical completion should not have been issued.

3.89 In the situation in which the PMB found itself, with the DG One building already over 7 months late in a contract of only 18 months duration, there was undoubtedly increasing pressure from both within the Council, which was nearing its end of term of office, and from wider public opinion, to bring the greatly delayed project to a completion.

3.90 This may have led to Council officers accepting a building as practical complete without necessarily having the full evidence to confirm than it was. Together with the presence of the other defects in the building, the inadequate fire-stopping should have been properly inspected and prevented the issue of the statement of practical completion.

3.91 There was perhaps a somewhat optimistic but unrealised expectation on the part of the Council representatives that the outstanding defects would be addressed quickly, effectively and permanently by the Contractor.

3.92 The statement of practical completion, as issued by the Chair of the PMB, was also intended to confirm that the Contractor had satisfied the requirements in relation to the completeness of the health and safety file, thereby providing sufficient information to allow the Council to occupy, operate and maintain the building in a safe and effective manner.

3.93 The Contractor was required to provide this essential information under the Construction, (Design & Management) Regulations 2007, and as an explicit contractual requirement of the contract form used. The satisfactory compilation and provision of these documents is a pre-requisite of the issue of the statement of practical completion.

3.94 Subsequent evidence from a range of multi-disciplinary witnesses to the Inquiry described the file as incomplete, inadequate and inaccurate in relation to many aspects of the construction and installations. This was also found to be the case by the Inquiry in examining the documents.

3.95 The Inquiry is of the opinion from the evidence provided that the building was prematurely accepted as having reached a state of practical completion and that the necessary informed inspections of the building elements and health and safety file had not been adequately undertaken to establish this fact and prevent the acceptance of the building in a state which potentially held risks for users and operators of the building.

3.96 This opinion is corroborated by evidence given to the Inquiry that on the discovery in 2011 of the extent of defects in the firestopping of the building, the fire authorities indicated that except for the undertaking by the Council to initiate significant emergency remedial works, they would have required that the building be closed due to it being considered unsafe for continued public use.

4. Remit Item 5:

"Management of risks to the council; and if council's standard practice regarding quality assurance provided adequate checks and balances for parties to the contract".

4.1 Without replicating previous commentary from this Report, in the opinion of the Inquiry, the decision as to the procurement model adopted, was the main factor in relation to determining the risk to the quality of the project delivered, in so far that it reduced the influence that the client would have on the development of the conceptual and detailed design of the project and delegated significant decision making to the Contractor and construction supply chain.

4.2 In the situation where it was intended to proceed with a design and build form of contract, the Council should have ensured that the following three protective mechanisms were in place.

4.3 Fundamental to protecting the quality of this type of contract are (1) the comprehensiveness and level of detail in the Employer's Requirements document in defining the quality of all aspects of the project; (2) the knowledge, experience and ability of the client's professional representation to administer the contract so as to ensure the detailed delivery of the defined quality and (3) the adequate resourcing of the site inspectorate to support the Employer's Agent and to provide informed independent scrutiny of the work of the contractor.

4.4 It is the view of the Inquiry that the Council in the execution of this project failed to adequately address each of these aspects and that there was an over-concentration on the risks associated with the achievement of cost and time objectives, which diluted to an unacceptable level the necessary focus on the quality of the project.

4.5 The Inquiry, however, does recognise that the Council did seek to put in place professional support for the Employer's Agent using both external and in-house resources. However, for various reasons, including how these functions were implemented on the project, this proved to be insufficient to adequately protect the quality of construction.

4.6 Equally, in relation to the remedial works contract, there was a lack of informed strategic oversight and ownership on the part of the Council in the development of this multi-million-pound building project. The main resources of the Council were largely concentrated on the legal pursuit of damages with inadequate focus on properly identifying the need for and addressing the reinstatement of the building to an appropriate condition.

4.7 The complexity of both the procurement and technical issues associated with this large project justified the full-time allocation of an in-house experienced project manager in both the pre-contract developmental stages and the construction stages, however this did not happen until after a year into its construction.

The use of the project risk register

4.8 Throughout the process, from a relatively early stage it is apparent that the Council maintained a comprehensive project risk register. The risk register, at the commencement of the project, provided an analysis of some 80 risks, rating them individually in terms of probability of occurrence and impact of occurrence.

4.9 The process used was consistent with current risk management practice, however, the effectiveness of the process depends on those managing it being properly informed and properly assessing the risks.

4.10 Updated risk registers were regularly presented to meetings of the Ad-hoc Sub-Committee as part of the Prince2 management approach, however they did not seem to lead to the initiation of effective responses to the problems that were occurring on-site.

4.11 The following examples are extracts from the DG One Project Risk Register of **14th August 2007**, after the project had been on site for 16 months. These risks have been chosen by the Inquiry from the 80 on the register due to their relevance as issues.

4.12 Risk number 67 read as follows;

"There is inadequate expertise and resourcing of client input role"

"not enough staff and those that are there don't have the right skills and experience"

4.13 The probability of this occurrence was rated as "very low", however the impact was rated as "critical". The method of controlling this risk in the register was described as

"monitor staff and appoint replacements as necessary".

4.14 Risk number 70 referred to the risk of *"ineffective quality monitoring"* by *"the Project Manager, Team Leaders or External Consultancies"*. It too was rated as "very low" in probability but was also rated "critical" in impact. The method of controlling this risk in the register was;

"robust quality plan with auditing required"

4.15 Both risks 67 and 70 were rated "very low" in their probability of occurrence and given an overall **green** as opposed to a potential **red** rating i.e. they were considered as not requiring immediate attention.

4.16 In relation to the first of these risks, number 67, this Report has already commented on the lack of relevant experience in the procurement, design, contract administration and construction of complex buildings of the type of DG One on the part of members of the Project Management Board and of the contract administrator and of the part-time site monitor.

4.17 Risk number 70 referred to the risk of ineffective monitoring of quality. It also received "low" probability risk and a **green** overall rating despite the fact that over the previous months a range of reports had been received identifying significant issues of quality in the design and construction of the project, which had not been addressed by the contractor.

4.18 Risk number 49 was that the building *"does not meet regulatory standards"*. It was rated "very low" in probability but "critical" in impact and was again given an overall rating of **green**. The control of this risk in the register was;

"will be subject to checking for compliance before issue of building warrant"

4.19 At this point in time the building had already been under construction for more than 16 months, was due to be completed within 6 weeks, which it would of course fail to achieve, yet no building warrants had been issued for the above ground elements of the building and these would not in fact be issued for another 7 months.

4.20 Two risks numbered 57 and 58 were respectively given "low" and "significant" probability ratings, both were given "critical" impact ratings and both were given **an overall red rating, identifying the need for action to be taken.** Both these risks related to concerns as to the performance of the contractor. They were;

(1)*" the contractor does not have the management capability or capacity to undertake the project" and*

(2) *"the contractor does not provide the workforce capability to undertake the project"*

4.21 The respective control mechanisms in the risk register for these two risks were:

"to ensure that the management structure followed that proposed in the tender documentation" and

"to ensure that necessary quality assurance and H&S plans are followed by the main contractor and sub-contractors. Client monitoring back-up".

4.22 These control mechanisms suggest a theoretical rather than a practical approach being taken to risk management of the project.

4.23 The terms, conditions and requirements of the design and build contract defined the relationship between Council and Contractor. The only effective mechanism to deal with failures on the part of the contractor was through the enforcement of the rights of the client as provided for in the contract, including the right to require the removal of any sub-standard work.

4.24 The Inquiry considers that, whilst in principle the use of risk registers on the project represented good practice, their effectiveness in use was limited due to the quality of analysis of the risks and the lack of appropriate affirmative action as a result.

4.25 It is the view of the Inquiry that In light of the impact that the sub-standard development of the DG One Building has had on the Council's ability to deliver public services, on the financial position of the Council and on its reputation, the Council needs to review its exposure to risk in relation to its organisational arrangements in terms of the allocation of responsibility for and the resourcing of the planning, procurement and project management of its major capital projects so as to be better placed to protect the quality of its projects.

4.26 The need for the development of a more appropriate strategy for the management of major projects should have a place in the corporate risk register of the Council.

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5. Remit Items: 6, 7 and 8

"Dumfries and Galloway Council's handling of the problems with the facility since 2009 including the process that led to the Council commencing proceedings against Kier Northern"

"The scope of the appointment of the professional team during the investigative phase and the extent and adequacy of the methodology adopted and the work carried out to inform the evidence used in proceedings against Kier Northern"

"The issues that the project is now facing, but not originally allowed for and why they were not discovered in the first instance"

5.1 The evidence provided to the Inquiry demonstrates the wide extent of the defects that were being encountered in the DG One building from the time of its opening onwards. In the early years after its opening, there were consistent but unsuccessful attempts on the part of the Council to have Kier undertake satisfactory permanent repairs to the recurring defects.

5.2 Problems included leaks from the pools, loose tiling to pool walls and floors, enforced closure of the training pool due to problems with the floating floor, damaged ceiling tiles, excessive water lying on floors, uncontrollable unacceptably high temperatures in many parts of the building, inadequate ventilation to toilet areas, corrosion and discolouration on a range of structural steel elements and stainless steel fittings throughout the building, poor quality finishes, fading paintwork and a range of problems with shower and sanitary fittings. Additionally, the building was failing to meet the energy performance targets specified in the contract.

5.3 In early 2011 in response to information on the level of defects in the DG One building, the in-house Design Services Group of the Council, without being commissioned to do so, initiated a report on the building, in which they sought the input of a range of external specialist consultants.

5.4 The report, completed in June 2011, was extremely critical of the quality of construction of DG One and expressed the view that the necessary remedial work to the building could not be effectively undertaken while the building remained operational.

5.5 The proactive initiative on the part of the in-house design services group in producing this report on the building is to be commended.

5.6 In March 2011, in response to the growing concerns, the Chief Executive set up a Project Board of senior Council officers to establish and implement an appropriate course of action. In light of a continuing failure to receive from Kier what the Council considered to be an adequate response to the on-going problems, the Project Board acting on behalf of the Council had little alternative but to seek legal advice as to the options available to it.

5.7 Legal advisers supported by independent experts were appointed. A series of reports of their investigations was produced culminating in a schedule of those defects considered attributable to Kier. This schedule confirmed the findings of the earlier in-house report and identified additional design and construction defects in the building to those previously known to the Council.

5.8 On being advised of the inadequacies of fire-stopping in the building, the Council immediately instigated the letting of a contract to a specialist firm to carry out the extensive remedial works required to this essential element of fire protection.

5.9 In the opinion of the Inquiry the Council acted appropriately and responsively in the actions it took to provide emergency repairs to fire-stopping within the building.

5.10 The schedule of defects as produced by the independent experts was provided to Kier and led to a series of communications between the legal representatives of both parties. Again, the proposals put forward by Kier were not considered adequate or acceptable by the Council, leaving the Council with no alternative but to initiate Court proceedings against Kier. Accordingly, a summons was eventually lodged on behalf of the Council in the Court of Session in October 2013.

5.11 In the opinion of the Inquiry the Council's decision to seek damages from Kier and to let a separate contract for the necessary remedial works was appropriate in the circumstances.

Decision to keep DG One open until 2014

5.12 The decision to keep the amenities in DG One open to the public as long as possible, particularly the swimming pools, placed constraints on the ability of the independent experts to undertake the intrusive investigations necessary to determine the full extent of defects in the building.

5.13 The Council were clearly advised at the commencement of the investigations in 2012 of the need to close the building to allow the required level of intrusive testing of the pools and the mechanical and electrical services in the building. The building was subsequently not closed to the public until October 2014, three years after the appointment of the independent experts. Only then could the necessary further intrusive investigations be undertaken. These would reveal the presence of significant additional defects in the pool tank walls and surrounding channels, in the underground drainage systems, and in the mechanical and electrical systems in the building.

5.14 However, in 2013 the Council had proceeded with the appointment of a design team, whose remit was to produce contract documentation to go to tender based on undertaking **only that work described in the then current version of the schedule of defects.** This schedule predated the closure of DG One and also therefore predated the undertaking of the further intrusive investigations that had been identified as necessary by the independent experts to establish the full extent of the defects.

5.15 As a result, the tender documentation produced by the design team in early 2014 did not include for any of the work that was subsequently found to be necessary as part of the essential more intrusive investigations undertaken in late 2014 after closure of the building.

5.16 Tenders were received based on this incomplete documentation from four bidders on 3rd October 2014. DG One closed to the public three days later on 6th October 2014, from which date the further necessary investigations could only commence.

5.17 It is the opinion of the Inquiry that the Council should either have closed DG One much earlier to allow the necessary investigations to be undertaken and the work included in a comprehensive set of tender documentation or should not have completed the tender process until after they had closed DG One in 2014 and allowed the additional

investigations to be carried out to inform the necessary additions to the tender documentation.

5.18 The approach adopted meant that the tenders received in October 2014 did not include the considerable additional remedial works identified as necessary by the investigations undertaken after the closure of DG One.

5.19 If this tender had resulted in the appointment of a contractor, the requirement to add this additional work would have caused significant disruption to the sequencing of the works tendered and would have resulted in significant additional costs to the Council.

5.20 However, with the identification of a further problem, the issue of accepting a tender based on a less than comprehensive tender package would not have to be faced. A failure in the implementation of appropriate procedural requirements in relation to the procurement process would prevent the Council from being able to accept any of the submitted tenders.

Failure to Comply with European Procurement Rules

5.21 In November 2013 the cost of undertaking the remedial works contract based on the schedule of defects had been estimated at **approximately £3.38 million**. This had been prepared by the independent quantity surveying expert, supported by Thompson Gray quantity surveyors. This was significantly below the threshold level of approximately £4.3 million, above which value all public-sector projects were required to be advertised in the Official Journal of the European Community (OJEU).

5.22 In early 2014, during the preparation of the tender documentation, as a result of on-going investigations in the then still open building, further items of remedial work, including very significant mechanical and electrical items, were added to the list of defects in the tender documents. No re-appraisal of the cost of the project was carried out to reflect these additions.

5.23 In **mid-2014** the completed tender documents were issued to a short-list of four tenderers selected from those who had responded to a public advertisement. It was not simultaneously advertised in the OJEU, based on the fact that the November 2013 estimate of £3.38 million was significantly below the threshold of approximately £4.2 million requiring EU advertising.

5.24 The lowest price of the four tenders received in October 2014, after adjustment for errors, was approximately £6.9 million, more than sixty per cent above the OJEU threshold. The Council would have been in breach of the European Regulations and liable to challenge if they had accepted this tender. Following legal advice, the Council determined that the current tender process should be abandoned, and the contract re-advertised, this time in the OJEU.

5.25 It is the opinion of the Inquiry that given the passage of time and the significant additions that had been made to the scope of the work in the Bill of Quantities from that on which the November 2013 estimate was based, standard practice should have required the production of a new cost estimate for the works before going out to public advertisement. This basic requirement should have been identified by the external Project Managers and the Council advised accordingly.

5.26 This would have determined both the need for a major increase in the budget cover required for the remedial works project from the Council and the need to advertise the project in the OJEU.

5.27 An appropriately qualified internal project manager had not been appointed by the Project Board to oversee on a day-to-day basis the work of the external project management and design team, to issue necessary instructions to them and to approve their decisions. This important interface between the Project Board and the external team of consultants was being provided by a Leisure and Sports officer acting more in a liaison role than that of an overseeing internal project manager.

5.28 The need to determine whether or not to advertise in the OJEU is a fundamental requirement in the project management of all public-sector projects. It would be expected that if an experienced internal client project manager had been in place, this major oversight and disruption to the project could have been avoided.

5.29 It is the opinion of the Inquiry that, whilst the need for a pre-tender estimate to check advertising requirements should have been identified by the external project management team, the Council also failed to adequately resource the remedial works project internally with an appropriately qualified professional officer to oversee the work of the external team.

5.30 It appears to the Inquiry that the project was being primarily viewed by the Council as a legal process in pursuit of damages without sufficient realisation that it also needed to be treated and internally resourced in the same way as the delivery of any other major construction project undertaken by the Council, particularly in light of the project's troubled history.

5.31 It is the opinion of the Inquiry that the Council had little option in these circumstances but to abandon the tender process. This failure to comply with European Regulations would subsequently prove to have a major impact on the delivery of the project in terms of both cost and time.

The settlement

5.32 Following the analysis from the Council's legal advisers that the final determination by the Court of the quantum of any damages the Council might not be granted until sometime in early 2017, the Council agreed with the proposal of their legal advisers to explore mediation as an extra-judicial approach that might produce an earlier acceptable outcome than waiting for the completion of the full Court process.

5.33 Details of the mediation process as undertaken are the subject of a confidentiality agreement between the parties and have not been made available to the Inquiry. However, the outcome, confirmed by the Council to the Inquiry, was the acceptance by the Council of an offer of £9.5 million from Kier in full and final settlement, made up of £8.7million damages and £0.8 million legal costs.

5.34 At the time that the offer was accepted, the estimate for the cost of the remedial works contract based on the tender received from McLaughlin and Harvey plus design fees was approximately £11.4 million.

5.35 The McLaughlin and Harvey negotiated tender was based on documentation prepared by the design team to address all items on the 'Schedule of Defects' prepared by the independent experts following their final investigations of the building in early 2015.

5.36 The Council was advised that even though reasonable diligence had been exercised by the Council's independent technical experts in undertaking their investigations, the possibility of latent defects manifesting themselves could not be discounted. As the offer was to be in full and final settlement, the Council would be taking on the risk of having to pay for the making good of any subsequent latent defects which might emerge.

5.37 However, the figure was seen by the legal advisers as a reasonable level of recovery in relation to the claim in the Court for the defects then known about. This was also put in the context of the Council not being able to have any certainty about the nature of the outcome should the Council proceed with their claim in the Court of Session, and the associated additional delay and cost to the Council of doing so.

5.38 The independent experts informed the Inquiry that they had always retained the position that until the building would be opened up as part of the construction process, they could not give assurances as to how accurately the measured quantity of the identified defects in the tender reflected the actual amount of defects that may be present or as to the presence and extent of any unidentified latent defects.

5.39 However, it would appear to the Inquiry that despite these qualifications, there was a general assumption, given the wide extent and significant cost for repair of the defects that had been identified, that the tender must have captured the vast majority of defects. There also was recognition of the risk of losing a so-called 'bird in the hand' if the offer was turned down.

5.40 The fact that the total cost of construction of the completed DG One building in 2008 had been approximately £12.5 million, must also have made £9.5 million appear to the Council as a significant offer.

5.41 It is the opinion of the Inquiry that the Council acted reasonably in accepting this offer, based on the information available at the time to the Council and to their legal advisers as to the extent of the defects identified, and based on the analysis provided by their legal advisers as to the reasonable level of recovery that the offer appeared to represent.

5.42 It would have been impossible in the circumstances and under the procurement strategy adopted for the Council to have foreseen the level of unidentified latent defects that would subsequently be discovered when the contractor started to open up the building and the resultant impact of agreeing to a 'full and final' settlement.

Identification of the need for client changes to the building

5.43 In mid-2016, prior to the commencement of the remedial works contract later that year, responsibility for the project was transferred from the previous Project Board to the CYPLL Capital Projects Board. The CYPLL Capital Projects Board covered a wide remit, particularly in relation to new school buildings and the DG One building was only a small part of a quite long agenda at these meetings.

5.44 Whilst there were now professionally qualified officers from the Schools for the Future Group responsible for overseeing the executive management of the project, these officers were simultaneously responsible for overseeing a range of other projects at key stages in their development and each carried heavy individual work-loads. There was still no internal project manager allocated to the project on a full-time basis at this critical point in its development. Also as this team had only become recently involved in the project, key decisions about the content and form of contract for the project had already been taken.

5.45 It was only at this very late stage of the process that the Council began to assess the need to address a range of maintenance issues in the building, particularly in relation to the mechanical and electrical installations and the general condition of doors, floors and wall finishes.

5.46 Also, the need for functional adjustments to the layout of the building and alternative uses for parts of the accommodation were examined in order to improve the operational effectiveness of the building. This process included seeking the views of Council and going out to public consultation on the proposed changes. These consultations were still in process when the remedial works contract commenced in September 2016.

5.47 It is a finding of the Inquiry that the production of a considered brief for all aspects of the remedial contract and the development of agreed design solutions that reflected that brief should have been implemented and completed in the considerable period since the closure of the DG One building and in time to have been properly incorporated into the tender documentation for the project. This should not have been left until after the contract had commenced.

5.48 It is also a finding of the Inquiry that there was an absence over the prolonged period since 2011, when it was first recognised that a major remedial contract would be required, of a necessary informed strategic overview as to how to deliver the DG One building to an appropriate level of finish to meet the reasonable expectations of the public.

The missed opportunity to identify defects to the masonry walls prior to signing the contract for the remedial works

5.49 In March 2016, following the collapse of a wall at Oxgangs Primary School, in Edinburgh, all Local Authorities had been advised by Central Government of the discovery of apparently widespread defective installation of wall-ties in the external masonry walls of recently built public sector buildings and had been advised to undertake checks for these defects in recent Council buildings.

5.50 In mid -April 2016, the Property and Architectural Services Manager, in light of the suspected prevalence of these defects in design and build projects and having already discovered similar defects in other design and build leisure facilities of the Council, requested that checks for these defects be undertaken in the DG One building.

5.51 Unfortunately, this request was not complied with in advance of the remedial works contract commencing in September 2016.

5.52 The subsequent discovery in early 2017 of widespread defects in the external masonry walls of DG One, following an instruction by the Council to the contractor to investigate the wall construction, led to a requirement to demolish most of the external walls of the large central rotunda of the building. Funding approval from the Council for this, and other works found to be necessary, was not issued for a period of 5-6 months during which the client continued to incur significant charges for site overheads and the contractor could not effectively progress much of the work.

5.53 The Inquiry is of the opinion that if the request of the Property and Architectural Services Manager in April 2016 had been proceeded with , the defects to the masonry construction could have been identified and the letting of the remedial contract delayed until this additional work had been designed and specified, acceptable rates agreed for inclusion in the contract, and the necessary funding approved by the Council; that is provided it would still have wished to proceed with the repairs to the DG One Building.

5.54 This would have avoided the significant costs incurred by the Council as a result of the inefficiencies created by the discovery of these defects during construction and the resultant 5-6 months delay by the Council in issuing instructions on how to deal with them.

The role of the independent experts

5.55 The terms of appointment of the individual independent experts as specified by MacRoberts solicitors had required them to carry out investigations and *"to report on the identified failures in design and construction in DG One with reference to Kier Construction Limited's obligations to D & G Council arising out of the Design and Build Contract"*. They were advised that the report should be produced in contemplation of litigation.

5.56 Over the period between the appointments in 2011 and 2012 of the independent experts and the completion in 2015 of the final tender documentation by the separately appointed design team, a range of investigations were undertaken by the independent experts. As previously explained the more intrusive of these were not able to be undertaken until after the closure of DG One in October 2014.

5.57 Comprehensive reports were produced by the independent experts to inform a 'Schedule of Defects' which was submitted to the Court and which also provide a basis for the mediation process that would lead to the extra-judicial settlement. This 'Schedule of Defects' listed in excess of 90 major defects in the building under the following main headings.

- External envelope
- Internal Structure
- Internal finishes
- Heating and Ventilation services
- Pool water filtration services
- Other M&E services
- Structural defects
- Kalwall Cladding defects

5.58 The large number and widespread nature of the defects could not reasonably have been expected to be found in what was a relatively new building. However, with each additional investigation carried out, further defects were being identified.

5.59 In January 2015, whilst the Council were anxious that the revised tender documentation fully reflected all the defects in the building attributable to Kier, they were also anxious that the tender negotiation process with McLaughlin and Harvey be started as soon as possible so as to get the facility back into use at the earliest possible date.

There was therefore a growing pressure on the independent experts to conclude their investigations in the early months of 2015.

5.60 The requirement on the part of independent experts is to act with reasonable diligence in undertaking their investigations and in their preparation of reports for the purposes of providing evidence for the legal pursuit of damages.

5.61 The type and level of investigations undertaken, including extensive analysis of particular aspects of the work by a number of specialist companies, appointed at the request of the independent experts, would indicate to the Inquiry that a professional and experienced approach was adopted consistent with the requirement on them to act with reasonable diligence.

5.62 The factors contributing to the considerable increase in the duration and cost of the remedial works contract since its commencement come under four broad headings;

1. the extent of identified defects proving to be greater on site than as measured in the Bill of Quantities;
2. the discovery of defects not previously identified in the investigations;
3. the need to undertake work associated with a lack of maintenance to the building;
4. client changes considered necessary to facilitate the more efficient operation of the building

5.63 The independent experts brief had been to report on the **identified failures in design and construction** in DG One. Those investigations, prior to the appointment of the contractor, that involved opening up of small parts of the building had to be arranged to also facilitate the opportunity for inspection by a set of equivalent independent experts representing Kier.

5.64 There was a natural constraint applied to the Council's independent experts in relation to them undertaking any investigations of areas of the building where defects had not been identified. It was thought that in doing so they could run the risk of being accused by Kier's independent experts of embarking on a "fishing trip" to look for other defects. This could have weakened the position of the Council in the prospective court action.

5.65 It is the opinion of the Inquiry that the extent of additional defects discovered following the extensive opening up of the building fabric by the contractor could not reasonably have been foreseen by the independent experts, without considerable additional intrusive and destructive investigations which would have been beyond what could normally be expected.

5.66 It is also evident that in relation to items (3) and (4) above that the brief for both the independent experts and the design team did not include consideration of these two areas of work, as both briefs were limited to dealing with the remediation of those defects which were considered attributable to Kier.

5.67 It is however also the view of the Inquiry that the brief for the design team from the Council should have included consideration of all necessary work to bring the building to an acceptable standard for use by the public and should not have been confined to only dealing with those specific defects that were the subject of the legal claim against Kier.

Why the unidentified issues had not been identified earlier than they were

5.68 In order to make the building operational and to an acceptable standard of finish there was a need to add a considerable number of previously unidentified items to the contract that were associated with a lack of maintenance to the building, particularly in relation to mechanical and electrical items.

5.69 The Council had not had any condition surveys of the building fabric and services undertaken prior to the letting of the contract, and no provision had been made for this necessary work. Photographs of the results of the independent condition survey commissioned by McLaughlin & Harvey after their appointment, in compliance with the requirement in their contract to do so, are included in Appendix 3 of this Report. From these photographs it can be seen that, before the main contractor started work, the building was already in a poor state of repair. This poor condition arose from both a lack of effective maintenance by the Council and from damage related to the defined schedule of defects listed in the remedial works contract.

5.70 As previously stated the design team had been specifically instructed by the Council only to include the making good of defects attributable to Kier in the contract documentation and consideration of any additional issues had specifically been excluded from their brief. It was only after the contract was commenced and the condition report had been produced, that the Council finally realised the need for the contract to address these further items.

5.71 In the opinion of the Inquiry, the Council should have required a comprehensive survey of the condition of the building and its services to be carried out in advance of letting the contract to identify any necessary items of work that were not attributable to Kier. Cost estimates should have been produced for these, funding approval sought from the Council and instructions issued to include these in the tender documentation.

5.72 As previously stated much of the additional work identified after commencement of the remedial works contract arose out of detailed inspections of the defective areas that were only available for inspection once the areas of work had been opened up by the contractor.

5.73 The wholesale opening up of these areas across the building, which was needed to reveal the extent of these defects, would not have been practical prior to having a contractor on site, as all such openings would have had to be properly closed up again to protect the building until a contract had been let.

5.74 The need for the contractor to be on site was particularly evident in relation to providing access to the previously unidentified sub-floor defects, including the corroded underground bases to the steel columns and significant defective areas of the drainage systems.

5.75 The major opening up of the pool tank walls, floors and edge channels was necessary to understand the extent of corrosion and lack of cover to the reinforcement in the concrete walls of the pool tanks and to determine the most appropriate design response to these unfolding situations.

5.76 The need to demolish and reposition further back one whole end-wall of the main pool could only have been established once the original tiles and render had been stripped by the contractor to allow concrete face to concrete face dimensions and the accuracy of the geometry to be measured. The dimensions of the main pool were found to be insufficient to allow the necessary thickness of finish to be applied to the concrete surfaces to provide the required waterproofing to the non-waterproof concrete walls and still retain the critical dimensions of the pool for competition purposes. This necessitated the demolition and rebuilding of one of the end walls of the main pool.

5.77 The corrosion that was discovered in the pipework to the LPHW and chilled water systems, requiring their virtual total replacement through the building, was discovered by the main contractor. The corrosion was attributed to the lack of maintenance of the pipework by the Council in the form of chemical dosing of the systems. At the time of this discovery both installations were still operational, full of water and pressurised.

5.78 The discovery that solid blockwork walls in the changing village had been built on top of the insulated screed, also containing runs of the pipework which had to be replaced, necessitated the demolition of these walls.

5.79 The original proposal, as described in the tender documentation to gain access to allow the fire protection and anti-corrosion treatment of structural elements and the fireproofing of gaps in the ceiling zones, had been to take down and reuse the existing ventilation ductwork that blocked necessary access. The reuse of ductwork would not be an unusual requirement in refurbishment contracts of this type but there are risks associated with this approach, in that contractors are generally unwilling to stand over any subsequent difficulties that might arise in relation to the reused elements.

5.80 However, in the case of the DG One building, the Inquiry was advised that the contractor was unable to dismantle the ductwork without damaging flanges etc. due to the manner in which ductwork had been erected with sections being joined and sealed with what was described as *'gunk'* or excessive glue. This fact could not reasonably be expected to have been foreseen by the design team.

5.81 In the event, much of the ductwork taken down was also reported to have been badly corroded internally. It was therefore necessary for both reasons for new ductwork to be installed leading to additional cost to the Council.

5.82 When several other parts of the existing building, for example roofing and cladding, were opened up and inspected, the proposed design team solutions on which measurements in the Bill of Quantities had been based, were found to require to be amended for practical reasons to do with the discovered condition of the existing materials or difficulty in gaining access to them. The areas of roofing that needed replaced and the volume of pumped underfloor insulation required were both significantly increased compared to the quantities that measured in the Bill.

5.83 One of the most significant impacts on the length of delay and additional costs to the remedial works contract was the discovery during construction of existing major defects in the construction of the external walls. These primarily related to the absence or inadequate installation of wall ties, header ties and lateral ties, all necessary to tie masonry panels to each other and to the steel structural frame.

5.84 These defects were discovered following an instruction from the Council to the contractor to open up walls for inspection in response to the Council receiving notification of the outcome of the Edinburgh Schools Inquiry. The defects could not have been readily identified without major takings down by the independent experts.

5.85 During the earlier investigative phase by the independent experts, predating the Edinburgh Schools Inquiry, there had been no awareness that this could be a systemic defect. Therefore, without having a particular reason to do before the completion of the tender documentation, the independent experts had not included intrusive investigations of the internal construction of the external walls.

5.86 The investigations carried out as part of the contract found widespread defects in the walls of the building and, in addition to undertaking necessary remedial works to other walls, resulted in the need to virtually demolish the complete three-storey high walls surrounding the large rotunda.

5.87 The minor openings that had been made in the external walls as part of the pre-contract investigations by the independent experts had been for the purposes of confirming the suspected omission of sections of the cavity wall insulation. These small openings would not have been sufficient to establish a widespread pattern of defective installation of wall ties in the building as a whole, although it may have been possible to identify local omissions of ties.

5.88 In the case of the visible internal cracking to the sides of the blockwork encasements to the steel columns in the rotunda, the Inquiry would have expected suspicions to be raised as to the adequate tying back and structural integrity of these very tall blockwork piers. The assumptions made at the time were that these cracks were the result of differential thermal expansion between the steel and the encasing concrete blockwork due to the excessive temperatures of up to 40 degrees being experienced at the top of the rotunda, which temeratures were reported ot be due to inadequate extract ventilation.

5.89 Overall, it is the opinion of the Inquiry that the very significant majority of the additional and unidentified defects could not reasonably be expected to have been identified in advance of the major opening up of the works by an on-site contractor.

5.90 It is the view of the Inquiry that the only time the majority of these unidentified and largely hidden defects could have been readily identified was when the original construction of the DG One building was being carried out. This would have required a high level of on-site independent scrutiny and inspection by site monitors acting on behalf of the Council during the initial contract.

5.91 In relation to the defective construction of the masonry walls, the evidence to the Inquiry suggests that there were no such inspections by Council representatives of this element of the construction.

5.92 The fact that so much work was not in accordance with the standards of the contract is ultimately the responsibility of Kier, the design and build contractor, and their principal sub-contractors. It is also a major failure of their supervisory and quality assurance processes, and of the skills and approach to quality of those teams and individual workers employed by Kier that were associated with the defective areas of work.

5.93 Unfortunately, the level of independent scrutiny as applied to the project on behalf of the Council, was ineffective in preventing the incorporation of so much defective work in the building.

6. Remit Items: 9 and 10

"The contractual arrangements between McLaughlin &Harvey and Dumfries and Galloway Council"

"The conduct of the contract negotiations with McLaughlin & Harvey and the council's level of governance of these arrangements"

The choice of contract

6.1 The contract used for the remedial works contract was the Scottish Form of Building Contract, SBC/Q/Scot Standard Building Contract (with Quantities) 2011 edition. This form of contract is generally used for projects where there is the ability to produce a fully developed set of detailed design drawings and specifications sufficient to allow the preparation of a comprehensive Bill of Quantities which accurately describes and quantifies all elements of labour, fixtures, fittings and materials required to construct a building. Provisional sums are used to address any specific aspects of the work which are known about but not yet fully conceived. Contingency sums are used to address unforeseen items arising as part of the construction. The client will often also hold a contingency sum outside of the contract.

6.2 The contractor's risk in this form of contract is being able to deliver the project to the required standard within his accepted tendered amount based on his pricing of the Bill of Quantities. The client's risk is that the Bill of Quantities fails to accurately reflect the work required in the drawings, schedules and specifications or that the drawings, schedules and specifications have failed to properly reflect the actual work required.

6.3 If the quantities actually required on site for the instructed work prove to exceed those measured in the Bill of Quantities, the full risk for the additional cost of these lies with the client, however these will generally be priced at the rates provided in the contractor's tender. If new work items that have not been described in the Bill of Quantities are discovered to be necessary, the client is at risk of having to pay inflated prices.

6.4 Therefore, as there was an inability to accurately quantify the work, as in the case of the DG One remedial works contract and as advised by several of the independent experts at the time, the above form of contract was unable to provide certainty to the Council as to the final outturn cost and the Council was liable for the cost of all additional work required.

6.5 In the unusual circumstances of the DG One building, the legal team were anxious to have a fully market-tested priced tender with a finite number to establish and justify to the Court the cost to the client of making good only those defects attributable to Kier. To produce a finite number required the production of a priced bill of quantities based on the independent experts' assessment of the quantification of these defects and the work necessary to address them. This could only be an assessment, as by their nature, the true extent of the defects was not accurately measurable until the elements within the building were opened up.

6.6 As previously stated in this report, the document required for the defined purpose of justifying the claim was not the same as the document that would have been required to undertake the work necessary to restore the building to an acceptable standard. Equally the priced 'With Quantities' form of contract which provided the information in the form

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best suited for legal purposes, was not necessarily the best form of contract to deliver the project in the most cost-effective manner.

6.7 The decision to use the traditional 'With Quantities' form of contract was apparently taken at the initial meeting of the design team called by project managers, Turner and Townsend, on 30th August 2013. This meeting was also attended by the independent quantity surveying expert as an observer. In an email after the meeting Turner & Townsend stated that following consideration of the pros and cons of different procurement models *"It had been agreed that the most effective choice of contract to use in order to control costs would be the JCT with quantities"*.

6.8 For the McLaughlin and Harvey agreed tender price to be a realistic assessment of the work required from the contractor, and to be an accurate assessment of the actual outturn cost to the Council, relied both on the accuracy and comprehensiveness of the schedules of defects prepared by the independent experts and on the practicality of the implementation of the design team's proposals to address these issues when the work had been properly exposed.

6.9 Neither of these two factors could be properly tested until significant further and widespread opening up of the fabric of the building had occurred. This could not practically happen until a contractor was on-site.

6.10 The original tender from McLaughlin and Harvey, addressing only the specific list of defects then identifiable as attributable to Kier, was approximately £10.8 million. This was reduced following negotiation and value-engineering to **£9,898,984**. The current assessed outturn cost for the contract is **£18,132,984**, although this figure may still vary before practical completion, which is now expected in the latter half of 2019.

6.11 The almost doubling of the contract sum is a reflection of the problems in relation to the extent and nature of additional defects that were discovered with the opening up of the project. On the discovery of these defects, there was a need to revise or produce new design proposals to respond to what was found and to have then costed. The time required for this added to the costs of prolongation and the length of the extension of time required to the contract period to undertake the additional work involved.

6.12 From the evidence provided to the Inquiry there appears to have been varied opinions within the project team in relation to the appropriateness of using a fully measured Bill of Quantities for this type of complex refurbishment project.

6.13 On 15th October 2013, a senior partner from Hurd Rolland wrote by email to Turner & Townsend in relation to the project plan they had issued to the design team members. He specifically asked that it be noted that his views, as previously expressed, on the choice of the most suitable procurement method did not concur with the recommendation of Turner and Townsend as contained in the project plan to use a fully measured 'With Quantities' form of contract. He asked for the following to be noted as a record of his views;

> *"Discussion over the contract type and procurement method took place and the expert consultants advised the use of a remeasurement type of contract, such as either JCT with approximate quantities, or a 'Fixed fee form of prime cost contract', to afford flexibility over unknowns and to avoid disputes over extensions of time and loss and expense, on the basis that this approach reflected industry guidance. This is a more common contractual procurement route for complex remedial works projects".*

6.14 In support of the above view that it was impossible to accurately measure the quantities given the extent of unknowns that could still be encountered in the opening up of the DG One building, he further commented;

> *"Unknowns may most importantly be additional works such as having to rebuild the swimming pool tanks or excavating foundations"*

6.15 This alternative view from Hurd Rolland was based on a belief, following a detailed technical appraisal of the defects in the building, that the full extent of the defects, many of which were already known to be related to sub-floor elements, could not be accurately measured in advance in a full Bill of Quantities. His hypothetical example of having to rebuild the swimming pool tanks would turn out not to be quite realistic, given the major reconstruction work to three of the walls and a complete rebuild of the fourth wall of the main pool.

6.16 With the use of the 'With Quantities' form of contract, the discovery of additional unknown defects not measured in the Bill, would lead to delays in design responses and the issue of instructions to the contractor, entitling the contractor to significant loss and expense.

6.17 The adoption of a pre-construction or two-stage approach to the procurement of the project, as one of the alternative suggestions made, would have used an **Approximate Bill of Quantities** to select a contractor. This would have provided, in a competitive process, an indicative cost for the remediation of the then known quantified schedule of defects and a schedule of rates to be used for the different aspects of work that might be required.

6.18 The tender for this approach would have allowed, before the Council would have to decide whether to commit to a full contract, for a first stage of the contract to take place within a prescribed period of time in which, on an agreed fee and cost basis, the contractor, working under the instruction of the design team, would have undertaken the major exploratory opening up of the building elements necessary to more firmly establish and quantify the nature and extent of the works required.

6.19 Only then would a cost and programme for the full extent of the works required be finalised with the contractor on the basis of the rates in the first stage tender, and this would be submitted for consideration and approval by the Council. Until this was agreed, no further contract could start, and the situation that did occur of the Council expensively delaying an on-site contract by 5-6 months while considering this type of information, would have been avoided.

6.20 Those proposing the use of the 'With Quantities' model had formed the not unreasonably held opinion that given the level of investigations undertaken and the considerable extent of defects that had already been identified, it was unlikely that there could be many more latent defects within the building. This analysis would unfortunately prove to be flawed.

6.21 Despite adopting the approach of a fully measured Bill of Quantities, the tendered contract documents required the contractor at the commencement of the contract to undertake intrusive investigations of the existing building to help the design team finalise the extent of the remedial work necessary. Many of the quantities in the documentation were provisional in nature and subject to remeasurement, so any view of the Council that this represented a reasonably fixed-price contract giving them price certainty were misplaced.

6.22 An example of the requirements in the contract documentation included the following;

> *"Carry out a full video survey of drains to establish condition and identify and locate obstructions and breaches. Provide video evidence for employer"*

6.23 The quantity of defective drainage discovered alone added £453,696.38 to the cost of the contract.

6.24 The nature and scale of the work necessary as an outcome of the investigations was not envisaged or efficiently catered for by this form of contract. It is accepted that there are risks associated with the use of all forms of contract, and that is particularly true in complex circumstances such as those surrounding the DG One building, where there was an inability to predict accurately what might be found when the building was opened up.

6.25 It should again be remembered that the vast majority of these problems originated with the defective construction of the building by the contractor to a level that could not be expected to have been foreseen by anyone.

6.26 As the offer the Council had accepted following mediation had been in full and final settlement, including patent and latent defects, they would have to pay for the making good of all additional defects discovered.

6.27 It is only following the opening up of the building by the contractor that the true extent of the defects in the building has become apparent. If significant defects additional to those addressed in the measured bill of quantities had not been found, which was a possibility, the implementation of the 'With Quantities' approach would not have encountered the problems that have led to a major escalation of the cost of the project.

6.28 Under the contract form used, as a result of the major prolongation of the contract period, it is likely that the Council will pay significantly more in addressing these defects, than it might have done if an alternative approach such as that described above had been adopted. It is also likely that the project would have been completed much earlier than it will.

6.29 Additionally, the use of the alternative form suggested could have allowed for an earlier production of the tender documents, appointment of a contractor and completion of the stage one exploratory works prior to the Council having to take a decision on the level of settlement being offered. This would have placed the Council in a better position in terms of having a much more accurate picture of the true extent of the defects and the cost of remedial works necessary and may have changed their view on the reasonableness of the full and final offer made by Kier.

6.30 However, it must be admitted that these views of the Inquiry have been made with the benefit of hindsight, which unfortunately was not available to those taking these decisions at the time.

The appointment of McLaughlin & Harvey as main contractor for the remedial works contract

6.31 The requirement to abort the first tender process for the remedial works contract, due to failure to comply with European Regulations, allowed for the additional defects identified in the investigations undertaken after closure of the building in October 2014 to be incorporated into revised tender documentation.

6.32 A pre-tender estimate of the updated tender was produced by the quantity surveyors, McGowan Miller, in the sum of **£9,578,831**. This figure is considerably higher than the lowest tender of £6.97 million received in the previous tender exercise, a year earlier, which had had to be aborted due to non-compliance with EU advertising requirements.

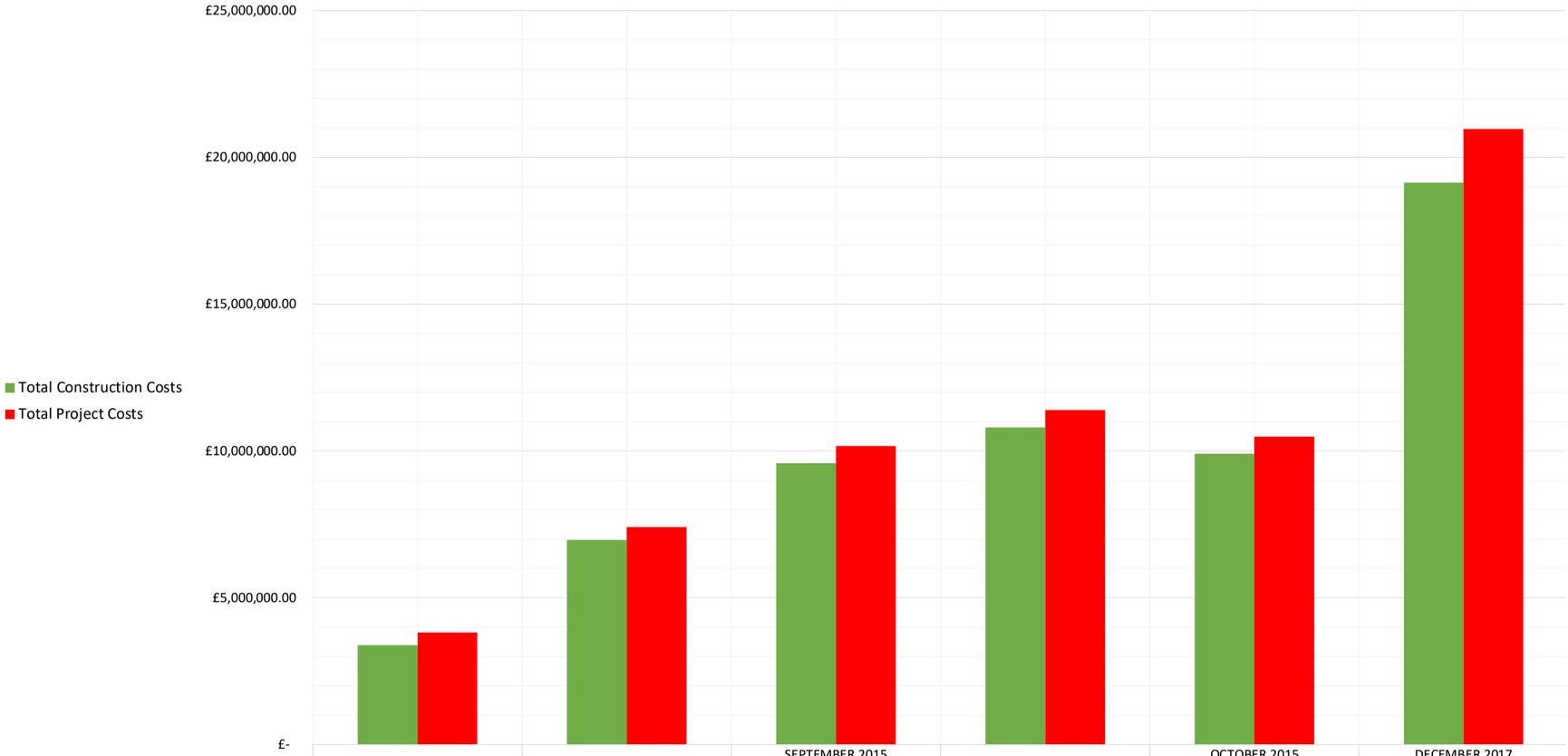
6.33 The Inquiry was advised that the main reasons for this significant uplift were the requirements for considerably more reconstruction work to the concrete pool walls, and additional works to underground drainage and to the mechanical and electrical systems. This additional work was only able to be identified after the closure of the building in October 2014.

6.34 Adjustments were also made to increase the levels of provisional sums, contingency and risk provision, preliminaries, overheads and profit and to allow for construction inflation over the period.

6.35 The following three tables show the major variation in the total construction prices from a preliminary estimate produced in November 2013 up to the present day, reflecting the changing levels of information as to the defects in the building.

6.36 They also show the dramatic variation in the level of work against each of the work headings actually required between the October 2015 negotiated price for the contract and the current position of that contract.

ILLUSTRATION OF CHANGES OVER TIME OF TOTAL CONSTRUCTION COSTS AND TOTAL PROJECT COSTS



	NOVEMBER 2013 THOMSON GRAY ESTIMATE DURING INVESTIGATION PHASE	OCTOBER 2014 ASHLEIGH TENDERED COSTS BASED ON SCOPE OF WORKS IDENTIFED BY INVESTIGATIONS	SEPTEMBER 2015 REVISED TENDER McGOWAN MILLER PRE-TENDER ESTIMATE CAPTURING FURTHER IDENTIFED WORKS	OCTOBER 2015 McLAUGHLIN & HARVEY TENDER RETURN	OCTOBER 2015 NEGOTIATED CONTRACT SUM FOLLOWING REMOVAL OF WORKS ELEMENTS AND REDUCTION IN COSTS	DECEMBER 2017 ESTIMATED FINAL COSTS FOLLOWING DISCOVERY OF MORE DEFECTS DURING THE COURSE OF THE WORKS
Total Construction Costs	£3,380,178.00	£6,967,615.11	£9,578,831.00	£10,802,670.00	£9,898,984.05	£19,134,333.05
Total Project Costs	£3,820,745.00	£7,408,182.11	£10,165,323.00	£11,389,162.00	£10,485,476.05	£20,962,833.05

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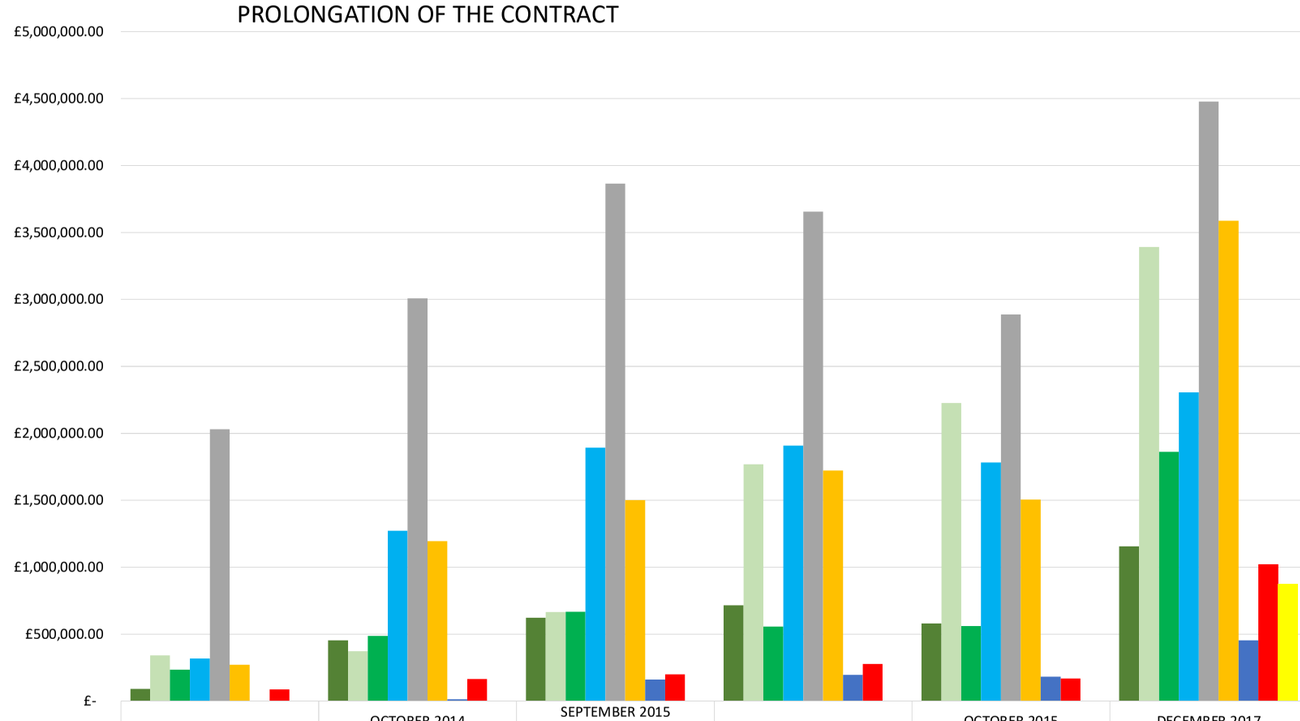
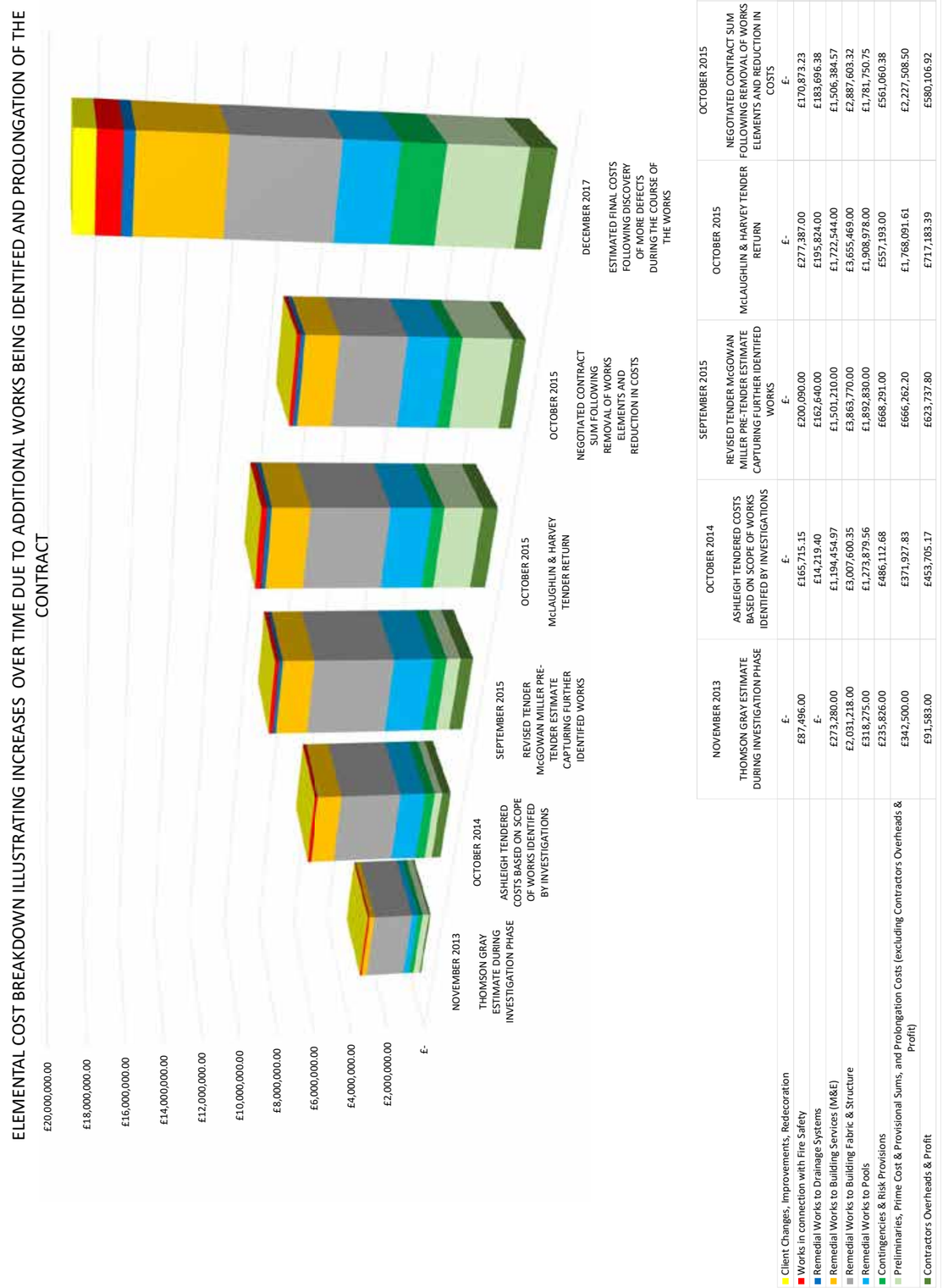
ELEMENTAL COST BREAKDOWN ILLUSTRATING INCREASES OVER TIME DUE TO ADDITIONAL WORKS BEING IDENTIFED AND PROLONGATION OF THE CONTRACT



	NOVEMBER 2013 THOMSON GRAY ESTIMATE DURING INVESTIGATION PHASE	OCTOBER 2014 ASHLEIGH TENDERED COSTS BASED ON SCOPE OF WORKS IDENTIFED BY INVESTIGATIONS	SEPTEMBER 2015 REVISED TENDER McGOWAN MILLER PRE-TENDER ESTIMATE CAPTURING FURTHER IDENTIFED WORKS	OCTOBER 2015 McLAUGHLIN & HARVEY TENDER RETURN	OCTOBER 2015 NEGOTIATED CONTRACT SUM FOLLOWING REMOVAL OF WORKS ELEMENTS AND REDUCTION IN COSTS	DECEMBER 2017 ESTIMATED FINAL COSTS FOLLOWING DISCOVERY OF MORE DEFECTS DURING THE COURSE OF THE WORKS
Contractors Overheads & Profit	£91,583.00	£453,705.17	£623,737.80	£717,183.39	£580,106.92	£1,155,290.00
Preliminaries, Prime Cost & Provisional Sums, and Prolongation Costs (excluding Contractors Overheads & Profit)	£342,500.00	£371,927.83	£666,262.20	£1,768,091.61	£2,227,508.50	£3,391,325.42
Contingencies & Risk Provisions	£235,826.00	£486,112.68	£668,291.00	£557,193.00	£561,060.38	£1,862,490.38
Remedial Works to Pools	£318,275.00	£1,273,879.56	£1,892,830.00	£1,908,978.00	£1,781,750.75	£2,306,750.75
Remedial Works to Building Fabric & Structure	£2,031,218.00	£3,007,600.35	£3,863,770.00	£3,655,469.00	£2,887,603.32	£4,477,522.32
Remedial Works to Building Services (M&E)	£273,280.00	£1,194,454.97	£1,501,210.00	£1,722,544.00	£1,506,384.57	£3,588,384.57
Remedial Works to Drainage Systems	£-	£14,219.40	£162,640.00	£195,824.00	£183,696.38	£453,696.38
Works in connection with Fire Safety	£87,496.00	£165,715.15	£200,090.00	£277,387.00	£170,873.23	£1,022,873.23
Client Changes, Improvements, Redecoration	£-	£-	£-	£-	£-	£876,000.00



NOVEMBER 2013	OCTOBER 2014	SEPTEMBER 2015	OCTOBER 2015	OCTOBER 2015	DECEMBER 2017
THOMSON GRAY ESTIMATE DURING INVESTIGATION PHASE	ASHLEIGH TENDERED COSTS BASED ON SCOPE OF WORKS IDENTIFED BY INVESTIGATIONS	REVISED TENDER McGOWAN MILLER PRE-TENDER ESTIMATE CAPTURING FURTHER IDENTIFED WORKS	McLAUGHLIN & HARVEY TENDER RETURN	NEGOTIATED CONTRACT SUM FOLLOWING REMOVAL OF WORKS ELEMENTS AND REDUCTION IN COSTS	ESTIMATED FINAL COSTS FOLLOWING DISCOVERY OF MORE DEFECTS DURING THE COURSE OF THE WORKS
£-	£-	£-	£-	£-	£876,000.00
£87,496.00	£165,715.15	£200,090.00	£277,387.00	£170,873.23	£1,022,873.23
£-	£14,219.40	£162,640.00	£195,824.00	£183,696.38	£453,696.38
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£91,583.00	£453,705.17	£623,737.80	£717,183.39	£580,106.92	£1,155,290.00

6.37 Surprisingly, the re-issued European-compliant advertisement attracted only one contractor, McLaughlin & Harvey, expressing an interest in tendering for the remedial works contract. None of the other contractors who had tendered on the previous occasion responded to the

6.38 Having sought legal advice and considered the options open to them, the Council decided to negotiate with this single contractor rather than to re-advertise. The reasons for doing this were threefold; not wanting a further delay to the process of bringing DG One back into us; a new advertisement may still not attract any further potential bidders; and there might be a risk of losing the single contractor that was interested.

6.39 Clearly one of the largest risks of negotiating with one bidder would be the impact of the lack of competition on the pricing of the work.

6.40 In order to maximise competition as far as possible, the contractor had been required to seek competitive tenders on an open book basis for all subcontracted packages of remedial works. Copies of all successful and unsuccessful tenders for forty-seven subcontracted work packages had been provided by McLaughlin & Harvey.

6.41 Whilst in total 235 sub-contractors had been invited to submit tenders by McLaughlin & Harvey, only 72 of these had responded with a tender. This was perhaps a reflection of the difficult nature of the work and the difficulty in accurately pricing it, particularly at a time when opportunities to tender for cleaner new-build work were relatively plentiful.

6.42 On 16th October 2015, McLaughlin & Harvey submitted a priced tender of £10,864,810 for carrying out the revised content of the remedial works contract. This exceeded the pre-tender estimate, prepared by McGowan Miller Quantity Surveyors in September 2015, by £1,223,439.

6.43 The analysis of the tender submitted by McLaughlin & Harvey indicated that the higher pricing of the preliminaries to the contract, as opposed to the pricing of the individual work packages, accounted for much of the increase over the quantity surveyors' pre-tender estimate.

6.44 By mid-2016, following several months of negotiation, a reduced figure of £9,898,984 was agreed as the basis of a contract to be entered between the Council and McLaughlin & Harvey. However, in achieving this figure, the contractor had not been prepared to reduce the seven per cent allowance for overheads and profit. In evidence to the Inquiry, the Contractor held to the view that this was an appropriate level for the project in question.

6.45 If the quantities as measured in the tender documentation had been an accurate reflection of the work that would actually prove to be required, this fact would not have had the significance that it subsequently has had on the cost of the contract. However, with the very significant prolongation of the contract to reflect the requirement for the major additional works, the level of preliminaries due to the contractor has represented a significant proportion of the increased costs to the project.

6.46 It is the view of the Inquiry that it would have been much preferable to have had effective competition between main contractors than to have negotiated with a single contractor and a re-advertisement may have been worthwhile. However, it is impossible at this stage to know if a re-advertisement would have been successful in attracting further competition, so the position adopted by the Council is understandable.

6.47 It is the opinion of the Inquiry that, in the circumstances of a negotiated tender without competition, the agreed contract sum of £9,898,984 would appear to have been a reasonable price for the works as described in the tender documentation when compared to the pre-tender estimate prepared by the quantity surveyors.

6.48 In implementing an open book approach to the tenders invited and received from sub-contractors, the Council actively sought to mitigate the loss of competition at main contractor level. Even this approach, however, would not have equated to a situation where there had been proper competition between main contractors. Inevitably, where there is only one contractor, the client will generally have to pay a premium over market rates.

The Council's Level of Governance of these Arrangements

6.49 This Inquiry has already expressed its views on the lack of full-time internal project management and clerks of works resources on this project, particularly given the complex nature of the remedial project and the troubled history of the project both during and since the original contract.

6.50 Equally it has commented on the failure of the systems and resources put in place in terms of their ability to respond sufficiently effectively and promptly with appropriate instructions to design issues and defects identified on site.

6.51 The on-going management of this contract required a completely different approach to that required for a green field new building where everything could be fully designed in advance. The project management and design team had to be able to quickly inspect and determine the appropriate design responses to what was being discovered as the building was opened up to reveal new defects.

6.52 Central to this requirement should have been the need for the proactive daily involvement of design leadership of the members of the design team in ensuring the production of fully coordinated and timely design information so as to not to cause delay to the progress of the work to the contractor and the risk of incurring resultant additional costs.

6.53 Special arrangements for quicker approvals and less long chains of decision-making should have been put in place to reflect the needs of this contract as the problems began to emerge. One of the inhibiting factors in this regard would appear to have been the on-going requirement for the approval of design team fees before undertaking additional design work necessitated by findings on site. The Inquiry did not get a feeling of the pro-active management of a unified design team that this project required.

6.54 It is the view of the Inquiry that the administratively driven arrangements put in place for the design development processes, pricing and the subsequent approval processes by the Council before instructions could be issued were inappropriately lengthy for a project of this type and did not properly reflect the nature and demands of the contract form used.

6.55 When the extent of the additional work began to emerge, following the opening up by the contractor, the Council's internal project management realised that the budget approved by the Council, including the 7.5% contingency, was insufficient to address the defects discovered. Approval to the additional expenditure was required from the Council to provide the authority to instruct the necessary additional work.

6.56 The major factors in the discovery of the additional defects were; the widespread defects in the construction of the external walls necessitating the demolition of the walls to the rotunda; the need to extend the length of the main swimming pool by demolishing the end wall; and the discovery below ground of corrosion to sections of steel columns and problems with the drainage systems.

6.57 The structural report on the inadequate tying of blockwork in the external walls of the building was only produced in April 2017, a full eight months after commencement of the remedial works contract in September 2016. Given the advance warnings for the need to check for these defects that had been sent to the Council as early as in March of 2016, it is difficult to explain why this issue was not addressed before construction commenced or, in the event, much sooner in the contract process.

6.58 The scale of the new requirements was a major and totally unexpected shock to the Council, as there had been an assumption on their part that the tender documentation had captured all the defects in the building. The requirement in the contract for the Contractor to provide for further investigations as part of opening up the works would indicate that the design team believed that the defects could be more extensive than those described in the tender documentation.

6.59 It is the opinion of the Inquiry that the Council acted appropriately in quickly appointing Gardiner and Theobold to undertake an immediate independent review of the situation. Their analysis confirmed the extent of the problems and pressed for a rapid completion of all investigations, finalisation of design proposals and the costing of the work with the contractor, so as to give the Council as accurate as possible an assessment of its full liability under the contract.

6.60 When it was realised that the final cost of completing the project could be more than double the original contract amount, the Council requested that an option appraisal be prepared to establish whether they should consider abandoning the project as not value-for-money.

6.61 Both an internally produced option appraisal and the separate recommendations of the Gardiner and Theobold review, concluded that continuing with the project was the least bad option for the Council in terms of cost and time.

6.62 If it had been possible for the Council to have known the true level of defects in the building and the likely cost of dealing with them in advance of commencing the remedial works contract, it is probable that they would not have proceeded with the project and might well have demolished the building and replaced it with a new facility.

6.63 The Inquiry was surprised to be advised that, although it would be an unlikely option, no proper exercise had been sought as part of the Options Appraisal to establish the costs of demolishing DG One and building a new facility, potentially to a new and updated brief.

6.64 Unfortunately, by the time the Council had found out the likely true cost of the remedial works, they had already incurred significant costs on the project and would incur more in withdrawing from the project, making continuing with the project a less expensive option.

6.65 If a two-stage pre-construction approach had been adopted, allowing for the significantly earlier undertaking of a much smaller first stage contract to establish the

true extent of defects, the Council would have been much better informed in relation to the options open to it and potentially could have decided not to proceed with the second stage of such a contract. However, this is again said with the benefit of hindsight, which was not available to those making decisions at the time.

6.66 It is the opinion of the Inquiry that, in the circumstances, the Council's options were very limited at this late stage, and the only realistic option for them was to complete the project, particularly when viewed from a funding and programme perspective.

6.67 Unfortunately, these fundamental reviews to establish better informed estimates of the projected outturn cost, and if or how to proceed with the project, were not finally resolved by decisions from the Council until its meeting at the end of September 2017, six to seven months after the discoveries of the additional defects.

6.68 During this six to seven months period the Contractor could not be instructed to commence the re-building of the rotunda until funding approval had been granted by the Council. Its reconstruction was now on the critical path for the project and required to be completed before other elements of the work could be addressed.

6.69 To undertake the additional work would already have required a considerable extension to the contract period. This long delay in instructing the contractor to commence the additional work would further increase the required period by another six months and of course add to the resultant large costs associated with the prolongation.

6.70 It is the opinion of the Inquiry that, given the impact of delay to the contract, more focus should have brought on seeking to reduce the period required after the letting of the contract to identify any defects in the blockwork and also on the period required to resolve the major funding issues arising from the additional work.

6.71 The report to Council proposed an extension to the original 18 months contract of an additional 21 months.

6.72 Whilst the Inquiry acknowledges that through the delay in receiving instructions on the re-building of the rotunda, the contractor was only able to achieve very limited productivity during a 6-month period, it is of the opinion that the proposed 21 months extension would appear to be over-generous and that the project could be completed sooner than this; that is provided there are no further delays as a result of any further discoveries of defects or as a result of any client changes instructed.

6.73 The issue of the length of extension of time granted is of course a matter for the contract administrator to determine in line with the requirements of the contract.

6.74 The Inquiry is aware that there are a number of current outstanding decisions of the Council including; proposed changes of use of parts of the facilities; the replacement of current lighting with more energy-efficiency lighting; and the need or otherwise to replace the main boilers. The issue of the need to extend the main flues also does not seem to have yet been resolved.

6.75 It is imperative that all required actions under the contract in response to all such issues are quickly decided and appropriate instructions to address them issued to the contractor as soon as possible.

7. Remit Item 11:

"The management and maintenance of the buildings since construction, including advising on whether the current defects should have been found earlier"

7.1 This Report has previously referred to a range of apparent failures in relation to the maintenance by the Council of the DG One building since its handover.

7.2 Prior to handover, members of the Project Management Board had already expressed strong concerns about the lack of allocation of the necessary revenue funding to properly maintain what was a very complicated building, particularly in terms of the mechanical and electrical systems associated with the pool areas. The Director of Finance had previously questioned the adequacy of the level of funding identified in the business plan for the operation of the Centre.

7.3 Witnesses advised the Inquiry that even relatively early in its operation they had expressed disappointment with the basic level of cleanliness of the building. It was reported that one of the companies undertaking the cleaning contract had withdrawn halfway through its contract as they could not provide the service within the amounts they were being paid by the Council.

7.4 In 2011, the report on the condition of the building produced by the In-house Design Services Group, contained major criticisms of the on-going maintenance of plant and equipment. Photographs in this Report show fire-dampers, essential components of the fire strategy for the building, still rendered inoperable three years after the building opened due to the cable-ties used to protect them in transit to the site not having been removed.

7.5 A good practice standard maintenance regime should have required regular inspections of these, which if carried out should have identified and removed these ties. Whilst an effective maintenance regime would have identified the presence of these cable-ties; it should not be forgotten that their presence should have been identified by Kier during commissioning of the building, and that they should have been removed at that time.

7.6 The major omissions and inadequacies in the fire-stopping to the building were also first identified in the same 2011 report. Again, the highly visible nature of these defects should have caused them to be easily identified by informed maintenance staff, if regular checks of fire-stopping had been carried out as part of a maintenance regime.

7.7 Amongst the many areas that were not properly maintained, both inside and outside the building, the one which had the most impact on the remedial works contract was the reported lack of chemical dosing of the water in both the low temperature hot water system and the chilled water system. The Inquiry was advised that this was the most likely cause of the widespread internal corrosion found in the pipework of both systems, requiring the majority of the pipework having to be stripped out and replaced.

7.8 It was only in September 2016, immediately after the appointment of the contractors for the remedial works, that a full condition and dilapidations survey of the building was carried out. This was for the purposes of recording the presence of any existing damage so that the contractor would not be held responsible for causing it and to be able to identify any damage that might subsequently be caused by the contractor to areas recorded as undamaged.

7.9 As previously stated a survey of this type should have been carried out well in advance of the contract so that necessary work could have been identified and incorporated into the contract rather than added in after the contract had been awarded.

7.10 The extensive photographs taken as part of the survey show the poor condition of many parts of the building, the result of an apparent lack of maintenance. Examples of these are included in Appendix 3. They also raise further questions as to the standard, quality and durability of the original materials and fittings used in the construction of DG One, particularly given the current age of the building and its original planned design life.

7.11 Whilst it is clear that there were problems associated with the general maintenance of the building, it should also be noted that those Council officers charged with looking after the building, were constantly having to deal with a stream of problems arising from the inadequacies of its construction, which must also have been a drain on the limited maintenance budget available for looking after the building. This was particularly the case in relation to the continuous problems of delaminating tiles in the pools and leakages from the spa and pools into other parts of the building.

7.12 Finally, there is evidence that as a result of inadequacies in the provision of operating manuals in the Health and Safety file for some of the engineering services systems, difficulties were encountered in their management. Also, a number of the Council staff operating these systems had not been provided with the required training and should not have been permitted to operate the complicated services. An inspection in 2011 found that several alarms lights on various panels had been left unaddressed by staff.

7.13 It is a finding of the Inquiry that there were failures on the part of the Council to put in place the appropriate funding, systems, expertise and staff resources to provide for the proper maintenance of the facility. This fact contributed to the increase in the required work and in the costs of the remedial works contract.

7.14 It is also a finding of the Inquiry that the poor quality of the original construction by Kier significantly increased the problems and costs of properly maintaining the building.

7.15 On the basis of the most recent information provided to the Inquiry, it would appear that the general refurbishment of some areas of finishes and some fittings within the DG One building, that was not perceived as essential to include, may not be included in the remedial works contract.

7.16 The Inquiry would be concerned that a decision by the Council not to at least refresh the appearance of all parts of the building would create a situation where on the re-opening of DG One in 2019, these areas would already be seen to require maintenance.

7.17 Given the level of expenditure incurred, the public expectations will be of a fully refurbished building.

Section 9 – Remit item 12: Recommendations

> *" Provide advice and recommendations on any specific or wider lessons which can be learned from this project for Dumfries and Galloway Council and any other bodies."*

This Section will set out a series of recommendations for consideration by Dumfries and Galloway Council. It is not intended to repeat here the evidence provided earlier in this Report from which these recommendations have been derived.

The level of defects discovered in the DG One building, resulting in its enforced closure and necessitating the deconstruction and rebuilding of significant areas of the building, were fundamentally the result of a combination of poor quality workmanship, inadequate supervision and ineffective quality assurance by the design and build contractor. The level of independent scrutiny applied to the construction on behalf of the Council was also insufficient to identify and seek rectification of the defective areas of construction that subsequently led to closure of the building.

Whilst numerous and varied defects were found in the DG One building, the similarity of two of the major defects in relation to serious inadequacies in the construction of external walls and in the installation of fire-stopping to the findings of the Edinburgh Schools Inquiry, can only reinforce concerns as to the systemic nature of these defects in the industry in Scotland.

Accordingly, clients should ensure that they incorporate into their procurement arrangements the provision of appropriately qualified and resourced independent scrutiny that provides the necessary level of assurance as to the quality of the buildings being procured.

In relation to the repeated occurrences of inadequacies of fire-stopping, it is recommended that clients of recent buildings, who have not undertaken checks on the adequacy of installation of fire-stopping in their buildings, should arrange for this to be done by appropriately qualified inspectors. Regular inspections should also be built into the on-going maintenance regimes for all buildings.

The list of recommendations

The full list of recommendations of this Inquiry as provided below is based on an analysis of the evidence provided to the Inquiry. The 34 individual recommendations are listed under the following eleven headings.

1. **Internal Structures and Resources for The Development of Capital Projects by The Council**
2. **The Protection of The Quality of Design of Council Projects**
3. **The Production of Comprehensive Business Cases for Projects**
4. **Clarification of the Level of Decisions in Relation to the Development of Projects that should be referred to Committees of Council**
5. **The Administration of Contracts during the On-Site Execution of Capital Projects**
6. **The Council's Relationship with the Design Team**
7. **The Role of Building Standards**
8. **Ensuring the Appropriate Funding and Quality of the Maintenance of Council Projects**
9. **Compliance with European Regulations and the Preparation of Pre-Tender Estimates**
10. **Learning from Construction Problems Experienced on the DG One Building**
11. **The Accounts Commission Report on Major Capital Investment in Councils**

1 Internal structures and resources for the development of capital projects by the Council

Recommendation 1.1

The Council should maintain, or have assured access to, a level of expertise and resources that allows it to act as an 'intelligent customer' in relation to both the strategic development of projects and the procurement and management of contracts with Private Sector Construction Companies.

It is recommended that before commencing a programme of work or an individual project, the Council should first assess this requirement and ensure that it has in place or access to the requisite and appropriate resources in terms of governance and project management arrangements, relevant professional expertise, support staff and funding to enable it to act effectively as an 'Intelligent Customer'.

Recommendation 1.2

It is recommended that the Council should review how it establishes the membership of Project Management Boards and how it selects and appoints individual project managers in terms of ensuring the relevant knowledge, expertise, experience and availability of those making key strategic and executive decisions on Council projects.

Recommendation 1.3

It is recommended that the approach to the allocation of responsibility for the delivery of major building projects and the organisational structure of Dumfries and Galloway Council should be reviewed in terms of ensuring that those charged with delivering projects have the appropriate skill- sets and are supported with the necessary professional resources that such tasks demand.

Such a review should consider whether the capital programme of Dumfries and Galloway Council is sufficiently large to enable Council to afford, attract and maintain the necessary level of expertise required for major projects or whether the Council should consider entering into arrangements with or share resources with other organisations that can help maintain or provide that expertise due to the regularity of major projects they may be engaged with.

There will still be a need for the Council to retain at a strategic level the ability to undertake its core role as a client, to articulate project needs and to provide informed oversight of the management of Council projects and of the roles undertaken by any external agencies supporting the Council in the delivery of their projects.

2 The protection of the quality of design of Council projects

Recommendation 2.1

If the Council is committed to ensuring that their future projects enhance the quality of the built environments in which they sit and, more importantly, enhance the quality of the lives of the communities they are intended to serve, it should recognise the need for the protection of longer-term quality-based objectives and the need for the Council to act as a design champion in this regard.

Recommendation 2.2

It is recommended that in so doing the Council needs to better ensure that best practice methodologies aimed at optimising the quality of design and the quality of construction are properly incorporated into all stages of the development of projects by the Council and into all forms of procurement models that may be used by the Council.

Recommendation 2.3

It is recommended that the Council should ensure that it has access to appropriate expertise in relation to setting wider strategic objectives for the Council in terms of protecting and enhancing the quality of the built environment, in relation to the conceptualisation and articulation of quality objectives for projects and in relation to the assessment of the quality of proposed design solutions for Council projects.

3 The production of comprehensive business cases for projects

Recommendation 3.1

It is recommended that the Council adopt the practice of requiring the production of structured business cases in accordance with standard practice and guidance for use by public sector bodies. The production of properly considered business cases of this type for both the original project and the remedial works project may have helped obviate problems encountered in the delivery of both projects and may even have avoided the need for a second project.

Recommendation 3.2

It is recommended that a key element of all business cases should be informed consideration of the procurement routes and contract forms available to establish the preferred option. This process should focus on which procurement model best supports the achievement of the key objectives set for a project and the risks attached to their use in achieving them. This decision can be key to the success or failure of projects and must be appropriately informed by professional advice.

The use of a different procurement approach to the original construction of DG One would have provided a more appropriate approach to the protection of the quality of the project.

The use of a different approach to the procurement of the remedial works project may have resulted in better financial and time outcomes for the Council.

Recommendation 3.3

It is further recommended that the business case should also examine the level and type of professional expertise and resources required in relation both the development planning of the project and its implementation using the chosen procurement model and should demonstrate how it is intended that these will be provided.

4 Clarification of the level of decisions in relation to the development of projects that should be referred to committees of Council

Recommendation 4.1

It is recommended that clear protocols are established setting the nature and level of decisions in relation to the executive delivery of capital projects that are expected to be referred to Committees of Council and those that should normally be delegated to officers of the Council acting in an executive role.

Recommendation 4.2

It is recommended that the regularity, nature, content and format of progress reports produced for Committees to enable them to provide appropriate levels of oversight and scrutiny of capital projects should be reviewed to ensure that there is a greater focus on conveying timely information and analysis on the key issues impacting on the success of the project.

Repeated presentations to Boards and Committees of similar very long registers of project risks can tend to reduce their effectiveness in providing the necessary focus on the actions necessary to actively addressing the key risks.

Recommendation 4.3

It is recommended that the use of risks registers is reviewed to make their use more meaningful by ensuring that the highest priority risks are properly assessed and identified and that the proposals to address them are realistic and fully implemented with active reporting on their application and impact.

5 The administration of contracts during the execution of capital projects

Recommendation 5.1

It is recommended that the Council ensures that due diligence is undertaken at an appropriate level in all construction contracts to confirm that the requirements of that contract are actually delivered. This responsibility cannot be taken lightly and requires the allocation by the Council of appropriately resourced and experienced professional expertise relevant to the nature of the specific project and form of procurement.

Recommendation 5.2

It is recommended that the Council should not rely on the effectiveness of the quality assurance systems of those contractors delivering design and build projects but should arrange for appropriate independent scrutiny of their work, both in relation to the development of detailed design and specifications and the examination of on-site construction.

The focus of the Council should be on ensuring that projects are designed and constructed so that they are built right first time, rather than relying on the ability to seek compensation when they prove not to be.

Recommendation 5.3

It is recommended that the Council ensures that it has access to an appropriate complement of experienced specialist Clerks of Works, covering each of the key construction disciplines, to allow for the necessary regular and detailed inspection of the work of contractors on site.

Recommendation 5.4

It is essential in order to protect the quality of the construction of projects that there is appropriate enforcement of contractual rights as to the removal and making good of any sub-standard work on site.

Recommendation 5.5

It is recommended that the Council introduces procedures to ensure that those appointed to the role of contract administrator have the relevant experience and the requisite knowledge, skills, and resources to allow them to effectively administer the full provisions of the contract and that inspections of work are sufficient in regularity and detail to identify sub-standard work prior to it being enclosed as part of the construction.

Recommendation 5.6

It is recommended that without the prior undertaking of informed independent comprehensive inspections of projects and written confirmation of the completion of the work to a satisfactory standard that statements of practical completion should not be issued by the Council, even in situations where political pressures may be brought to bear.

Recommendation 5.7

It is recommended that the Council establish a strict protocol for project managers in relation to the required content and timing of submissions by contractors of as-built documentation, the checking of this information and the subsequent retention of it by the Council. Certificates of practical completion should not be issued prior to the provision of this information to an acceptable standard by contractors.

6 The Council's relationship with design teams

Under the design and build model of procurement used for DG One, there was little if any contact or relationship between the Council and the key members of the design team who were responsible for designing the building they were procuring.

In addition to the absence of the potential benefit that can be afforded by valuable dialogue between designers and client, the Council were unable to confirm that the building was being constructed by the contractor fully in accordance with the designer's intent or that the members of the design team had undertaken inspections of the work to confirm the standard of construction.

The scope of design team appointments and the level of involvement of design team members in inspection of the works was delegated to the contractor to determine and manage.

Whereas the tender proposals from the contractor had described the appointments of the architect and structural engineers as requiring both to undertake on-site inspections, the Council was not advised by the contractor that these had not in fact happened as prescribed. Any comfort that the Council may have gained from the inclusion of the proposed inspections of the work of the contractor by qualified design team professionals was misplaced.

Recommendation 6.1

It is recommended that the Council reviews current procurement arrangements to ensure that they provide for the optimum level of communication between the Council and the key members of the design team responsible for the design of their projects, and that they are able to benefit to the fullest extent from their creativity, design skills, professional knowledge and expertise.

Recommendation 6.2

It is also recommended that under design and build arrangements, the Council should require that contractors provide as part of their tender, confirmation of the range of services, including inspection services, that are to be provided by the design team and that the Council should require to be provided with certified confirmation of the satisfactory execution of these by the design team members .

Recommendation 6.3

It is recommended that the Council review its approach to the establishment of fee levels so that, while it should continue to ensure that it is getting value-for-money, it should also ensure that the design team are adequately resourced to provide the level and quantum of service expected by the Council and that the project requires .

7 The role of building standards

It is clear that there were a significant number of failures to comply with statutory standards both in relation to the processing of DG One warrant approvals and completion certification and in relation to failure to identify defective construction in the building. One of the most serious failures was in relation to the major inadequacies and omissions in the installation of fire-stopping throughout the building.

Recommendation 7.1

It is recommended that a review is undertaken as to the nature, number and level of detail of inspections carried out by building standards inspectors to ensure that there is an appropriate focus on issues such as fire-stopping and other aspects of construction that may impact on the safety of building users . The Council should review its current procedures to ensure the appropriate involvement of the fire officer in these processes.

Recommendation 7.2

It is also recommended that a review be undertaken of the capacity and level of available expertise in the Building Standards Department so as to ensure its capability of delivering the required quality of service consistent with the procedural requirements of the legislation and the level of demand for these services.

Recommendation 7.3

It is further recommended that consideration be given by the Council to seeking the provision of Building Standards verification services from adjacent authorities for projects which are being developed by the Council so as to avoid any potential conflict of interest in dealing with the Council's own applications.

8 Ensuring the appropriate funding and quality of the maintenance of Council projects

Recommendation 8.1

In light of the failure of the Council to provide adequate funding for and adequate provision of the level of maintenance required for the DG One project, **it is recommended** that a review be undertaken of the processes used by the Council for establishing and allocating the funding levels required to address routine, planned and preventative maintenance of its new buildings. This requirement should be a standard part of the business case process.

Recommendation 8.2

It is recommended that the Council review its standard approach to establishing maintenance regimes for all its buildings based on best practice models and including regular inspections of all aspects of fire protection and public safety measures

Recommendation 8.3

It is recommended that there is a renewed focus on ensuring the proper commissioning of buildings and of the thorough training of general and technical maintenance staff undertaken as part of the pre-handover procedures and protocols . The Council should introduce the requirement for a sign-off process to confirm that all such steps have been properly executed.

Recommendation 8.4

It is finally recommended that the application of appropriate maintenance procedures should be inspected on an unannounced basis by appropriate senior managers within the Council to ensure that the required standards are being maintained.

9 Compliance with European regulations and the preparation of pre-tender estimates

In the case of both the original tender process for the construction of DG One and the first subsequently aborted tender process undertaken for the remedial works contract, there was a failure by the Council and its advisers to produce pre-tender estimates.

This is an essential process in relation to ensuring that the Council is kept adequately advised of the funding requirement for projects and that, as a public-sector project, the projected cost does not exceed the threshold requiring advertising in the Official Journal of the European Union.

In both cases the latest budget that had been advised to the Council was more than £3 million below the lowest tenders received. In the case of the remedial works project the contract had to be re-advertised to comply with EU Procurement Regulations.

Recommendation 9.1

It is recommended that the Council ensure that appropriate cost-planning is undertaken on all projects, including the preparation of pre-tender estimates, and that there is a formal protocol established to confirm whether there is a requirement to advertise individual projects in the European Journal.

10 Learning from problems experienced with the construction of the DG One building

It is clear that there are significant problems associated with the consistent delivery of the appropriate quality of construction within the industry in Scotland and that public bodies should take appropriate steps to help mitigate the impact of this situation on their new development projects.

Recommendation 10.1

It is recommended that Local Authorities and other interested public-sector organisations cooperate in the production and sharing of a list of those aspects of the construction of new buildings in which defects are seen to frequently occur, such as is the case with external masonry wall construction and fire-stopping.

This list should be used in the briefing of all designers, contractors and site inspectors. Method statements should be required from each to demonstrate how the recurrence of these regular defects will be prevented through revised approaches to design, supervision and inspection processes.

Recommendation 10.2

It is also recommended that the Council initiate the development of Key Performance Indicators in relation to the level of defects identified following planned rigorous inspections at key stages of construction and in the snagging of new buildings prior to handover.

A tolerance by clients in continuing to accept sub-standard construction will lead to that standard becoming the norm. Refusal to accept sub-standard construction will force contractors to review their approaches to quality assurance, supervision and training of staff.

Recommendation 10.3

Finally, in light of the risk associated with the inadequate installation of fire-stopping, **it is recommended** that public authorities should undertake appropriately informed inspections of existing buildings and new buildings nearing completion to ensure the adequacy of the fire-stopping installed.

11 The Accounts Commission Report on Major Capital Investment in Councils

Recommendation 11.1

The Inquiry recommends that in undertaking its future capital development programme the Council takes full account of the principles set out in the Good Practice Guide prepared by Audit Scotland in 2013.

APPENDIX 1.

Summary of Roles of Main Participants and Those Invited to Provide Evidence to the Inquiry

The following explains the roles of each of the main participants relevant to the various stages of the project and lists both the witnesses that provided evidence to the Inquiry and those that declined to do so. Throughout this report and in the following list, individual witnesses, as advised in advance of their giving evidence, have not been identified by their name but rather by their organisation, position or role. This was so as to encourage openness on the part of witnesses and to seek to de-personalise the content of this report.

DUMFRIES & GALLOWAY COUNCIL

As discussed in Section 5 of this report, Dumfries & Galloway Council had several tiers of management and governance in place for the project. Different departments within the council were represented on and fed into this project management structure. The make-up and role of each of these was as follows.

Dumfries & Galloway Council Chief Executive

The now retired former Chief Executive of the Council was in post during the planning, procurement and construction of the DG One Leisure Centre and had overall responsibility for all executive functions of the Council.

- The former Chief Executive of the Council gave evidence to the Inquiry.

Ad-Hoc Sub-Committee of Council

The Council delegated responsibility for oversight of the development of DG One to this Sub-Committee of Council, formed from fifteen cross-party elected Members. The individual membership varied over the prolonged period of the development. Through regular reports from council officers on the Project Management Board, the members of the committee were kept advised of procurement, progress, cost and quality issues. Key decisions on the management of the project were referred to this committee by the Project Management Board.

- Three long-serving elected members of the Council who sat on this Committee gave evidence to the Inquiry

Project Management Board

The Project Management Board (PMB) comprised between ten and fifteen Council Officers representing the relevant departments from across the Council.

This included officers representing Community Services, Internal Communications and Public Relations, Leisure and Sport, Design Services, Corporate Services, Combined Services, Financial Services, Legal Services, and Estates Management.

This Board was responsible for the strategic and financial management of the project including the establishment of a project management structure, the appointment of key personnel, the agreement of the project brief and providing recommendations to the Ad-hoc Committee for decisions on key issues such as the choice of procurement.

The following members of the PMB gave evidence to the Inquiry;

- The retired former Director of Corporate Services who chaired the PMB.
- The retired former Corporate Governance Group Manager
- The retired former Director of Combined Services
- A current Senior Officer from Education and Community Services with a responsibility for Leisure and Sport
- The retired Council Officer and Civil Engineer who acted as the Project Manager and Contract Administrator

Other Current and Retired Council Officers Who Gave Evidence

- The current Chief Executive of Dumfries & Galloway Council.
- The former Operations Manager for Strategic Property Services, the department that employed the Project Manager and Contract Administrator
- The retired former architectural manager whose department provided technical staff to undertake inspections during the construction of DG One and provide support to the Project Manager.
- A retired Senior Technical Officer and Architectural Services Manager who was involved in the project from a very early stage during site selection and who helped develop the outline design and define the project brief.
- The Property & Architectural Services Manager, who has recently left the Council.
- A retired former Principal Structural Engineer who was involved with monitoring and inspection during the construction of the foundations and structure.
- An Incorporated Engineer and Member of the Institution of Civil Engineers who undertook site inspection and monitoring of the foundations and structure during the early stages of the construction of DG One.
- A current Principal Electrical Design Technician who undertook a watching brief on the electrical services installations during the construction of the building.
- A current Principal Mechanical Design Technician who undertook a watching brief on mechanical building services during construction of the building.
- The Manager of the DG One Facility
- The Maintenance Technician for the DG One Facility
- The current Director of Children, Young People & Lifelong Learning, the department which undertakes Capital Projects for Dumfries & Galloway Council and is overseeing and managing the reconstruction of DG one.
- The Strategic Lead of Physical Learning Environments in the Children, Young People and Lifelong Learning Division who had an overseeing role for the rebuilding phase of the project.
- The current Senior Project Manager overseeing the rebuilding of DG One.
- The Clerk of Works currently overseeing building work on the rebuilding phase.
- The Clerk of Works currently overseeing building services installations on the rebuilding phase.

- The current Corporate Health & Safety Adviser Construction and a former Clerk of Works.
- A Project Officer working on current PPP projects in a Clerk of Works role.
- The current Head of Legal and Democratic Services
- The current internal Audit Manager.
- The current team leader within the Building Standards Team
- The current leader of the Labour Group and Leader of Dumfries & Galloway Council
- The current leader of the SNP Group and Depute Leader of Dumfries & Galloway Council

EXTERNAL CONSULTANTS AND ORGANISATIONS

Strategic Leisure Ltd

Strategic Leisure were appointed by Dumfries & Galloway Council to provide support services during the initial development of the design brief and the selection of the site.

Capita

During the early stages of the evolution of the project, Capita were selected through a procurement process as the preferred bidder for the role of potential commercial partner to undertake a joint venture with Dumfries & Galloway Council in the delivery of a new combined retail and leisure centre. This model did not prove viable.

SportsScotland

SportsScotland provided an advisory role in reviewing the project brief and scope and provided specialist advise on the design, specification and procurement of the proposed sports facilities. They also provided a significant grant towards the funding of the project.

- The Head of Facilities for SportsScotland, who was personally involved during the development of DG One gave evidence to the Inquiry.

Hypostyle Architects

Hypostyle Architects were appointed by Dumfries & Galloway Council to provide architectural support services on the design & build bid documentation, to provide assessments of the architectural quality of the designs submitted and later under a separate appointment to provide support to Council's Employers Agent in the monitoring of the Design and Build contractor's work on-site.

- The senior architect from Hypostyle who undertook these functions **declined** the invitation to attend the Inquiry but wrote a letter to the Inquiry outlining the nature of the services that Hypostyle had undertaken for the Council.

Desco Mechanical & Electrical Building Services Consultants

Desco Mechanical & Electrical Building Services Consultants were appointed by Dumfries & Galloway Council to provide mechanical and electrical engineering advice, support and advisory services to the Employer's Agent during the construction phase of DG One

- The Director of Desco who undertook this function gave evidence to the Inquiry.

Clerk of Works

The now retired freelance Clerk of Works appointed on a part-time basis to support the Project Manager in undertaking site inspections and monitoring construction and construction quality during the building of DG One, gave evidence to the Inquiry

MacRoberts LLP

MacRoberts were appointed as Solicitors to act for Dumfries & Galloway Council during the Court Case with Kier Northern. MacRoberts appointed the Expert Witnesses on the case and who investigated and established the range of defects that existed in the DG One Building. MacRoberts also appointed the QC who represented the Council during Court proceedings, and who advised the Council on the outcome of the out-of-court settlement with Kier Northern.

- The Partner from MacRoberts responsible for the case and the Queen's Counsel who represented Dumfries & Galloway Council gave evidence to the Inquiry.

Hurd Rolland Partnership

A senior member of the Hurd Rolland Partnership was individually appointed to act as the Independent Architectural Expert in relation to the legal case being taken against Kier. The practice itself was subsequently appointed to provide architectural consultancy services as part of the design team for the remedial works contract.

- Both the Partner, who acted as Expert Witness, and the lead Architect on the design team gave evidence to the Inquiry.

G A Morris & Associates

A senior member of G A Morris & Associates was individually appointed to act as the Independent Mechanical and Electrical Engineering Expert in relation to the legal case being taken against Kier.

- The Partner who acted as Expert Witness gave evidence to the Inquiry.

Wren & Bell/Peter Brett Associates

A senior member of Wren and Bell, which practice would subsequently become Peter Brett Associates, was individually appointed to act as the Independent Structural Engineering Architectural Expert in relation to the legal case being taken against Kier. Wren & Bell were subsequently appointed to provide structural engineering consultancy services as part of the design team for the remedial works contract.

- The Director who took over part way through the process as Independent Expert and who acted as the lead structural engineer on the design team for the remedial works contract gave evidence to the Inquiry.

FTI Consulting

A senior member of FTI Consulting was individually appointed as Independent Quantity Surveying Expert in relation to issues of quantum (costs) associated with the legal case against Kier.

- The retired former Senior Managing Director who acted as Expert Witness gave evidence to the Inquiry

McGowan Miller

McGowan Miller were appointed as quantity surveyors and cost consultants for the implementation of the remedial works contracts.

- Two Directors from the practice gave evidence to the Inquiry

Turner Townsend

Turner Townsend were appointed as Project Managers for the remediation and rebuilding of DG One.

- The Director responsible for the project, the project manager responsible for the pre-construction stage of the remedial works which included tendering of the works, and a second project manager responsible for overseeing the construction stage of the project all gave evidence to the Inquiry.

K J Tait

K J Tait, Mechanical & Electrical Building Services Engineers were appointed as sub-consultants to G A Morris & Associates during the investigation stage and were then appointed directly by Dumfries & Galloway Council to provide consulting engineering design services in relation to the replacement of defective building services within the building.

- The project engineer responsible for design of the replacement building services systems gave evidence to the Inquiry.

Barr & Wray

Barr & Wray a specialist pool and spa design and installation contractor were appointed by Dumfries & Galloway Council to provide specialist advice on the pool remedial works.

- No one from Barr & Wray was invited to give evidence to the Inquiry.

Hub South West

The Chief Executive of Hub South West was approached by the Director of CYPLL of Dumfries & Galloway Council to provide an independent opinion on the management and progress of the DG One remedial works project.

- The Chief Executive of Hub South West gave evidence to the Inquiry.

Gardiner & Theobald

On the recommendations of the Chief Executive of Hub South West, Gardiner & Theobald were appointed by the Director of CYPLL of Dumfries & Galloway Council to undertake a review on emerging problems associated with the DG One remedial works project and to provide an independent report with recommendations..

- The Partner responsible for undertaking the review and preparing the report gave evidence to the Inquiry.

Scottish Futures Trust (SFT)

Scottish Futures Trust is an infrastructure delivery company owned by the Scottish government undertaking works through the Non-Profit Distributing (NPD) programme with public and private sector partners

- The Chief Executive and Procurement Review Director of Scottish Futures Trust gave evidence to the Inquiry.

Audit Scotland

Audit Scotland undertook an Audit of Dumfries & Galloway Council in 2016/17.

- The Portfolio Manager from Audit Scotland gave evidence to the Inquiry.

APPOINTED MAIN CONTRACTORS

Tenders were received from Kier Northern, Border Construction and Barr Construction for the original design and build contract for DG One. This tender competition was won by Kier Northern. Barr Construction would subsequently merge with McLaughlin and Harvey and under that name would be appointed following a tender process to undertake the remedial works contract currently on-site.

- Kier Northern **declined** several requests to give evidence to Inquiry. The company wrote to the Inquiry advising that there were no personnel left within the business that had had any involvement in the construction of the project.
- Representatives of McLaughlin and Harvey (previously Barr Construction) gave evidence in relation to the remedial contract.

SUB-CONTRACTORS AND CONSULTANTS WHO WERE EMPLOYED BY KIER NORTHERN

William Saunders & Partners

William Saunders & Partners (WSP) acted as lead consultant for the design of the building and undertook the Architectural design, and the Civil & Structural Engineering design.

- William Saunders & Partners were invited to give evidence to the Inquiry before agreeing to attend but sought *'specific information'* that the Inquiry was unable to provide.

Rybka

Rybka are Mechanical & Electrical Engineering Consultants who were employed by Balfour Beatty Building Services to undertake the design of the Building Services in the building.

- Rybka were invited to give evidence to the Inquiry but declined to do so.

Balfour Beatty Building Services

Balfour Beatty Building Services who were responsible for the installation of Building Services in the building were invited to attend the Inquiry to give evidence but declined to do so on the basis of the passage of time, the changes in personnel across the company and their inability to provide a witness who had been involved in the project.

T A Kirkpatrick – Steelwork Fabricator and Sub-Contractor to Kier

T A Kirkpatrick a local steelwork fabricator was employed by Kier Northern to manufacture and erect the steel frame in the building. Unfortunately, the Company went into liquidation during the construction of DG One.

- A former Director of T A Kirkpatrick gave evidence to the Inquiry

Taylor Pools

Taylor Pools was a specialist contractor employed by Kier Northern to construct the several swimming pools on the project. Unfortunately, during the project, the business failed.

Appendix 2 Responsibility matrix for participants in remedial works project

Project: DG1,Dumfries & Galloway Council Project ref: 23032 dated 13 August 2013

P=Principle C=Contributor		D&GC (RG/RW)	DG1 Pool manager	Turner & Townsend PM	Hurd Rolland	Turner & Townsend CM	Wren & Bell	G A Morris	tbc	tba	MacRoberts	tba	tba	tba
		Estates, Stakeholder & Building Procurement Management	End User	Project Manager	Architect & Lead Consultant	Quantity Surveyor	Structural & Civil Engineer	Building Services Engineer	CDM Coordinator	Main Contractor	Legal adviser	Building & Civil Engineering Clerk of Works	Mechanical & Electrical Clerk of Works	Test and Commissioning Engineer
1	Appointment of Consultants	C		P		C			C					
2	Development of Brief	P	C	C	C	C	C	C	C					
2A	Preparation of Room Data Sheets/drawings/ details/spec	C		C	P		C	C						
2B	Sign-off of Design and Room Data Sheets	C		C	P									
3	Agree Project Execution Plan	C		P	C	C	C	C	C					
5	Design Team Co-ordination			C	P	C	C	C	C					
5A	M&E works coordinated with fabric works	C		C	C		C	P						
6	Responsibilities Matrix	C		P	C	C	C	C	C					
7	Master Programme	C		P	C	C	C	C	C	C	C			
8	Risk Management	C		P	C	C	C	C	C	C	C	C	C	C
9	Value Management	C		P	C	C	C	C		C				C
12	Facilities Management Planning	P		C	C	C	C	C	C					C
14	Decanting / Disruption management	P	C	C	C	C		C						
	Dry side phasing plan	C		C	P	C	C	C						
17	Services Design Co-ordination (buildings)	C			C		C	P						C
18	Services Design Co-ordination (site)	C			C		C	C		P				C
19	Site Ownership and Boundaries	P		C	C									
20	Site Investigation Scope and Brief	P		C	C	C	C	C						
21	Land and/or Building surveys (measured)	C			P		C							

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24	Setting Out				C		C	C		P				
25	Test cores of pool tanks				C		P			C				
26	Existing Services Investigation	C					C	P						
33	Collating Designer's Hazard Assessments (CDM)	C			C		C	C	P					
35	Health & Safety Plan - Construction Stage				C		C	C	C	P		C		C
36	Building Warrant	C			P		C	C						
38	DPM				P		C		C					
39	Water Retaining Structures/Tanking				C		P		C					
40	Slab Surface Feature Co-ordination (holes, pits, sumps, trenches, recesses, chases, service penetrations, kerbs, bases, plinths, and covers)				C		P	C	C					
42	Building Primary Structure Elements				C		P		C					
42A	Building Secondary Structure Elements				C		P		C					
42B	Reinforcement design						P		C					
42C	Steel connections design				C		P		C					
43	Roads and Kerbs (Inc' setting out)				C		P	C	C					
44	Drainage Calculation (generally)						P		C					
46	External Foul/Surface Drainage	C			C		P	C	C					
47	Foul/Surface Drainage Below Slab	C			C		P	C	C					
48	Foul Drainage Above Slab				C		C	P	C					
49	Surface Drainage Above Slab				P		C	C	C					

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50	Roof Gutters				P		C		C					
51	Sanitary Ware	C			P			C	C					
52	Trade Effluent Disposal	C					P	C	C					
53	SEPA / Scottish water Consultations/Consents	C		C	C		P	C	C					
54	Foul/Liquid Waste Collection, Treatment, and Disposal	C			C		P	C	C					
55	Water Supply/Storage	C			C		C	P	C					
56	Grey Water Collection, Storage, Treatment, Supply and/or Disposal	C			C		C	P	C					
57	Cold Water Distribution	C			C			P	C					
59	Hot Water Supply/Distribution	C			C			P	C					
60	Gas and Chemical piped services and storage facilities	C			C			P	C					
62	Utility Service Provider Liaison (pre-site)	C		C	C			P	C					
62A	Utility Service Liaison (Site)	C						C		P				
63	Design Fire Strategy	C			P		C	C	C					
63B	Sprinkler design	C			C			P						
64	Structural Fire Protection - Materials Selection				P		C		C					
65	Structural Fire Protection - Construction Information				C		P		C					
66	Fire Fighting Installation	C			C		C	P	C					
67	Fire Action Plan/Certification	P			C			C	C					
68	Fire Alarm/Detection	C		C	C			P	C					
69	Electrical Power and Lighting	C			C			P	C					

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70	External Lighting (not power)	C			C		C	P	C					
71	Stand-by Power Generation & UPS (inc.' CHP)	C						P	C					
72	Building Management System	C		C				P	C					C
74	Security/Access Control Systems	C		C	C			P	C					
75	Intruder Detection System (CCTV / movement detection)	C		C	C		C	P	C					C
76	Communications Systems	C		C	C			P	C					C
78	Public Address System	C		C	C			P	C					C
80	Time and Attendance Systems	C		C	C			P	C					C
81	Lightning Protection				C		C	P	C					C
82	Heating Installation/Fuel Supply	C			C			P	C					C
83	Mechanical Engineering	C			C			P	C					C
84	Ventilation/Air Conditioning	C			C			P	C					C
86	Special Air Filtration/Extraction	C			C			P	C					C
87	Modelling discharges from flues	C	C	C	C			P						C
90	Energy Supply and Distribution	C						P	C					C
91	Energy Collection / Recovery / Storage	C			C		C	P	C					C
92	Special Piped Services	C						P	C					C
95	Lifts				C		C	P	C					C
96	Solar Shading/Black-out Systems (Controls)				C		C	P	C					C
96a	Solar Shading/Black-out Systems (Intergration)	C			P		C	C	C					
97	Refrigeration Plant/Installation	C			C		C	P	C					C
98	Site/Materials Delivery to site	C			C		C	C	C	P				C

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99	Window Cleaning /access	C			P		C		C					C
100	Fixed (Glazing/Roof) Access Systems	C			P		C		C					
101	Catering Equipment/Kitchens	C		C	P			C	C					C
102	Solid Waste - Storage/Containment	C			P		C	C	C					
103	Solid Waste - Disposal/Treatment	P			C		C	C	C					C
108	Hard Landscaping (roads, associated footways, service yards, and car parks)	C			C		P		C					
109	Hard Landscaping (excluding roads, associated footways, service yards, and car parks)				P		C		C					
110	External Envelope				P		C	C	C	C				
114	General Fixtures and Fittings	C	C		P			C	C					
116	Signs & Notices (internal and external corporate, informative, and fire precautions)	P			C			C	C					
117	Signs & Notices (road markings and traffic signs)	C			C		P	C	C					
118	Signs & Notices (building services)	C						P	C					
118a	Signs & Notices (process safety)	P			C				C					
119	Contract Valuation			C		P				C				
120	Budgeting and Cost Planning	C		C	C	P	C	C						
121	Building Contract Preliminaries	C		C	C	P	C	C	C					
122	Bills of Quantities			C	C	P	C	C						
122A	Prepare and issue Pre-Construction Info to tenderers								P					
123	Tender Issue			P	C	C	C	C	C					
124	Tender Assessment and Report			C	C	P	C	C						

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124A	Assessment of Tender H&S status	C		C	C		C	C	P					
124B	Advising client on suitability of Contractors Construction Phase H&S Plan and welfare facilities								P					
125	Contract/Construction Document Issue(s)			P	C	C	C	C						
126	Contract Administration			P	C	C				C				
127	Contract Certification			P	C	C				C				
128	Review of Contractor Design / Design Workshops			C	P	C	C	C	C	C				C
131	Periodic Site Inspection (Quality Benchmarking, Inspection and Observation)			C	P		C	C				C	C	C
132	Continuous Site Supervision									P		C	C	
132A	Weekly and intermittent Site Inspections and recording of labour, plant and workmanship											P		
132B	Intermittent site visits and inspections	C		C	P		C	C						
133	Operating and Maintenance Manuals	C		C	C		C	C	C	P				C
133A	Commissioning Testing and Compliance	C						C		P		C	C	P
134	Construction Record Documents (inc.' Drawings)	C		C	C		C	C	C	P				C
135	User Instruction/Training	P			C				C	C				C
136	Health & Safety File				C		C	C	P	C				C
136A	Notifying HSE at appropriate times								P					
137	Post Completion Project Evaluation	C		P	C	C	C	C	C	C		C		C
138	WRAP Assessment	C		C	P	C	C	C		C				
139	Traffic Impact Assessment	C		C	C		P							

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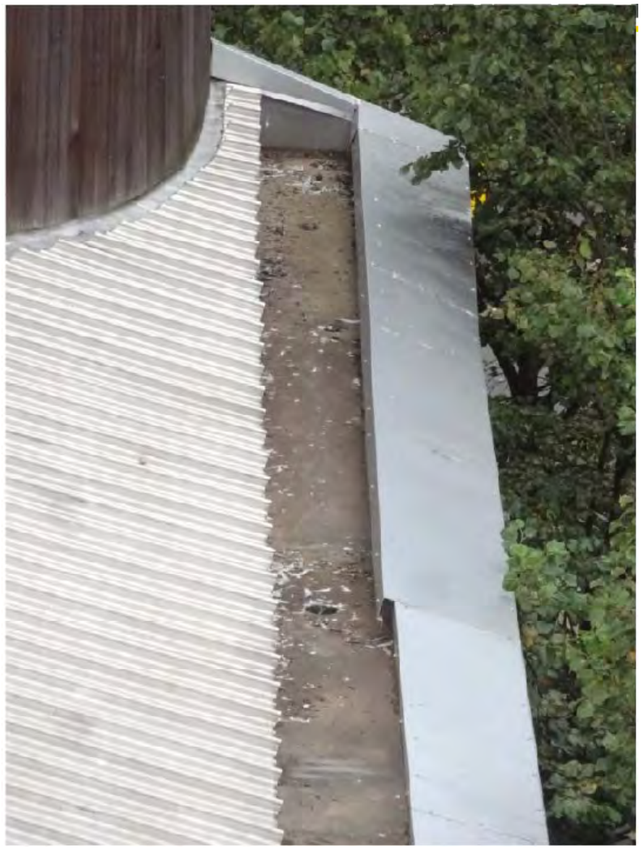
APPENDIX 3 Photographs showing condition of DG One prior to commencement of Remedial Works Contract

Part 1 Roof

External

Blocked gutter at Rotunda

Poorly sealed penetrations through roof



Poorly fitted and sealed flashing

Poorly sealed and fitted coping flashing

Build up of debris on roof and poorly fitted flashing

Poorly sealed ventilation duct

Corroded pipe supports

Damaged ductwork

Corrosion to roof mounted plant

Corrosion to panels on roof

Potentially dangerous delaminating coverings

Unsecured and difficult to access panel on chiller

Corroding expansion chamber and valve

Corroded valve

No proper maintenance access to plant. Poor condition of solar panels

Images illustrating the condition of the DG One building prior to the start of the remedial works contract.

Part 2

Staining and water ingress to escape stairs


Corrosion to handrail support in escape stair.


Failure of paint system

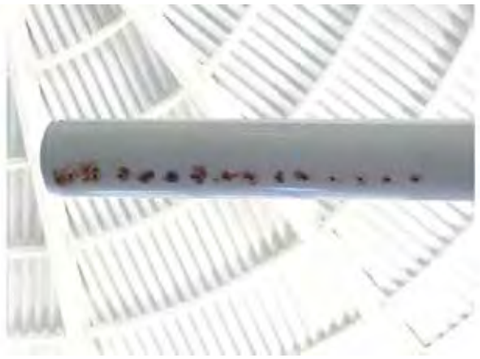
POOL PLANT ROOM

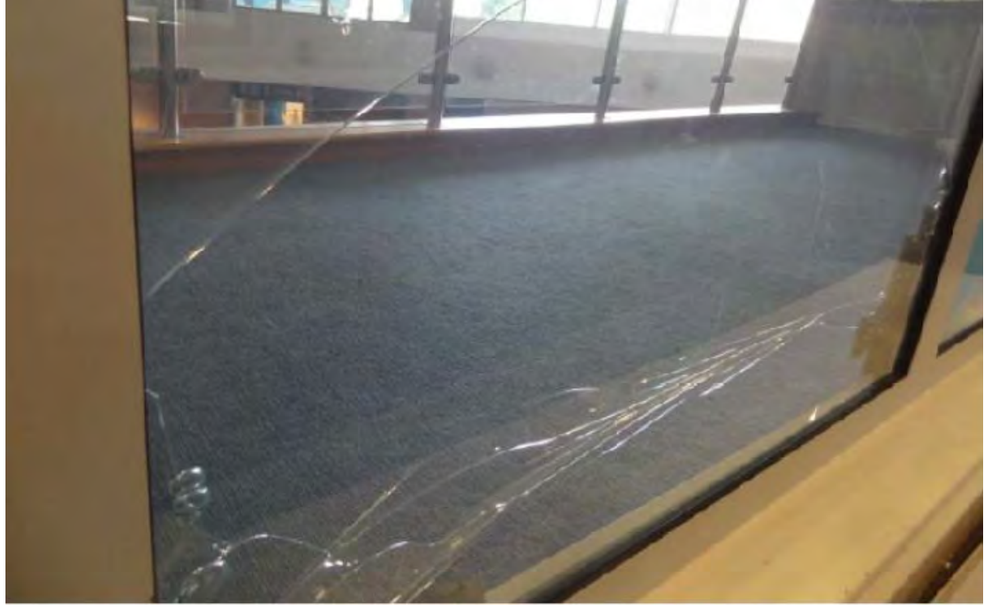


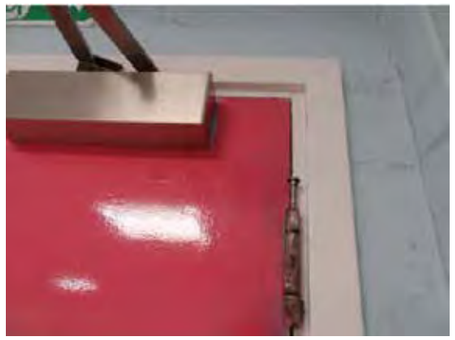


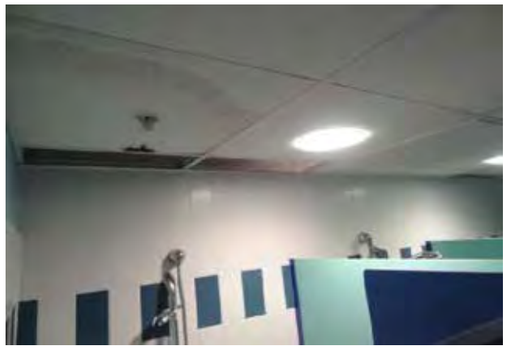

Leaks and lack of fire stopping


meters









Images illustrating the condition of the DG One building prior to the start of the remedial works contract

Part 3 Exterior