

# Proceedings of the Institute of Acoustics

## WAR AND PEACE OVER 18 YEARS

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### 1. INTRODUCTION

From initial commission to the first concert in The Waterfront Hall took exactly 18 years and two weeks. The project started without any fixed ideas on the part of the City Council as to what - if anything - should be built, and has culminated in what has been greeted enthusiastically as a significant addition to the list of the world's great concert venues. Along the way there have been many pitfalls and tribulations to be overcome, not least of them being the ungenerous opposition for many years of central government in Westminster to the whole endeavour. It is to the everlasting credit of Belfast City Council, and a tribute to the persuasive abilities of Victor Robinson, the Architect, that this magnificent hall now exists and can be enjoyed by generations to come.

In this paper the processes leading to the present situation, the evolution of the Design Brief, and the key features that have influenced the internal design of the building and its auditoria from a performance standpoint, are examined.

### 2. HISTORY

In late 1978, recognising that the development of cultural, entertainment and educational aspirations of the citizens for whom it is responsible was seriously handicapped by the lack of suitable facilities, Belfast City Council placed a small advertisement in the local newspapers - about two single column inches I recall - inviting expressions of interest from architects based in Northern Ireland and supporting teams who would like to be considered for a commission *"to investigate the possibility that a site near the centre of the City and adjacent to the River Lagan could be used for the construction of a major arts complex whose existence would enhance very substantially the quality of life in Belfast."* A total of 19 expressions were received from which a short list of 5 teams were selected for interview by Council Committee.

Carr and Angier were asked to join two teams, that headed by Robinson & McIlwaine eventually being selected by the Council to undertake the study.

The examination of local needs commenced immediately in January 1979, and culminated in April 1980 with the publication of what came to be known as 'The Blue Book'. In this document the current provisions in Belfast for the performing arts and live entertainment were examined, and recommendations made about how best to fill the identified gaps with facilities worthy of Belfast's status as the Province's Capital City. The study also embraced the impact of any new developments on tourism, and the benefits to be derived from including purpose-designed conference facilities and an hotel on the site.

The identified shortfall was considerable; at the same time the City Council decided it needed a public Archive facility for the storage and display of its historic records, and in conversation with the BBC it emerged that it needed a large new television studio in Belfast, but lacked the capital funds with which to construct it; it would be able, however, to rent the shell of a studio and operate it on a 'drive-in' basis using existing Outside Broadcast equipment and control vehicles. The tourism and conference investigations confirmed the need for new facilities, including another hotel in the city centre.

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For musical performance and large-scale entertainment the choice in 1980 lay between the Ulster Hall - a venerable and much loved Civic Hall with a fine acoustic reputation, a cherished organ, around 1,200 seats, but little else - and the King's Hall, a concrete barn of an exhibition shed away from the centre on the Agricultural Showground site, but with a capacity in excess of 5,000 for popular events. For professional drama there was the Arts Theatre company operating in a converted cinema, and the Group Theatre making use of a small ancillary space in the Ulster Hall building, with only the Lyric Players Theatre (small-scale repertory drama) to represent contemporary theatre design. For genuine Lyric Theatre, the Grand Opera House remained peerless as one of the finest examples of the work of the master theatre architect Frank Matcham, although its limited capacity and sore need than of serious rehabilitation were factors to be considered.

The team examined a whole range of options, and concluded that circumstances required a comprehensive treatment in which the arts, entertainment, and conferences, would be central, but should be supported by a range of retail and other facilities to make the whole more attractive to the population at large. It was recommended also that Northern Ireland would benefit considerably from the provision of purpose-designed conference facilities but that these would need the support of a good quality hotel in addition to the existing limited bedstock in the city centre.

The key element of the development would be a new concert hall of national significance with associated rehearsal and recording facilities together with a theatre as a base for professional drama, cinemas, and a large indoor arena for mass spectacle, ice shows, pop/rock concerts, and similar events. The proposals also included an art gallery, the new television studio for the BBC, the City Archive - including a museum section and resource centre - a specialist music library, shops, offices, and car parking. The whole was costed at that time at £26 million - the eventual construction cost of the concert hall alone.

From the outset the team concluded that the site of the old power station was inappropriate, being out off from the city centre by the railway embankment, and too small for any significant development. Instead, the team recommended that the site be moved to the triangle to the north-west of the railway, which is where the Waterfront Hall now stands.

Development of a new large concert hall was encouraged by the proposal then in its infancy to amalgamate the existing two small orchestras in Northern Ireland - those of the Arts Council and of the BBC. - into a single unit that could play the normal classical repertoire. That amalgamation subsequently took place and has resulted in The Ulster Orchestra as we see it today. A large new hall would encourage also visits to Northern Ireland - and indeed for Ireland as a whole - from major U.K. and other orchestras and artistes of international reputation for which no suitable venue then existed on the whole Island, thus raising the profile of musical activity in the Province and enhancing the status of its Capital.

The original hope had been that the combined orchestra would take up residence in the new complex, which would include its rehearsal and administrative facilities. In conjunction with the resident Arts Theatre company, the complex then would have a thriving and active resident community of performers, who would bring a vibrant and stimulating artistic ambience to the centre of Belfast. Unfortunately due to differences between the Orchestra and the City Council that ambition was abandoned quite early on, and sadly even now the orchestra is programmed to give the majority of its performances elsewhere.

Though the Blue Book report was widely welcomed, and was fully endorsed by the City Council, funding problems and the difficult political scene in Northern Ireland inhibited any real progress. But the City Council bravely continued to support the study team in the face of adversity, much of it generated by an astonishing antagonism towards the whole project from the Northern Ireland Office and the Government in Westminster. Over the years a number of further reports and studies were commissioned, with each of which the need for a genuine large concert/conference hall was endorsed by the City Council. But still Westminster put every obstacle in the path and refused to allow the necessary expenditure, at one point even threatening compulsory purchase of the site in order to construct additional Law Courts!

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Eventually it was recognised that with the whole of the west bank of the River Lagan extending for several miles upstream in need of major rehabilitation, this clearly was beyond the financial capacity of the City Council. Lagside Development Corporation then was established with government funding and responsibility for overseeing all work along the river bank. With that transfer vanished all hope of the integrated arts, conference and entertainment complex previously envisaged, although the City Council at long last was given the freedom to pursue its goal of the new Concert/Congress Centre.

Because of the funding and political uncertainties surrounding the project the City Council even then felt unable formally to commission progress to Tender stage, but over the years 1989-1990 exploratory work was undertaken 'at risk', with Sandy Brown Associates joining the team as Acoustic Consultants. Eventually in November 1990 - more than ten years after the publication of the Blue Book - the Council agreed after heated debate to instruct formal design work on a new concert/conference hall complex of two auditoria, with the proposed new hotel adjoining providing conference catering and function facilities. Tenders were sought on a fixed price basis in the autumn of 1992, with the first 'sod' being turned on site on 4th May 1993 following a Bill of Reductions to bring costs in line with the Council's maximum outturn figure of £29.1million. The first public performance took place on 17th January 1997.

Nearly three-quarters of the funding has been provided by the Belfast City Council, with additional contributions from the European Union and the U.K. Government.

## THE BRIEF

The initial concept for the new Concert Hall had been set out by me in the Blue Book on the basis of a Main Auditorium of not less than 2,000 seats, supported by a second Hall primarily for use by the proposed resident orchestra, but with potential for public performances also. In both auditoria considerable flexibility was proposed to cater for a wide-ranging programme, in which classical symphony concerts would form only a modest proportion of the programme - for the main hall a probable maximum of around 50 concerts a year.

A provisional Schedule of Accommodation was prepared to enable preliminary planning work to start in 1989, but the formal Design Brief as eventually approved by the City Council was not completed until March 1992, having evolved over the intervening months in the context of what could - or could not - be achieved within the financial constraints set by the Client. Almost uniquely, therefore, the finished building accurately reflects both its Design Brief and its Client's original funding targets.

The opening of the Berlin Philharmonic had sparked a strong ambition to apply the same principles to an auditorium myself. In the late 1970's this opportunity arose with my appointment to the project for a new auditorium in Cardiff, where the need was for a multi-function space of popular appeal yet which would satisfy the requirement also for a classical symphony hall. St David's Hall opened in 1983 was an immediate success in meeting all these objectives.

During the fallow 1980's following the Blue Book study, Councillors and their Officers were keen to learn something of contemporary design practices for concert halls, conference centres, and theatres; a tour was organised to the main new U.K. buildings in Cardiff, Nottingham and London, and on to Utrecht, Amiens, and Paris. Of all the halls visited, Councillors were especially taken with St David's Hall, and had been greatly impressed by the general ambience of that terraced vineyard auditorium and its suitability to house a wide range of classical and popular music, entertainments, conferences, and other events. They determined, therefore to adopt St David's Hall as a conceptual role model, but I was able to convince them of the potential for greater flexibility and a larger seating capacity to house an even wider programme with improved economic viability.

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Following the formal commission, the main providers of music and entertainment in Northern Ireland - the Arts Council, local Entrepreneurs, the BBC, Ulster Television, the Ulster Orchestra, etc., - were all revisited to see if their views had changed since the original research. Diametrically-opposing reactions came over the question of capacity, with one sector fearful of an inability to fill such a large hall, the other pressing for an increase over the 2,000 tentatively suggested in the Blue Book study of 1980 for commercial reasons.

Capacity in auditoria is always an emotive issue. On the one hand viewing distances and performer/audience relationships are important to ultimate success in attracting the paying public; on the other hand, maximising box office potential income is critical to attracting entrepreneurs and their artistes. Achieving the right balance is extremely difficult, with the end result heavily dependent upon the way the finished building is managed. My conclusion was a total of 2,250 seated - including the choir - would be appropriate for normal concert work in Belfast, and could be achieved without losing altogether the intimacy that is such a feature of the Cardiff auditorium; but the need to achieve up to 3,000 capacity for rock concerts with a large proportion of standing audience was also recognised, and had a considerable influence on the auditorium plan.

In our work on the Glasgow Royal Concert Hall - opened in 1990 - we had developed the concept of moving large banks of seats to provide an open 'arena' format, extending from the back of the stage to the rear of the stalls, and suitable for marching displays, some indoor sports, pageants, etc. But whereas in Glasgow site constraints had meant that the wagons rested on a fixed flat floor with the stage being lowered to achieve the area, with consequent sight line problems from some seats, in Belfast on a green-field site we were able to plan for complete flexibility in the stalls floor, which here is entirely formed by elevators. The stalls floor thus can be raised to achieve continuity with the stage platform creating an arena approximately 22m wide and 25m in length, and with satisfactory sight lines from the majority of seats.

The platform in the performing area follows quite closely the pattern devised originally for St. David's Hall, which I had been told by a respected orchestra manager was the most sensible and practical layout he had experienced anywhere. The floor is made up of nine elevators for the 'standard' format for up to around 80 players (depending upon instrumentation) with the possibility of two forward extensions for particularly large forces; with the remaining elevators under the stalls seating wagons this makes a total of fourteen elevators in all.

All the elevators can be lowered to front stalls level, and the two in front of the standard platform also can be taken further down to form an orchestra pit for opera, dance, etc. This pit is accessed from below, and can comprise either one or both of the elevators.

Of particular concern to me was the importance of maximising seating capacity under different performance conditions - (e.g.) for a symphony orchestra with or without a choir; for a choir with piano; or a light entertainment singer with small backing group. For pop groups who will not accept any audience behind the platform it is important not then to lose a significant number of fixed 'choir' seats. I decided therefore that a proportion of the choir seating should be easily demountable, so three rows are mounted on wagons, also placed on an elevator, and when not required these can be removed to extend the working depth of the stage. Then if appropriate, the front platform elevator can be lowered and additional seating placed in the stalls.

In the Blue Book my opposition to any attempt to provide 'proscenium theatre' facilities in a concert hall was clearly stated. It had been a subject of interest for some years, but extremely difficult - and potentially expensive - to achieve in an aesthetically-pleasing manner in a 'surround' concert hall. However, I felt the value of such an arrangement needed to be recognised if it could be achieved, so I included reference in the Brief as a *Supporting Objective* in the following terms:-

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*Provide as far as is reasonable without compromise to the primary objectives of concert and conference use for other entertainments and activities of a sensibly compatible nature, typically including (e.g.) semi-staged performances of opera and dance, pageants, spectacles ..... industrial theatre and commercial events.*

In both the Cardiff and Glasgow halls I had devised a full theatrical suspension grid at high level extending over the stage area. These grids with their considerable load-bearing capacity had proved invaluable in providing almost infinite possibilities for suspending lights, scenery, loudspeakers, projection screens, acoustic reflectors, and so on, and in Belfast I determined to do the same but with extensions forward over the arena area to increase flexibility. Rock groups needing to hang heavy trusses or speaker clusters have absolutely no difficulty whatsoever in finding appropriate fixing points for their chain hoists, while on the grid itself there are a number of permanent electric hoists of both single and multiple line form, that can be operated independently or in electronically-linked groups from stage level.

Albeit with some reluctance, the architects and myself then pursued the potential for erecting a proscenium arch facility for more theatrical performances involving traditional suspended scenery, drapes, backcloths, etc. The arrangement we devised, and which was specified in some detail in the Tender documents, was cut from the project during the Bill of Reductions stage, along with the cinema screen, film projection equipment, and various other technical items. But subsequently the hall Management was able to obtain additional funds from the National Lottery, and a proscenium stage was erected for the first time in April, based upon our original specification but with some economies in materials for cost savings. Northern Ballet Theatre, presented a quite spectacular production of a ballet 'Dracula', complete with orchestra in the pit, house curtains, flown scenery and scene changes, and all the effects associated with traditional 'theatre'. Within acceptable sight lines seating for up to about 1,600 spectators is achieved, a useful increase over the small capacity of the Grand Opera House.

Although a specialist could quibble over details, the end result for a normal spectator is surprisingly good, and provides a useful basis for future development if such a need should arise elsewhere. There is, of course, no safety curtain or acoustic separation, and wing space is limited, by the presence of the choir seating; but we had provided additional space to the sides underneath the choir tiers that in concert use is screened off, and which proved extremely useful for dancers making a rapid exit from the performing area.

A requirement of the Brief was to provide suitable facilities for Broadcasting of events from the centre, so the main hall includes dedicated control boxes in which a broadcasting or recording company can place their own equipment. For conferences there are boxes and permanent equipment for simultaneous translation, located specifically on the side walls to give good views of both the speakers and the delegates - and also to add visual interest to areas of wall that otherwise might be a bit bland. Lighting control, sound control, and projection, all have their own rooms, and there are facilities for placing sound and lighting controls at the rear of the stalls when appropriate. There are lighting bridges in the auditorium ceiling, and numerous other lighting positions on the technical galleries that surround the stage, under the auditorium boxes, and at stage and arena level. There is a high-quality sound reinforcement system based upon a central cluster and delayed ceiling-mounted speakers for the rear seats and underneath the tiers, and a sophisticated communications system based upon conventional theatre practice.

The second (Minor) Hall is a simple, rectangular box with flexible seating throughout, and a capacity of up to about 600 depending upon format, with the audience on two levels, the second being a continuous balcony that runs all around the space. This auditorium provides a useful alternative to the main hall for smaller-scale and more informal events, or can be used to support (e.g.) a conference by providing exhibition space or additional refreshment room.

There is no permanent stage, although the opportunity to create an 'end' stage with a defined front edge does exist, and

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curtains can be hung to create a notional proscenium frame if required. The hall also is fully equipped with stage lighting, sound and communications systems, and there are numerous interconnections /between the two auditoria.

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In both halls the importance of adjustment to the acoustics to suit different types of performance was recognised from the outset and was stated as a requirement in the Brief. From a practical viewpoint the need was for simple systems economic to install and easy for normal hall technicians to operate and maintain.

## CONCLUSIONS

The opening of the Waterfront Hall complex after eighteen years of struggle represents a real triumph of tenacity over adversity. The fact that the total outturn cost including professional fees and all equipment and furnishings is no more than £33million is a remarkable credit to the work of the whole Design Team, and represents extraordinarily good value for money when compared with other concert venues which cannot match the Waterfront in the breadth of its facilities and the degree of flexibility and opportunities encompassed therein.

While I would still like the opportunity to develop even further the opportunities for more comprehensive 'theatre' facilities in a hall of this type, the end result as it stands I find enormously satisfying, with the building as a whole, and the main auditorium in particular, providing a real sense of thrill upon each entry. The efforts of eighteen years then all seem entirely justified.