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# Pool Refurbishment V Pool Replacement

Technical Digest

# Pool Refurbishment v Pool Replacement

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The “Ticking Time Bomb” (sportsotland, 2000) summarised the results of the Pool Refurbishment Study undertaken for sportsotland by a consultancy team. This study estimated the total cost of maintaining, upgrading and refurbishing Scotland’s public pools over the period from 1998-9 to 2019-20 as around £500M plus VAT - a huge sum when compared with current local authority sport and recreation budgets. It also identified that all local authorities will face the need either to refurbish or replace their public pools over the next twenty years or so.

Deciding which of these alternatives is the more cost-effective option will rarely be easy. Accordingly, this technical digest summarises the main issues and considerations local authorities and other pool owners should take into account.

Deciding whether it will be better to refurbish or replace a pool will require a careful evaluation of the advantages and disadvantages of each course of action. The main arguments in favour of replacement are likely to include:

- There will be minimal disruption to local swimming programmes, provided of course that the existing pool can continue to operate while the new one is built on a different site.
- The level of risk is very much lower or, put another way, building a new pool should allow much greater cost and time certainty than refurbishing an existing one.
- It should be easier to ensure that a new pool will meet reasonable customer expectations, codes of practice and legislation than a refurbished old one
- A new build project should involve significantly less compromise than a refurbishment and it may be possible to achieve a more economic layout and building volume
- If a larger or deeper pool is required, this will almost certainly be achieved more easily through new build than refurbishment

Against a new build project on a new site:

- The site of the existing pool may be the best available (for example, there may be no other town or city centre site) or the cost of a new site may not be affordable
- The existing pool may be linked to other facilities, such as “dry” sports facilities, which it is desirable to retain
- The existing site may be highly accessible, especially by public transport, and give the pool a high profile which a new site might not

Only rarely will it be possible to decide the most appropriate course of action without undertaking a comprehensive feasibility study. What then, should this study cover?

In essence, there are two “acid tests” to consider in relation to refurbishment schemes:

- If we were starting from scratch, would we pick this site for our new pool?
- Can we achieve a result which will be equivalent to a new build in terms of achieving our sports development objectives, the range of facilities provided and customer satisfaction, but at a lower total cost (ie capital plus net revenue) over the next 20-25 years?

This is a significantly more onerous requirement than appointing a design team to prepare proposals for refurbishing the building. It also requires a comparison of the cost of both refurbishment and, where it may be an achievable alternative, a new building. Even more important, however, before appointing a design team it will first be sensible for the local authority to undertake a strategic review of the future of pool provision in its area and, in particular, how that provision is to be managed over the next twenty years or so.

Accordingly, the process of deciding whether to refurbish or replace a particular pool requires two quite separate investigations:

- A strategic review, to determine whether the existing pool is likely to remain a sufficiently important element in the local pattern of provision to be worth either refurbishing or replacing
- A feasibility study, to determine which of these alternatives will be more cost effective

The strategic review may require an input from several local authority departments, such as leisure services, education, planning, technical services, finance and the council’s leisure management contractor, and in some instances external consultants, and should contribute to the Council’s best value review of its sports and recreation service. The feasibility study, on the other hand, is a job for an experienced pool design team, possibly supplemented by specialist financial expertise on VAT issues.

## The Strategic Review

The strategic review should seek to look ahead approximately twenty years or so and answer three key questions:

- What is the future for local authority pools in this area?
- What broad pattern of pool provision do we need in this area?
- What is the best location for specific pools?

The accompanying diagram summarises the key decisions to be taken in a strategic review. Parts of the strategic review are of direct relevance to the “Challenge” element of Best Value reviews, such as “Why are we providing this service?”



Swimming pools are inherently expensive to provide and operate and local authority capital and revenue budgets for pool provision and maintenance are under increasingly severe pressure. This has led to a growing view that publicly funded, community-based "sport and recreation for all" may not survive in its present form.

This view is fuelled both by the constraints on local authority expenditure and the growing level of private sector provision in the more densely populated and more prosperous areas. Private sector clubs, such as those operated under the David Lloyd, Next Generation, Healthlands and other brands, are beginning to expand fairly rapidly in Scotland. They are attracting significant numbers of members who want, and are willing to pay for, good quality health and fitness facilities. Many have pools and other sports facilities.

These clubs are obviously likely to attract a proportion of their members from current users of local authority facilities and many local authorities are concerned that this will result in significant loss of income. Clearly this will make it more and more difficult for them to operate, maintain and eventually refurbish or replace their pools and other capital intensive sports and leisure facilities. This situation will obviously be exacerbated if the local authority sector is left with what might be termed the "social inclusion" segment of the overall market - those individuals for whom low or no admission charges are essential if they are to be able to participate - and income levels reduce significantly.

Local authorities can react in several ways. The first possible approach will be to accept this situation and accept that their key role should be to operate low admission charge facilities so as to make access to sport and recreation more affordable for those who are disadvantaged. Those that adopt this approach will have to face the financial consequences, which are likely to be either higher net operating costs (which may not be affordable) or cumulative under-investment in maintenance and repairs, leading eventually to the closure of facilities at the end of their "hard cycles" (which is perhaps more likely). They will also have to acknowledge that this approach will lead not to social inclusion but "ghetto-isation" as those who can afford to use privately run facilities will continue to do so. Moreover, a policy which accepts steady decline is not compatible with the best value requirement for continuous improvement.

Second, they can accept that they cannot realistically compete with the private sector and withdraw from the market, while adopting a policy of working with private operators to make their facilities readily accessible to people who are disadvantaged. They could do this, for example:

- By subsidising admission charges or membership subscriptions for those individuals in receipt of various benefits (and their dependents) who wish to avail of private sector sports facilities
- By imposing appropriate conditions on planning permissions for private sector sports and recreation facilities requiring them to adopt socially inclusive membership policies

It is far from certain that this will be effective. In the first place, in spite of national planning policies requiring a “sequential test” for the location of major facilities, the siting of many private sector facilities is likely to be such that the easiest way of accessing them will be by private car. They will almost certainly be most accessible from those areas of towns and cities housing families with significant disposable income. As for “buying” social inclusion, local authorities cannot force commercially owned and operated clubs to work with them. Private sector operators tend to generate a very much higher proportion of their total income from secondary spend than local authorities. Most if not all, disadvantaged users will not be able to afford significant expenditure on food, beverages and other items and therefore private sector operators may simply not be interested in welcoming them to their facilities. Moreover, part of the appeal of their facilities to some members is that they are socially exclusive rather than inclusive. As for conditions attached to planning permission, they will be extremely difficult to enforce and could be challenged at appeal.

The third approach is to create an arm’s length trust or similar body to operate local authority sport and recreation facilities. This is an approach which Perth and Kinross Council has followed for many years, although the structure adopted for Perth and Kinross Recreational Facilities Ltd could not legally be adopted today. More recently, the City of Edinburgh and West Lothian Councils have created arm’s length charitable bodies to run their sports and leisure centres, although they still retain ownership of them. Individual leisure centres in Inverness and Moray, subsidised by the local authorities, are also operated by arm’s length trusts.

Many other local authorities are considering a similar approach. They are driven primarily by the opportunity to transfer expenditure on rates from local to national taxation as charitable bodies receive at least 80% rates relief, with the loss of income to the local authority being made up by the Treasury. While this saves the local authority a significant sum each year, it does not in fact save even a penny in total public expenditure. More serious, the savings made on the local authority revenue budget are likely to provide only a relatively short term “breathing space”, rather than a long term solution, and will not be sufficient to fund regular upgrading and refurbishment.

A very much better reason for the creation of a trust or similar body is to see it primarily as a vehicle for borrowing to fund capital expenditure for upgrading and repairs without affecting the local authority’s capital programme. Against this, as trusts will generally have no capital assets of their own, the local authority will normally have to guarantee any such borrowings. While banks will obviously seek a guarantee for the full amount of any loan, in reality the local authority will be guaranteeing only any shortfall between the income the trust can generate to pay off the loan and the cost of the loan repayments.

The fourth possible strategic approach is to move towards a situation where public sports and leisure facilities are increasingly concentrated on school sites and withdraw from “stand-alone” public facilities. This obviously accords with the “focus on school and community” in sportscotland’s strategic plan for the distribution of Lottery monies 1999-2003 (Levelling the Playing Field, 1999). However, the amount of funding available under this programme can, at best, make only a tiny dent in the total amount required to keep Scotland’s public pools in a safe and usable condition. Moreover, the backlog of repair and maintenance expenditure on other local authority buildings, such as schools, is such that local authorities face real dilemmas in deciding how best to allocate their limited resources.



The fifth broad approach is to “fight back” by providing net revenue generating facilities linked to pools, such as fitness facilities which match the quality of those in private sector clubs, and introducing targeted membership schemes. Glasgow City Council, for example, has adopted this approach. This is an approach which a number of local authorities have adopted. It can easily be extended to a membership scheme, the cost of which can be sensitive to individuals’ social and economic circumstances. This approach therefore has much to commend it, especially in those areas where private sector competition is unlikely. It can be used to maximise income to the local authority while promoting social inclusion so at the point of entry to facilities, all members can be treated in exactly the same non-discriminatory way. In more densely populated areas, however, it will not prevent the rise of commercial competition and the local authority could not legally refuse planning permission for such facilities on the grounds that they will threaten the future of its own provision.

The final broad approach is to work in partnership with the private sector. This can be done in three main ways:

- By giving a suitable leisure management company a lengthy contract in return for a capital injection - in effect, a Public-Private Partnership (PPP)
- By cross-funding from the sale of Council-owned land for developments such as supermarkets
- Through the Private Finance Initiative (PFI). Some Councils, such as the City of Glasgow and Falkirk Councils, are currently considering the PFI route for the replacement of outmoded schools

The most likely of these scenarios will not be the same in all areas, although it is difficult not to be generally pessimistic regarding the future of local authority sports and recreation facilities, especially those with inherently high costs such as pools. What is clear, however, is that local authorities should take a strategic policy decision while they still have time to do so and before embarking on major capital expenditure.

The outcome of this part of the strategic review should be a clear statement of how the local authority sees its involvement in pool provision in the future and a decision to make the necessary long term budget allocations. If the Council decides that it cannot realistically be involved in pool provision in the medium to long term, it should immediately start to consider alternative methods of ensuring that there is adequate provision in its area. Alternatively, if it does regard itself as a key long term player in local pool provision, the next step is to identify the most appropriate broad pattern of provision.

#### The Broad Pattern of Pool Provision

Given a looming repairs or refurbishment crisis in a particular pool, it is tempting to try to solve it in isolation. Instead, however, in most areas this should be seen as creating an opportunity to review the overall pattern of provision from first principles, although any new pool or recently refurbished pools with a significant future lifespan should probably be regarded as “fixed elements” in this pattern. A pool that was the right size and type and in the right place twenty or so years ago may not be the right size and type and in the right place in ten years from now. In some areas there may be an opportunity to rationalise pool provision and possibly close those smaller pools which serve only a limited number of purposes. Many factors can affect this, for example:



- The creation of unitary local authorities should have made it easier to plan school and community pool provision in a holistic way.
- New pools may have been provided in the meantime or older pools demolished
- Other pools may be in urgent need of repair or refurbishment or not meet the forthcoming legislation on disability discrimination
- There may have been changes in the way in which school children are taught to swim
- New swimming development schemes may have been introduced
- Club swimming may be better organised than before and have specific requirements which are not currently met
- Public transport routes may have changed or the pool may not be easily accessible by public transport
- The number and distribution of houses in the area may have changed
- The Area Institute of the Scottish Institute of Sport may require specific aquatic facilities

This suggests that the upgrading and refurbishment of any pool should be set within a comprehensive review of local swimming provision and different broad strategic options for different patterns of provision explored before any firm decisions are taken. The factors to be considered in this review are likely to include:

- The programming and use of all public, school and private pools in the area, together with trends in their use and operating economics over several years, where available
- The general condition of each local pool
- The nature and distribution of the local population
- The needs of local swimming clubs and the Scottish Amateur Swimming Association (Scottish Swimming)
- The corporate aims of the local authority and its sports and recreation or leisure strategy
- The national and regional sports policy context
- Resources

In appropriate instances, sportscotland's Facilities Planning Model (FPM) can be used to investigate different provision strategies as a contribution to this process.

The outcome of this process should be a clear and ideally prioritised statement of the broad pattern of public pool provision the council will seek to develop in its area.



#### Case Study: Horsham Swimming Strategy

Horsham District in West Sussex is roughly halfway between Gatwick Airport and the south coast of England. The population is around 110,000, although it is estimated to grow to about 130,000 by 2006. There is one large town, Horsham, with a population of around 50,000, and a number of villages spread over an area of approximately 205 square miles.

The Council commissioned Kit Campbell Associates (KCA) to prepare a swimming strategy for the District in 1995. At that time there was only one public 25m/4 lane plus learner pool, in Horsham, opened in 1981, and a recently opened 25m/6 lane pool in the nearby Christ's Hospital School with an evening and weekend membership scheme.

KCA prepared and explored the implications of a number of alternative strategies, including an extension to the existing well used public pool and various combinations of two or three pools with different sizes and locations. The conclusion of this analysis was that the best option would be to replace the existing public pool with an 8 lane pool and build a 25m/4 lane pool in one of the villages in the southern part of the District. This pool opened in early 2000 and the replacement of the Horsham pool will proceed later in 2000. The two projects received grants of approximately £1.25 and £3M respectively from the Sport England Lottery Fund.

#### Location and Site Planning

Before proceeding to the "refurbish or replace" feasibility study, there is one further element to the strategic review: an evaluation of location for the pool under consideration.

Conrad Hilton once memorably remarked that the three most important issues in relation to the success of his hotels were location, location and location. Location can also affect the usage and therefore the economic performance of a pool. The key topics to consider when reviewing a pool's location and deciding whether to continue to use an existing site or seek an alternative one are normally:

- **Awareness:** does the pool advertise itself to passers-by? A pool which is hidden away is likely to attract fewer customers than one which potential users see as they go about their daily lives. If it does not, how can awareness of the pool's existence be raised?

- **Accessibility:** how and from which areas will customers be able to travel to the pool? It is clearly desirable that pools, and other popular sports facilities, should be close to public transport services from as wide an area as possible, as well as "alternative" travel networks for pedestrians and cyclists' use. The topography of the area may also be significant in terms of accessibility; a pool close to the top of a steep hill is probably unlikely to attract fewer users than one which is perceived as requiring less effort. If accessibility is poor, how can it be improved?

- **Land value:** a long established pool may be located on a site which could be used for some commercial purpose and therefore potentially valuable. One way of releasing this value might be to relocate the pool to a less expensive site.



This completes the strategic review. The feasibility study should then be undertaken only if the strategic review concludes that:

- The local authority has adopted a long term policy of continuing to be involved in public pool provision; and
- Believes it can afford to do so; and
- There is a need for a pool in roughly the location of the existing pool in the Council's preferred long term strategy for local pool provision

## The Feasibility Study

If the strategic review does not reach these conclusions it will be necessary sooner or later, to close the present pool and consider adopting an alternative course of action. However, if it does reach these broad strategic conclusions, it will then be necessary to decide whether to refurbish or replace the present pool. This feasibility study is likely to require consideration of:

- Site characteristics and planning
- Sports development objectives
- The range of facilities required and customer expectations
- Design proposals with related capital and revenue costs

### Site characteristics and planning

- Is the site large enough for the proposed development? If not, find another site
- If yes: is the topography suitable? If not, find another site
- If yes: is personal safety adequate? If personal safety will not be acceptable, find another site
- If yes: are ground conditions suitable? If not, find another site
- If yes: are utility services adequate? If not, find another site

If yes: what are our sports development objectives?

- What are our swimming objectives?
- What are our other sports objectives, if any?
- What are our social objectives?
- What are our financial objectives?

What facilities will we need to achieve our objectives?

- What pool sizes (length, width, depths, area) and types do we need?
- What pool changing and essential ancillary areas do we need?
- What other sports or exercise facilities do we need?
- What additional changing and other essential ancillary areas do we need?
- What spectator accommodation do we need?
- What social facilities do we need?
- How much parking (cars, buses and bicycles) do we need?
- What level of quality should we aim to achieve?

### Design Survey - Potential for Refurbishment

- Undertake a structural survey
- Identify and evaluate structural risk
- Review space planning and layout
- Evaluate the building fabric's condition and identify risks
- Undertake a building servicing systems survey



### Design Proposals & Economic Appraisal of all Options

- Prepare alternative design proposals for both refurbishment and replacement
- Undertake an economic appraisal of capital and revenue costs of the different options

### Site Characteristics and Planning

The initial step is to look at pool sites from the point of view of:

• **Size:** is the site large enough for the proposed pool and any additional facilities which may be required, as well as contractors' huts, material storage and other items needed for a major refurbishment or rebuilding project? Ideally, the public areas of pools should be on a single level as this helps to make the pool accessible for people with disabilities and inherently safer. However, a single level pool needs a larger site than one with two or more floor levels. In addition, it will normally be desirable to have a site large enough to permit expansion at some time in the future. In the past decade, for example, many local authorities have extended their pools by the addition of fitness facilities in order to generate additional income.

• **Topography:** pools are best located on a reasonably flat site or one with a gentle slope which can be exploited by skillful design.

• **Personal safety:** a significant proportion of the use of many pools occurs on winter evenings and so it is clearly sensible to take account of personal safety issues. For obvious reasons, women and children should feel safe when leaving a pool at night and this can be promoted by the careful choice of its location. A pool which pedestrians have to access through an lengthy underpass, for example, will not meet this criterion, nor will one on a school site where the car park has to be "round the back" and adjacent to playing fields which are pitch black at night and therefore could hide an attacker.

• **Ground conditions and utility services:** a site with a high water table, for example, close to a river, may require special (expensive) precautions to prevent the pool tank floating when emptied and perhaps breaking its back. Equally, it will be desirable to avoid sites with poor ground conditions and unnecessarily long drainage runs or which are not close to the full range of utility services.

### Sports Development Objectives

Many local authorities now have a sport and recreation strategy or are in the process of producing one. If so, it should provide the general context for the pool - essentially local sports development objectives and priorities. Some Councils have also prepared a swimming strategy which sets out explicitly how it wishes to develop swimming and provide opportunities for local swimming. These objectives determine the main pool elements required and therefore set the brief for either the refurbishment or a new pool.

Where there is not a clear strategy already in place, it will always be sensible to start from first principles in order to decide the most appropriate objectives for a new or refurbished pool. Different sports development objectives result in a need for different types and sizes of pools. For example:



- A desire to accommodate local swim club training and keep fit swimming will normally require a 25m pool and very occasionally a 50m one. The number of lanes, pool depths and whether it will be sensible to include a movable pool floor and/or bulkhead will then depend on factors such as the size of the local swim clubs and the levels and types of competitions in which they participate

- A desire to provide for synchronised swimming, water polo or diving at different training or competition levels all have specific implications for pool dimensions

- A desire to accommodate national short or long course competitions can have implications not only for pool sizes and depths but also changing, spectator facilities and car parking

- A desire to attract day trip visitors and/or tourists may suggest the need for a leisure pool

Sports development objectives are therefore a vital input to the feasibility study. At the same time, it is important not to view individual pools in isolation but in relation to the overall pattern of provision in the area. This might, for example, lead to a more general review and possibly some rationalisation of local pool provision - for example, the replacement of two or three existing small pools by one larger one (or vice versa). The local sport and recreation strategy might also identify additional facilities required in the area, not necessarily pool related, which could usefully be linked to a new or refurbished pool.

#### The Facilities Required

Once broad sports development objectives have been determined, the next step is to translate them into specific facility requirements. These are likely to cover:

- Water areas
- Spectator areas
- Changing areas
- Ancillary areas (eg social, administration)
- Plant areas

Customer expectations should play a critical role in deciding the facilities required: inevitably, customers will compare the refurbished building with what might have been achieved in a new building. The one exception to this is when a “traditional” pool (say, one built before 1945) is refurbished. In this case, customers will probably accept the retention of design features - such as a raised pool deck and scum channel - which they might oppose in a modern pool.

Best Value requires local authorities to consult their local communities over appropriate issues relating to service delivery and the provision of facilities such as pools. Broadly speaking, in most areas there will be three main “pool constituencies” to consider as well as local Council Tax payers and businesses:

- Local schools, who may use their local pool for teaching swimming and possibly after-school swimming clubs
- Local swimming clubs, who depend on pools for training and, very often, income from swimming lessons
- Local recreational swimmers of all ages



Where a pool is used or is intended to be used regularly for wider than local competitions, it may also be desirable to consult the Scottish Amateur Swimming Association (Scottish Swimming).

This leads to the first key decision point: if the present pool configuration will not be able to deliver the agreed sports development objectives, can the existing building be altered in such a way as to make this possible at reasonable cost? If it can, all well and good but if it cannot, either the objectives must be changed or a new pool provided.

In this context, “pool configuration” covers:

- The length, breadth and depth(s) of each pool or water area
- Spectator accommodation and its relationship to the pool or pools
- The number of pools (for example, a major competition pool may require a warm-up as well as a main pool)

#### Design Survey - Potential for Refurbishment

Assuming that the existing pool is either of an appropriate configuration, or can be altered in such a way as to make this possible, the next step is to determine the capital and revenue implications of both refurbishment and replacement. If the existing building cannot be refurbished in a way which will meet sports development and other objectives in a cost effective way there is no alternative to replacement. For potential refurbishments, this requires a thorough review of the building’s condition (including environmental servicing systems) and layout followed by the preparation of design proposals.

The condition and layout review should begin with those parts of the building which may be critical and move progressively to those which are less important. The ultimate aim is to minimise the risk which is inherent in any refurbishment project.

If serious and unexpected deterioration requiring major remedial works, or the reconstruction of part of the building is discovered part way through the refurbishment works, the results will almost certainly be significant and unforeseen extra cost. This may be a major financial embarrassment and cause delay. This means that there will almost always be a need to carry out invasive surveying of parts of the building before any refurbishment scheme is planned. If this is not done, the refurbishment proposals and cost estimates may be based on unreliable assumptions about the condition of the building. Ideally, it is desirable to try to identify the best and worst case scenarios in relation to every possible problem and then take whatever steps are necessary to reduce uncertainty. Where a clear defect exists, it is vital to identify and eradicate the cause(s) of it and not simply deal with the symptoms. The order in which the evaluation of the building’s condition is undertaken should normally be:

- The structural system, including the pool tank(s)
- Layout and space planning
- The building fabric
- Environmental servicing systems





## Structural Risks

If available, the original drawings for a pool can give a guide to the structural system and form of construction, but should always be checked carefully on the ground. Very few buildings remain unaltered throughout their life.

The most obviously critical part of the building is likely to be its structure. Since the sixties, most pools have had a structural frame while before this many had a load-bearing masonry structure. The building's structure is significant in four main ways, two of which relate to the building before refurbishment and two to what may be possible in terms of refurbishment:

### The Building Before Refurbishment

1. If the building's structure is failing, there is probably no real alternative to demolition, at least in part. Accordingly it is essential to undertake a full survey of the structural system, especially where it is built in or otherwise hidden from view. The most likely forms of deterioration are:

- Reinforced concrete: condensation and chemical attack, leading to spalling of the concrete cover to reinforcement and the exposure and rusting of reinforcement
- Steelwork: condensation resulting in corrosion
- Laminated timber: condensation resulting in water damage and possibly rot

2. The second area which must be investigated carefully is the condition and watertightness of the pool tank or tanks and the deck surrounding the pool. Rectangular pool tanks will normally be reinforced concrete and free-form pool tanks either reinforced concrete or gunite (a form of sprayed concrete whose presence is normally indicated by coved junctions to a radius of about 300 mm between the pool floor and walls). Recent pools may have a tank formed of stainless steel panels bolted together, but it is unlikely that pools with this form of construction will require refurbishment for a number of years, assuming that the design and construction is of good quality.

Some chemicals dissolved in water can penetrate both tiling and renders to attack the concrete beneath and progressively "gnaw away" at the concrete, exposing and corroding reinforcement and greatly weakening the tank or deck. The initial signs of problems usually include unexplained water loss (which shows up as a need for significant amounts of make-up water) and a white powder, similar to efflorescence, or rust staining on the outside of the pool tank.

### The Potential for Refurbishment

The structure should also be studied in order to identify potential constraints on the way in which refurbishment might be undertaken. The key issues here are:

3. Whether the building structure is adaptable (usually the case with a relatively simple frame structure) or inflexible, which may occur when there is an unnecessarily complex and possibly composite structure, prestressed concrete or a concrete shell.



4. Whether there is likely to be adequate clearance for new servicing systems. Many old pools, for example, were built without a proper air handling ventilation system or only a simple system in which exhaust air is extracted direct to the atmosphere. As any refurbishment is likely to entail the installation of large supply and recirculation air ducts there must be adequate headroom beneath beams and space through the structure - or the ability to create the holes which will be required without weakening the structure to an unacceptable degree.

### Layout and Space Planning

Pools built in the sixties and before the energy crisis of the early seventies were sometimes lavishly planned with considerable waste of space, while those built in the last two decades or so of the twentieth century were often more tightly planned. The key issues in relation to layout are:

1. How much floor space is there?
2. What is the overall disposition of the building - how are the different elements of accommodation laid out, how do users move through the building and are staffing levels unnecessarily high as a direct result of the pool's design?

### Layout

The key issues in relation to the general layout and disposition of the building are likely to be:

- Levels: the number of levels and, if there is more than one, any problems caused by accommodation being on different levels. For example, access for people with disabilities may be poor
- Clear route: the route users take as they move through the building: is it clear so that first time users can easily find their way around?
- Safety: are there any aspects of the building which give rise to concerns over safety? For example, is the access to the pool hall from the changing area adjacent to deep water or do swimmers have to use steps or a ramp which can be dangerous in wet conditions? A review of accident reports may help to pinpoint particular problems.
- Security: do any aspects of the building raise concerns about the security of users, staff or cash?
- Waste space: where is floor area wasted and could it be put to a better use?

### Space Planning

The simplest way of analysing the overall floor area is to calculate the area of each of the main floor areas and compare them, both in aggregate and separately, with the total water area.

The basic water area to total floor area ratio gives a rough guide as the overall efficiency with which the building has been planned. For a well planned building, this ratio should be about:

- 1:3.5 Small (20m and under) neighbourhood or school pools
- 1:4 Public pools without formal spectator accommodation
- 1:5+ Public pools (up to 50m) with formal spectator provision and leisure pools

Note: these ratios relate only to those areas which are essential to the pool such as the pool hall, changing, administrative accommodation, circulation and plant space. They exclude additional non-essential areas such as fitness studios.



In addition, the proportion of the total floor area allocated to different uses should be approximately:

· Balcony area	6%
· Changing, and precleanse, toilets	17%
· Entrance and reception	6%
· Offices	3%
· Plant room	12%
· Pool stores	3%
· Pool surround	21%
· Pool tank	25%
· Stair and common areas	7%
· Totals	100%

Source: unpublished analysis of pool plans, Thomas and Adamson and Kit Campbell Associates, Pool Refurbishment Study, 1999

If there is significant “spare” space within a pool building, it may be possible to use some of it for some other purpose, such as a creche, fitness areas or aerobics studio, following refurbishment.

Pool staff are also likely to be able to contribute useful views on the drawbacks which are inherent in an existing building, particularly on those areas where the nature of the building requires higher than normal staffing.

#### The Building’s Condition

The internal environment of a pool building is almost ideal for promoting various forms of fabric deterioration, especially those caused by condensation and water and in addition, most pools are subject to heavy wear and tear from users. In consequence, refurbishment often involves the replacement of many building elements and finishes and therefore it is essential to undertake a comprehensive survey of the building’s fabric and servicing systems.

Specific problem areas are likely to include:

- Asbestos (especially in sixties pools where it may be found as insulation for hot water systems and as a protective coating for structural elements)
- Flat roofs
- In-ground tanks with buried pipework
- Wood wool slabs
- Built-in steelwork
- Cavities and voids
- Rising damp
- Chemical attack
- Surface or interstitial condensation damage and staining

#### Environmental Servicing Systems

There is a common assumption that refurbishing a pool and replacing environmental servicing systems will reduce energy consumption and therefore costs. Unfortunately, this is not always the case, as some parts of existing systems may be inoperative and therefore not using any energy at all. Reviewing the condition and efficiency of plant items is a specialist job which should be done by experienced engineers.

One quick and simple way of benchmarking a pool’s energy consumption is to use the energy consumption yardsticks published by the government’s Energy Efficiency Office (EEO). These yardsticks, in kWh/sq m of gross floor area, are:

<b>Electricity:</b>		<b>Low</b>		<b>High</b>
· Stand-alone pools	165		235	
· Wet and dry centres		360		540
<b>Fossil fuel:</b>				
· Stand-alone pools	775		1,120	
· Wet and dry centres		150		205

Source: Energy Efficiency Office (1994), Introduction to Energy Efficiency in Sports and Recreation Centres, Department of the Environment: London

#### Design Proposals and Economic Appraisal of All Options

Once the structural integrity, layout and condition of the pool have been investigated fully, it will be appropriate to draw up refurbishment proposals and, where appropriate and for comparison purposes, proposals for a replacement building. This is normally a job requiring specialist knowledge and experience.

#### Design Proposals

Once design proposals are available they should be costed. This should entail consideration of both capital and revenue costs. For simplicity, and to avoid unnecessary guesswork, all costs can be calculated at constant prices. The outcome from this part of the process should be comparative capital costs for a new build and a refurbishment, with a stream of net revenue costs, ideally over a full pool life cycle of 20-25 years. There may also be savings while a pool is closed for refurbishment to be taken into account.

#### Economic Appraisal - Capital and Revenue Costs

The final step is to undertake a formal economic appraisal of the alternative approaches to link the capital and revenue costs together into a single Net Present Value, or NPV. Guidance on how to do this is given in the “Green Book” - Economic Appraisal in Central Government - A Technical Guide to Government Departments (HM Treasury, 1991). In general terms, the better value project will then be the one with the lower Net Present Value, although it may also be necessary to take into account some additional costs or savings. These might be, for example, the cost (or opportunity cost) of land for a new pool or a capital receipt from the sale of the site of an existing one.

sportscotland may be able to assist in the process of estimating potential income using a consistent methodology for different pool options by undertaking runs of its Facilities Planning Model (FPM) to estimate the demand for a pool at different locations within an area..

This does not inevitably mean that the cheaper project will inevitably be better. If social inclusion objectives are particularly important, for example, it might be the one which will attract more people from specific areas of deprivation. Other factors may also have to be taken into account but the key point is that refurbishment should not be undertaken more or less automatically, or with relatively little prior investigation, when a pool is coming to the end of a particular 20-25 year life cycle. There may be better alternatives available.

Nuneaton and Bedworth Borough Council in Warwickshire commissioned KCA to advise on the refurbishment of the Pingles Leisure Centre, a 33.3m pool built in the nineteen sixties. With the aid of planning and costs models, KCA compared the advantages and disadvantages, including capital and revenue costs on a Net Present Value basis of:

- Refurbishment of the existing pool at three different levels of cost
- Replacement on adjacent land by a 25m/8 lane pool plus small area of leisure waters
- An alternative strategy involving a 25m/6 lane pool on the Pingles site plus either one or two 20m pools at those schools with aspirations for a pool elsewhere in the Borough

As a result of this analysis, the Council decided to pursue the replacement option.

## Conclusions

In round figures, the cost of building a reasonably well specified public pool is currently around £1,500 per sq m. When external works and professional fees are added, the cost comes to around £2,000 or so per sqm. As the total floor area of a pool is likely to be an average of around 4.5 times the water area, the overall cost of building a pool can also be expressed as equivalent to about £8,000 or more, plus VAT, per sq m of water.

Using the rule of thumb for maintenance and refurbishment costs derived from the Pool Refurbishment Study, the total cost of maintaining the equivalent of a single square metre of water over the typical 25 year pool life cycle is likely to be around £300 x 25 = £7,500. As this figure does not include any allowance for maintenance of external areas, or professional fees related to refurbishment, it is probably safe to say that, at constant prices, the cost of maintaining, upgrading and refurbishing a pool over a typical life cycle of around 25 years is likely to be at least as much, and probably more than, it costs to build.

If current local authority capital budgets for sport and recreation continue, it is absolutely clear that they will be inadequate to fund the public pool refurbishments which will be needed over the next twenty or so years. There is also considerable evidence that annual and periodic maintenance regimes have been cut back in recent years to breakdown levels with little preventive maintenance. The more that this is done, the earlier that refurbishment or replacement will be needed and the higher the cost of refurbishment, if that is the most appropriate course of action.

Unfortunately it seems unlikely that Scottish local authorities will receive significantly bigger capital budgets in future, and if they do, the refurbishment of pools will be only one of the many calls on that money and a lower priority compared with other public buildings in poor condition such as schools. So there is a very real chance that Scotland could lose a number of its public pools over the next twenty years.

If this is to be avoided, local authority pool owners may be forced either to implement half-hearted refurbishments, designed simply to keep a pool in the minimum acceptable operating condition or find alternative sources of funding.

The clear evidence from the Pool Refurbishment Study is that limited refurbishment (in most cases, little more than essential plant upgrading or repairs) will rarely be value for money. If there is little obvious improvement to public areas, then usage and income will go down steadily.

This leaves new sources of funding as the only viable alternative if Scotland is to continue to have anything like its present level of pool provision and the vast majority of the population able to swim. There are various ways in which this might be done, including the creation by local authorities of arm's length trusts or similar bodies to manage their pool stock or working in partnership with the private sector. Alternatively, they may decide that local authority pool provision has no long term future and seek to transfer responsibility to the private sector, possibly seeking to form a partnership to promote social inclusion.

However, the capability of the private sector both to provide all of the funds needed and then recover them from income through more effective operation of public pools is likely to be limited. In the short term, arm's-length trusts or similar charitable bodies which can borrow money on the market, free of the rules controlling local authority expenditure to provide an alternative approach. But this will also require that the economics of pools will have to improve, as the capital required will have to be recouped from income rather than written off over a long period from a separate capital budget. This clearly has the potential to conflict with government and local authority policies on social inclusion. It will depend on whoever is managing local authority pools by finding an effective and acceptable way of raising charges for those who can afford higher prices while targeting subsidies more effectively at those who cannot.