

ITEM No ...2.....

REPORT TO: RECESS SUB-COMMITTEE – 6 JULY 2022

REPORT ON: OLYMPIA REFURBISHMENT PROGRAMME – REVIEW OF THE DESIGN AND CONSTRUCTION OF OLYMPIA

REPORT BY: EXECUTIVE DIRECTOR OF CITY DEVELOPMENT

REPORT NO: 150-2022

1 PURPOSE OF REPORT

1.1 This report discharges the remit from members to undertake a review of the design and construction of the Olympia building.

2 RECOMMENDATION

- 2.1 It is recommended that the Sub-Committee:
- a notes the review undertaken of the design and construction of the Olympia and the planned refurbishment and future operations at the facility; and
 - b delegates the Head of Design and Property and the Director of Leisure and Culture to finalise and implement a strategy for periodic closures as standard practice for future years' operation and maintenance of the Olympia facility.

3 FINANCIAL IMPLICATIONS

3.1 The capital costs of the proposed refurbishment works are contained in a separate tender report which is considered elsewhere on the committee agenda. Based on the nature of the refurbishment works, it is anticipated that the revenue running costs will remain similar once the capital works are completed, and these will therefore be contained within the existing City Development and Leisure & Culture Revenue Budget.

4 BACKGROUND

- 4.1 Reactive Maintenance works were identified during the latter part of 2021 in relation to a failure of fixings associated with the light fitting mountings in the pool area. As a precautionary measure the decision was taken by Leisure and Culture Dundee (L&CD) Management Team in consultation with the L&CD Board and Council Officers to close the pool facilities.
- 4.2 Prior to the light fixing issue occurring, Council Officers had been developing a planned programme of refurbishment works to address building fabric issues that have developed during the operational life of Olympia. As an intensively operated facility with complex mechanical and electrical installations, a cyclical approach to component refurbishment and replacement is required, and this necessitates periods of closure to upgrade and replace. The refurbishment works planned were essentially in relation to surface and superficial corrosion and rectification of water egress with general upgrade and refurbishment.
- 4.3 L&CD and the Council agreed that the pool facilities would remain closed until all refurbishment works have been completed.
- 4.4 Reference is made to the minute of the meeting of the City Development Committee of 6 December 2021 (Article VII) which approved Report 336-2021, noting the reactive works carried out to date and the planned refurbishment programme for the leisure pool comprising several work streams across the facility.

- 4.5 At the meeting, Members also remitted the Chief Executive to undertake a review of the design and construction of the Olympia building and to report back to the Sub-Committee on the outcome. The review would include an assessment of liability in respect of the contractual works. The Head of Democratic and Legal Services will provide legal advice to the members of the Committee separately.

5 DESIGN AND CONSTRUCTION

- 5.1 Reference is made to Report 204-2008, considered at the Leisure, Arts and Communities Committee held on 24 March 2008 (Article VII of the minute refers) agreeing to progress with the existing Olympia Swim and Leisure Centre being demolished and replaced by a purpose-built swimming and leisure facility on a site at the Allan Street Car Park.
- 5.2 As part of this approval Members also gave consideration to the previous committee reports including the Central Waterfront policy where options for the long-term provision of swimming and leisure pool facilities in Dundee were considered, and recommendations made that the Council replace the Olympia Swimming Leisure Centre with a new complex. It was agreed that the proposed redevelopment in and around the Central Waterfront would continue to isolate the facility which would increasingly look out of place and dated. In addition, consideration was also given to the complex construction, operational costs and age of the facility.
- 5.3 The new development included a 50 metre pool within the facility at Allan Street, primarily for local swimming clubs, training and regional level competition combined with appropriate leisure facilities. The scope of project was developed under the guidance of the then formed Olympia Project Board and a stakeholder group involving representatives from Dundee Leisure, SportScotland and swimming clubs in Dundee to act as a client advisory group during the project development.
- 5.4 Development of the detailed design commenced following Committee approval with full stakeholder engagement for the design consultants to consider. The key milestone for planning consent was granted March 2009 and Building Warrant approval was achieved in April 2010.
- 5.5 The Council procured the Olympia Leisure facility and associated Allan Street car park through a single contract based on a traditional procurement route and standard form of contract conditions. Competitive tenders were invited from an assessed short list of contractors.
- 5.6 The design for the project was led by the Council's Architectural Services Division with specialist input from directly appointed design consultants along with contractor design portion elements. This collaboration of design input contributed to provide the overall scope, design and specification for the Contractor to execute the works programme.
- 5.7 Tenders were received and Report 660-2010 was considered at the Policy and Resources Committee held on 8 November 2010 (Article VI of the minute refers), recommending Mansell Construction Services Ltd of Perth to carry out the works, Mansell subsequently became part of the Balfour Beatty construction company, progressing the works under this identity.
- 5.8 The Head of Design & Property has reviewed the process undertaken for this appointment, taking cognisance of the level of staff resource utilised through the duration of the pre-contract design and construction phases of the project. The Council employed in-house design staff to manage all disciplines, with Clerk of Work services utilised on site. Client project management services were also utilised to support the client, designers, programming and management of the contract.
- 5.9 Works commenced on site in early 2011 based on an 80 week construction programme, with practical completion being achieved by May 2013. During the subsequent 12 months the making good defects liability period progressed, with snagging rectification works implemented by the Contractor.

- 5.10 All statutory approvals and certifications were lodged and approved at the appropriate pre-contract stage, during the works and at formal handover of the project. Residual works at the end of the 12 months defect period were addressed and managed through the conditions laid out in the contract.
- 5.11 The remaining issues related to ongoing plant room water ingress and the levels of superficial corrosion. The Contractor carried out remedial exercises to resolve water egress issues, with resolutions performing initially, but ultimately these have been short lived due to the ongoing stresses associated with the building environment. The water egress issue has subsequently required intrusive survey work and testing during the current closure period, followed by design work to determine appropriate solutions. The issue in relation to the corrosion is covered in the following section of the report.
- 5.12 As part of the construction contract the requirement for the main pool to be certified for 25 and 50m competition use was carried out by a specialist surveying company on behalf of the Contractor. The surveying body initially issued a Certificate valid until 31 December 2015 based on their findings for both 25 and 50m courses. Subsequent to this, the surveying body retested the pool after tolerance adjustments were incorporated to the pool arrangements, and confirmed that both the 25 metre short course and the 50 metre long course complied with the FINA rules for competition swimming pools.

6 REFURBISHMENT WORKS

6.1 Overview

- a The atmospheric conditions within a leisure facility, and specifically a pool hall, make it one of the most difficult and demanding environments to operate and effectively manage. Creating conditions that will result in a comfortable environment for the customers and staff, whilst protecting the fabric of the building from corrosion and decay is a difficult balance to achieve.
- b The atmosphere created by combining high humidity, high temperature and the airborne chemical by-products of the pool water treatment process must be clearly understood, with day-to-day operational procedures utilised for the frontline management strategy. Whilst most building types may be able to cope with minor inefficiencies in material performance, quality of workmanship or operational maintenance and cleaning strategy, this is not the case with a swimming pool hall. What may start as a minor imperfection can evolve into an issue and become difficult to manage and resolve, leading to service disruption.
- c This section of the report concentrates on the main elements that have been considered as key areas of focus which may contribute to rectifying the legacy issues and incorporating solutions as part of the refurbishment works programme.

6.2 Superficial Corrosion

- a It should be highlighted that swimming pools are highly aggressive environments and there are no building materials that last in perpetuity. However, there are material selections that can provide a long-term lifespan provided robust cleaning regimes and operational planned maintenance are implemented.
- b One of the principal areas identified where corrosion has progressed relates to the flume access stair and deck. The works will include the full dismantling and refurbishment of the structure, stair and platform, to allow treatment of the superficial surface corrosion and applying new protection to each component. The constituent parts require to be removed from site to allow for refurbishment treatment and replacement work to be carried out to the steel and stainless steel components, prior to returning to site for the installation process.

- c The grade of stainless steel was previously analysed and confirmed to be appropriate and correct, in line with the original specification requirements. To avoid future accelerated degradation the stainless-steel balustrades, handrails etc, require regular and periodic deep cleaning to reduce the potential for corrosion deterioration to develop.
- d Within the Olympia, like many other leisure and pool facilities across the country, corrosion progression can be controlled through a combination of the mechanical ventilation system and operational choices. Accordingly, measures will be implemented to augment ventilation and air circulation and to combat the environmental constraints going forward. Working with L&CD colleagues, current operational measures and cleaning regimes will be reviewed and developed to provide a rigorous protocol for ongoing management of the surface materials that are in frequent contact with pool water.

6.3 Control of the Pool Environment - Ventilation/Humidity

- a When reviewing the requirements for the mechanical and ventilation systems the Council Engineers, in conjunction with external mechanical and pool consultants, assessed current systems performance. The main aim was to provide a baseline for developing a solution with more flexibility and capacity for future air control.
- b Using this approach will provide an improved platform for air temperature control, working alongside the pool temperature, for improved management of humidity levels. This will help suppress corrosion inducing conditions throughout a typical 24-hour cycle for operating the facility.
- c The assessment for the distribution of the air was focused on the pool hall features and locations which generate the highest moisture gains, to assist in the protection of the building fabric. The air will be directed into the areas where it is required to deal with the moisture gains, supplying air at high level around the outside perimeter of the pool with some of the air blown down the external walls to assist with protecting the building façade. The majority of the air will be blown at high levels across the ceiling towards the spectator seating area and return air louvres.
- d As set out in the previous report, where plant and equipment are nearing the end of their useful life and are being renewed as part of cyclical replacement, the new installation will be more energy efficient based on technical development and advances that have taken place within the industry since the original equipment was installed.

6.4 Water Ingress into Plantrooms

- a The water ingress into the plantroom areas has been evident to some extent over the life of the building. The Contractor carried out rectification works after practical completion on several occasions. These rectification works had different levels of success from reducing the level of water egress to eradicating the leaks for a period. On each occasion a gradual reoccurrence of the water issues developed. Recent surveys and flood testing procedures have been used to track and identify the exact source of the water loss, where it passes through several construction junctions and locations terminating in the plantroom area.
- b The results of the testing concluded that the area identified as the weak point for water egress is penetrating the joints between the transfer channels and pool surround, as well as between the precast concrete slabs. Accordingly design work has been carried out to develop the scope of works and specify detailing and materials to be used to provide the resolution to this issue.

6.5 Pool Water Treatment

a Overview

The treatment principles for Olympia Leisure Centre align with the typical pool water circulation and treatment system principles advised by Pool Water Treatment Advisory Group (PWTAG).

The plantroom areas available for the water treatment plant and water features plant have been used to arrange the plant to maximise hydraulic efficiency, ease of operation and maintenance of the systems. Routes for removal and replacement of large items such as the sand filter vessels have also been considered in the original design by way of clear access areas through the basement plantroom and a removable floor to the service area adjacent to the access road.

The systems appear to be in good serviceable condition. However, as previously reported, as the systems are approaching 10 years old it is anticipated that some items may be approaching the end of their lifespan, while other items may require an overhaul to prepare them for the next stage in their operational life. Accordingly, the identified plant will be serviced or replaced as appropriate.

At the time of the water treatment audit there was nothing to indicate a problem with the current pool water quality in the 50m pool and leisure pools. During the closure, the opportunity will be taken to address localised algae through operational management procedures

b Review of Chlorination Chemicals

The nature of the source water is a key determining factor in the chlorine donor to be used. The preferred chlorine donor for the water supply in the Dundee area, which is low in calcium and low in alkalinity, would normally be calcium hypochlorite, typically supplied in pellet form.

The facility currently uses sodium hypochlorite. By changing to calcium hypochlorite, this negates the regular requirement for the addition of sodium bicarbonate and calcium chloride to provide balanced water quality. The occasional addition of the other chemicals may still be required, if there is a significant change to the source water alkalinity levels. This process is routine and will be carried out by qualified L&CD staff.

c Review of pH Correction Chemical Dosing

Based on the water source quality in the Dundee area, the preferred pH control would be CO₂, however it should be noted that on leisure pool waters, turbulence through activities drives off CO₂. Therefore, the CO₂ usage on the leisure pool and toddler pool could be excessive and may even struggle to keep the pH down, therefore the current use of hydrochloric acid should continue.

In summary the current dosing strategy of using hydrochloric acid, on all systems, will continue to be used for pH correction going forward, providing the optimum solution across the 3 pools.

6.6 Pool Cover Option

There are significant energy demands to manage pool water temperature, air temperature, and air humidity of an internal leisure pool at the required levels for user and staff comfort.

There are 3 main types of heat loss from a swimming pool - conduction through the pool walls and floor, convection from the water surface into the atmosphere, and evaporation from the water surface into the atmosphere, with evaporation being the most significant. Pool covers are widely used on certain types of swimming pools to reduce the direct energy losses. The benefits of a pool cover include a reduction of evaporation of water from the surface of the pool, which is the main cause of energy loss. In addition, less evaporation of water to the pool hall atmosphere means that the ventilation system operation can be adjusted.

In the case of Olympia, it should be highlighted that a pool cover can only be considered for the 50m pool and not the leisure or toddler pools with their current layout, due to their freeform shapes and the various features incorporated into them.

- 6.7 The long operational hours of the Olympia facility and the complexity of 3 multi activity pools heavily influence the effectiveness and efficiency any pool cover would have in the pool hall. The inclusion of a pool cover on the 50m pool at Olympia Leisure Centre, while it may contribute to reduce the overall evaporation load for the short period for which it would be deployed in any 24-hour period, is unlikely to reduce the corrosive effect of the pool hall environment on the building fabric. This factor, combined with the adverse operational impact, has resulted in the conclusion that the provision of a pool cover will not provide adequate benefit at this time to be considered as part of the refurbishment programme. This assessment will be reviewed on a periodic basis, taking account of energy tariff movement and operational patterns. Should this position change, pool covers could be retro fitted at an appropriate time in the future.

7 REFURBISHMENT PROCESS - DESIGN AND CONSTRUCTION REVIEW

- 7.1 As previously reported, using the Places for People Procurement Hub framework, Robertson Construction Tayside have been appointed to work in conjunction with City Development designers to review the current facility, diagnosing the issues within the building.
- 7.2 Community Wealth Building is an integral part of the Council's procurement approach. Dundee City Council's Community Benefits Through Procurement Policy seeks to maximise economic and social benefits from Council procurement within the current legal framework through the inclusion of Community Benefits on all applicable contracts. As part of the main contract for Olympia Refurbishment work, Dundee City Council's Community Benefits Officer will work in partnership with Robertson Construction Tayside and monitor local supply chain and sub-contract expenditure.
- 7.3 Through the current closure period, internal design staff have collaborated with all building disciplines to consider the design and construction of Olympia across all elements of the facility. Combined with this has been the appointment of external mechanical services and pool consultants, to survey and report their findings in relation to air humidity, ventilation control and the pool treatment, among other elements.
- 7.4 Utilising expertise from all sectors of the industry has ensured a systematic approach has been taken to reviewing the performance of the building to date, providing solutions to the legacy issues encountered.
- 7.5 Having assessed the surveys carried out, reviewing the design and construction of Olympia, the findings have informed the full works content of the project comprising the rectification of water egress, improvements to environmental conditions and the general fabric upgrading, refurbishment and plant replacement. The scope of works to be undertaken is outlined in Appendix 1.

8 DELIVERY PROGRAMME

8.1 Programme

The programme for the works is based on a mobilisation period of 4 weeks and a 60 week construction programme, providing a sequenced approach to undertake all works in as effective a manner as possible, based on the nature of the refurbishment works. Officers will work with the Contractor to explore options should any opportunities arise during the contract to alter the sequence of site operations and reduce the overall programme, to ensure the facility is back in operation at the earliest possible date.

9 OPERATIONAL MANAGEMENT

9.1 Life Cycle Replacement, Operational Maintenance and Cleaning

- a As part of the refurbishment project a review of the operational management is being developed, reinforcing existing and creating new strategies and processes where required to assist with combatting and managing the environmental conditions and high operational usage encountered at Olympia.
- b As previously outlined, the Olympia has long operational hours and high usage within an intensive internal environment and therefore will always require periodic component replacement and regular planned maintenance. As part of the appointment of a specialist pool consultant, expert advice will be obtained to support this exercise and develop maintenance regimes.
- c Having a major programme of works amalgamated into one contract allows the Council to reset the property and service functions, alongside L&CD's operational protocols, for future service delivery and management.
- d Moving forward, it is important to manage expectations. In a hard-working aggressive environment such as Olympia, all materials will be in a progressive deterioration and will have a limited life. Implementing robust planned maintenance and cleaning regimes will provide the platform for future operational practices, ensuring component lifecycle performance is being achieved. As initial frontline protection, the L&CD routine cleaning regime for managing the immediate impact of the aggressive atmosphere will be developed as part of this project.
- e Future maintenance and refurbishment work, to varying degrees, will be required on a periodic basis throughout the operational life of this building. Annual service closures are not only applicable to maintenance of the plant, but also offer an opportunity for deep cleaning and minor works that would otherwise have required an uncommercial unplanned shutdown. A strategy for periodic closures will be developed and implemented as standard practice for future years of operation. L&CD will develop a communications strategy to ensure members, customers and staff are aware in advance of future planned closures.

10 MAINTENANCE WORKS

- 10.1 The importance of a supply chain strategy for planned and reactive maintenance cannot be under-valued. A combined strategy of utilising our in-house trades within Construction Services will be employed to carry out general day to day maintenance where appropriate. Augmenting this resource is a further series of Health and Safety Contracts for compliance testing to service, maintain, repair and/or replace mechanical and electrical equipment throughout Olympia. Over and above this approach will be the appointment of specialised Contractors or suppliers as and when the need arises. Approaching the management of the Olympia in this way allows for utilising the appropriate skill set and resources to carry out the necessary work whilst minimising disruption to the daily operation.

- 10.2 Through the construction phase and commission period, the planning maintenance programme will be developed, comprising day to day maintenance and cleaning regimes, short term periodic routine maintenance, annual maintenance including shutdown protocols, medium term overhaul and component upgrades and long-term lifecycle replacement.

11 SUMMARY

- 11.1 As outlined, the Olympia has long operational hours with high usage for a wide variety of activities within one pool hall which, by its nature, is an intensive environment.

- 11.2 There have been several factors contributing to the current closure which are inextricably linked and therefore not easy to diagnose and highlight as isolated factors. However, the knowledge and experience of Council Officers involved, and survey information and audit checks carried out by external experts, have resulted in a combination of factors outlined below where improvements will contribute to the modified atmospheric conditions and more effective operation and ongoing maintenance:

- daily maintenance routines;
- initial workmanship and detailing;
- operational management of the pool;
- ventilation/humidity control;
- cleaning methodology and frequency; and
- periodic closure for maintenance.

12 POLICY IMPLICATIONS

- 12.1 This report has been subject to an assessment of any impacts on Equality and Diversity, Fairness and Poverty, Environment and Corporate Risk. There are no major issues.

13 CONSULTATIONS

- 13.1 The Council Leadership Team were consulted in the preparation of this report.

14 BACKGROUND PAPERS

- 14.1 None.

Neil Martin
Head of Design and Property

Author: Neil Martin

Robin Presswood
Executive Director of City Development

Dundee City Council
Dundee House
Dundee

RP/NM/KM

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APPENDIX 1

Item	Description
1	Rectify external condensation issues at bullnose fascia detail.
2	Flume and Dive Stairs - Rectify corrosion to stair treads for flume access and dive stairs.
3	Launch pad - replace and refurbish flume launch pad and supporting structure.
4	Water Ingress to Pool Plant Room - replace shower flooring. Overhaul shower drainage channels. Reline poolside channels. Overhaul poolside waterproofing detailing.
5	Redesign and amend dive barriers to remove sitting risk.
6	Remove and replace affected balustrading.
7	Corrosion to Steelwork and Stairs - removal of areas of corrosion, treatment and refurbishment.
8	Curtain Walling Saddle Brackets, fixings at head.
9	Replace defective poolside shower ceiling tiles.
10	Wave Plant Room - infill floor opening and associated remedial work.
11	Main Entrance Revolving Door - replace matwell.
12	Reception Foyer Air Curtain - new air barriers across entrance.
13	Workshop Floor - remediate groundwater leak.
14	Replace east foyer by-pass door.
15	Poolside Seating - corroded fixings - remove existing shell seats, retile.
16	West Screen - apply anti-glare film.
17	Underwater Cameras - existing obsolete system to be replaced.
18	Replace Staff Door and panic hardware.
19	Ventilation Works - alterations to improve performance of ventilation system to pool hall and changing village.
20	Water tracking at Toddler Pool - build low-level kicker wall adjacent to Toddler Pool.
21	Treat algae staining in training pool based on pool consultant findings.
22	Replace corroded ironmongery to Poolside Fire Doors.
23	New Public Access Barrier installation compatible with L&CD booking system
24	Pool treatment system - implement appropriate recommendations and design from Pool Consultant.
25	Chemical Stores and Treatment - implement appropriate recommendations from pool consultant.
26	Pool Hall PA Speakers - reposition to more accessible location for future maintenance.
27	Replace polypropylene fixings to poolhall light fittings.
28	Revisions to lighting scheme for improved access for future maintenance.
29	Corroded pool plant overhauled or replaced as necessary.
30	Pool filter media to be replaced as part of cyclical works.
31	Moveable floor boom - maintenance and servicing to be undertaken during closure.

Item	Description
32	Sprinkler system - maintenance and corroded elements replacement.
33	Changing village ceiling tile refresh.
34	Waste water heat recovery system - modification to improve and increase energy efficiency.
35	Air Handling Units - system assessed for overhaul and replacement providing improved efficiency and environmental conditions to pool hall.
36	Changing Village Desk - supplementary ventilation provided for staff comfort.
37	Fire and Smoke Dampers - annual checks while premises closed - any remedial works to be actioned.
38	Replace thin walled carbon mechanical services pipework
39	Café Kitchen Facilities - upgrade catering equipment to electric from gas for energy efficiency.