ITEM No …3……..

REPORT TO: **CITY GOVERNANCE COMMITTEE - 22 SEPTEMBER 2025**

REPORT ON: **OLYMPIA**

REPORT BY: **CHIEF EXECUTIVE**

REPORT NO: **246-2025**

1. PURPOSE OF REPORT

1.1 The purpose of this Report is to enable the Council to scrutinise the Report by Burness Paull, Solicitors, regarding the closure of the Olympia Swimming and Leisure Centre in 2024 following £6.1m of capital investment by Dundee City Council.

2. RECOMMENDATIONS

2.1 The Committee is recommended to note and scrutinise the Report by Burness Paull, Solicitors, regarding the closure of the Olympia Swimming and Leisure Centre in 2024 following £6.1m of capital investment by Dundee City Council (Appendix One).

2.2 The Committee is also recommended to remit the Report by Burness Paull to the Scrutiny Committee for their further consideration.

3. FINANCIAL IMPLICATIONS

3.1 There are no financial implications arising out of this Report.

4. BACKGROUND

4.1 Reference is made to Article II of the Minute of the Meeting of the City Governance Committee on 22 April 2024 regarding Olympia.

4.2 This Item was placed on the Agenda at the request of the Leader of the Council who asked the Committee to agree to the formation of an independent investigation into the closure of the Olympia following £6.1m of capital investment with a view to identifying the key issues and providing clear actions.

4.3 The Committee subsequently resolved:-

- To instruct the Chief Executive to commission a thorough and rigorous investigation of the background that led to the recent closure of Olympia following £6.1m of capital investment.
- This investigation would be led by an independent expert on behalf of the Council and would engage with Leisure and Culture Dundee and other appropriate bodies to understand the nature of the problems which led to the closure, what actions could have prevented this situation and that the results of this investigation be brought to the City Governance Committee as soon as practically possible.
- Such an investigation must consider and identify all of the key factors and issues, utilise all available information and ensure value to the public in obtaining its findings.

4.4 Having regard to the issues which actually or potentially caused or contributed to the closure and actually or potentially caused or contributed to the length of the closure, the Head of Democratic and Legal Services formulated the following questions for investigation and response:-

1. Were the works required to the Flume Pipework and Support reasonably foreseeable at the time the recent capital works were instructed?

2. Why were the recommendations of Environmental Health regarding safety barriers at the dive boards not actioned at an earlier date?

3. What were the causes of the dosing system not operating as expected when the Olympia reopened?

4. Was the original scope of capital works sufficiently comprehensive to ensure that all works identified following the closure in 2021 were addressed during the 2023/2024 closure?

5. Why were additional capital works required following the £6.1m capital investment?

6. What impact (if any) did the working relationship between Dundee City Council as Building Owner and Leisure and Culture Dundee ("LACD") as Building Manager have on the causes of, and length of, the recent closure?

4.5 For convenience, the individual questions and responses are summarised in Section 5 of this Report.

4.6 For the purposes of Scrutiny, Burness Paull's full Report is attached at Appendix One.

(The Committee is asked to note that the names and job titles of Officers of Dundee City Council and Leisure and Culture Dundee who either hold positions below Head of Service or who are no longer employed by DCC or LACD have been redacted, as have the personal details of third party contractors. The Report is otherwise entirely unredacted).

5. QUESTIONS AND ANSWERS

5.1 Question 1 - Were the works required to the Flume Pipework and Support reasonably foreseeable at the time the recent capital works were instructed?

Answer 1 - The works required to the Flume Pipework and Support were not reasonably foreseeable at the time the most recent capital works were instructed.

5.2 Question 2 - Why were the recommendations of Environmental Health regarding safety barriers at the dive boards not actioned at an earlier date?

Answer 2 - A combination of factors led to the recommendations of Environmental Health regarding safety barriers at the dive boards not being actioned at an earlier date.

These included temporary measures being put in place while a design solution evolved being seen as the best balance of minimising the operational risk in the area where behaviours considered to be at risk occurred and compliant with the required regulations outside these areas.

The COVID-19 Pandemic played a part.

There was a misunderstanding of the previous instructions by DCC Environmental Health by LACD which led to the additional bars on the central area of the platform and did not lead to the changes DCC Environmental Health had instructed.

Finally, there had been a missing step - engagement by LACD with DCC Environmental Health.

5.3 Question 3 - What were the causes of the dosing system not operating as expected when the Olympia reopened?

Answer 3 - Information provided by both DCC and LACD underlines that the key concern was the stability of the chemical dosing system.

Views vary as to the reason or reasons for the time spent on achieving that stability, but Devin, DCC's retained Pool Consultants, were asked to consider these and they set out their professional opinion that the chemical controllers were not the cause of the issue in achieving that stability.

The available evidence therefore does not seem to support the view that the chemical controllers were the cause of the issues with the dosing system.

Devin then noted that actions taken in respect of matters such as the pH set point, sodium bicarbonate dosing, UV dosing levels and the installation of an additional bulk tank had led to a stable pH value being maintained and a significant reduction in chemical usage.

The time spent on the dosing system was due to the merging and marrying in with existing equipment and procedures to achieve the optimal operation balance and efficiency which influenced further adjustments and modifications being required of a system that is now part new and part original.

Accordingly, there was a requirement to bed in the new equipment.

It took time and it was only through live pool operation that these interfaces could be fully tested.

Commissioning as an exercise is carried out towards the end of a Contract in ideal conditions without other routine operations going on.

It is a realistic expectation that this will not always be straightforward and that time is needed to bed in with a soft start in an existing facility particularly important.

As issues arise the pool systems are highly complex and interrelated with diagnosis being progressive, working through each scenario in turn until the effective solution is achieved.

5.4 Question 4 - Was the original scope of capital works sufficiently comprehensive to ensure that all works identified following the closure in 2021 were addressed during the 2023/2024 closure?

Answer 4 - The original scope of capital works was sufficiently comprehensive to ensure that all works identified following the closure in 2021 were addressed during the 2023/2024 closure.

As with any refurbishment, additional works will be required, which were unexpected, but any additional works would not be arising due to an insufficient scope of works but rather due to the very nature of carrying out works on a refurbished building.

5.5 Question 5 - Why were additional capital works required following the £6.1m capital investment?

Answer 5 - The additional capital works referred to were works that were brought forward in light of the opportunity to undertake them while the Olympia was closed for other works, in order to save a future closure.

5.6 Question 6 - What impact (if any) did the working relationship between Dundee City Council as Building Owner and Leisure and Culture Dundee ("LACD") as Building Manager have on the causes of, and length of, the recent closure?

Answer 6 - The working relationship between DCC and L&CD did not prolong the project.

Both DCC and L&CD personnel expressed a strong desire to work better together, especially in relation to Health and Safety matters.

Communication between the parties could no doubt have been better, but this did not affect the recent closure.

6. OLYMPIA CURRENT OPERATIONAL PERFORMANCE

Since the reopening of Olympia, the monitoring and performance of the facility has been undertaken by relevant Council officers working collaboratively with Leisure and Culture Dundee management and staff.

- Refurbishment Project

  The overall scope of works established and carried out as the refurbishment project have been operating as intended since the reopening. Works to the flumes, including the rectification to the water supply pipe, continue to perform as intended.

  The dosing system continues to achieve expected daily performance levels, with Leisure and Culture Dundee staff undertaking chemical dosing procedures providing a stable water quality for the pool users to enjoy.

  The installation of additional rails to the diving platform has ensured compliance with Environmental Health recommendations and provide Leisure and Culture Dundee with the facility to operate a safe system when open to the public or for club and competition use.

- Operational Management

  Operational management has been supported by a strategic maintenance programme delivered in partnership by City Development and Leisure and Culture Dundee staff. The approach prioritises operational resilience and minimises disruption with Olympia operating as intended since the reopening.

  Council officers carried out a review of Leisure and Culture Dundee cleaning procedures to ensure that, going forward, daily cleaning is the first line in proactive protection against corrosion and overall protection of the Council asset. Current Leisure and Culture Dundee cleaning practices are being carried out with Council officers monitoring to ensure frequency and standards are maintained.

  This approach ensures Olympia remains a safe, high-quality environment for users while strengthening long-term asset integrity.

- Planned Maintenance

  As referenced in previous Committee Reports, 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, supporting daily regimes and minor works that would otherwise have required an unplanned shutdown. A strategy for periodic closures is in place as standard practice for future years of operation. Leisure and Culture Dundee have developed a communications strategy to ensure members, customers and staff are aware in advance of future planned closures.

- Facility Usage

  Olympia facility usage has experienced a robust recovery in attendance numbers, with pool visits and overall facility usage exceeding expectations and membership growth surpassing pre-Pandemic levels.

7. POLICY IMPLICATIONS

7.1 This Report has been subject to the Pre-IIA Screening Tool and does not make any recommendations for change to strategy, policy, procedures, services or funding and so has not been subject to an Integrated Impact Assessment. An appropriate senior manager has reviewed and agreed with this assessment.

8. CONSULTATIONS

8.1 The Council Leadership Team have been consulted in the preparation of this Report.

9. BACKGROUND PAPERS

9.1 None.

GREG COLGAN
CHIEF EXECUTIVE

DATE: 11 SEPTEMBER 2025

Burness Paull

REPORT

TO

DUNDEE CITY COUNCIL

REGARDING

OLYMPIA INDEPENDENT INVESTIGATION

1 INTRODUCTION

1.1 We are asked by Dundee City Council ("**DCC**") to investigate and report with comments on a number of questions, as below, arising in respect of the background that led to the most recent closure of the Olympia swimming and leisure centre, Dundee (the "**Olympia**") following a circa £6.1m capital investment. Those questions are:

1.1.1 Were the works required to the Flume Pipework and Support reasonably foreseeable at the time the recent capital works were instructed?

1.1.2 Why were the recommendations of Environmental Health regarding safety barriers at the dive boards not actioned at an earlier date?

1.1.3 What were the causes of the dosing system not operating as expected when the Olympia reopened?

1.1.4 Was the original scope of capital works sufficiently comprehensive to ensure that all works identified following the closure in 2021 were addressed during the 2023/24 closure?

1.1.5 Why were additional capital works required following the £6.1m capital investment?

1.1.6 What impact (if any) did the working relationship between Dundee City Council as Building Owner and Leisure and Culture Dundee ("**L&CD**") as Building Manager have on the causes of, and length of, the recent closure?

1.2 In carrying out that investigation we have engaged with, and been given relevant information by, DCC and L&CD personnel.

1.3 We have commented on these questions below.

2 QUESTION 1

2.1 The question here is whether the works required to the Flume Pipework and Support were reasonably foreseeable at the time the recent capital works were instructed.

2.2 The works referred to here are understood to be those referred to in the Members Briefing Note 1, dated 5 March 2024, which included the following:

"*This briefing note has been prepared to update councillors regards the current issues that have affected the opening and operation of Olympia in recent weeks.*

The two main issues relate to the burst supply pipework at the red flume and the operation of the new chemical dosing installation. A further item has also been

included in this note to update members in relation to the operation of the diving boards…

…Works to Flume Pipework and Supports Background

Failure of the supply water pipe to the red flume, subsequently caused a supporting rod to fall due to the disproportionate force of the pipe failure dislodging the rod. These elements of the facility were not in the scope of works for the refurbishment contract based on the condition and performance to date. The pipe fracture was a localised failure on a specific one-off run of pipework unique for the supply to the flumes. It would not have been possible to have anticipated this type of failure occurring…"

2.3 The comment at the end of extract above - that it would not have been possible to anticipate this type of failure – was reflected in comments from other DCC personnel. Comments from L&CD personnel included the view that:

"*The burst pipe incident was likely unforeseen but could have been prevented with more comprehensive checks and pre-opening assessments. The urgency to complete the project led to certain elements being overlooked. This matter can be divided into two key components: the burst pipe and the support work. Both incidents could have been avoided through appropriate checks and thorough evaluations…*

…The burst pipe likely resulted from ongoing deterioration. Bar & Wray conducted a full report and provided it to DCC, which was not shared with L&CD. On the day of the incident, a pressure issue was identified during the daily testing of the flumes before opening to the public. The plant staff and supervisor followed the proper procedures and ran the flume. However, the pipe burst during a session later that afternoon.

The challenge was that much of the pipework had been left drained, and the process of preparing the flumes for opening in December 2023 was rushed. This was partly because two pumps identified for replacement were quoted in June 2023 but not ordered until October 2023. These pumps arrived only days before the restart, leading to rushed inspections."

2.4 Starting with the causes of the burst pipe and rod falling, we have not seen any evidence supporting deterioration as being the cause of failure of the pipe. Instead, contemporaneous evidence in the form of emails between [redacted] at DCC and [redacted] (Design & Property Services) at DCC on 5th and 8th February 2024 set out views, following reports of an "*an explosion type noise as* [the rod] *fell*" that:

2.4.1 The cause of the rod falling could be what's referred to as water hammer, which we understand to create a shockwave - "*Photos aren't great quality but it's happened at an elbow in the pipe which also coincides with a*

reduction in pipe diameter. I can see how, if flow was disrupted, water hammer, either during the disruption or when flow was restored, could jolt the pipe and bracket out of their supports. This absolutely hasn't happened due to static loads so would consider it to be a localised issue to the recent burst rather than a pool-wide issue."[1]

2.4.2 The cause of the pipe burst could be misalignment of the pipework which has then been put under stress by high water pressure – "*Flume pipework failure - red flume - we can see that the split pipe now has an offset between its two parts and the neighbouring pipe currently sits at a splay. This suggests that when the start section was relocated after the flume deck was done there is a slight misalignment which has put the pipe under stress, when coupled with high water pressure failure has occurred. I think your theory on this event resulting in water hammer and the loads referred through the structure dislodging what was probably an already loose rod is spot on.*"[2]

2.5 Turning then to the question of whether the burst pipe and fallen rod could have been identified or indeed prevented with more comprehensive checks and pre-opening assessments; that is of course possible, but we have not seen any evidence to suggest that anyone should have anticipated these specific failures, at the time the capital works were instructed, and put in place checks and pre-opening assessments over and above those carried out following the refurbishment works.

2.6 Indeed, it seems to us that the successful operation of the pipe for a number of weeks, following those works being carried out, militates against the view that longer pre-opening assessments - unless they were for a number of weeks under normal operating conditions - could have identified the issue.

2.7 In light of the above and the currently available evidence, our view on question one is that the works required to the Flume Pipework and Support were not reasonably foreseeable at the time the most recent capital works were instructed.

3 QUESTION 2

3.1 The question here is why were the recommendations of Environmental Health regarding safety barriers at the dive boards not actioned at an earlier date?

3.2 The background to this question is summarised in the email from [redacted] ([redacted] at DCC) to [redacted] ([redacted] at L&CD) on 28th February 2024 at 6.10pm:

"*Thank you for your update below sent following my visit to the swimming pool this morning with my colleague* [redacted] *when I met*

[1] Email from [redacted] to [redacted] Neil Martin and others on 5 February 2024 at 9:01.
[2] Email from [redacted] to [redacted] on 8 February at 22:38.

with you and [redacted] The purpose of our visit was to carry out a swimming pool health and safety intervention and for Olympia's public entertainment license renewal application.

During this visit a number of issues were identified and discussed with you.

Of most concern was the 3m & 5m dive platform barriers. I noted that there still remains a significant gap between the dive platform floor and the lowest guardrails. The gap on both platforms is such that it could allow a small child to slip through and fall a significant height.

As you are aware this department investigated an accident in 2017 where a child slipped and fell through the gap to the right of the 3m diving board. The child had been standing on the 3m diving board, but changed his mind and stepped off onto the dive platform, then slipped and fell through the gap to the pool side 3m below.

Following our accident investigation, steps were taken to put in place temporary barriers to prevent a similar accident from reoccurring until such time as a permanent solution could be found. I have attached the letter sent to Olympia following the accident investigation in 2017 for your information.

However the temporary barriers remained in place up until the pool closed in 2020.

When we visited today I noted that corrective action had been taken in terms of the installation of the vertical barriers at the waiting area on the dive platform where another accident occurred in 2016, however no action had been taken to decrease the gap between the safety barrier and both dive platforms.

Following discussion with my manager I contacted you after the visit to advise that due to the significant risk of injury, access to the dive platform should be prevented until such times as the risk of injury from slipping through the gaps can be mitigated."
[3]

3.3 We understand the earlier recommendations referred to in this question, following the accident in 2017 referred to above, are those set out in the letter below from [redacted] to [redacted] at L&CD dated 2 May 2017.

[3] Email from [redacted] to [redacted] on 28 February 2024 at 18:10.

Following the first incident, **temporary** guarding was put in place on some sections on the 3m and 5m dive platforms to help reduce the risk of a person slipping and falling through the gaps under the bottom railings. However, this was with the understanding that permanent measures would be taken thereafter to reduce the gaps between the bottom rails and the platform floors.

To date no permanent alterations have been made to reduce the aforementioned gaps.

It was not known why the permanent works have not been carried out to reduce the aforementioned gaps even though a quotation for the work had been sought and provided by Metaltech UK in November 2016. **Had the works been carried out at that time then the second incident would have been avoided.**

I indicated during my initial visit that the 3m and 5m diving boards be kept closed until suitable temporary measures could be put in place to reduce any remaining exposed gaps between the lower rails and the dive platform floors along the length of the railings on both platforms.

I also requested that we be told how quickly a permanent fix could be carried out to close the gap between the dive 3m and 5m platform floors and the bottom rails of the barriers.

The dive platforms were then closed until Wednesday 26th April 2017 when I was notified by [redacted] that the additional temporary barrier had been put in place. I revisited the premises that afternoon and confirmed after viewing the temporary barrier that the dive platforms could reopen.

Steps must now be taken as quickly as possible to permanently reduce the gaps between the bottom rails and the platform floors so as to prevent anyone falling through the gap.

[4]

3.4 Following the visit on 28th February 2024 referred to above, a meeting was arranged at the Olympia on 8th March 2024, as set out in the email from [redacted] at DCC to [redacted] and Neil Martin of DCC, Judy Dobbie of L&CD and others on 11th March 2024 at 11.03am:

"*All - further to our discussions on-site last Friday (08/03/2024), and also referring to the points in my earlier email (29/02/2024) I would advise as follows:*

Diving Platforms - It was agreed to add a further section (tubular hollow-section stainless steel) into the lower gap of the rails which run parallel with the diving platform. I have attached an image which provides an outline of the proposed modification for reference.

This is a very minor modification, and whilst an interim/temporary measure (e.g. use of plastic barriers) was suggested, this may draw attention to the issue, and I would suggest therefore it would be better to move directly and quickly to the permanent modification agreed." [5]

[4] Letter from [redacted] to [redacted] dated 2 May 2017.
[5] Email from [redacted] to [redacted] Neil Martin, Judy Dobbie and others on 11 March 2024 at 11.03.

3.5 [redacted] email - to [redacted] Judy Dobbie, Neil Martin and others - dated 9th March 2024, following that on-site meeting referred to above, comments on the history of events and issues arising:

"*Firstly, thank you to [redacted] for suggesting and organising the site meeting, and to [redacted] and [redacted] team in Environmental Health for attending and providing useful background and context. It was extremely helpful to be able to physically see the issues and to discuss these.*

For everyone's information and to provide some of that context, Environmental Health's involvement in this matter is in their capacity as statutory enforcers for health and safety at Olympia. All advice provided by them is in pursuance of that role.

The issues highlighted with the diving boards were raised initially in 2016/2017, following 2 no notified incidents on the 3m platform, where young children fell from the landing for the 3m platform in one instance and from the side of the diving board on the 3m platform in the other. The issues were again flagged by EH in 2020 during a routine inspection when no permanent remediation had been carried out to address this fall from height risk, although temporary barriers had been put into place.

Whilst the guard railing for the entire diving tower follows the parameters of sector guidance and is similar to installations in other swim centres, it does, in this case, leave a fall from height risk from under the bottom rail. This is due to the height of the bottom rail above the platform deck; for clarity, this is not a fall from height risk where the mechanism of the fall is a stumble or fall direct against the barrier, it is a 'chuting' risk whereby a person slipping is able to fit under, and through, the gap between the platform deck and the bottom rail. This is the mechanism by which both falls from height of the young children happened.

Vertical rails have now been fitted at the landing to the 3m platform which has addressed this risk in that location. This is where a child from a diving club fell under the bottom rail. However, the guard rails along the sides of the 3m platform and the top platform still have this gap present. A child fell under the bottom rail at the far side of the 3m platform when stepping down from the diving board after deciding not to dive. These gaps leave a clear and reasonably foreseeable risk of similar incidents happening in these areas.

The installation of vertical rails along the side of the dive platforms would not be appropriate, as this would impede the view of the platform for both supervision by lifeguards (or coaches during club sessions) and by judges during competitions. An alternative solution to reduce the gap between the platform deck and the bottom rail should be sought. Any such solution should be robust enough in it's construction and fixing to remain in place when taking the force of a falling/slipping person. This solution should be installed to both sides of the 3m and top platforms, including the return detail to the front edge of the 3m platform. Until such a solution can be identified and put into place, the diving boards should remain out of use. It would be prudent

to discuss any proposed solution with [redacted] *and* [redacted] *before proceeding, to ensure that the risk is judged to be suitably mitigated*." [6]

3.6 Details in respect of the comment above - that "*the guard railing for the entire diving tower follows the parameters of sector guidance and is similar to installations in other swim centres*" – as well as considerations as to revising the design of the dive platform barriers is set out in the DCC document titled "*20-007 Olympia Refurbishment, Alterations to Dive Board Barriers – Briefing Note*" from March 2024, which includes the following[7]:

"*BACKGROUND –*

The design and installation of Dive Boards is regulated under the international standards controlled by and published by the international governing body for aquatics – FINA, now World Aquatics. Its vision is focussed on aquatics for sport, health and life.

At the time of construction, the Regulations in force for the Dive Boards were the FINA Facilities Regulations FR5 rev 2010, the regulations in respect of barriers for dive platforms stated –

FR 5.2.7 The back and sides of each platform (except a 1.0 metre platform) shall be surrounded by handrails with a minimum clearance of 1.8 metres between pairs. The minimum height shall be 1.0 metre and they shall be with at least two crossbars placed outside the platform beginning 0.8 metre from the front edge of the platform.

The 2020 Revision states –

FR 5.2.8 The back and sides of each platform (except 1.0 metre or lower platforms) shall be surrounded by handrails up to 1m from the edge of the platform with a minimum clearance of 1.0 metres between vertical pairs. The minimum height shall be 1.0 metre and they shall be with at least two horizontal crossbars placed outside the platform beginning 1.0 metre from the front edge of the platform.

A solid transparent barrier is also permitted instead of a crossbar.

Built examples using a solid transparent barrier are exceptionally rare.

PRIOR DISCUSSION

[6] Email from [redacted] to [redacted] Judy Dobbie, Neil Martin and others dated 9 March 2024.
[7] In putting forward extracts from this briefing note, we have excluded certain comments opining on whether operating practice caused or contributed to the accidents occurring as the question we are concerned with is why the recommendations of Environmental Health regarding safety barriers at the dive boards not actioned at an earlier date.

Within the original design the briefing by LACD management at that time was based on their existing practice with their boards at the old Olympia, which used ladders for access and queuing was on poolside. For the new pool stairs were adopted as a preferred safer means to access the boards and gates would be included at the bottom of each flight to control access with queuing continuing on poolside…

…Following falls from Diving Boards there was discussion with the Property Section regarding potential solutions, including infilling the Dive Barriers and adding a toe board or bottom rail. At that time the 2010 Regulations were still in force and this would have been non-compliant. In addition, the discussion included the counter argument that the addition of rail or board at low level would have introduced an entrapment risk for a foot or ankle because in accordance with the regulations the barriers are mounted on the outer edge of the platforms. ASD were only peripheral to these discussions but it is understood that it was concluded that on the balance of risk and probability this was an undesirable solution.

Earliest contact on this matter on record for Architectural Services is an email from Property to the City Architect dated 15.06.18 … which … mentions the falls and the fact that the solution was under review due to the site's mixed use.

It is understood that DCC Property Section contacted FINA with regards to being advised on suitable compliant solutions.

It was noted that in 2020 the wording of the FINA regulations was amended to include an option for glazed barriers.

TIMELINE OF CURRENT PROJECT

In 2020 the Olympia Refurbishment project came into being and there was an initial briefing and transfer of information to initiate the project from Property to Architectural Services which included work they had been doing on glazed barriers. Work was undertaken to find a technical solution through the supply chain that could adapt or replace the barriers in a manner that complied with the revised standard and came with the appropriate structural testing and certification. As an adaptation to an existing facility the revisions also had to be compatible with the existing fixings and platform edge. The platforms are a specialist structure subject to stringent performance standards as well as specific structural criteria and had originally been design by a specialist in this area. Associated with these considerations was also the issue with the condition of the barriers with respect to surface spotting with corrosion.

The developed proposals therefore took the form of complete replacement with a proprietary glazed barrier system fitted to a specially adapted fixing to suit the existing installation.

LACD site staff first raised concern about this solution with Architectural Services on 26th Jan 2022. This conversation was primarily precipitated by a need to chat through

the details of the scheme that was being worked on and which was still the solid balustrading option as there were some construction and technical questions to sort out. They raised what was seen as a couple of valid concerns, one is that that a glazed barrier at the dive boards would be difficult to clean whichever position it was in. The other is that there are really very few if any known examples of glazed dive board barriers and that they recognised that this was really a management and supervision matter, which could be helped if there is a design intervention that can be used. The lack of UK or international precedent made the glazed barriers difficult to support…

…The design evolved based on the following briefing – the barriers needed to be FINA compliant in the area of the platforms used for diving and was cleanable from the platform, was not climbable or could be sat on in the area where the queuing occurred. The hybrid solution adopted was seen as the best balance of minimising the operational risk in the area where behaviours considered to be at risk occurred and compliant with the required regulations outside these areas.

This matter was also updated and reported in this manner at the time of the Scrutiny Committee. In March 2022.

The technical solution in response to the revised briefing was prepared and submitted for approval to LACD management in April 2022. This was approved with one revision, they asked to have the area under the second flight of stairs to also be done in the same fashion as it was reported at that time that one of the falls had occurred in this area.

The amended drawing was then issued for construction to the contractor in May 2022.

CONCLUSION

The Dive Barriers now in place are a highly unusual if not unique solution to the design of dive structure barriers, based on site-specific operating practices. Research shows consistently that throughout the UK and globally there is very little variation in dive barrier design the format following broadly the same format everywhere. Take up of the glazed barrier option now permitted by World Aquatics is still exceptionally unusual probably because of the lack of a safe means of cleaning them at height and over water, most countries having in place regulations similar to our CDM Regulations."

3.7 The email from [redacted] for L&CD to [redacted] on 5th March 2024 at 11.02am then sets out:

"*Looking into the history of this from records such as our Property and Safety Committee I believe that [redacted] did act upon your instructions. There were two proposals which had been costed and proposed. The first was a partition such as a plastic / glass barrier similar to the balcony that we discussed last week. The*

second was an additional cross bar within the gap which was the idea we had come to independently as well. We proposed this idea to City Development last week and commented that this is what L&CD had previously proposed based on what had been instructed. The impression that I have been given is that they are proposing additional lifeguarding instead to Marshal that risk. From our conversation additional lifeguarding would not be enough to reduce the risks that you have identified, and we do in fact need a physical barrier.

I believe a misunderstanding of the previous instructions has occurred which led to the additional bars on the central area of the platform and did not lead to the changes you & line manager instructed. I believe with Covid, a series of managers moving on and retiring has led to our side not being aware of this. I wondered whether City Development had also received the written instruction, I believe they would have been aware due to the content of minutes of meetings…I wondered if some direct communications would be appropriate to ensure nothing is missed in translation. Looking at this objectively I think that there has been a missing step and that is the engagement with yourselves before making the changes on the middle of the structure." [8]

3.8 In light of the above and the currently available evidence, our view on question two is that a combination of factors led to the recommendations of Environmental Health regarding safety barriers at the dive boards not being actioned at an earlier date; namely – as set out above – that temporary measures being put in place while a design solution evolved that was "*seen as the best balance of minimising the operational risk in the area where behaviours considered to be at risk occurred and compliant with the required regulations outside these areas*". Covid of course also played a part in timings, but the following comments of [redacted] seem particularly pertinent to us:

3.8.1 "*A misunderstanding of the previous instructions…occurred which led to the additional bars on the central area of the platform and did not lead to the changes you & line manager instructed*"; and,

3.8.2 "*Looking at this objectively I think that there has been a missing step and that is the engagement with yourselves* [Environmental Health]."

4 QUESTION 3

4.1 The question here is what were the causes of the dosing system not operating as expected when the Olympia reopened?

4.2 The background to this question is also set out in the Members Briefing Note 1, dated 5 March 2024, which included the following:

[8] Email from [redacted] to [redacted] on 5th March 2024 at 11.02.

"*Dosing System Background*

5.1 The chemical dosing system manages the demand and supply of chemicals to the pool based on chemical balance readings taken from the pool monitoring system. Essentially combatting bacteria and microbes disinfecting the water for safety.

5.2 These readings are in a state of constant change and vary across the three pools. The readings are impacted by the amount of fresh water in the pool at any time, the number of contaminants in the pools brought in by bathers, the pH balance of the pool as chemicals are added and chlorine is used up as it combats contaminants…

…5.5 On the advice of the pool consultant and with support from L&CD the chlorination chemical dosing system has been changed to one which the industry would more normally expect to see in a modern leisure facility with the selected chemical dosing chosen as the most appropriate for the soft water supply in the Dundee area…

…Current Operational Performance

5.7 Since the facility reopened in December 2023, the stability of the chemical dosing system performance has not been where it was anticipated, leading to the requirement for the pools to be closed for further investigation, testing and any necessary works to take place to improve stability and efficiency of the dosing and overall performance.

5.8 While the system conforms to the specification provided by the pool consultant, merging and marrying in with existing equipment and procedures to achieve the optimal operation balance and efficiency has influenced further adjustments and modifications being required of a system that is now part new and part original. Accordingly, there is a requirement to bed in the new equipment. It has taken time and it is only through live pool operation that these interfaces can be fully tested. Commissioning as an exercise is carried out towards the end of the contract in ideal conditions without other routine operations going on. It is a realistic expectation that this will not always be straightforward and that time is needed to bed in with a soft start in an existing facility particularly important. As issues arise the pools systems are highly complex and interrelated with diagnosis being progressive, working through each scenario in turn until the effective solution is achieved.

5.9 All parties involved in the refurbishment contract with particular focus from the specialist pool contractor and pool design consultant have continued to monitor the performance of the pool chemical dosing system over recent weeks, as well as discuss and implement further measures.

5.10 Components that are part of the dosing system that have been subject to high activity and intensive use in recent weeks have had a planned service brought orward to provide a baseline for monitoring performance when re-commencing operations…

… 5.16 L&CD to monitor and record daily chemical use and top ups. Data to be fed back to specialist contractor and pool consultant to review and assess overall dosing performance moving through this transitional stage." [9]

4.3 As the Members Briefing Note 2, dated 17 March 2024, sets out:

"*4.0 Dosing System*

4.1 L&CD have monitored and recorded daily chemical use and top ups. Data has been fed back to the specialist pool consultant and contractor to review and assess overall dosing performance moving through this transitional stage.

4.2 As intimated previously a meeting was arranged and held on 14 March with the principal leads from the following parties (i) Devin Pool Consulting, (ii) Barr & Wray Ltd, (iii) Robertson Construction, (iv) L&CD and (v) DCC. The meeting covered all aspects of the current closure in relation to the dosing and pool chemical process. Critically Devin Consulting had been carrying out ongoing research based on the data recorded by L&CD staff as well as visiting the site for a general site survey, plant inspection and discussion with the L&CD plant operators prior to the meeting…

…4.4 Chemical Dosing – Use of Sodium Bicarbonate The use of calcium hypochlorite tends to raise the pH of swimming pool water. Hydrochloric acid is required to lower the pH value to what is best for effective disinfection in the range of 7.2-7.4 pH. A further chemical, sodium bicarbonate is regularly used in the management of pool water quality. Sodium bicarbonate is added to pool water to (i) assist the effectiveness of the other pool chemicals calcium hypochlorite and hydrochloric acid, (ii) stabilise pH levels avoiding too acidic or alkaline water quality and (iii) assist with water clarity.

Devin have now requested that L&CD reduce the use of their sodium bicarbonate quantities as this may be affecting the performance of the chlorine and acid dosing of the pool system.

Essentially the alkalinity of the water is drawing in the use of more chlorine and acid than anticipated to maintain pool monitoring readings within the required parameters.

Current quantities of sodium bicarbonate while based on previous L&CD practices, are significantly above target guidance. L&CD have been instructed to revise maximum alkalinity target to 60 (circa 50% lower than current practice).

Aligned to this is the method and frequency of adding the sodium bicarbonate to the pools. This requires to be slowed down and spread out over a timetabled period,

[9] Members Briefing Note 1 dated 5 March 2024.

distributed evenly around the pools to avoid shock dosing of the pool leading to chemical instability and fluctuating readings.

The results from this change have indicated that the pool system performance is now trending towards more stable performance and should lead to tolerance levels expected to be operating within. Devin will continue to monitor the data provided to reinforce their initial findings from this weeks data." [10]

4.4 While the information provided by both DCC and L&CD all underlines the point above that the key concern was the stability of the chemical dosing system, views vary as to the reason or reasons for the time spent on that, to the extent that time was over and above what might be anticipated in the circumstances described at paragraph 5.8 of the Members Briefing Note 1 above.

4.5 Some DCC personnel considered that contributing factors to the issues arising were difficulties in "*getting to grips*" with how best to operate the new system and move away from old practices, potentially in part due to an incomplete understanding of that new system caused by an insufficient induction. L&CD however considered that there were issues in particular with (i) inadequate calibration of the dosing controls, which it said led to a fundamental misalignment in the system's operation and thus contributed significantly to the failures experienced as well as (ii) equipment deficiencies, with the dosing system not operating as it was meant to.

4.6 Those points raised by L&CD are reflected in the email of [redacted] [redacted] of L&CD to [redacted] [redacted] at DCC, and others, on 18 April 2024 at 4.05pm:

"…*So far so good. We have been carrying out the "install" process and the results are noticeable with us using 40%+ less acid in the last week. The figures for the prior week were a bit off as we were running on fumes waiting for a delivery. You will be able to see the day last week on the pool tests that we ran out before the delivery the following day.*

This exercise brought the readings closer than it has ever been since the install of the new system. With the machine having not been set up right from the start it completely explains why the readings were never close. I am happy to discuss this in more detail.

It's a slow process as I detailed in my original email. Bayrol suggesting we should see a difference after a couple of weeks.

It gets to the root of the problem going on. The control units were not reading properly so they have been dosing inaccurately. Confirmed by the manufacturers of the control units Bayrol. That's the cause of the merry go round effect and excessive acid use.

[10] Members Briefing Note 2 dated 17 March 2024.

Until that was addressed our manual efforts were not going to matter. The system was dosing too much acid despite the bicarb reduction.

You will be able to refer to my previous emails on the "yo-yo" effect and how the pH readings were completely out.

Normal calibrations could not resolve the issue. This change is us acting as though control units are new out the wrapper to draw a line on the control issues. Each day there are noticeable differences as we edge towards having the control that is required.

There will continue to be issues perhaps for a couple more weeks i.e. this morning we had too much chlorine in the competition pool. I propose it's another factor in it adjusting.

The chlorine levels are much better in general. Last week they bounced as the controllers got to grips with the readings. It's about line of sight. Suddenly the controllers can see the water standards and can dose accordingly." [11]

4.7 DCC asked Barr + Wray and Devin on 18 April 2024 if the points in that email above were a "*correct assessment of what has been happening with the Bayrol units calibration impacting on the whole system and operational response?*"

4.7.1 Barr + Wray responded on 18 April 2024 saying that "*the Bayrol units were set up correctly. The only thing that the Bayrol Engineer suggested was to calibrate the units more frequently*." [12]

4.7.2 Devin responded on 19 April 2024:

"*Regarding the site managers observations in the email…I wouldn't consider the chemical controllers to be the root cause of the issue. There have been significant improvements in the water sample and acid usage results prior to the Bayrol technicians review and any subsequent recalibration exercises undertaken. However, there is a discrepancy between the pool and controller sample readings which requires further investigation/action. The concentration of disinfectant residual within the pool can vary in different areas of the pool, so it may be beneficial to take samples from different parts of the pool to see what impact this may have on the pool readings.*

The daily report data has been populated into a series of charts in the attached document to provide a visual representation of the results from the past month to accompany my latest observations below.

[11] Email of [redacted] to [redacted] and others on 18 April 2024 at 16:05.
[12] Email of [redacted] to [redacted] and others on 18 April 2024 at 16:53.

From a review of the information received on the water test reports since our meeting in March, and the Bayrol technicians report, my observations are as follows:

 Following adjustment of the alkalinity target level to 60mg/l on 14/03, the records show a consistent trend in maintaining a stable pH value.

 The acid usage indicated a noticeable improvement from 02/04 onwards, providing a reduction of 40% usage compared to the data prior to this date. This could be attributed to the reduction in sodium bicarb and lower alkalinity levels.

 Records since the meeting indicate controllers are maintaining pH and free chlorine set points.

 From the Bayrol review on 08/04, the technician believes the controllers are working correctly.

 Records indicate discrepancies between pool sample readings and controller sample readings.

o Further clarification/instruction may be required from the Bayrol technician to verify the site operatives have interpreted any calibration instructions correctly.

o Current water testing regime to be reviewed. Information can be referred to within the PWTAG guide.

o Further training by a recognised trainer recommended." [13]

4.8 In looking to comment on the question of what the causes of the dosing system not operating as expected were when the Olympia reopened, taking in the possible causes raised by both DCC and L&CD, the Devin operational issues updates from April 2024 through to the latest one we have in January 2025[14] are consistent in noting that:

4.8.1 "*In summary, systems are displaying a relatively stable pH value and maintaining the required free chlorine levels, indicators that the systems are providing a water quality in accordance with PWTAG* [Pool Water Treatment Advisory Group] *guidelines*"

4.8.2 Actions taken in respect of matters such as the pH set point, sodium bicarbonate dosing, UV dosing levels and the installation of an additional bulk tank have led to a stable pH value being maintained and a significant

[13] Email from [redacted] to [redacted] and others on 19 April 2024 at 12:23.
[14] Operational Status Report by Devin Consulting dated 28 January 2025.

reduction in chemical usage. For example, in respect of sodium bicarbonate dosing – which was often referred to in the information provided, the most recent Devin report sets out:

"*Issue*

• Very large amounts of sodium bicarbonate were being added to pools; alkalinity levels fluctuated wildly, and regularly in excess of 150 mg/l. This would have led to a lot of acid being used, which in turn knocks the alkali out (causing the system to 'chase its tail').

Actions undertaken

• Alkalinity target level adjusted to 60 (March 2024).

• Site advised to dose sodium bicarbonate in smaller and frequent quantities. Site operatives have adopted this approach, utilising the dosing pots in the plantroom to dose the sodium bicarbonate.

Improvements

• Smaller quantities of sodium bicarbonate are being used.

• Records indicate a stable pH value, and lower alkalinity is being maintained in all pools."

4.8.3 Those reports do note that discrepancies between manual and controller readings were advised, with recalibration having been undertaken by L&CD and the view from a Bayrol technician that the chemical controllers were working correctly. For example, the latest Devin report sets out:

"*4.0 Bayrol chemical controllers and manual water testing*

Issue

• Operators advised discrepancies between manual and controller readings.

Actions undertaken

• Site operators have recalibrated chemical controllers to align with manual probe readings.

• Bayrol technician has undertaken a remote review of the chemical controllers via telecon with Olympia staff (April 2024). The technician believes the controllers are working correctly."

4.8.4 The Devin reports also recognise that "*the complexities of the systems warrant additional training for site operatives*."

4.9 In light of the above and the currently available evidence, our view on question three is that:

4.9.1 Information provided by both DCC and L&CD underlines that the key concern was the stability of the chemical dosing system:

4.9.2 Views vary as to the reason or reasons for the time spent on achieving that stability, but Devin was asked to consider these and set out their professional opinion that the chemical controllers were not the cause of the issue in achieving that stability. The available evidence therefore does not seem to us to support the view that the chemical controllers were the cause of the issues with the dosing system.

4.9.3 Devin then notes that actions taken in respect of matters such as the pH set point, sodium bicarbonate dosing, UV dosing levels and the installation of an additional bulk tank have led to a stable pH value being maintained and a significant reduction in chemical usage.

4.9.4 It therefore seems to us, from the available evidence, that the time spent on the dosing system is due to the circumstances described in paragraph 5.8 of the Members Briefing Note 1 as follows, with our underlined emphasis of those points we see being highlighted by the evidence:

"…*the merging and marrying in with existing equipment and procedures to achieve the optimal operation balance and efficiency has influenced further adjustments and modifications being required of a system that is now part new and part original. Accordingly, there is a requirement to bed in the new equipment. It has taken time and it is only through live pool operation that these interfaces can be fully tested. Commissioning as an exercise is carried out towards the end of the contract in ideal conditions without other routine operations going on. It is a realistic expectation that this will not always be straightforward and that time is needed to bed in with a soft start in an existing facility particularly important. As issues arise the pools systems are highly complex and interrelated with diagnosis being progressive, working through each scenario in turn until the effective solution is achieved.*"

5 QUESTION 4

5.1 The question here is - was the original scope of capital works sufficiently comprehensive to ensure that all works identified following the closure in 2021 were addressed during the 2023/2024 closure?

5.2 The report, dated 25 November 2021 and numbered 336-2021, for the City Development Committee meeting on 6 December 2021 sets out:

5.2.1 That "*a planned major refurbishment for the leisure pool is currently being finalised which will necessitate a longer-term closure of the pool facilities at Olympia*"

5.2.2 "*A health and safety risk issue was identified at Olympia on 29 September 2021 due to a failure of fixings associated with the light fitting mountings in the pool area…as a precautionary measure the decision was therefore taken by Officers to close pool facilities…During this period of closure further inspection works were carried out in other areas of the facilities…the Council have instigated additional survey works comprising technical advice from City Development Officers and engaging with specialist services and pool consultants to assess the overall facility. Once all survey works have been completed and fully assessed, any further works identified will be scoped, designed and incorporated into the works programme outlined below*."

5.2.3 "*Prior to the light fixing issue occurring, Council Officers had been developing a programme of 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 are essentially in relation to surface and superficial corrosion, general refurbishment and upgrading and rectification of water egress within ancillary plant areas.*

Through discussions with the Council's Specialist Mechanical, Electrical and Structural Engineers and the Director of Leisure and Culture Dundee, it is now recommended that the facility should remain closed until all works are complete on site. These works will include the originally scoped refurbishment programme and take account of all survey work outlined [in paragraph 5.2.2 above]." [15]

5.3 DCC personnel discuss a list of issues which were brought to DCC by L&CD's operational team. This list was subsequently developed into the scope of works.

[15] Report, dated 25 November 2021 and numbered 336-2021, for the City Development Committee meeting on 6 December 2021.

L&CD says that the scope of the project addressed critical issues such as (i) an overly potent chemical dosing system, (ii) reduced airflow due to energy efficiency modifications, (iii) insufficient airflow pipework and (iv) evaporation issues causing damage to fixtures and fittings. However, L&CD says that there were unaddressed problems such as humidity control.

5.4 From the information we have been provided with, specifically in the scope of works document we have been provided called *Appendix 1 – Olympia Remedial Works Scope*[16]*,* we note that the scope did include for *Ventilation Works* (no.19 of the scope) and "*Air Handling Units"* (no.35 of the scope) which should include for humidity control.

5.5 L&CD also voiced some Quality and Design Concerns on the basis that "£*6 million Olympia project was rushed, leading to substandard work and safety risks. The same* team responsible for initial issues oversaw the project, resulting in unmet standards." These allegations as to substandard work do not seem to us to be relevant to the question here, which is one as to fulfilment of identified scope in asking whether the works identified following the closure in 2021 were addressed during the 2023/2024 closure, unless the argument is that the works referred to were not in fact carried out but we have seen no evidence in support of that.

5.6 In light of the above and the currently available evidence, our view on question four is that the original scope of capital works was sufficiently comprehensive to ensure that all works identified following the closure in 2021 were addressed during the 2023/2024 closure. As with any refurbishment additional works will be required, which were unexpected, but any additional works would not be arising due to an insufficient scope of works but rather due to the very nature of carrying out works on a refurbished building.

6 QUESTION 5

6.1 The question here is - why were additional capital works required following the £6.1m capital investment?

6.2 We understand that the additional works referred to here are those set out under the following heading:

"2. *Additional Works – Efficiency & Operational Measures undertaken after closure*

- *Additional Supplementary bulk acid tanks*
- *Additional Sampling Pumps to Controllers*

[16] Appendix 1 – Olympia Remedial Works Scope.

• *Break Tank*

• *Further planned prevention works – replacement of acrylic screw bolt fixings lighting tracks cable trays*"

6.3 The first three of those items are also referred to in the Members Briefing Note 1[17], where their benefit is described as follows:

"*Efficiency & Operational Measures*

5.12 Additional supplementary bulk acid tank –This additional storage will provide L&CD with additional resilience when ordering and managing chemical stock levels. Anticipated 6-8 week lead in with an install date to be confirmed. Pool operations can continue as the installation works will not require a further closure. Interim management arrangements will be implemented to assist with controlling current usage by introducing a temporary switch to an 18% concentrate until the supplementary bulk tank is operational.

5.13 Additional Sampling Pumps to Controllers – Proposals are being developed, to provide better variable dosing function, particularly through higher demand periods and out of operational hours. Programme and costs are currently being developed for installation.

5.14 Break Tank – Additional break tank install to segregate the draw off for two separate tasks providing increased stability in flow for the hopper arrangement and poolside rinse down regime. Programme for installation of the tanks is currently being developed. Pool operations can continue as the installation works will not require a further closure. Interim management arrangements are currently in place with alternative source for poolside wash-down water being used to allow dedicated uninterrupted water supply for dosing in the interim."

6.4 DCC personnel were clear that these additional works were not omissions from the scope of the works forming the £6.1m capital investment but were instead works that they could see they would likely have to carry out over the next few years, which may well require a further closure, and the opportunity was therefore taken to carry them out while the Olympia was already going to be closed. They were therefore described as works brought forward to be carried out while the Olympia was closed, to save a future closure. We have not seen any evidence that contradicts that.

6.5 In light of the above and the currently available evidence, our view on question five is that the additional capital works referred to were works that were brought forward in light of the opportunity to undertake them while the Olympia was closed for other works, in order to save a future closure.

[17] Members Briefing Note 1 dated 5 March 2024.

7 QUESTION 6

7.1 The question here is - what impact (if any) did the working relationship between Dundee City Council as Building Owner and Leisure and Culture Dundee as Building Manager have on the causes of, and length of, the recent closure?

7.2 To start with, we wish to highlight that all DCC and L&CD personnel were clearly strongly driven by a desire to secure the best outcomes for the Olympia and the facilities it provides to the public. To a greater or lesser extent though, all commented that the working relationship between the two organisations could be better. In some cases, that is an understatement. While some personnel spoke of perhaps understandable issues arising where it is unclear who, between landlord and tenant, bears responsibility for looking after what, other comments ranged from:

7.2.1 A view that "*communication has not been fabulous*" (although, consistent with many others that "*all of us would like to change that going forward*"): through to,

7.2.2 Strongly expressed concerns from some in L&CD as to exclusion of key personnel from critical meetings and decisions, withholding of reports, disregarding feedback and bypassing direct communication.

7.3 From the available information, it seems to us that the primary causes of the closure were the events arising in respect of (i) the flume pipework and support, as well as (ii) the chemical dosing system. It does not seem to us that there is any evidence showing that the working relationship between DCC and L&CD – in whatever way that is characterised - gave rise to those events causing closure.

7.4 Equally - while there is considerable disagreement as to (i) the possible causes of the issues arising in respect of the chemical dosing system and (ii) the manner in which decisions were taken in respect of it - we have not seen evidence that the time involved, in works or other measures carried out following those events, was notably prolonged due to the working relationship between DCC and L&CD.

7.5 In light of the above and the currently available evidence, our view on question six is that the working relationship between DCC and L&CD did not prolong the project. Both DCC and L&CD personnel expressed a strong desire to work better together, especially in relation to Health and Safety matters. Communication between the parties could no doubt have been better, but this did not affect the recent closure.

Burness Paull LLP
9 July 2025

APPENDIX 1

Appendix 1 to Report to Dundee City Council – Olympia

INDEX OF DOCUMENTS

APPENDIX 1 – OLYMPIA REMEDIAL WORKS SCOPE

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
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	Café Kitchen Facilities –Upgrade catering equipment to electric from gas for energy efficiency.

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OLYMPIA REFURBISHMENT - MEMBERS BRIEFING NOTE ONE

1.0 Introduction

1.1 This briefing note has been prepared to update councillors regards the current issues that have affected the opening and operation of Olympia in recent weeks.

1.2 The two main issues relate to the burst supply pipework at the red flume and the operation of the new chemical dosing installation. A further item has also been included in this note to update members in relation to the operation of the diving boards.

2.0 Overview - Olympia Refurbishment

2.1 Through the initial part of the Olympia closure period, internal council design staff collaborated across building disciplines to consider the design and construction of Olympia. 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.

2.2 Utilising expertise from all sectors of the industry has ensured a systematic approach was taken to reviewing the performance of the building, providing solutions to the legacy issues encountered.

2.3 Having assessed the surveys carried out, reviewing the design and construction of Olympia, the findings then informed the full scope of works content for the project. This comprised the rectification of water egress, improvements to environmental conditions and the general fabric upgrading, refurbishment and plant replacement. Report 150-2022 appendix 1 considered at Recess Sub-Committee 6 July 2022, outlined the items that were assessed as being in scope with subsequent design development progressed to form the contract works.

3.0 Works to Flume Pipework and Supports

Background

3.1 Failure of the supply water pipe to the red flume, subsequently caused a supporting rod to fall due to the disproportionate force of the pipe failure dislodging the rod. These elements of the facility were not in the scope of works for the refurbishment contract based on the condition and performance to date. The pipe fracture was a localised failure on a specific one-off run of pipework unique for the supply to the flumes. It would not have been possible to have anticipated this type of failure occurring. The complexity of this repair work is the height and access to the flume deck and services rather than the work content itself.

3.2 Required material and specialist sub-contractor labour were mobilised as quickly as practicable. The main contractor Robertson supporting and co-ordinating, exerting their presence in the market to have the required plant, labour and material on site for safe working practices to execute the works asap.

3.3 Further high-level inspection and assessment in areas around the flume launch pad have also been carried out. Whilst access is available, this opportunity was used to undertake a further inspection, to then augment or replace any components deemed necessary as preventative and protective works.

Progress of Work

3.4 The developed programme of works has progressed through the period of closure as follows:-

Flume Deck & Flumes

- Fractured flume supply pipe repaired and tested.

- Uni-strut supports to flume deck overhauled.
- Remaining restricted access high-level nylon rods over flume deck removed/replaced.

3.5 Barr and Wray completed the replacement section of the pipe to the red flume Wednesday 28 February, this was tested several times, switching on the pump and robustly testing for 45 minutes. Multiple tests were completed successfully.

3.6 L&CD further tested all water features the following morning (Thurs Feb 29th) and confirmed that all equipment was operational comprising the flumes, the toddler play structure, the water cannons and the waves.

3.7 The rope access contractor, completed the replacement of the remaining high level harder to access rods adjacent to the flume platform and also replaced the water supply pipe bracket that could not be accessed from the mobile hoist.

4.0 Planned Preventative Works

Areas of acrylic screw bolt fixings have previously been identified to lighting tracks in the pool hall. Planned replacement of these components at a future date was brought forward and undertaken out-with operational hours. From assessment, this is considered to be low risk, given the nature of the components and their designed function. Night time working commenced this week and a targeted completion has been set for the 15 March.

5.0 Dosing System

Background

5.1 The chemical dosing system manages the demand and supply of chemicals to the pool based on chemical balance readings taken from the pool monitoring system. Essentially combatting bacteria and microbes disinfecting the water for safety.

5.2 These readings are in a state of constant change and vary across the three pools. The readings are impacted by, the amount of fresh water in the pool at any time, the number of contaminants in the pools brought in by bathers, the pH balance of the pool as chemicals are added and chlorine is used up as it combats contaminants.

New System

5.3 The Committee Report considered at recess sub-committee July 2022 outlined the current dosing strategy of using hydrochloric acid, for all pool systems, will continue to be used for pH correction going forward, providing the optimum solution across the 3 pools.

5.4 Through the specialist surveys, reports and working with L&CD, implementation of the recommendations from the pool consultant was taken to modernise the dosing system while Olympia was closed. Certain component parts were of an age that would require replacement in the relative near future, therefore the contract period was seen as a suitable opportunity for life cycle replacement. Based on the construction programme approved at committee there was sufficient time to carry out the works during the planned contract period.

5.5 On the advice of the pool consultant and with support from L&CD the chlorination chemical dosing system has been changed to one which the industry would more normally expect to see in a modern leisure facility with the selected chemical dosing chosen as the most appropriate for the soft water supply in the Dundee area.

5.6 The chemical dosing system was replaced to improve balance of chemicals, reduce manual handling of chemicals and H&S risk to staff, assisting with the sometimes perceived harsher/concentrate of chemicals from an older type of system and work in tandem with the ventilation installation to manage overall atmospheric conditions in the pool hall.

Current Operational Performance

5.7 Since the facility reopened in December 2023, the stability of the chemical dosing system performance has not been where it was anticipated, leading to the requirement for the pools to be closed for further investigation, testing and any necessary works to take place to improve stability and efficiency of the dosing and overall performance.

5.8 While the system conforms to the specification provided by the pool consultant, the merging and marrying in with existing equipment and procedures to achieve the optimal operation balance and efficiency has influenced further adjustments and modifications being required of a system that is now part new and part original. Accordingly, there is a requirement to bed in the new equipment. It has taken time and it is only through live pool operation that these interfaces can be fully tested. Commissioning as an exercise is carried out towards the end of the contract in ideal conditions without other routine operations going on.

It is a realistic expectation that this will not always be straightforward and that time is needed to bed in with a soft start in an existing facility particularly important. As issues arise the pools systems are highly complex and interrelated with diagnosis being progressive, working through each scenario in turn until the effective solution is achieved.

5.9 All parties involved in the refurbishment contract with particular focus from the specialist pool contractor and pool design consultant have continued to monitor the performance of the pool chemical dosing system over recent weeks, as well as discuss and implement further measures.

5.10 Components that are part of the dosing system that have been subject to high activity and intensive use in recent weeks have had a planned service brought forward to provide a baseline for monitoring performance when re-commencing operations.

Summary of Ongoing & Planned Works

5.11 Servicing Equipment

- Calcium Hoppers – Works carried out in conjunction with L&CD staff – completed between 1st and 3rd March.
- Chemical Controllers – completed 5 March.

Efficiency & Operational Measures

5.12 Additional supplementary bulk acid tank –This additional storage will provide L&CD with additional resilience when ordering and managing chemical stock levels. Anticipated 6-8 week lead in with an install date to be confirmed. Pool operations can continue as the installation works will not require a further closure. Interim management arrangements will be implemented to assist with controlling current usage by introducing a temporary switch to an 18% concentrate until the supplementary bulk tank is operational.

5.13 Additional Sampling Pumps to Controllers – Proposals are being developed, to provide better variable dosing function, particularly through higher demand periods and out of operational hours. Programme and costs are currently being developed for installation.

5.14 Break Tank – Additional break tank install to segregate the draw off for two separate tasks providing increased stability in flow for the hopper arrangement and poolside rinse down regime. Programme for installation of the tanks is currently being developed. Pool operations can continue as the installation works will not require a further closure. Interim management arrangements are currently in place with alternative source for poolside wash-down water being used to allow dedicated uninterrupted water supply for dosing in the interim.

5.15 Water source pH set-point to be adjusted to 7.4 from 7.2, assisting chemical dosing process by demanding less acid working with the 18% concentrate as the system requires less acid.

5.16 L&CD to monitor and record daily chemical use and top ups. Data to be fed back to specialist contractor and pool consultant to review and assess overall dosing performance moving through this transitional stage.

Further Actions

5.17 Chief officers have assessed the current position and the following actions have commenced:-

i) The contract for the Olympia refurbishment project has been passed to the [redacted] to review aspects in relation to dispute resolution clauses.
ii) The contract for the Olympia refurbishment project has been shared with the Head of Legal & Democratic Services for review.
iii) A request has been made to the main contractor for a written report which requires to include the following:-

- the current position with issues/challenges relating to the dosing system;
- recommendations to address the issues/challenges;
- timescales for rectification;
- associated cost implications.

5.18 Training – Further commissioning, demonstrations and training for chemical dosing and associated equipment have been instructed with details awaited. This is to ensure all L&CD staff are fully briefed on operating procedures and when deviation is required to maintain system balance.

Reactive attendance and on-call requirement – availability from contractor and consultant ongoing through the duration of the current alterations and as the facility reopens is being discussed.

Communication between all parties involved continues to be carried out daily, based on the urgency to have Olympia fully operational at the earliest available opportunity.

6.0 Additional Work Costs

Due to the reactive nature of the works contained in this report, the costs for each element are still to be fully ascertained. Based on the opinions from procurement and legal services still being considered in addition to the main contractor's report, the council will evaluate all factors to ensure that only costs are reimbursed for additional works out with the scope of the refurbishment contract. Where works have or are to be carried out as part of the contractual defects liability period, officers will ensure the appropriate deductions are made to the relevant parties.

7.0 Diving Pool Platform Operation

7.1 L&CD recorded two separate accidents (2016 and 2017) which involved young persons slipping and falling at the diving-board platforms. Shortly after these accidents, a temporary barrier was added to mitigate the risk of any further accidents - with a view to providing a permanent solution in-conjunction with safe methods of working and supervision.

7.2 Options for the permanent solution were discussed, although no option was fully developed or signed off with L&CD for implementation prior to the closure of the facilities.

7.3 As part of the refurbishment contract, options were reviewed and fully designed to minimise future risk from similar events. Designs were developed in consultation with L&CD to ensure safe operational management procedures could be implemented, staff could maintain and clean the guardrails and compliance with World Aquatics/FINA guidance continued to be adhered to.

7.4 The extent of additional railing over and above World Aquatics/FINA guidance was signed off by L&CD officers in April 2022 and installation of the rails took place during the recent refurbishment.

7.5 L&CD are currently reviewing their operational management of the dive pool and will implement appropriate risk assessed procedures. Appropriate further training will be provided to life guard staff to ensure safe working practices are in place for the dive pool operations.

Neil Martin
Head of Design & Property

Date 5 March 2024

CONFIDENTIAL

OLYMPIA REFURBISHMENT - MEMBERS BRIEFING NOTE TWO FOR W/C 18 MARCH

1.0 Introduction

1.1 This briefing note has been prepared to further update councillors regards the current issues that have affected the opening and operation of Olympia in recent weeks.

1.2 The briefing note updates for the following items:-

- Flume pipework and supports
- Dive platform operation
- Dosing system operation
- Contract snagging and defects

2.0 Works to Flume Pipework and Supports

2.1 The summary of works has progressed as follows:-

- Fractured flume supply pipe repaired and tested - complete
- Uni-strut supports to flume deck overhauled, completed and inspected - compete
- Remaining restricted access high-level nylon rods over flume deck removed/replaced - complete

Planned Preventative Works

- Replacement of acrylic screw bolt fixings lighting tracks cable trays – complete.

3.0 Diving Pool Platform Operation

3.1 Although the current platform installation complies with World Aquatics/FINA guidance, combined with the extent of additional railing over and above the guidance, Environment Health Officers (EHO) advice based on the nature of the incidents and public use have instructed further physical barriers are installed for the 3m and 5m boards.

Officers have developed a design for additional barriers to be installed at the relevant areas of the diving platform structure. This design has been accepted by the council EHO and works have been instructed. The programme for this work is currently being finalised with around a 5 week lead-in period and subsequent two shift operation out with operational hours for the site installation. Based on these time constraints the projected date for completion will be week commencing 22 April.

Arrangements are being explored by L&CD and support from Corporate H&S to examine the possibility of opening with temporary arrangements in place.

3.2 L&CD have reviewed their operational management of the dive pool and will implement appropriate risk assessed procedures. Appropriate further training will be provided to life guard staff to ensure safe working practices are in place for the dive pool operations.

4.0 Dosing System

4.1 L&CD have monitored and recorded daily chemical use and top ups. Data has been fed back to the specialist pool consultant and contractor to review and assess overall dosing performance moving through this transitional stage.

4.2 As intimated previously a meeting was arranged and held on 14 March with the principal leads from the following parties:-

- Devin Pool Consulting
- Barr & Wray Ltd
- Robertson Construction
- L&CD
- DCC

The meeting covered all aspects of the current closure in relation to the dosing and pool chemical process. Critically Devin Consulting had been carrying out ongoing research based on the data recorded by L&CD staff as well as visiting the site for a general site survey, plant inspection and discussion with the L&CD plant operators prior to the meeting.

4.3 Update on Planned Efficiency & Operational Measures

Break tank installation – programmed for week commencing 1 April.

Bulk Acid Tank installation programme tba – 6-8 week lead in time.

Sample pumps to controls – costs and programme awaited.

Note:-

1) Confirmation provided that none of the above measures are required to be in place for the opening and functioning of the dosing system.

2) Confirmation provided that for the above works to take place will not require a closure of the pool during operation hours.

4.4 Chemical Dosing – Use of Sodium Bicarbonate

The use of calcium hypochlorite tends to raise the pH of swimming pool water. Hydrochloric acid is required to lower the pH value to what is best for effective disinfection in the range of 7.2-7.4 pH.

A further chemical, sodium bicarbonate is regularly used in the management of pool water quality.

Sodium bicarbonate is added to pool water to:-

- assist the effectiveness of the other pool chemicals calcium hypochlorite and hydrochloric acid
- stabilise pH levels avoiding too acidic or alkaline water quality
- assist with water clarity

Devin have now requested that L&CD reduce the use of their sodium bicarbonate quantities as this may be affecting the performance of the chlorine and acid dosing of the pool system.

Essentially the alkalinity of the water is drawing in the use of more chlorine and acid than anticipated to maintain pool monitoring readings within the required parameters.

Current quantities of sodium bicarbonate while based on previous L&CD practices, are significantly above target guidance. L&CD have been instructed to revise maximum alkalinity target to 60 (circa 50% lower than current practice)

Aligned to this is the method and frequency of adding the sodium bicarbonate to the pools. This requires to be slowed down and spread out over a timetabled period, distributed evenly around the pools to avoid shock dosing of the pool leading to chemical instability and fluctuating readings.

The results from this change have indicated that the pool system performance is now trending towards more stable performance and should lead to tolerance levels expected to be operating within. Devin will continue to monitor the data provided to reinforce their initial findings from this weeks data.

It was emphasised at the meeting to all parties involved with the project that DCC require the appropriate level of confidence in the systems performance combined with adjustments to L&CD operational procedures to determine when the pools can be reopened.

4.5 Dosing Controllers

Dosing Controller data variations - supplier to visit site and review.

L&CD manual testing of water procedures to be reviewed.

4.6 Preparation for Re-opening

Further commissioning, demonstrations and training for chemical dosing and associated equipment were also discussed and will be developed and implemented prior to re-opening. This is to ensure all L&CD staff are fully briefed on operating procedures and when deviation from standard practice is required to maintain system balance.

Reactive attendance and on-call requirement – availability from contractor and consultant ongoing through the duration of the current alterations and as the facility reopens is being discussed.

Communications

4.7 LACD and the Council are currently working on a communication strategy at this time, taking consideration of the up and coming school holiday period. Assessing the current position as it stands, an opening date has still to be established.

5.0 Contract Works – Defects Liability Period

Contract snagging and defect works will be picked up and remedied throughout and at the end of the 12 months defect liability period. Works will be programmed to avoid operational hours or programmed for future planned closures later in the year as appropriate.

i) A defect has occurred in relation to the flume deck floor covering where a split has occurred in the membrane. The rectification of this requires a week closure to carry out the work and allow curing time. The council and Robertson are currently exerting pressure on the flooring contractor for a locked in date for this work to take place.

ii) A previously identified leak at the base of the blue flume catch pit will be carried out within the same closure period for the flume deck floor repair.

6.0 Additional Work Costs

Due to the reactive nature of the works contained in this report, the costs for each element are still to be fully ascertained. Based on the opinions from procurement and legal services still being considered in addition to the main contractor's report, the council will evaluate all factors to ensure that only costs are reimbursed for additional works out with the scope of the refurbishment contract. Where works have or are to be carried out as part of the contractual defects liability period, officers will ensure the appropriate deductions are made to the relevant parties.

Neil Martin
Head of Design & Property Date: 17 March 2024

OLYMPIA REFURBISHMENT - MEMBERS BRIEFING NOTE THREE (CONFIDENTIAL)

1.0 Introduction

1.1 This briefing note has been prepared to further update councillors regards the current issues that have affected the opening and operation of Olympia in recent weeks.

1.2 The briefing note updates for the following items:-

- Flume pipework and supports
- Flume deck cover and catch pit repair
- Dive platform operation
- Dosing system operation

2.0 Works to Flume Pipework and Supports

2.1 As previously reported the works are now fully completed.

3.0 Flume Deck Floor Covering & Catch Pit

3.1 A defect has occurred in relation to the flume deck floor covering where a split has occurred in the membrane. The rectification of this requires a week closure to carry out the work and allow curing time. The programme for this work is planned for week commencing 8 April.

3.2 A previously identified leak at the base of the blue flume catch pit will be carried out within the same closure period for the flume deck floor repair.

4.0 Diving Pool Platform Operation

4.1 Officers have developed a design for additional barriers to be installed at the relevant areas of the diving platform structure. The detailed design has been developed with final queries signed off by council officers. The programme for this work is currently being finalised (due to the Easter holidays) with around a 5 week lead-in period and subsequent two shift operation out with operational hours for the site installation. Based on these time constraints the projected date for completion will likely now change from week commencing 22 April to w/c 29 April.

Arrangements have been explored by L&CD and the decision to wait for the permanent works being installed before reopening the 3m and 5m platforms has been made.

5.0 Dosing System

5.1 L&CD continue to monitor and record daily chemical use. Data has been fed back to the specialist pool consultant and contractor to review and assess overall dosing performance moving through this transitional stage.

5.2 Detailed information on all chemical quantities used is being fed back to the pool consultant to assess overall efficiency and performance.

5.3 Update on Planned Efficiency & Operational Measures

Break tank installation – works currently on site, final connection, nightshift Thursday 11 April.
Bulk Acid Tank installation programme tba – 6-8 week lead in time – L&CD pursuing Brenntag for sign off the design proposals
Sample pumps to controls – cost submitted - programme awaited from Barr & Wray

Note:-

1) Confirmation provided that none of the above measures are required to be in place for the opening and functioning of the dosing system

2) Confirmation provided that for the above works to take place will not require a closure of the pool during operation hours

5.4 Chemical Readings

As reported previously the results from measures taken continue to indicate that the pool system performance is stable as verified by the pool consultant. Devin continue to monitor the data provided reinforcing their findings.

Since last reported the readings have continued to stabilise and provide evidence and assurance that the measures implemented have had the predicted improvement in chemical balance for all pools.

5.5 Dosing Controllers

Dosing Controller data variations – video conference call arranged for 8 April to review live operational procedures.

5.6 Poolside Cleaning

To ensure that the first point of protection against corrosion is as robust as possible, the council are
developing a cleaning protocol for L&CD to adopt. Audit checks will be carried out by the council to ensure cleaning is implemented to the required levels.

5.7 Preparation for reopening

Commissioning, demonstrations and training for chemical dosing and associated equipment are being developed and implemented prior to re-opening. The Council are arranging for an external specialist in pool systems to provide further training for L&CD staff with appropriate courses. This is to ensure all L&CD staff are fully briefed on operating procedures and day to day plant management in line with Pool Water Treatment Advisor Group (PWTAG) guidance.

Next Steps

5.8
- Continued monitoring of the pool system and chemical levels
- Meeting to be arranged with Dundee City Council and LACD to discuss information from the pool consultant, this will be scheduled for w/c 15th April
- Consider potential opening dates and the approach for opening.
- Communication strategy for engaging with elected members, staff and public

Neil Martin
Head of Design & Property

Date: 10 April 2024

CONFIDENTIAL

OLYMPIA REFURBISHMENT - MEMBERS BRIEFING NOTE FOUR FOR W/C 15 APRIL

1.0 Introduction

1.1 This briefing note has been prepared to further update councillors regards the current issues that have affected the opening and operation of Olympia in recent weeks.

1.2 The briefing note updates for the following items:-

- Flume pipework and supports
- Flume deck cover and catch pit repair
- Dive platform operation
- Dosing system operation

2.0 Works to Flume Pipework and Supports

2.1 The works are now fully completed.

3.0 Flume Deck Floor Covering & Catch Pit

3.1 This work has been carried out as programmed last week.

3.2 The leak at the base of the flume catch pit has been repaired. The testing of this will happen once fully operation. If further work is required this will be programmed at a suitable time to avoid operational disruption.

4.0 Diving Pool Platform Operation

4.1 The programme for this work is now finalised with material programmed for arriving w/c 22nd April. Fabrication in the contractor yard will be during that week. The following week work will take place on site with two night shifts for installation, with the work being completed at the latest by Friday 4th May. The 3m and 5m platform will then be available for use.

5.0 Dosing System

5.1 L&CD continue to monitor and record daily chemical use. Data has been fed back to the specialist pool consultant to review and assess overall dosing performance.

5.2 Detailed information on chemical quantities used is being fed back to the pool consultant to assess overall efficiency and performance.

5.3 <u>Chemical Readings</u>

As reported previously the results from measures taken in recent weeks continue to indicate that the pool system performance is stable as verified by the pool consultant. Devin continue to monitor the data provided reinforcing their findings.

Since last reported the readings have continued to stabilise and provide evidence and assurance that the measures implemented have had the predicted improvement in chemical balance for all pools.

Systems are displaying a stable pH value and maintaining the required free chlorine levels, indicating that the systems are providing a water quality in accordance with Pool Water Treatment Advisory Group (PWTAG) guidelines.

The data is also now demonstrating the reduction in acid use.

5.4 Update on Planned Efficiency & Operational Measures

Break tank installation – works complete. Commissioning 16/17 April, operational by end of this week.
Bulk Acid Tank installation programme tba – 6-8 week lead in time – Details being finalised with the design prior to issuing instruction for programming and installation.
Sample pumps to controls – programme date awaited from Barr & Wray for installation.

5.5 Dosing Controllers

Dosing Controller data variations – video conference call took place on 8 April to review live operational procedures.

Feedback - discrepancies between the manual pool test readings and controller readings on occur on occasion. Findings from the video call assessment confirmed that the controllers are working correctly.

The site staff require to test and calibrate first thing daily to ensure the controllers are correct throughout the day, every manual pool test should be checked against the controllers and any difference will require controller adjustment. The controllers require a couple of weeks of progressively calibrating to bring the figures within scope to mirror the manual readings.

5.6 Poolside Cleaning

To ensure that the first point of protection against corrosion is as robust as possible, the council are developing a cleaning protocol for L&CD to adopt. Audit checks will be carried out by the council to ensure cleaning is implemented to the required levels.

5.7 Preparation for reopening

Commissioning, demonstrations and training for chemical dosing and associated equipment are being developed and implemented prior to re-opening. The Council are arranging for an external specialist in pool systems to provide further training for L&CD staff with appropriate courses. This is to ensure all L&CD staff are fully briefed on operating procedures and day to day plant management in line with Pool Water Treatment Advisor Group (PWTAG) guidance.

Communications

5.8 LACD and the Council are currently working on a communication strategy at this time, assessing the current position as it stands. An opening date is now being proposed for early May.

Neil Martin
Head of Design & Property

Date 17 April 2024

Estimated Costs

Flume pipework repair and associated supports	£10,200
Flume deck floor covering (contract work)	£ nil
Catch pit repair	£4,500
Planned high level support inspection and replacement	£9,700
Dive platform barriers	£10,100
Dosing system operations	£5,500
Beak tank design & installation	£24,000
Bulk acid tank design & installation	£9,400
Sample pumps for controllers	£7,000
Devin Consultancy Fees	£5,500
Total	£85,900

Alterations to Dive Board Barriers – Briefing Note

BACKGROUND –

The design and installation of Dive Boards is regulated under the international standards controlled by and published by the international governing body for aquatics – FINA, now World Aquatics. Its vision is focussed on aquatics for sport, health and life.

At the time of construction, the Regulations in force for the Dive Boards were the FINA Facilities Regulations FR5 rev 2010, the regulations in respect of barriers for dive platforms stated –

> *FR 5.2.7 The back and sides of each platform (except a 1.0 metre platform) shall be surrounded by handrails with a minimum clearance of 1.8 metres between pairs. The minimum height shall be 1.0 metre and they shall be with at least two crossbars placed outside the platform beginning 0.8 metre from the front edge of the platform.*

The 2020 Revision states –

> *FR 5.2.8 The back and sides of each platform (except 1.0 metre or lower platforms) shall be surrounded by handrails up to 1m from the edge of the platform with a minimum clearance of 1.0 metres between vertical pairs. The minimum height shall be 1.0 metre and they shall be with at least two horizontal crossbars placed outside the platform beginning 1.0 metre from the front edge of the platform.*
>
> *A solid transparent barrier is also permitted instead of a crossbar.*

Built examples using a solid transparent barrier are exceptionally rare.

PRIOR DISCUSSION

Within the original design the briefing by LACD management at that time was based on their existing practice with their boards at the old Olympia, which used ladders for access and queuing was on poolside. For the new pool stairs were adopted as a preferred safer means to access the boards and gates would be included at the bottom of each flight to control access with queuing continuing on poolside.

This operational practice however was not used when the centre opened and users, casual swimmers and Dive Clubs were permitted to queue on the Dive Structure.

At the time of the original handover there was a courtesy visit, pre-opening for Scottish Swimming including representatives from the Midlands District Swim Committee (under whose auspices the local diving competitions are run). No issues were raised with the design of the dive boards as they were along the same standard lines as all other installations. There is some later email correspondence with them but it was all about integrating their scoring system with the score board, nothing about the barriers.

Following falls from Diving Boards there was discussion with the Property Section regarding potential solutions, including infilling the Dive Barriers and adding a toe board or bottom rail. At that time the 2010 Regulations were still in force and this would have been non-compliant. In addition, the discussion included the counter argument that the addition of rail or board at low level would have introduced an entrapment risk for a foot or ankle because in accordance with the regulations the barriers are mounted on the outer edge of the platforms. ASD were only peripheral to these discussions but it is understood that it was concluded that on the balance of risk and probability this was an undesirable solution.

Earliest contact on this matter on record for Architectural Services is an email from Property to the City Architect dated 15.06.18 regarding the ongoing contractual matters with Balfour Beatty which also mentions the falls and the fact that the solution was under review due to the site's mixed use.

It is understood that DCC Property Section contacted FINA with regards to being advised on suitable compliant solutions.

It was noted that in 2020 the wording of the FINA regulations was amended to include an option for glazed barriers.

TIMELINE OF CURRENT PROJECT

In 2020 the Olympia Refurbishment project came into being and there was an initial briefing and transfer of information to initiate the project from Property to Architectural Services which included work they had been doing on glazed barriers. Work was undertaken to find a technical solution through the supply chain that could adapt or replace the barriers in a manner that complied with the revised standard and came with the appropriate structural testing and certification. As an adaptation to an existing facility the revisions also had to be compatible with the existing fixings and platform edge. The platforms are a specialist structure subject to stringent performance standards as well as specific structural criteria and had originally been design by a specialist in this area. Associated with these considerations was also the issue with the condition of the barriers with respect to surface spotting with corrosion.

The developed proposals therefore took the form of complete replacement with a proprietary glazed barrier system fitted to a specially adapted fixing to suit the existing installation.

LACD site staff first raised concern about this solution with Architectural Services on 26th Jan 2022. This conversation was primarily precipitated by a need to chat through the details of the scheme that was being worked on and which was still the solid balustrading option as there were some construction and technical questions to sort out. They raised what was seen as a couple of valid concerns, one is that that a glazed barrier at the dive boards would be difficult to clean whichever position it was in. The other is that there are really very few if any known examples of glazed dive board barriers and that they recognised that this was really a management and supervision matter, which could be helped if there is a design intervention that can be used. The lack of UK or international precedent made the glazed barriers difficult to support.

An objective overview is that the dive structure in its as-built state was fully compliant with FINA regulations. The accidents happened because of the operator's operating practice of allowing queueing on the structure, and in particular Dive classes which gather and are grouped on the 3m landing.

The design evolved based on the following briefing – the barriers needed to be FINA compliant in the area of the platforms used for diving and was cleanable from the platform, was not climbable or could be sat on in the area where the queuing occurred. The hybrid solution adopted was seen as the best balance of minimising the operational risk in the area where behaviours considered to be at risk occurred and compliant with the required regulations outside these areas.

This matter was also updated and reported in this manner at the time of the Scrutiny Committee. In March 2022.

The technical solution in response to the revised briefing was prepared and submitted for approval to LACD management in April 2022. This was approved with one revision, they asked to have the area under the second flight of stairs to also be done in the same fashion as it was reported at that time that one of the falls had occurred in this area.

The amended drawing was then issued for construction to the contractor in May 2022.

CONCLUSION

The Dive Barriers now in place are a highly unusual if not unique solution to the design of dive structure barriers, based on site-specific operating practices. Research shows consistently that throughout the UK and globally there is very little variation in dive barrier design the format following broadly the same format everywhere. Take up of the glazed barrier option now permitted by World Aquatics is still exceptionally unusual probably because of the lack of a safe means of cleaning them at height and over water, most countries having in place regulations similar to our CDM Regulations.

RECOMMENDATION

Given the hybrid nature of the facility and the need to comply with Diving and CDM Regulations it is recommended that LACD review their operational practices with regards to access and queuing at the Dive Boards to provide a safe operational environment that addresses the previous issues to the satisfaction of the EHO.

ITEM No …7……..

REPORT TO: **CITY DEVELOPMENT COMMITTEE – 6 DECEMBER 2021**

REPORT ON: **OLYMPIA MAINTENANCE PROGRAMME**

REPORT BY: **EXECUTIVE DIRECTOR OF CITY DEVELOPMENT**

REPORT NO: **336-2021**

1 PURPOSE OF REPORT

1.1 This report provides an update for members regarding the current closure at Olympia, likely timetable for reopening and planned maintenance works programme for the facility.

2 RECOMMENDATION

2.1 It is recommended that the Committee:

a notes the works undertaken to date to carry out reactive maintenance as detailed within the report;

b notes that a planned major refurbishment for the leisure pool is currently being finalised which will necessitate a longer-term closure of the pool facilities at Olympia; and

c remits the Executive Director of City Development to submit a tender report to City Development Committee for approval at the earliest possible date.

3 FINANCIAL IMPLICATIONS

3.1 Short term reactive maintenance to address current Health and Safety issues within the facility have been carried out at a cost of £49,000 which has been met from the Revenue Budget 2021/2022 for Property Maintenance.

3.2 The works programme as set out in the report is anticipated to cost in the region of £3.5m - 4.5m inclusive of fees and contingency. The final sum will be reported at tender stage and may vary as some elements of work are still being scoped, and other maintenance items may be identified as scoping and work on site progresses.

3.3 Funding for these works will be met through a combination of borrowing and unapplied capital receipts, details will be included within the forthcoming tender report.

3.4 Details of the revenue implications, taking account of the schedule of works and projected impact on income and costs, will be incorporated into the forthcoming tender report.

4 BACKGROUND

4.1 <u>Recent Olympia Closure - Reactive Maintenance</u>

a A health and safety risk issue was identified at Olympia on 29 September 2021 due to a failure of fixings associated with the light fitting mountings in the pool area. Although secondary fittings ensured that the lighting fittings did not become detached, as a precautionary measure the decision was therefore taken by Officers to close pool facilities.

b Council Officers instigated inspections and under the Health & Safety contract instructed immediate rectification works to replace the light fixings with the plan to allow the facilities to be reopened, minimising the disruption for the public. The Contractor commenced rectification works on 18 October 2021, with a hoist and specialist lift utilised to reach readily accessible areas around and over the main pool.

c During this period of closure further inspection works were carried out in other areas of the facilities. As a consequence of a failure being identified with two curtain wall bolt fixings it is prudent to assess the other similar fixings. Since this inspection requires removal and re-assembly of each bolt these will be replaced to ensure the required standard of performance.

d Based on the findings, the Council have instigated additional survey works comprising technical advice from City Development Officers and engaging with specialist services and pool consultants to assess the overall facility. Once all survey works have been completed and fully assessed, any further works identified will be scoped, designed and incorporated into the works programme outlined below.

e Due to the ongoing nature of the investigation and surveys the pool facilities will remain closed until all refurbishment works have been completed.

4.2 Refurbishment Works Programme

a Prior to the light fixing issue occurring, Council Officers had been developing a programme of 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 are essentially in relation to surface and superficial corrosion, general refurbishment and upgrading and rectification of water egress within ancillary plant areas.

b Through discussions with the Council's Specialist Mechanical, Electrical and Structural Engineers and the Director of Leisure and Culture Dundee, it is now recommended that the facility should remain closed until all works are complete on site. These works will include the originally scoped refurbishment programme and take account of all survey work outlined in Section 4.1d. The projected start on site for the works is in the first quarter of 2022.

c Although the building works are not structural in nature, the requirement to remove, replace and reinstall key public facing equipment, including the flume structure, will require a significant closure.

d A detailed method for sequencing and phasing the works is currently being developed. The main item within the project relates to the flume deck and refurbishment of the structure and flooring, treating the superficial surface corrosion and applying new protection to each component. This element of work requires a sequenced approach to allow scaffold erection for dismantling the entire structure on a component by component basis. Elements require to be removed off site to allow for refurbishment work and treatment to be carried out, prior to returning to site for the installation process. The complexity and sequential nature of this particular task influences the overall construction programme.

e The duration for the programme of works is also currently being finalised, however, based on the work content, lead in times for material, plant components and specialist sub-contractors, this is estimated to be around 45 weeks from a start on site.

f The final contract programme will be approved as part of the tender acceptance, and the Director of Leisure and Culture Dundee will be consulted on the optimum time for the various works to be carried out.

4.3 Procurement and Delivery

a Using the Places for People procurement hub framework, Robertson Construction Tayside, as the Scotland national sub-contractor for Wilmott Dixon, will procure sub-contract packages to undertake the works. A full tender price will be submitted by the contractor using open book tendering for all work packages, with contractually fixed management fees, overheads and profit for the lead contractor.

b Community Wealth building is an important 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 Councils Community Benefits Officer will continually monitor the local spend.

4.4 Life Cycle Replacement, Operational Maintenance and Cleaning

a 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 this project a review of the operational management will be developed to assist with the protection and longevity of the Olympia. A specialist pool consultant will be appointed to assist and support this exercise.

b It should be recognised and acknowledged that future works, to varying degrees, will be required on a periodic basis throughout the operational life of this building. Identifying the frequency of planned maintenance and scheduling the requirements going forward will allow Leisure and Culture Dundee and Dundee City Council to prepare for periodic shutdowns throughout the continued life of the Olympia complex.

5 POLICY IMPLICATIONS

5.1 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.

6 CONSULTATIONS

6.1 The Council Management Team and the Director of Leisure and Culture have been consulted in the preparation of this report and are in agreement with its content.

7 BACKGROUND PAPERS

7.1 None.

Neil Martin
Head of Design and Property

Author: Neil Martin

Robin Presswood
Executive Director of City Development

Dundee City Council
Dundee House
Dundee

NM/KM

25 November 2021

Title:	**OPERATIONAL ISSUES UPDATE – POOL WATER TREATMENT SYSTEMS**		
Project:	Olympia Leisure Centre	Project No.:	672
Date:	28.01.25	Page:	1 of 4

Data review period: 16th March 2024 – 12th December 2024, including findings from site visit undertaken on 21st January 2025.

In summary, systems are displaying a relatively stable pH value and maintaining the required free chlorine levels, indicators that the systems are providing a water quality in accordance with PWTAG guidelines.

1.0 pH set point

Issue

- In the Covid-19 pandemic, PWTAG recommended that pH was reduced to between 7.0 and 7.2. This has proved difficult for some pools such as Olympia where incoming mains water has a low hardness and alkalinity content, and large amounts of acid are being used.

Actions undertaken

- pH set point adjusted to between 7.2 and 7.4 (circa mid-March 2024).
- Further adjustment to pH set point to between 7.5 and 7.6 (circa early-November 2024) with the aim to further reduce acid consumption.

Improvements

- Records indicate a stable pH value is being maintained in all pools.
- The effect on acid usage resulting from adjusting the pH set point to between 7.5 and 7.6 is inconclusive from the data range reviewed due to a period of pool closure for maintenance shortly after adjusting the pH set point.

Further actions

- The adjusted pH range may be maintained to determine the effectiveness of a higher pH set point regarding acid usage. However, it should be noted that chlorine-based disinfectants are most effective at the lower end of the allowable range. Therefore, a balance between acid usage and effective disinfection should be considered when adjusting the pH set point.

2.0 Sodium bicarbonate dosing

Issue

- Very large amounts of sodium bicarbonate were being added to pools; alkalinity levels fluctuated wildly, and regularly in excess of 150 mg/l. This would have led to a lot of acid being used, which in turn knocks the alkali out (causing the system to ‘chase its tail’).

Actions undertaken

- Alkalinity target level adjusted to 60 (March 2024).
- Site advised to dose sodium bicarbonate in smaller and frequent quantities. Site operatives have adopted this approach, utilising the dosing pots in the plantroom to dose the sodium bicarbonate.

Improvements

- Smaller quantities of sodium bicarbonate are being used.

- Records indicate a stable pH value, and lower alkalinity is being maintained in all pools. However, frequent peaks in alkalinity of between 80-100 are evident above the target level. Site operatives identified challenges in maintaining the target level when manually dosing the sodium bicarbonate, frequently overshooting the alkalinity target in the pools. This may be causing an increase in acid usage.

Further actions
- Dosing of sodium bicarbonate from day tanks with dosing pumps would be beneficial.
- Revisit dosing approach to aim for a target level of 60.

3.0 UV systems

Issue
- UV dosing values were excessive (100-300mJ/cm²) causing increased chemicals usage.

Actions undertaken
- UV dosing levels have been reduced for all pools. Levels initially adjusted mid-April, indicating levels typically between 65 – 100; levels since mid-May are generally between 60 – 70, more closely aligned with the target of 60mJ/cm². It should be noted that the excess dosing of UV would have resulted in higher chlorine usage and hence higher acid usage.

Improvements
- Records indicate a reduction in chemical usage which appears to correlate with the adjustments to UV dosing levels.

Further actions
- If no bathers, the UV units may be switched off to reduce chemical usage.

4.0 Bayrol chemical controllers and manual water testing

Issue
- Operators advised discrepancies between manual and controller readings.

Actions undertaken
- Site operators have recalibrated chemical controllers to align with manual probe readings.
- Bayrol technician has undertaken a remote review of the chemical controllers via telecon with Olympia staff (April 2024). The technician believes the controllers are working correctly.

Improvements
- Records indicate controllers are maintaining pH and free chlorine set points; there are some fluctuations, but it appears these are being managed.
- Site operatives identified they feel more proficient with operating the new chemical controllers.

Further actions
- Regarding any recalibration, this should be in accordance with manufacturers guidelines.

- Site operatives to review current water testing regime. Information can be referred to within the PWTAG guide.
- Further training could be provided (see below).

5.0 Further training

Issue
- The complexities of the systems warrant additional training for site operatives.

Actions undertaken
- None.

Improvements
- Nothing to report.

Further actions
- Training is provided by a recognised trainer, with Devin in attendance.
- In the longer term, implement a PWTAG recommended frequency for refresher training.

6.0 Calcium hypochlorite dosing

Issue
- Insufficient supply water available from existing break tank.
- Length of dosing lines are at the maximum recommended.
- Review of JAK installation by manufacturer identified snagging issues (March 2024).
- Frequent clogging of chemical dosing lines since completion of refurbishment works (reported 1-2 times a week).

Actions undertaken
- New break tank installed and operational (April 2024).
- Co-ordination of other water demands from break tank with demands of the JAK units.
- Site operatives flushing dosing lines weekly, and as required to prevent blockages.
- Site operatives changed from Melclorite to HTH® for calcium hypochlorite supply (circa Sept. – Nov. 2024).

Improvements
- The records indicate that the JAK units are operating satisfactorily.
- No issues of clogged dosing lines experienced since changing to HTH® supply.

Further actions
- Attend to snagging and fitting issues identified in JAK report (including rotating units 180° to allow for effective maintenance access). Obtain confirmation from JAK that these have been closed out satisfactorily.
- Installing boosted loops to chemical stores for all pool systems to reduce dosing lines.

7.0 Hydrochloric acid dosing

Issue

- It is understood the amount of acid being used at Practical Completion (before the current revised operation) was similar to use prior to the refurbishment. The volume of chemical delivered is larger because it is a low strength acid.
- As of January 2025, site operative advised 1000 litres of acid is being delivered approximately every 10 days (approx. 3000 litres per month).

Actions undertaken

- Refinements to the sodium bicarbonate dosing methodology.
- Supply and installation of additional bulk tank. Total maximum storage capacity is circa 3250 litres (considering capacity of bulk tanks and day tanks).
- Adjustments to UV dosing levels.

Improvements

- The actions undertaken since March 2024 is indicating a significant reduction in acid usage (circa 30-40% reduction).

Further actions

- Improvements anticipated resulting from actions identified in other sections above.

End of report.

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Working in Partnership with Dundee City Council

LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE

A meeting of the Committee was held on 9 December 2022.

Present: Will Dawson, Trustee, Vice-Chair (Chair of Health & Safety and Property)
Paul Henehan, Head of Support Services
[redacted]
Judy Dobbie, Managing Director
[redacted]

In Attendance: [redacted]

Apologies: [redacted]

1 WELCOME AND APOLOGIES AND DECLARATION OF INTERESTS

The Chair welcomed everyone and there were no declaration of interests.

2 MINUTE OF MEETING HELD ON 20 OCTOBER 2022

The Minute of the previous meeting was approved.

3 MATTERS ARISING

3.1 [redacted]

3.2 [redacted]

3.3 [redacted]

3.4 [redacted]

3.5 [redacted]

3.6 [redacted]

4 [redacted]

5 OLYMPIA REMEDIAL WORKS - UPDATE

Paul confirmed that a progress meeting was to be held the following week. One issue that had been noted by the contractors was water in the hollow balustrades of the sprial staircase and how it got there. Sealing the balustrades will form part of the work on the staircase. There was also a rapid river water leak since the pool had been drained, but there was no immediate concern.

The Chair advised that there was a door smashed beside the Council car park. [redacted] to look into this.

6 [redacted]

6.1 [redacted]

[redacted]

6.2 [redacted]

[redacted]

6.3 [redacted]

[redacted]

7 [redacted]

[redacted]

8 [redacted]

8.1 [redacted]

[redacted]

8.2 [redacted]

[redacted]

8.3 [redacted] –

[redacted]

9 [redacted]

[redacted]

[redacted]

10 [redacted]

[redacted]

11 AOCB

11.1 [redacted]

11.2 [redacted]

11.3 [redacted]

[redacted]

12 DATES OF FUTURE MEETINGS

Thursday 9 February 2023
Thursday 13 April 2023
Thursday 8 June 2023
Thursday 10 August 2023
Thursday 12 October 2023
Thursday 7 December 2023

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CHANGING FOR THE FUTURE

Mr Tom Stirling - Head of Community Safety & Protection

Neighbourhood Services
3 City Square
Dundee
DD1 3BA

If calling please ask for: [redacted]
Tel: 01382 [redacted]
Email: [redacted]

Our Ref: [redacted]
Your Ref:

Date: 2nd May 2017

[redacted]
Leisure and Culture Dundee
1 Shore Terrace
Dundee
DD1 3AH

Dear [redacted]

Legislation: The Health and Safety at Work etc. Act 1974 and associated regulations
Reporting of Injuries Diseases and Dangerous Occurrences Regulations 2013
HSG 179 - 'Managing health and safety in swimming pools'
Premises: Olympia, 3E Whale Lane, Dundee, DD1 3JU
Accident to : [redacted] on 13th April 2017
[redacted] on 26th June 2016

I refer to the accident report received, via the RIDDOR website, on the 18th April 2017. This was in connection with the incident on the 13th April 2017, resulting in injury to [redacted] a member of the public.

The injured person (IP), a seven year old child, slipped through the 3 metre dive platform railings onto the padded platform supports below before landing on the poolside, resulting in him sustaining a head injury; he was then taken directly to hospital.

I then visited the premises on 18th April 2017, with my colleague, [redacted] to investigate the incident further and met with [redacted]

We discussed the incident and viewed the area on platform where it is believed the IP slipped and fell through to the poolside below. It was believed that the IP has gone onto the 3m dive board with the intention of jumping into the water but changed his mind and stepped off the dive board to make his way along the dive platform to the steps which led back down to the poolside. However the IP slipped and fell through the gap between the lower rail of the guard rail and the floor of the dive platform.

We also discussed a similar incident which occurred in 2016 when an eight year old child also slipped through the railings at the designated waiting area at the 3m platform. See the attached letter dated 20th September 2016 sent regarding this incident.

Following the first incident, **temporary** guarding was put in place on some sections on the 3m and 5m dive platforms to help reduce the risk of a person slipping and falling through the gaps under the bottom railings. However, this was with the understanding that permanent measures would be taken thereafter to reduce the gaps between the bottom rails and the platform floors.

To date no permanent alterations have been made to reduce the aforementioned gaps.

It was not known why the permanent works have not been carried out to reduce the aforementioned gaps even though a quotation for the work had been sought and provided by Metaltech UK in November 2016. **Had the works been carried out at that time then the second incident would have been avoided.**

I indicated during my initial visit that the 3m and 5m diving boards be kept closed until suitable temporary measures could be put in place to reduce any remaining exposed gaps between the lower rails and the dive platform floors along the length of the railings on both platforms.

I also requested that we be told how quickly a permanent fix could be carried out to close the gap between the dive 3m and 5m platform floors and the bottom rails of the barriers.

The dive platforms were then closed until Wednesday 26th April 2017 when I was notified by [redacted] that the additional temporary barrier had been put in place. I revisited the premises that afternoon and confirmed after viewing the temporary barrier that the dive platforms could reopen.

Steps must now be taken as quickly as possible to permanently reduce the gaps between the bottom rails and the platform floors so as to prevent anyone falling through the gap.

Please provide us with an update within one week of receiving this letter on how quickly this work can be carried out.

I would advise that my colleagues in Building Standards should be contacted as a building warrant may have to be sought. The Building (Scotland) Act indicates that in respect of a building where the public have a right of access, a material alteration to such a building should not commence without firstly obtaining formal Building Warrant approvals.

The temporary barriers must remain in place until the gap is suitably reduced but I must reiterate that this can only be considered to be a temporary solution.

Failure to progress the works will result in more formal action being taken to secure compliance.

Should you wish to discuss this letter further please do not hesitate to contact me.

Yours sincerely

[redacted]

c.c. [redacted]

[redacted] by email.

[redacted]

From: [redacted]
Sent: 09 February 2024 08:51
To: [redacted]
Cc: [redacted] Neil Martin
Subject: Re: Olympia Issues urgent

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Olympia

Thanks [redacted] agreed. We will get co-ordinated for Tuesday, I assume this will be between myself and [redacted]
Thanks
[redacted]

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[redacted]

From: [redacted]
Sent: 09 February 2024 08:31
To: [redacted]
Cc: [redacted]>; Neil Martin <neil.martin@dundeecity.gov.uk>
Subject: Re: Olympia Issues urgent

Hi [redacted]

When (I presume) [redacted] called me yesterday afternoon I was in a meeting with Neil and [redacted] discussing Olympia. I'm minded that any engineering opinion needs to be from a suitably close vantage point rather than from pool hall level and this is scheduled for Tuesday.

Regards

[redacted]

From: [redacted]
Sent: 08 February 2024 22:38
To: [redacted]
Cc: [redacted]>; Neil Martin <neil.martin@dundeecity.gov.uk>
Subject: Re: Olympia Issues urgent

[redacted]
Just to cover each of the points raised by [redacted] and your reply plus relevant observations from site on these -

- Ductwork support rods swaying - it was explained to [redacted] that this was a normal factor in a flexible support system subject to movement of the air within the duct itself or air movement around it. There is one, possibly more locations where the rods supporting ventilation ductwork are contacting with and rubbing on the delta trusses which will need to be moved. Rectification action on this will be with Robertsons.

It was discussed that these are snagging issues and, to be honest, I'm more concerned about the effect on the painted steelwork than the movement. It may be worth reviewing the extent of movement to verify that it is within tolerance though.

- The tragic event featured in the video shared by their Health and Safety consultant as a teaching material in a training session, for their own sensationalist and provocative ends, appears to be currently under investigation and therefore there are no technical details available on the circumstances of the failure and therefore its relevance or otherwise to this or any other site is currently nil.

Agreed and intend to make no comment on this.

- Rod replacement - there are two sections of containment tray rod replacement at the launch pad which have not been actioned. One has a reasonable degree of accessibility from the launch pad with a few individual rods which are trickier to replace. The other is where the containment tray passes through the end of truss 1, this also has the end of the launch pad structure under it. Access is being assumed to be by rope access at the moment. It may be prudent to take an Engineer's view on the necessary extent and if there is any degree of

redundancy in what has been fitted. A site visit in conjunction with Robersons' PM should resolve.

Agreed and the latter point was also discussed - the spacing between rod supports is quite conservative in a few areas and there may be scope for redundancy. The containment system already has redundancy that prevents a catastrophic failure.

- Flume pipework support - there are two locations where the clamped unistrut detail is incomplete - these are historic and not new. They are being rectified together with the site of the failure by a contractor instructed by the Property team next Tuesday

Agreed, I didn't want to commit to these being historically absent without being within touching distance.

- Flume pipework failure - red flume - we can see that the split pipe now has an offset between its two parts and the neighbouring pipe currently sits at a splay. This suggests that when the start section was relocated after the flume deck was done there is a slight misalignment which has put the pipe under stress, when coupled with high water pressure failure has occurred. I think your theory on this event resulting in water hammer and the loads referred through the structure dislodging what was probably an already loose rod is spot on. We can also see that the green flume pipework is not sitting securely on its shims, similarly when this pipe was reconnected to the green start section the pipe was probably lifted. A visual check of the rest of the pipework from the stair would suggest there are no other visible issues at the moment. The contractor is mobilised to sort these out under snagging and will be on site Tuesday as well whilst access is available. They will be briefed to replace the pipework at the red flume, check and secure the green flume pipework and check the other two flumes.

It's the fact the rod remained intact that points to a lateral force pushing it off it's support. It's up for discussion on Tuesday but tightening up these fixings and ensuring there's some edge distance should they become loose again.

Hope this helps your understanding of this and as I suggest it would be useful to meet with an Engineer re a couple of these details.

This is best done when access is available on Tuesday.

Regards

[redacted]

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[redacted]

From: [redacted]
Sent: 08 February 2024 17:46
To: [redacted]
Cc: Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted]
Subject: Re: Olympia Issues urgent

Hi [redacted]

I have one missed call from a private number at 14:43 today, whilst I was in a meeting, and no voicemail left so don't know what the telephony issue was. Reference your photos below, it does appear that a section of Unistrut is absent from the top face of the beam, photograph 2 below. Whether this has previously been absent or somehow detached during the recent pipe fracture won't be clear until platform access is available next week. [redacted] has replied under separate cover on the inspection regime planned for these areas once access is on site.

Regards

[redacted]

From: [redacted]
Sent: 08 February 2024 16:14
To: [redacted]
Cc: Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]; Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted]
Subject: FW: Olympia Issues urgent

Hi [redacted]

I've not been able to get you on the phone today.

I've had a walkaround with [redacted] and I think that we are in agreement in the key aspects that will need repaired or replaced. I am keen to wait on feedback before extending my red boundary of keeping the flumes, leisure and toddlers pools closed. At the moment there does not seem to be anything likely to substantially move and few people are being allowed access.

However, there are obviously items such as the pins detailed in the photos below that could have been dislodged if we were operating. We are ensuring no one unauthorised is going into the area around the flume tower. It sounds as though a platform lift has been secured to arrive next Tuesday, so we are unlikely to learn much more or need to take any additional actions until then.

Issue three: unsecured joint.

There are two more pins sitting unsecured. There is a missing bracket that should be above the beam which the pins slot into. In orange you can see where Saturdays pin fell and the burst pipe. Suggestion was from discussions with [redacted] that the weight from the lack of support has contributed to the pipe bursting. [redacted] recons that its not likely to have done so.

6

8

Any feedback would be appreciated. We will hold off on taking any further actions or having a meeting until we hear from you on the basis above.

Kind regards

[redacted]

From: [redacted]
Sent: Thursday, February 8, 2024 11:16 AM
To: [redacted]
Cc: [redacted]>; Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted]
Subject: Olympia Issues urgent
Importance: High

Hi [redacted]

I spoke to [redacted] who has pointed me in your direction for advice. Can you please advise me around these issues?

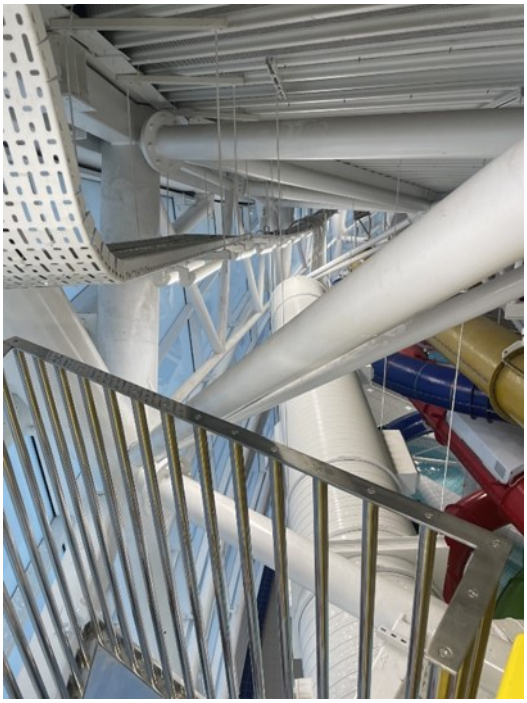
Issue One Identified today: Movement of the supporting pins (approx. 5 inches). At least three sets of these are swaying at the moment when the flume platform is not in use

They support this....

My fear is that this could happen: https://youtu.be/uFrKmcAkw3o?feature=shared

Our Safety consultant from [redacted] briefed us on this yesterday. Those pins appear to have moved in their fixings and there is at least one that is bending.

Issue two identified today: supports for electrics



Like the first issue these ducting's are around the pool hall and not just restricted to the flume tower area.

Kind regards,

[redacted]

[redacted]

From: [redacted]
Sent: 19 April 2024 12:23
To: [redacted]
Cc: [redacted]
Subject: RE: 672 Control units
Attachments: 672-240419 pool analysis charts.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Olympia

Hi [redacted]

Regarding the site managers observations in the email below, I wouldn't consider the chemical controllers to be the root cause of the issue. There have been significant improvements in the water sample and acid usage results prior to the Bayrol technicians review and any subsequent recalibration exercises undertaken. However, there is a discrepancy between the pool and controller sample readings which requires further investigation/action. The concentration of disinfectant residual within the pool can vary in different areas of the pool, so it may be beneficial to take samples from different parts of the pool to see what impact this may have on the pool readings.

The daily report data has been populated into a series of charts in the attached document to provide a visual representation of the results from the past month to accompany my latest observations below.

From a review of the information received on the water test reports since our meeting in March, and the Bayrol technicians report, my observations are as follows:

- Following adjustment of the alkalinity target level to 60mg/l on 14/03, the records show a consistent trend in maintaining a stable pH value.
- The acid usage indicated a noticeable improvement from 02/04 onwards, providing a reduction of 40% usage compared to the data prior to this date. This could be attributed to the reduction in sodium bicarb and lower alkalinity levels.
- Records since the meeting indicate controllers are maintaining pH and free chlorine set points.
- From the Bayrol review on 08/04, the technician believes the controllers are working correctly.
- Records indicate discrepancies between pool sample readings and controller sample readings.
    - Further clarification/instruction may be required from the Bayrol technician to verify the site operatives have interpreted any calibration instructions correctly.
    - Current water testing regime to be reviewed. Information can be referred to within the PWTAG guide.
    - Further training by a recognised trainer recommended.

Kind regards,

[redacted]
Project Engineer

[redacted]
www.devin-consulting.com

From: [redacted]
Sent: Friday, April 19, 2024 7:10 AM
To: [redacted]
Cc: [redacted]
Subject: RE: Control units

Hi [redacted]
Thank you for correcting this. Do you have the contact details for the Bayrol Engineer please?
Regards
[redacted]

[redacted]

From: [redacted]
Sent: 18 April 2024 16:53
To: [redacted]
Cc: [redacted]
Subject: RE: Control units

Hi [redacted]
I don't know the reasons for the bold text, as the Bayrol units were set up correctly. The only thing that the Bayrol Engineer suggested was to calibrate the units more frequently.
Regards,

[redacted]

[redacted]

Please consider the environment before printing this email message.

From: [redacted]>
Sent: Thursday, April 18, 2024 4:21 PM
To: [redacted]
Cc: [redacted]
Subject: FW: Control units

[redacted]/[redacted]

Possibly worth a comment from the Bayrol engineers from last week on the assessment below from [redacted]

Are his statements below correct assessment of what has been happening with the Bayrol units calibration impacting on the whole system and operational response?

Thanks,

[redacted]

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[redacted]

From: [redacted]
Sent: 18 April 2024 16:05
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]

[redacted]
Subject: Re: Control units

Hi [redacted]

Going forward it might be better to speak to myself or [redacted] in matters such as this.

So far so good. We have been carrying out the "install" process and the results are noticeable with us using 40%+ less acid in the last week. The figures for the prior week were a bit off as we were running on fumes waiting for a delivery. You will be able to see the day last week on the pool tests that we ran out before the delivery the following day.

This exercise brought the readings closer than it has ever been since the install of the new system. ***With the machine having not been set up right from the start it completely explains why the readings were never close***. I am happy to discuss this in more detail.

It's a slow process as I detailed in my original email. Bayrol suggesting we should see a difference after a couple of weeks.

It gets to the root of the problem going on***. The control units were not reading properly so they have been dosing inaccurately. Confirmed by the manufacturers of the control units Bayrol***. That's the cause of the merry go round effect and excessive acid use.

Until that was addressed our manual efforts were not going to matter. The system was dosing too much acid despite the bicarb reduction.

You will be able to refer to my previous emails on the "yo-yo" effect and how the pH readings were completely out.

Normal calibrations could not resolve the issue. This change is us acting as though control units are new out the wrapper to draw a line on the control issues. Each day there are noticeable differences as we edge towards having the control that is required.

There will continue to be issues perhaps for a couple more weeks i.e. this morning we had too much chlorine in the competition pool. I propose it's another factor in it adjusting.

The chlorine levels are much better in general. Last week they bounced as the controllers got to grips with the readings. It's about line of sight. Suddenly the controllers can see the water standards and can dose accordingly.

Happy to go through anything with you.

Kind regards

[redacted]

Sent from Outlook for Android

From: [redacted]
Sent: Thursday, April 18, 2024 3:38:13 PM
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]

[redacted]
Subject: RE: Control units

Thanks [redacted]

I've copied in [redacted] and [redacted] to see if they can help re this week.

Enjoy your holiday.

[redacted]

[redacted]

From: [redacted]
Sent: 18 April 2024 15:29
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Control units

Hi [redacted]

Last week myself and [redacted] were doing 2 point calibration on Toddlers and Leisure pools and slowly getting the unit and samples from the unit to come together, this week I'm on holiday so don't know what's happening, your message will have just missed [redacted] and he is now off till Monday I think.

[redacted] or [redacted] may be able to help regarding this week and how the readings are progressing.

Regards [redacted]

[redacted]

From: [redacted]
Sent: 18 April 2024 14:19
[redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Control units

Afternoon [redacted]/[redacted]

10 days on from the call with the Bayrol Engineer, can you update on how the controllers are performing, and how the gradual recalibration is going?

Thanks,

[redacted]

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[redacted]

From: [redacted]
Sent: 09 April 2024 16:43
To: [redacted]
Cc: [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Paul Henehan <paul.henehan@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>
Subject: Control units

Hi

We had a successful call with the Bayrol Control Unit specialist. It appears that we have been given a reasonable explanation about what the control units are not matching up with actual readings.

The solution is to take small steps to the recalibration. Essentially this is related to the range of the units.

They suggested that we should be able to do the small steps and see a positive difference and a stabilising of the PH balance.

I've instructed [redacted] to do this until the end of her working week, then it will be done by one of the plant ops until we balance things out.

The advice we received was we should see a difference in the readings within a couple of weeks.

I would suggest after that we would hope to see a reduction in chemical use as the control units will be able to read the results and dose more accurately.

Kind regards

[redacted]

[redacted]

From: [redacted]
Sent: Monday, April 22, 2024 16:01
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]>; Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted]
Subject: Re: Control units

Hi [redacted]

I note your comments however in the interest of transparency I will be sharing what I have found to Judy who in turn will discuss with Neil Martin. I believe you will find this information helpful.

I believe that Devin have been indicating that they are confident in that the conditions are improving including the reduction of acid use by over 40%. I would hope that Bar & Wrays adjustment to the UV filters will also help going forward.

As a consequence of the improvements in the last couple of weeks with the dosing levels stabilising we intend to test the dosing "timing" settings to see if the system can be operated as designed. My intention is to reinstate this on Thursday the 25th of April to put the system back into normal settings. If you have any reservations about the dosing controls being reverted to normal safety settings please let me know before the end of play on Wednesday the 24th of April.

Kind regards,

[redacted]

From: [redacted]
Sent: 22 April 2024 14:49
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Control units

Afternoon [redacted]
I hope this finds you well.
I note your request that going forward it might be better to speak to yourself or [redacted] in matters such as this.
Further to your point on the *root of the problem going on*, I have further consulted with Devin on this matter.
They have reiterated, as have Barr & Wray and the Bayrol engineer that, other that some slight calibration adjustment, the Bayrol Controls have been and are working as intended.
The calibration adjustments being undertaken by pool plant team now after consultation with Bayrol engineer, settling down the occasional minor reading discrepancies.

From their ongoing detailed analysis of pool data, Devin have confirmed that root of the problem going on has been the pools chemical management and high pool alkalinity target.
With pool water alkalinity targets brought down, allowing for better pH control, adjustment to quantities and methods of bicarb dosing, these have all contributed to, reduction in chemical quantities, flattening of the spikes and gradual improved stability in the pools chemicals, which has been demonstrated by the analysis of reported pool data being taken in the weeks prior to the Bayrol/L&CD review of the controllers.
This is for clarification and to ensure that we are all of the same understanding that the issues being experienced were not of the making of the controllers.
Best regards,
[redacted]


[redacted]

From: [redacted]
Sent: 18 April 2024 16:05
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: Re: Control units

Hi [redacted]

Going forward it might be better to speak to myself or [redacted] in matters such as this.

So far so good. We have been carrying out the "install" process and the results are noticeable with us using 40%+ less acid in the last week. The figures for the prior week were a bit off as we were running on fumes waiting for a delivery. You will be able to see the day last week on the pool tests that we ran out before the delivery the following day.

This exercise brought the readings closer than it has ever been since the install of the new system. With the machine having not been set up right from the start it completely explains why the readings were never close. I am happy to discuss this in more detail.

It's a slow process as I detailed in my original email. Bayrol suggesting we should see a difference after a couple of weeks.

It gets to the root of the problem going on. The control units were not reading properly so they have been dosing inaccurately. Confirmed by the manufacturers of the control units Bayrol. That's the cause of the merry go round effect and excessive acid use.

Until that was addressed our manual efforts were not going to matter. The system was dosing too much acid despite the bicarb reduction.

You will be able to refer to my previous emails on the "yo-yo" effect and how the pH readings were completely out.

Normal calibrations could not resolve the issue. This change is us acting as though control units are new out the wrapper to draw a line on the control issues. Each day there are noticeable differences as we edge towards having the control that is required.

There will continue to be issues perhaps for a couple more weeks i.e. this morning we had too much chlorine in the competition pool. I propose it's another factor in it adjusting.

The chlorine levels are much better in general. Last week they bounced as the controllers got to grips with the readings. It's about line of sight. Suddenly the controllers can see the water standards and can dose accordingly.

Happy to go through anything with you.

Kind regards

[redacted]

Sent from Outlook for Android

From: [redacted]
Sent: Thursday, April 18, 2024 3:38:13 PM
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Control units

Thanks [redacted]

I've copied in [redacted] and [redacted] to see if they can help re this week.

Enjoy your holiday.

[redacted]

[redacted]

[redacted]

[redacted]

From: [redacted]
Sent: 18 April 2024 15:29
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Control units

Hi [redacted]

Last week myself and [redacted] were doing 2 point calibration on Toddlers and Leisure pools and slowly getting the unit and samples from the unit to come together, this week I'm on holiday so don't know what's happening, your message will have just missed [redacted] and he is now off till Monday I think.

[redacted] or [redacted] may be able to help regarding this week and how the readings are progressing.

Regards [redacted]

[redacted]

From: [redacted]
Sent: 18 April 2024 14:19
To: [redacted]
Cc: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Control units

Afternoon [redacted]/[redacted]

10 days on from the call with the Bayrol Engineer, can you update on how the controllers are performing, and how the gradual recalibration is going?

Thanks,

[redacted]

[redacted]

From: [redacted]
Sent: 09 April 2024 16:43
To: [redacted]
Cc: [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Paul Henehan <paul.henehan@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>
Subject: Control units

Hi

We had a successful call with the Bayrol Control Unit specialist. It appears that we have been given a reasonable explanation about what the control units are not matching up with actual readings.

The solution is to take small steps to the recalibration. Essentially this is related to the range of the units.

They suggested that we should be able to do the small steps and see a positive difference and a stabilising of the PH balance.

I've instructed [redacted] to do this until the end of her working week, then it will be done by one of the plant ops until we balance things out.

The advice we received was we should see a difference in the readings within a couple of weeks.

I would suggest after that we would hope to see a reduction in chemical use as the control units will be able to read the results and dose more accurately.

Kind regards
[redacted]

[redacted]

From: [redacted]
Sent: 05 February 2024 14:01
To: [redacted] Neil Martin; [redacted]
Cc: [redacted]
Subject: RE: Steel Rod
Attachments: Rods 1.jpg; Rods 2.jpg; Rods 6.jpg; Rods 11.jpg; Rods 12.jpg; Rods 13.jpg

Categories: Olympia

[redacted]

Further photos, and tomorrows inspection should show more.

Agree with your assessment [redacted] of the dynamic nature.

Couple of these photos may suggest some other issues with components to be picked up tomorrow.

[redacted]

[redacted]

From: [redacted]
Sent: 05 February 2024 09:16
To: [redacted]; Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]
Subject: RE: Steel Rod

Thanks [redacted]
[redacted] has advised that we can get a cherry picker up to replace the tie. He will liaise with [redacted] and [redacted] on site.
Will keep you posted.
Regards
[redacted]

From: [redacted]
Sent: Monday, February 5, 2024 9:01 AM
To: Neil Martin <neil.martin@dundeecity.gov.uk>; [redacted]

[redacted]

Subject: Re: Steel Rod

Hi Neil,

Photos aren't great quality but it's happened at an elbow in the pipe which also coincides with a reduction in pipe diameter. I can see how, if flow was disrupted, water hammer, either during the disruption or when flow was restored, could jolt the pipe and bracket out of their supports. This absolutely hasn't happened due to static loads so would consider it to be a localised issue to the recent burst rather than a pool-wide issue.

I suggest that pipe fittings on the runs affected by the burst are reviewed with particular attention to elbows and tee pieces. [redacted] subsequent photos show the problems of trying to inspect from pool level.

Regards

[redacted]

From: Neil Martin <neil.martin@dundeecity.gov.uk>
Sent: 05 February 2024 08:39
To: [redacted]
Subject: Fw: Steel Rod

Hi All,

Photos from Judy. Apparently they heard an explosion type noise as it fell.

Regards

Neil

Neil Martin
Head of Design & Property
City Development Department
Dundee House

Tel 01382 433711
E-Mail neil.martin@dundeecity.gov.uk

From: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>
Sent: 05 February 2024 08:25
To: Neil Martin <neil.martin@dundeecity.gov.uk>
Subject: FW: Steel Rod

From: [redacted]
Sent: Saturday, February 3, 2024 12:53 PM
To: [redacted]
Cc: [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; [redacted]
Subject: Steel Rod

Hi,

We have had a steel rod fall from underneath the flume tower(please see attach steel rod), fortunately it never struck a member of staff or public.
On further investigation I think this has came from under the flume tower possibly loosened by the burst pipe on the Red slide. Please see pic water pipe.

Regards [redacted]

[redacted]

[redacted]

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CHANGING FOR THE FUTURE

Mr Tom Stirling - Head of Community Safety & Protection

Neighbourhood Services
3 City Square
Dundee
DD1 3BA

If calling please ask for: [redacted]
Tel: 01382 [redacted]
Email: [redacted]

Our Ref: [redacted]
Your Ref:

Date: 2nd May 2017

[redacted]
Leisure and Culture Dundee
1 Shore Terrace
Dundee
DD1 3AH

Dear [redacted]

Legislation: The Health and Safety at Work etc. Act 1974 and associated regulations
Reporting of Injuries Diseases and Dangerous Occurrences Regulations 2013
HSG 179 - 'Managing health and safety in swimming pools'

Premises: Olympia, 3E Whale Lane, Dundee, DD1 3JU

Accident to : [redacted] on 13th April 2017
[redacted] on 26th June 2016

I refer to the accident report received, via the RIDDOR website, on the 18th April 2017. This was in connection with the incident on the 13th April 2017, resulting in injury to [redacted] a member of the public.

The injured person (IP), a seven year old child, slipped through the 3 metre dive platform railings onto the padded platform supports below before landing on the poolside, resulting in him sustaining a head injury; he was then taken directly to hospital.

I then visited the premises on 18th April 2017, with my colleague, [redacted], to investigate the incident further and met with [redacted]

We discussed the incident and viewed the area on platform where it is believed the IP slipped and fell through to the poolside below. It was believed that the IP has gone onto the 3m dive board with the intention of jumping into the water but changed his mind and stepped off the dive board to make his way along the dive platform to the steps which led back down to the poolside. However the IP slipped and fell through the gap between the lower rail of the guard rail and the floor of the dive platform.

We also discussed a similar incident which occurred in 2016 when an eight year old child also slipped through the railings at the designated waiting area at the 3m platform. See the attached letter dated 20th September 2016 sent regarding this incident.

Following the first incident, **temporary** guarding was put in place on some sections on the 3m and 5m dive platforms to help reduce the risk of a person slipping and falling through the gaps under the bottom railings. However, this was with the understanding that permanent measures would be taken thereafter to reduce the gaps between the bottom rails and the platform floors.

To date no permanent alterations have been made to reduce the aforementioned gaps.

It was not known why the permanent works have not been carried out to reduce the aforementioned gaps even though a quotation for the work had been sought and provided by Metaltech UK in November 2016. **Had the works been carried out at that time then the second incident would have been avoided.**

I indicated during my initial visit that the 3m and 5m diving boards be kept closed until suitable temporary measures could be put in place to reduce any remaining exposed gaps between the lower rails and the dive platform floors along the length of the railings on both platforms.

I also requested that we be told how quickly a permanent fix could be carried out to close the gap between the dive 3m and 5m platform floors and the bottom rails of the barriers.

The dive platforms were then closed until Wednesday 26th April 2017 when I was notified by [redacted] that the additional temporary barrier had been put in place. I revisited the premises that afternoon and confirmed after viewing the temporary barrier that the dive platforms could reopen.

Steps must now be taken as quickly as possible to permanently reduce the gaps between the bottom rails and the platform floors so as to prevent anyone falling through the gap.

Please provide us with an update within one week of receiving this letter on how quickly this work can be carried out.

I would advise that my colleagues in Building Standards should be contacted as a building warrant may have to be sought. The Building (Scotland) Act indicates that in respect of a building where the public have a right of access, a material alteration to such a building should not commence without firstly obtaining formal Building Warrant approvals.

The temporary barriers must remain in place until the gap is suitably reduced but I must reiterate that this can only be considered to be a temporary solution.

Failure to progress the works will result in more formal action being taken to secure compliance.

Should you wish to discuss this letter further please do not hesitate to contact me.

Yours sincerely

[redacted]

c.c. [redacted]
[redacted] by email.

From: [redacted]
Sent: Tuesday, February 6, 2024 16:56
To: [redacted]
Subject: Re: Arrange a visit to Olympia re: Public Entertainment Licence renewal

Hi [redacted]

When I saw your name, I wondered if it was you... [redacted]

Yes, Wednesday, 28th February 10am would be fine. There will be two of us though. One will be looking at the plant room(s) and another the swimming pools - pool-side, so can you please arrange for the right people for these areas to take us around (if not yourself)?

Have the issues with the stainless steel rust been resolved? I'll also be looking at the hand rails on the dive platform where previously Olympia were supposed to install railing that would prevent small children from falling from the platform (issue identified from past accidents).

See you in 3 weeks.

[redacted]

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[redacted]

From: [redacted]
Sent: 05 February 2024 11:28
To: [redacted]
Cc: [redacted]
Subject: Re: Arrange a visit to Olympia re: Public Entertainment Licence renewal

Hello [redacted]

Long time no see.

I propose Wednesday the 28th of February. Would 10am work for you?

Kind regards,

[redacted]

[redacted]

From: [redacted]
Sent: 05 February 2024 09:53
To: [redacted]
Cc: [redacted]
Subject: RE: Arrange a visit to Olympia re: Public Entertainment Licence renewal

Hi [redacted]

I have copied in [redacted] to make suitable arrangements for you.

Regards [redacted]

[redacted]

From: [redacted]
Sent: 02 February 2024 17:26

To: [redacted]
Subject: Arrange a visit to Olympia re: Public Entertainment Licence renewal

Hi [redacted]

Re: Arrange a visit to Olympia re: Public Entertainment Licence renewal

With regards to Olympia's PEL application, can you please let me know a suitable date and time for the visit starting the week of the 26th February 2024.

Regards,

[redacted]

From: [redacted]
Sent: Wednesday, February 28, 2024 18:10
To: [redacted]
Cc: [redacted]
Subject: Re: Visit today

Hi [redacted]

The Health and Safety at Work etc. Act 1974 and associated regulations

HSG 179 - 'Managing health and safety in swimming pools'

Olympia, 3E Whale Lane, Dundee, DD1 3JU

Thank you for your update below sent following my visit to the swimming pool this morning with my colleague [redacted] when I met with you and [redacted] The purpose of our visit was to carry out a swimming pool health and safety intervention and for Olympia's public entertainment license renewal application.

During this visit a number of issues were identified and discussed with you.

Of most concern was the 3m & 5m dive platform barriers. I noted that there still remains a significant gap between the dive platform floor and the lowest guardrails. The gap on both platforms is such that it could allow a small child to slip through and fall a significant height.

As you are aware this department investigated an accident in 2017 where a child slipped and fell through the gap to the right of the 3m diving board. The child had been standing on the 3m diving board, but changed his mind and stepped off onto the dive platform, then slipped and fell through the gap to the pool side 3m below.

Following our accident investigation, steps were taken to put in place temporary barriers to prevent a similar accident from reoccurring until such time as a permanent solution could be found. I have attached the letter sent to Olympia following the accident investigation in 2017 for your information.

However the temporary barriers remained in place up until the pool closed in 2020.

When we visited today I noted that corrective action had been taken in terms of the installation of the vertical barriers at the waiting area on the dive platform where another accident occurred in 2016, however no action had been taken to decrease the gap between the safety barrier and both dive platforms.

Following discussion with my manager I contacted you after the visit to advise that due to the significant risk of injury, access to the dive platform should be prevented until such times as the risk of injury from slipping through the gaps can be mitigated.

You agreed to immediately close the dive platforms during the call and I would ask that you confirm this in writing to me as soon as possible.

A more detailed letter will follow regarding this matter and the other issues identified during the visit.

Regards,

[redacted]

[redacted]

From: [redacted]
Sent: 28 February 2024 15:46
To: [redacted]
Subject: Visit today

Hi [redacted]

I appreciate you giving us your time today.

The key points that I noted and have raised with the Council include:

- Chemical dosing (must work before reopening)
- Additional Acid Bulk Tank (must be installed before reopening)
- Diving board bars (you are going to enquire into previous requirements)
- Up to date schematic drawings must be added to the plant room to reflect the changes made during the refurb
- High level inspections & repairs to be finished before reopening.

If I have missed anything please let me know.

The Leisure & Culture Head Office is at Wellgate Shopping centre, Level 3, Central Library, The, Dundee DD1 1DB.

I am managed by Judy Dobbie who is our Managing Director. I've briefed her on the visit and we will await your report.

Kind regards,

[redacted]

[redacted]

From: [redacted]
Sent: Tuesday, March 5, 2024 16:19
To: [redacted]
Cc: [redacted]
Subject: Fw: Diving Boards at the Olympia

Hi [redacted]

Thank you for your email sent following our telephone call this morning.

I would also refer you to the discussions that [redacted] had with Judy Dobbie and Neil Martin last Thursday, and also the subsequent email sent by [redacted] to them confirming not only the issue relating to the diving platforms detailed below but the other points identified during our visit to the pool on Wednesday 28th February 2024 (covering chemical dosing, etc.) - see attached email.

I would advise that we have already offered for ourselves to meet with the Olympia management on-site to go through the physical details of the measures proposed.

We will make ourselves available to meet with you as soon as you have formulated a solution, I would therefore suggest that we arrange to meet at a mutually convenient time to discuss your proposed solutions.

[redacted]

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[redacted]

From: [redacted]
Sent: Tuesday, March 5, 2024 16:19
To: [redacted]
Cc: [redacted]
Subject: Fw: Diving Boards at the Olympia

Hi [redacted]

Thank you for your email sent following our telephone call this morning.

I would also refer you to the discussions that [redacted] and [redacted] had with Judy Dobbie and Neil Martin last Thursday, and also the subsequent email sent by [redacted] to them confirming not only the issue relating to the diving platforms detailed below but the other points identified during our visit to the pool on Wednesday 28th February 2024 (covering chemical dosing, etc.) - see attached email.

I would advise that we have already offered for ourselves to meet with the Olympia management on-site to go through the physical details of the measures proposed.

We will make ourselves available to meet with you as soon as you have formulated a solution, I would therefore suggest that we arrange to meet at a mutually convenient time to discuss your proposed solutions.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

From: [redacted]
Sent: 05 March 2024 11:02
To: [redacted]

Cc: [redacted]
Subject: Diving Boards at the Olympia

Morning [redacted]

Thank you for your call today.

As we discussed I had a meeting this morning with Judy Dobbie (L&CD Managing Director) to follow up on discussions she was having with City Development. At the core of the issue that you have identified is that you feel that there is a potential risk of someone (particularly of child size) being able to slip and fall under the bottom spar of the high board. Judy and myself completely understand the position having now been given the history around this of the two previous accidents.

The history

I shared the letter you sent me for [redacted] She was not aware of it but now is. Looking into the history of this from records such as our Property and Safety Committee I believe that [redacted] did act upon your instructions. There were two proposals which had been costed and proposed. The first was a partition such as a plastic / glass barrier similar to the balcony that we discussed last week. The second was an additional cross bar within the gap which was the idea we had come to independently as well. We proposed this idea to City Development last week and commented that this is what L&CD had previously proposed based on what had been instructed. The impression that I have been given is that they are proposing additional lifeguarding instead to Marshall that risk. From our conversation additional lifeguarding would not be enough to reduce the risks that you have identified, and we do in fact need a physical barrier.

I believe a misunderstanding of the previous instructions has occurred which led to the additional bars on the central area of the platform and did not lead to the changes you & line manager instructed. I believe with Covid, a series of managers moving on and retiring has led to our side not being aware of this. I wondered whether City Development had also received the written instruction, I believe they would have been aware due to the content of minutes of meetings. If you have not done so already, I believe that Neil Martin the Head of Property & City Designs needs to be engaged to make sure we get this right. I can certainly do this based on feedback that you give me, however I wondered if some direct communications would be appropriate to ensure nothing is missed in translation. Looking at this objectively I think that there has been a missing step and that is the engagement with yourselves before making the changes on the middle of the structure.

Having discussed this with you again today that it was neither suitable nor sufficient to mitigate the risk of slipping / falling under the bottom rung of these platforms. As pictured above.

<u>What I propose for the 3m and 5m boards</u>

The issue is the gap between the lower bar and the platforms on the 3m and 5m boards. It requires a physical barrier.

- **Temporary measure:** To that end in the short term I have a second proposal that we utilise scaffolding bars and fixings to form a barrier into that space.
- **The fix:** This would then be replaced by City Development with a set of fixed bars in those low gaps.

This would have to take a physical weight, with assurances around if someone impacted upon it. The bolts would have to be positioned so that they cannot be unintentionally kicked on the way past. It cannot fail due to being hit or braced against. I stress this would be a temporary measure until the horizontal fixed bars are welded onto the gaps at the 3m and

5m boards. I think from our conversation on the phone that this is appropriate, however could you please give me feedback now you have visuals to complement the concept. For the longer term option, I appreciated the comments about getting the property team to investigate how long a welded joint is likely to last in this type of environment. I will make amendments to our risk assessments to reflect these changes.

1m low board

I also thank you for agreeing that we can utilise the 1m diving board which is not on the main structure. This will allow us to reinstate the diving club. I can assure you that a physical barrier and restrictions to the main structure will continue to be in place until we have resolutions for those platforms.

I can assure you that having been made aware of the history of this that we are keen to ensure that this is resolved to ensure that the risk that you identified from the two previous accidents is mitigated.

Kind regards,

[redacted]

From: [redacted]
Sent: Friday, May 3, 2024 15:56
To: [redacted]
Subject: Re: Olympia - diving boards

Hi [redacted]

I've pencilled a revisit in for Monday, 6th May for 10:30am if that's ok?

[redacted]

[redacted]

this email, or for any loss which may arise from reliance on information contained in this email.

From: [redacted]
Sent: 03 May 2024 15:35
To: [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>
Cc: Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted] Gregory Colgan <gregory.colgan@dundeecity.gov.uk>
Subject: Re: Olympia - diving boards

Good afternoon

We have positive news.

1) Diving boards: works to be completed tonight. Our colleagues at City Development are very positive about the progress. I propose a Monday morning inspection however they should be ready to operate after tonight.

2) Chemical dosing: significant progress made. We will monitor and continue to adjust over the weekend. We will open with actions planned of how to react. We have restrictions on bather loads from reopening.

3) Bulk tank: plans are underway to put this in place. With the configuration work on the dosing controls based on the manufacturers advice we are dosing less chemicals. I believe this will reduce the need to utilize emergency hand dosing measures.

4) Schematics: City Development are chasing these for us.

5) high level inspection and repairs: my understanding from city development is the work is complete. They have a watching brief on other potential works however I have been told everything necessary has been completed.

Kind regards

[redacted]

From: [redacted]
Sent: Monday, March 11, 2024 11:23:59 AM
To: [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; Neil Martin <neil.martin@dundeecity.gov.uk>
Cc: Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted] Gregory Colgan <gregory.colgan@dundeecity.gov.uk>
Subject: Re: Olympia - diving boards

All - further to our discussions on-site last Friday (08/03/2024), and also referring to the points in my earlier email (29/02/2024) I would advise as follows:

Diving Platforms - It was agreed to add a further section (tubular hollow-section stainless steel) into the lower gap of the rails which run parallel with the diving platform. I have attached an image which provides an outline of the proposed modification for reference.

This is a very minor modification, and whilst an interim/temporary measure (e.g. use of plastic barriers) was suggested, this may draw attention to the issue, and I would suggest therefore it would be better to move directly and quickly to the permanent modification agreed.

Chemical Dosing - As I now understand it, there are serious concerns with the effectiveness / performance of the newly installed chemical dosing system and this is currently under discussion between the operators / designers and contractors. The leisure and toddlers pools are currently closed accordingly. We would be grateful to be kept informed of any progress with this.

Additional Acid Bulk Tank - This issue is directly linked to the above. If the coinciding current practice of handling high amounts of chemicals is to continue, every effort must be made to ensure that staff safety is not compromised.

Up-to-date Schematic Drawings - Whilst this would not in itself delay any reopening of the pools, these should be in place as soon as practicable.

High Level Repairs and Inspections - I understand that various methods have been / are in the process of being carried out to check on the integrity of the internal structure. I also understand that the findings of this work are to be reported back to [redacted] I would be grateful to also be provided with a copy of these findings when they are available.

Regards

From: [redacted]
Sent: 09 March 2024 16:02
To: Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; [redacted] Neil Martin <neil.martin@dundeecity.gov.uk>
Cc: Paul Henehan <paul.henehan@leisureandculturedundee.com>; [redacted] Gregory Colgan <gregory.colgan@dundeecity.gov.uk>
Subject: Olympia - diving boards

Hello all,

My apologies for not being able to get this message to you on Friday as promised.

Firstly, thank you to [redacted] for suggesting and organising the site meeting, and to [redacted] and her team in Environmental Health for attending and providing useful background and context. It was extremely helpful to be able to physically see the issues and to discuss these.

For everyone's information and to provide some of that context, Environmental Health's involvement in this matter is in their capacity as statutory enforcers for health and safety at Olympia. All advice provided by them is in pursuance of that role.

The issues highlighted with the diving boards were raised initially in 2016/2017, following 2 no notified incidents on the 3m platform, where young children fell from the landing for the 3m platform in one instance and from the side of the diving board on the 3m platform in the

other. The issues were again flagged by EH in 2020 during a routine inspection when no permanent remediation had been carried out to address this fall from height risk, although temporary barriers had been put into place.

Whilst the guard railing for the entire diving tower follows the parameters of sector guidance and is similar to installations in other swim centres, it does, in this case, leave a fall from height risk from under the bottom rail. This is due to the height of the bottom rail above the platform deck; for clarity, this is not a fall from height risk where the mechanism of the fall is a stumble or fall direct against the barrier, it is a 'chuting' risk whereby a person slipping is able to fit under, and through, the gap between the platform deck and the bottom rail. This is the mechanism by which both falls from height of the young children happened.

Vertical rails have now been fitted at the landing to the 3m platform which has addressed this risk in that location. This is where a child from a diving club fell under the bottom rail. However, the guard rails along the sides of the 3m platform and the top platform still have this gap present. A child fell under the bottom rail at the far side of the 3m platform when stepping down from the diving board after deciding not to dive. These gaps leave a clear and reasonably foreseeable risk of similar incidents happening in these areas.

The installation of vertical rails along the side of the dive platforms would not be appropriate, as this would impede the view of the platform for both supervision by lifeguards (or coaches during club sessions) and by judges during competitions. A alternative solution to reduce the gap between the platform deck and the bottom rail should be sought. Any such solution should be robust enough in it's construction and fixing to remain in place when taking the force of a falling/slipping person. This solution should be installed to both sides of the 3m and top platforms, including the return detail to the front edge of the 3m platform. Until such a solution can be identified and put into place, the diving boards should remain out of use. It would be prudent to discuss any proposed solution with [redacted] and [redacted] before proceeding, to ensure that the risk is judged to be suitably mitigated.

Once a solution is in place, the risk assessment for the management of this part of the facility by Olympia staff should also be reviewed to reduce the risk from divers waiting/queuing to as low a level as possible. This reviewed risk assessment must be communicated to let holders (dive clubs, competition organisers) when a let is agreed and compliance with controls set out therein monitored.

I hope this information is of assistance but please do let me know if you have any queries or require further detail.

Kind regards,

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

From: [redacted]
Sent: Friday, May 24, 2024 16:43
To: [redacted]
Cc: [redacted]
Subject: Olympia Dive Platforms

Dear [redacted]

Following on from my visit with [redacted] on 6th May 2024, I would confirm that the matters relating to the dive platforms have now been addressed.

We also noted that changes have been made, and will continue to be made, within the pool plant room which has resulted in improvements in the pool water quality readings. These readings will be closely monitored by yourselves as the bathing load within the pool is gradually increased over the forthcoming period.

As advised it is essential that you follow your standard operating procedures (SOP) should the water quality readings start to fluctuate again.

Regards

[redacted]

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[redacted]