Inverclyde council

AGENDA ITEM NO: 12

Report To:	**Environment & Regeneration Committee**	**Date:**	**29 October 2015**
Report By:	**Corporate Director Environment, Regeneration & Resources**	**Report**	**LPS/145/15/AMcC**
Contact Officer:	**Alan McClintock**	**Contact No:**	**01475 712444**
Subject:	**Victoria Tower – Refurbishment as Tourist Attraction**		

1.0 PURPOSE

1.1 The purpose of this report is to update the Committee on the proposal to carry out refurbishment work to the Victoria Tower to facilitate its use as a tourist attraction.

2.0 SUMMARY

2.1 At its meeting on the 24th September 2013 the Policy and Resources Committee approved an allocation of £150,000 to carry out works to the Victoria Tower and to allow public access as a tourist attraction.

2.2 At its meeting of 31st October 2013 the Environment and Regeneration Committee approved the proposals and a modest charge to be levied to cover the cost of providing a guide for the groups accessing the tower.

2.3 A feasibility study was carried out to investigate the extent of the work required and estimated the cost of the work. Two options were investigated, option one was to provide access to the very top of the Tower and option two was to provide access to the midway point. Funding has been provided for option two.

2.4 A subsequent detailed Structural Report highlighted the loading limitations of the floors and resultant requirement of limited access by the public.

2.5 A Fire Risk Assessment was carried out to determine the safe access and egress of the public and this confirmed that risk could be mitigated but not eliminated. The Design Team were unable to develop a method of safe evacuation of a comatose person.

2.6 The Council has a statutory obligation to ensure the safety of visitors, employees and workmen. The Study concluded that the Council could not open the Tower to the public and satisfy its statutory obligation. The Tower should continue to have restricted access.

3.0 RECOMMENDATIONS

3.1 That the Committee accept that public access to the Victoria Tower has inherent risks which are not acceptable to the Council and that the remaining funding of £127,000 is reallocated to the refurbishment of the District Courtroom.

Aubrey Fawcett
Corporate Director
Environment, Regeneration
& Resources

4.0 BACKGROUND

4.1 Access to the Tower is gained from the balcony overlooking Cathcart Square on the fourth floor of the stair between Cathcart House and the Municipal Buildings. From here an enclosed concrete stair leads up the square section of the tower. It is narrow, has no handrail and is unlit. At each floor there is a room which is currently undeveloped but provides narrow windows with restricted viewing each side of the tower. This continues for 5 floors and then opens out into an open area where the interior of the tower can be seen. From here to the top of the tower a spiral staircase winds up. This was condemned as unsafe in approximately 2000 and has not been used since. A scaffolding tower has been built inside the tower to provide access for inspections and maintenance.

4.2 The Victoria Tower was conceived to be taller than Glasgow City Chambers which illustrated the rivalry between the two towns. The structure cleverly used a diaphragm wall technique which also housed the access stair within the diaphragm. This did, however, limit the accessibility and so the Victoria Tower was poorly designed as a public access tower and poses health and safety issues with the access and egress route. The stairs are narrow, irregular, have no handrails and no lighting. In addition the intermediary floors were designed as structural bracing for the tower and not as load bearing floors for the public. It is estimated that the floors can safely support about five people and this is reflected in the subsequent Management Strategy.

4.3 Discussions with Building Control confirmed that the Tower was not compliant primarily with regard to landings and stair risings and goings and the narrow width of the stairway. Full compliance is not necessary as long as there is a fire escape strategy which considers occupancy levels and escape periods from the top of the tower.

4.4 A consultant fire engineer was appointed to provide specialist knowledge to the design team; they provided a fire risk assessment having discussed the constraints with Building Control, the Council's Health and Safety Department and Scottish Fire and Rescue Services. A Fire Safety Strategy was developed which could mitigate the risk to the public. This could be achieved by controlled and managed access to the Tower as well as physical alterations to handrails and lighting etc.

4.5 The risk of an emergency event was mitigated by the Management Plan but not eliminated. Consideration of emergency evacuation apparatus confirmed that should there be an incident, it would be impossible to evacuate a patient. The stairway is too narrow, too steep and has right angled bends that make it impossible to use a standard stretcher. Experiments with other types of evacuation apparatus proved fruitless.

4.6 Each intermediary floor has been structurally assessed as poor and used for bracing the tower structure rather than for taking floor loads. It was considered that replacing the floors with something more substantial to allow more visitors to access the landings would provide an opportunity to introduce hatches for unimpeded vertical evacuation. This was considered too radical and could possibly jeopardise the structural integrity of the Tower.

4.7 Evacuation from the mid floor windows proved to be impossible due to the narrow width of the windows. The viewing gallery windows are larger but at some considerable height from the ground and considered impractical to use as an escape route.

4.8 The Design Team considered the Escape Strategy of the Wallace Monument in Stirling and the Scott Monument in Edinburgh, both formidable buildings to evacuate but which do have a Strategy. A visitor was recently air lifted using a Sea King helicopter from the balcony of the Wallace Monument. The architecture of the Victoria Tower restricts

safe evacuation either upward or downward and there are no suitable egress points.

4.9 There remains a problem of evacuation of any member of the public who, despite the management protocol, experiences an emergency event such as a seizure. The Design Team could not resolve the issue of emergency evacuation of an unconscious person. A fail-safe strategy could not be developed and therefore only mitigates the risk but does not eliminate the risk.

4.10 The Council has a statutory obligation to ensure the safety of visitors, employees and workmen. The Study concluded that the Council could not open the Tower to the public and satisfy its statutory obligation.

4.11 The Tower should continue to have restricted access.

5.0 IMPLICATIONS

5.1 Financial Implications – One off Costs
An element of the £150,000 has been utilised to arrive at the position outlined in the report leaving £127,000 available.

Cost Centre	Budget Heading	Budget Year	Proposed Spend this Report	Virement From	Other Comments
	District Court Project	2016/17	£127K	n/a	Transfers the remaining balance to the District Court project

5.2 Financial Implications – Annually Recurring Costs/(Savings)

Cost Centre	Budget Heading	With Effect from	Annual Net Impact	Virement From	Other Comments
Office accommodation	Employee Costs	2015/16	(£5,000)	n/a	Reverses the decision of the Committee in October 2013
Victoria Tower	Income from tours	2015/16	£5,000	n/a	Reverses the decision of the Committee in October 2013

6.0 CONSULTATION

Legal

6.1 There are no legal issues arising from the content of this report and as such the Head of Legal and Property Services has not been consulted.

Human Resources

6.2 There are no direct staffing implications in respect of the report and as such the Head of Organisational Development, HR and Communications has not been consulted.

Equalities

6.3 There are no equalities implications in this report.

Repopulation

6.4 There are no repopulation issues.

7.0 LIST OF BACKGROUND PAPERS

7.1 Victoria Tower Report on Tourist Attraction September 2015 (Appendix 1 to this Report).

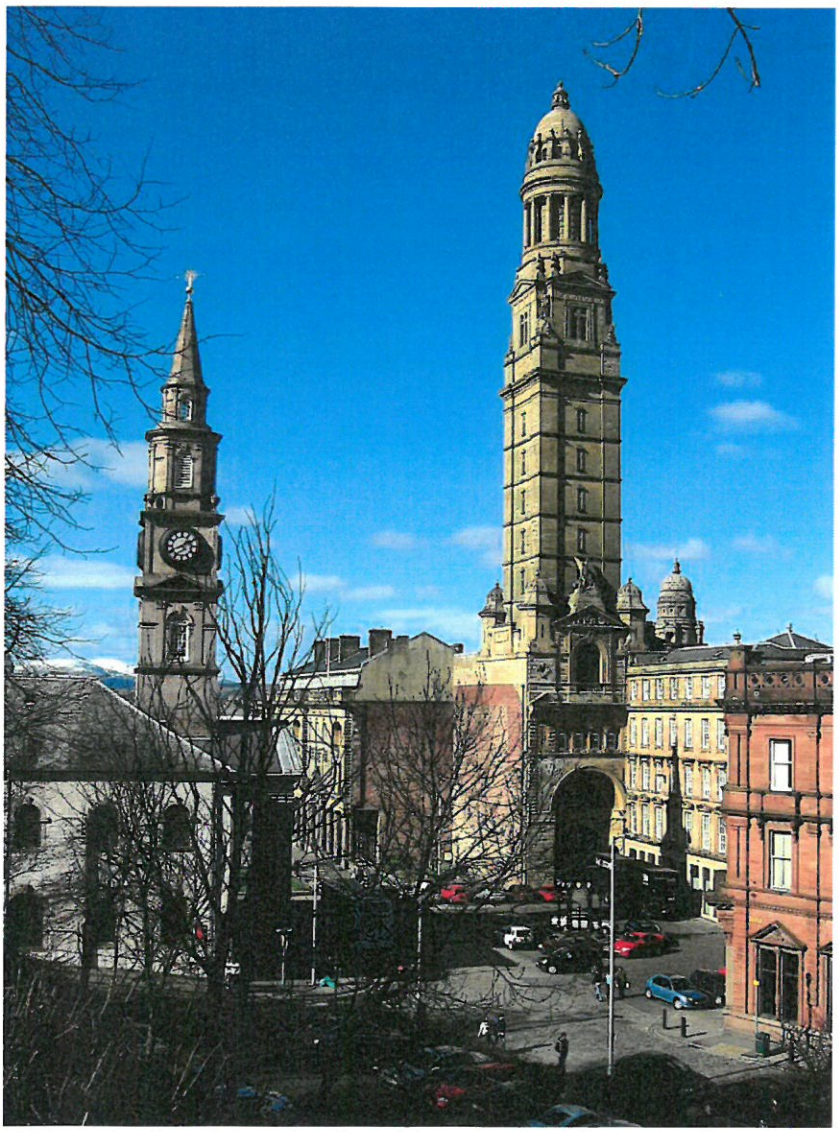
APPENDIX 1

Inverclyde council

LEGAL & PROPERTY SERVICES

13/095b

VICTORIA TOWER
REPORT ON TOURIST ATTRACTION



September 2015

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1.0 Executive Summary

The Victoria Tower was conceived to be taller than Glasgow City Chambers which illustrated the rivalry between the two towns. The structure cleverly used a diaphragm wall technique which also housed the access stair within the diaphragm. This did, however, limit the accessibility and so the Victoria Tower was poorly designed as a public access tower and poses health and safety issues with the access and egress route. The stairs are narrow, irregular, have no handrails and no lighting.

In addition the intermediary floors were designed as structural bracing for the tower and not as load bearing floors for the public. We estimate that the floors can safely support about five people and this is reflected in the Management Strategy.

A Fire Safety Strategy was developed which could mitigate the risk to the public. This could be achieved by controlled and managed access to the Tower as well as physical alterations such as handrails and lighting.

There remains a problem of evacuation of any member of the public who, despite the management protocol, experience an emergency event such as a seizure. There is no way for emergency evacuation of an unconscious person. (See Appendix 2 regarding Health and Safety issues). All additional measures we have explored have proven to be impractical, cost prohibitive, or both. The strategy therefore only mitigates the risk but does not eliminate the risk.

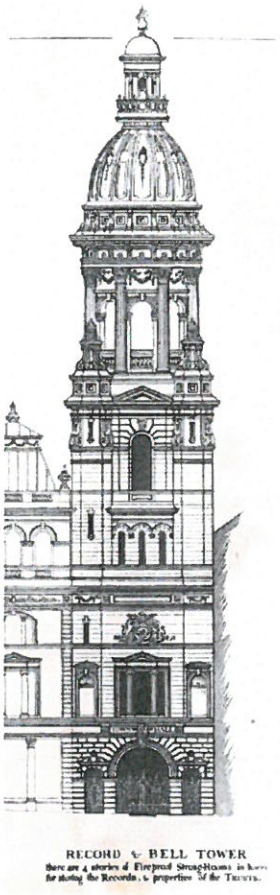
The Council has a statutory obligation to ensure the safety of visitors, employees and workmen. The study concludes that this cannot be achieved and the Tower should continue to have restricted access.

2.0 Introduction

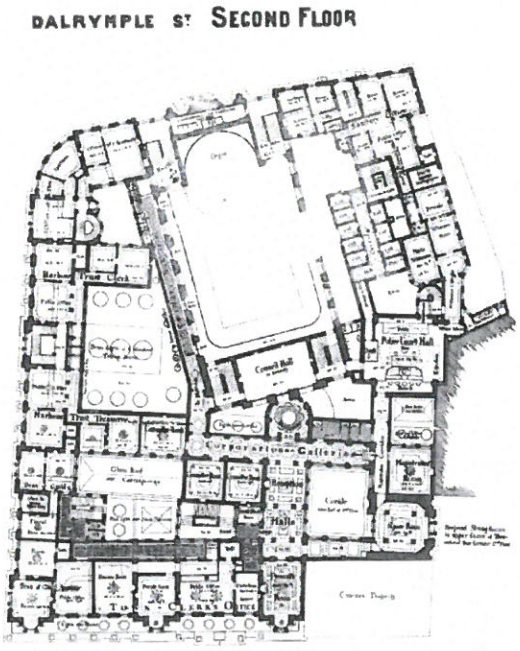
In the 19th century, Greenock was a prosperous port town benefitting from the trade with the rest of the Scottish west coast and the Americas. It was also the first port of call for Irish and Highland immigrants and over-crowding of parts of the Town occurred. The area around the Town Hall was known as the Vennel due to the prominence of narrow alleyways and passages usually associated with dense urban communities.

*A **vennel** is a passageway between the gables of two buildings which can in effect be a minor street in Scotland and the north east of England. In Scotland, the term originated in royal burghs created in the twelfth century, the word deriving from the Old French word venelle meaning "alley" or "lane". Unlike a tenement entry to private property, known as a "close", a vennel was a public way leading from a typical high street to the open ground beyond.*

The Vennel area was subject to intense regeneration over several generations. Large parts of the Vennel was demolished for the construction of the Municipal Buildings which essentially wrapped round the Town Hall forming a building within a building.



RECORD & BELL TOWER



DALRYMPLE ST SECOND FLOOR

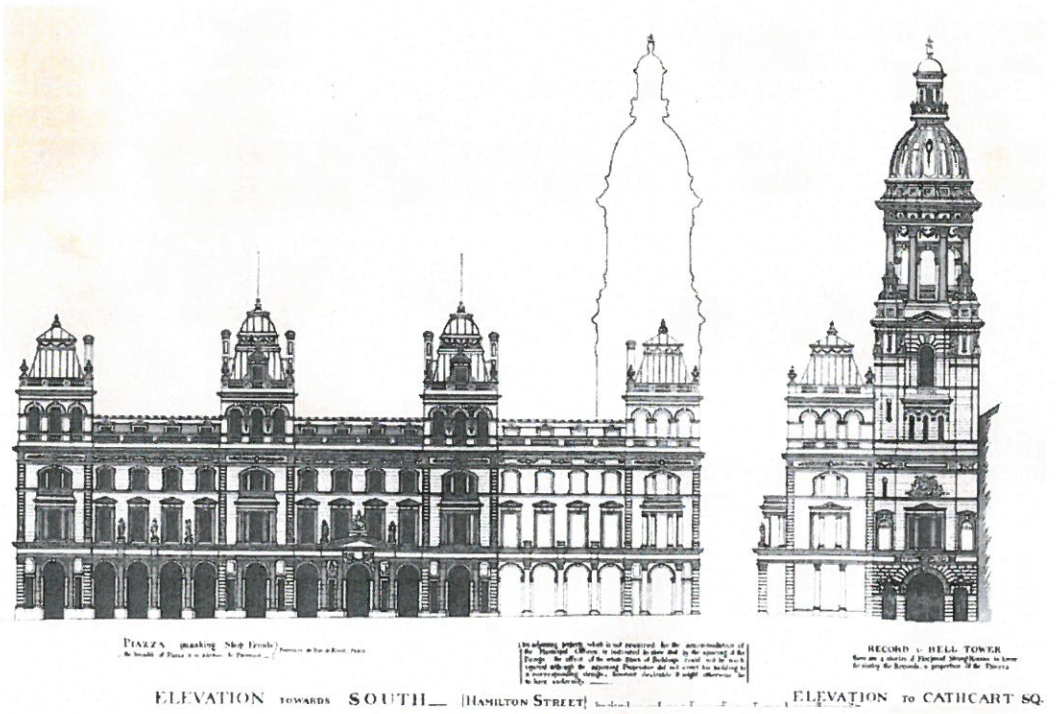
PLAN OF FIRST FLOOR FROM HAMILTON ST

Greenock's importance and wealth was manifest in the construction of the Italianate Municipal Buildings, whose Victoria Tower, completed in 1886, stands 245 feet (75m) tall. Taller than Glasgow City Chambers which was no coincidence and illustrated the rivalry between the two towns. The design was subject to a competition and architects H. &D. Barclay won from 80 entries.

Construction of the Greenock Municipal buildings and town-hall began on 6 Aug. 1881. The foundation stone was laid at a ceremony on that date. Provost Dugald Campbell remarked in his speech-That the new buildings would replace former *"spots of disease and death which were situated in this place"*. A reference to the Vennel.

The building cost £80,000 and was a four storey ashlar building ornately decorated with classical details outside with lavish decoration inside. The domed capped Victoria Tower was part of the second phase that included the main façade of the municipal buildings facing onto Hamilton Street, which is now the Clyde Square. The building housed police, cleansing, and sanitary departments. The pillars along the front of the building are of Peterhead granite and the spaces occupied by ground floor offices were originally shops. The original plan was to have a tower at each corner of the building plus a lower Victoria Tower.

This did not happen because the owner of the property at the east end of the main façade nearest to Cathcart Square refused to sell his premises to the Greenock Burgh Council. Instead of the intended tower at the corner, the higher Victoria Tower was built, and the corner remained in private ownership. It is known locally as Cowan's Corner. The municipal building survived damage during World War 2, with the exception of the upper two storeys facing onto Hamilton Street which were severely damaged by fire. These were rebuilt in 1944 and at that time it was decided to remove the tower on the south west corner which was unsafe. Cowan's corner was not so lucky as it was burned to the ground, and explains why the ornate ashlar façade becomes bare brick walls, now rendered, at the corner.



The Municipal Buildings were 'A listed' on the 13th of May 1971.
Historic Scotland describes the building as

"4-storey ashlar Renaissance of mixed character with much sculpture: granite columns: atlantes: niches: 245' dome-capped tower. H. & D. Barclay, archts., 1881.

3.0 Tourist Attraction

Access to the Tower was to be delivered in partnership with Inverclyde Tourist Group who currently carry out guided tours of the municipal building and were hoping to offer a much improved tour with the upgrading of the facility and the addition of the tower.

The Inverclyde Tourist Group began in 2001. It is a group of enthusiastic volunteers who meet and greet cruise ship passengers arriving in Greenock. In 2013, 40 cruise ships with over 90,000 passengers and over 40,000 crew berthed in Greenock.

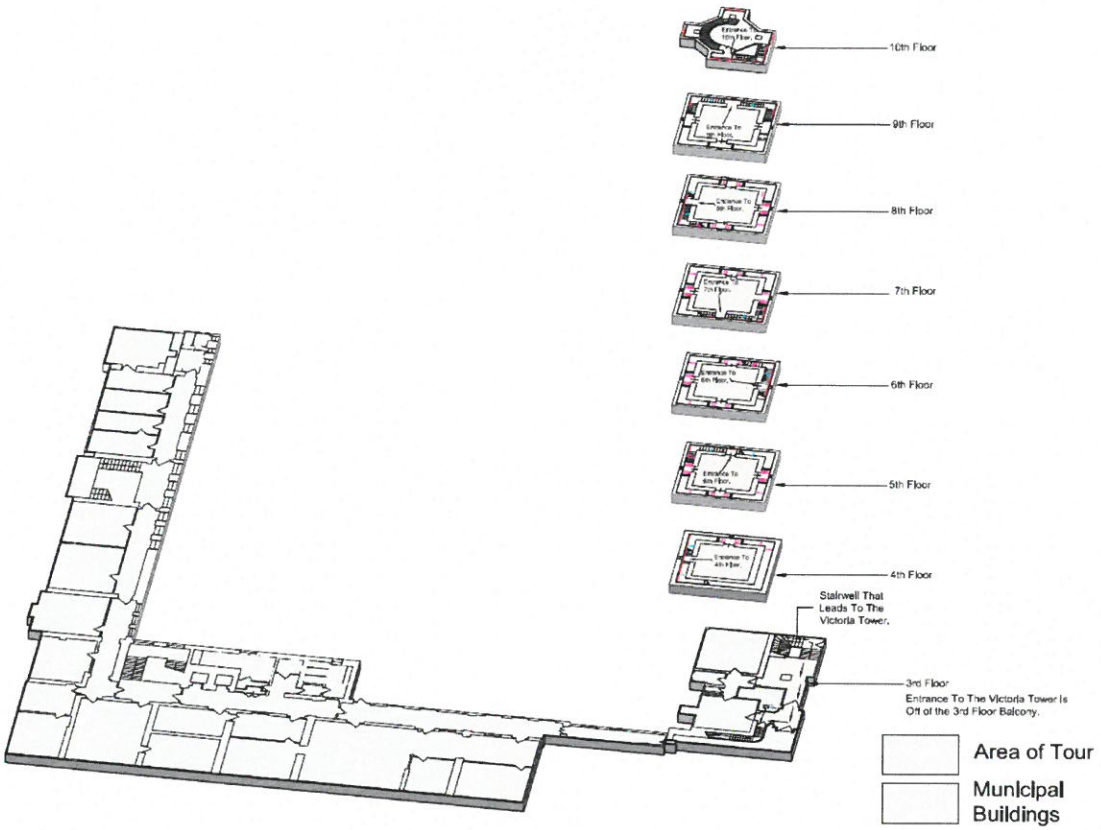
The main aim of the group is to give passengers information to enhance their stay in the local area and beyond. Free coach tours of the local area are offered on cruise call days. One of the highlights of the Greenock tour is Greenock Municipal Buildings.

Cruise passengers come from all over the world and are always surprised by the history and grandeur of the building. They are also amazed at the opulence of the architecture and furnishings. The importance of Greenock, at a time when Scotland was a centre of history and trade, is explained.

Many of the passengers have family connections with Scotland and recognise that some may have left from Greenock to go to America, Canada and Australia. There were many trade connections with cargo ships leaving Greenock bound for all parts of the world. Another connection is World War 2 when troops arrived in Greenock to be transported throughout Britain in readiness for the Normandy Landings. Greenock was also the base for the Atlantic Convoys.

Inverclyde Tourist Group currently run tours of the Municipal Building featuring the Grand Corridor, Council Chambers and the Provost's Room. It was conceived that this experience would be enhanced by extending the tour to include the Victoria Tower, not only for cruise ship passengers but also visits by local people who

could take advantage of the opportunity – many people have expressed disappointment at not being able to access the Tower.

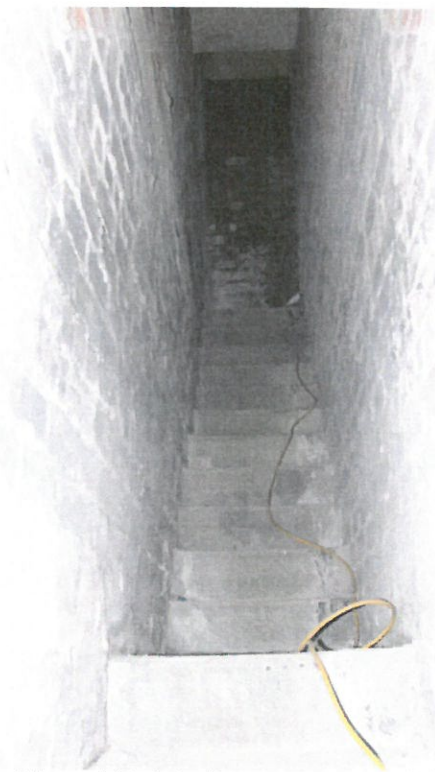


The Victoria Tower has a 'Viewing Gallery' at high level but is poorly designed as a public accessible space. It poses risk to visitors, employees and workmen and does not comply with current building regulations for the safety and wellbeing of the public. Property Services developed an 'Escape Strategy' to mitigate the problems of access and egress of the tower but unfortunately there remains an underlying risk which cannot be eliminated and this is described in the following chapters.

4.0 Escape Strategy

The grandeur of the Municipal Buildings and the height of the Victoria Tower was an expression of the new confidence and vitality of Greenock. The Tower however was wholly symbolic and we now understand that it was not intended for public access. The following problems exist:

- Access stairway is too narrow, has no handrail and tight corners restrict evacuation.
- The stairs are irregular and steep.
- There is no general lighting or emergency lighting.
- There are no fire doors to restrict the spread of fire.
- The mid landings can only support small groups of people.
- Windows are too small to allow alternative evacuation.



Discussions with Building Control confirmed that the Tower was not compliant primarily with regards to landings and stair risings and goings and the narrow width of the stairway. (See Appendix 1)

To compensate for the non-compliance of the tower, additional measures would need to be taken. Enhanced protection would be required in terms of fire separation, reduced sources of combustion and visual awareness. These would be incorporated into the in-house design package.

A consultant fire engineer was appointed to provide specialist knowledge to the design team; they provided a fire risk assessment having discussed the constraints with Building Control, the Councils Health and Safety Department and Sottish Fire and Rescue Services.

A Management Plan was developed which considered the following:

- The narrow width of the stairway and the height of the Tower is a health risk to the infirm and unhealthy. Tour guides would therefore restrict access to those considered able to negotiate the stair.

- Those who could not ascend the stair could be shown a 3D virtual reality tour of the Tower.
- The length of the stairs and difficulty in negotiating a descent required a restricted number of tourists in the Tower at any one time.
- The lack of compliance would be mitigated by introduction of a handrail, lighting and emergency lighting.

5.0 Statutory Obligations

The Council has a statutory obligation to ensure visitors, employees and workmen are safe at all times and must be compliant with the following Regulations:

- Occupiers Liability (Scotland) Act 1960
- Health and Safety at Work Act 1974
- Fire (Scotland) Act 2005
- Fire Safety (Scotland) Regulations 2006
- Corporate Manslaughter Corporate Homicide Act 2007
- Construction Design and Management (CDM) Regulations 2015
- Manual Handling Regulations

Visitors

The Management Plan for visitors illustrates a method of reducing risk by improving the escape environment and by controlling and restricting access. There still exists the problem of evacuating a patient should there be an emergency event. It is impossible to evacuate down the stairway using a standard stretcher and the windows are too narrow for alternative egress.

Employees

The Council has an obligation to ensure the safety of employees and as described for visitors, should there be an emergency event an employee would have the same difficulty of evacuation.

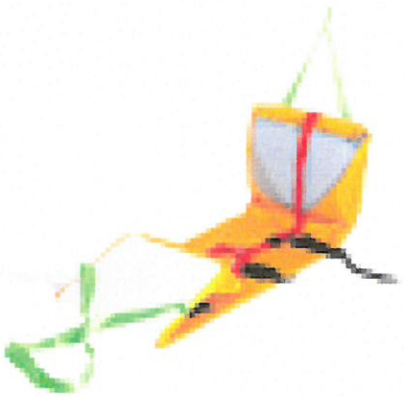
Workmen

There is also an obligation to ensure the work can be carried out safely and any construction work carries an additional risk due to the nature of the work. This also includes future maintenance when safe access and egress is required. Workmen are affected by the limit to evacuation and particularly vulnerable at the early stages before remedial measures are in place. There is also the problem of delivering building materials safely to the areas of work.

6.0 Detailed Analysis

The risk of an emergency event was mitigated by the Management Plan but not eliminated. Consideration of emergency evacuation apparatus confirmed that should there be an incident, it would be impossible to evacuate a patient. The stairway is too narrow, too steep and has right angled bends that make it impossible to use a standard stretcher.

There was no suitable evacuation chair from the various selections available that could be used in the stairwell. The only evacuation mode that would function in the stairwell was the ResQmat. When this was a considered in more depth and an on site assessment and trail carried out problems became evident. The staff carrying the ResQmat down the stairwell were put under extreme physical stress for a prolonged period of time. Speed was gained on descend due to the unequal risers of the stairs. The casualty in the ResQmat would more than likely be put in a lying prone position for more than 20mins creating the opportunity for suspension trauma which is not recommended and can be dangerous in itself. (See Appendix 2)



A 'mock-up' of the stair was constructed to explore the possibility of chamfering the internal corner of the Tower to ease passage round the corners but this proved to be unacceptable. (Note that it was subsequently considered structurally unacceptable to chamfer the structural wall element. See Appendix 3)

7.0 Alternative Proposals

The Design Team explored various methods to evacuate patients safely.

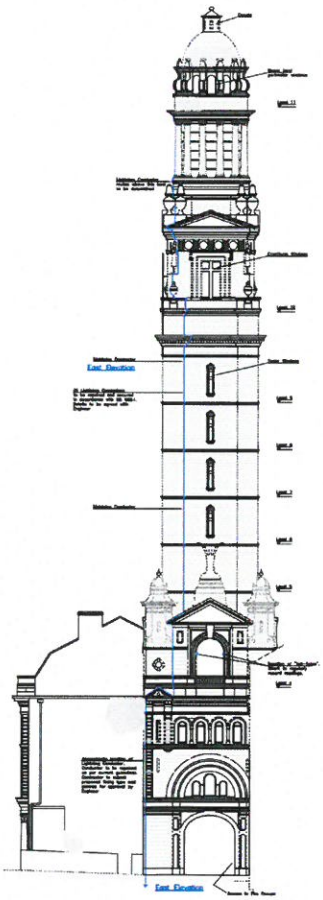
Escape Hoists
All products that have been investigated have the suspension rail level rather than on a slope as would be required to egress down the stairway. A complex braking system would be required and we could not find anything suitable on the market. A breeches buoy system was considered but this cannot turns corners. A separate line would be required for every straight run of stair and was considered impractical.

Forming Openings
Each intermediary floor has been structurally assessed as poor and used for bracing the tower structure rather than for taking floor loads. We considered replacing the floors with something more substantial to allow more visitors to access the landings. Such a design could include the forming of floor hatches to allow unimpeded vertical egress for evacuation. The structural implications to this are discussed in the next Chapter but it was considered impractical.

8.0 Structure

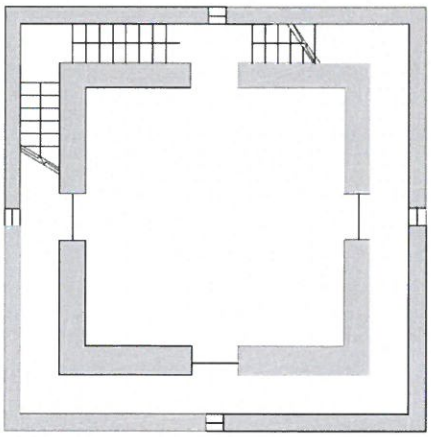
An external structural engineer was commissioned by Invercylde Council to prepare a condition survey of the spiral staircase and level 10 within Victoria Tower. The purpose of the survey was to determine the condition of the stair and the viewing platform and ascertain if it is was suitable for the general access loads. (Full Structural Report see Appendix 4)

The Survey was subsequently adapted to consider the replacement of intermediary floor slabs to carry higher loads and to include an alternative evacuation route in the form of a series of hatches.



Structurally the Tower is of diaphragm wall construction with both inner and outer walls acting as load-bearing members and tied together with the stairs and landings. The intermediary floors have poor load bearing capacity and are thought to be for bracing purposes.

The windows are small and narrow and maximise the load bearing wall masonry. (Note that this also restricts the emergency egress strategy.)



With the location of the tower and the narrow access to the upper sections it was noted that the logistics of moving materials into the tower for repair could determine the method of repair and also the extent of the repairs. With the limited access, consideration will require to be given to the access for any operatives and also for any emergencies which could occur during the works. As such, which route would an emergency exit take and how would this be kept clear at all time.

The intermediary floors were examined and it was considered that they have poor floor loading capability and probably designed as bracing to the tower structure. A further structural examination was progressed tasked with considering the replacement of these floors to provide additional floor loading ability and also to consider integrated floor hatches which could be used for emergency evacuation. The structural engineer subsequently expressed concern about destabilising the whole structure and the study was terminated. The following comments noted by the Structural Engineer:

- As described previously the internal floor is formed from cut brick and masonry bound together with concrete, in order to form a void through the floor we would recommend that steel trimmers are placed around the floor opening in order to provide support to the floor. Within a number of the upper floor levels, the existing steel beams providing support to the floor are badly corroded and would need to be replaced as part of these works
- The existing floor provides a horizontal restraint to the overall structure via diaphragm action therefore the formation of a void within the floor will reduce the capacity of the floor to provide restraint to the overall superstructure
- The existing floor has not been designed for the loads that would be experienced as an exhibition space in accordance with current guidelines and design standards and under such loadings the floor would fail under design analysis.
- With the above in mind, we have discussed the proposal of introducing a new floor to the tower that would be designed for exhibition space and allow emergency evacuation.
    - This would impact on the existing masonry structure and it's foundations with an increase in Dead and Imposed loadings, not previously experienced by the structure or designed for.
    - We are aware that due to the tower's location, the probable ground conditions would be sands and silts, which are susceptible to differential settlement under the increased loadings.
    - Ground Investigation works would be required to confirm the existing ground conditions and provide an allowable bearing capacity for foundation analysis.
    - Possible underpinning/ pilling works to the tower would be required if the ground conditions were poor with evidence of settlement likely.

The conclusion is that such an alteration to the structure of the Tower would present significant structural problems and risk. Such work is considered impractical by the Structural Engineers.

9.0 Cost Analysis

A cost report has not been prepared due to inconclusive nature of the findings and conclusions.

10.0 Conclusion

The Victoria Tower was poorly designed as a public access tower and poses health and safety issues with the access and egress route. The stairs are narrow, irregular, have no handrails and no lighting.

In addition the intermediary floors were designed as structural bracing for the tower and not as load bearing floors for the public. We estimate that the floors can safely support about five people and this is reflected in the Management Strategy.

An Escape Strategy was developed which could mitigate the risk to the public. This could be achieved by controlled and managed access to the Tower as well as physical alterations such as handrails and lighting.

There remains a problem of evacuation of any member of the public who, despite the management protocol, experience an emergency event such as a seizure. There is no way of emergency evacuation of an unconscious person. (See Appendix 2 regarding Health and Safety issues). All additional measures we have explored have proven to be impractical. The strategy therefore only mitigates the risk but does not eliminate the risk.

The Council has a statutory obligation to ensure the safety of visitors, employees and workmen. The study concludes that this cannot be achieved and the Tower should continue to have restricted access.

11.0 List of Appendices

Appendix 1: Statement from Building Standards

Appendix 2: Statement from Health and Safety

Appendix 3: Email from Structural Engineer regarding chamfering of the corners.

Appendix 4: Fire Safety Strategy (Separate Document)

Appendix 5: Structural Report (Separate Document)

Appendix 6: Fire (Scotland) Act 2005

Appendix 7: CDM Regulations

Appendix 8: Health and Safety Regulation... a Short Guide

Appendix 1: Statement from Building Standards **EXCERPT**

As implied in this document, formal compliance with current standards will not be possible in the normal manner. The introduction of public access does however constitute a Conversion as defined under Regulation 4, Schedule 2, requiring the provisions of Regulation 12 Schedule 6 to be considered. The aims of the standards would need to be considered relative to management practices, which is contrary to the normal asset based approach taken. Numbers may need to be controlled and visitors should be aware of the higher risk environment they are entering and the level of exertion necessary (possible non-compliance re landings and stair rising/going). The stair widths are such that measures like a traffic light system may be useful - I have seen this used in a similar monument. The risk of firewill need to be managed - with rooms ideally being able to be fire separated from the stairs and with suitable communication of the outbreak of fire being provided. Sources of combustion could be restricted - the structure itself is fairly non-combustible from memory. Sprinklers could be considered to the rooms if the level of risk/freedom regarding exhibits made this preferable. Any lighting scheme should also make provision for emergency lighting in the event of a power failure. The standard 2.14 'Fire and rescue service facilities' includes requirements for a fire fighting stair, a fire fighting lift, fire-fighting lobby, ventilation to stair and lobby and a wet fire main - consultation with Strathclyde Fire and Rescue would be necessary to agree what level of provision was appropriate for this proposed use.

Addition of a handrail to the lower stair would seem feasible and preferred, to at least one side of the stair. The spiral stair to the circular tower was condemned as unsafe by Property Services. My understanding is that this was due to the unreinforced nature of the cantilevered stone stair treads and the condition of some of them. Given the attractiveness of this section of the tower is partly due to the shape of this stair (see photo attached), a scheme
to provide support to these may be possible, either based on total support or to accommodate temporary support to a local failure. This scheme could also possibly form the basis of a handrail/barrier system which would need to be fully compliant. Presumably Historic Scotland may have an input to this also. Consultation with an engineer that specialises in ancient monuments/historic buildings may be worthwhile. There are also some iron/steel beams in the floors that should be checked for their current condition. Reference is made to the possibility that visitors would be content to ascend only as far as the base of the circular tower. Presumably the scaffold tower would be removed - checking of the stability of the spiral

stair in the circular tower would be necessary at least to be happy that collapse under no imposed load could happen. Consideration as to how maintenance access is to be achieved would also be required. The inability to achieve access for all is a difficulty relative to conformance, given that the introduction of public access constitutes a Conversion as defined under Regulation 4, Schedule 2. I would suggest consultation with ICOD regarding this, with the aim of demonstrating to them that access is not feasible. There may be issues regarding the standards for visually impaired (and able bodied use to avoid trips/slips) relative to the provision of contrasting nosings) - again perhaps some management/warning signage relative to this could be accepted if this was felt to be an issue. Legal advice on the protection any warning may provide relative to possible litigation following an accident may be advisable. Access to sanitary provision for staff and visitors should be considered - perhaps the contact centre facilities would be sufficient. There may be some heating introduced - this should consider maximising fire safety. Given the unusual nature of the development, the application of the energy requirements of Section 6 could be seen to be of little importance, but energy conservation should ideally be considered relative to the selection of heating source and lighting provision. Hopefully this is of some assistance at this stage.

Appendix 2: Statement from Health and Safety

(Syncope in the main is easier explained by the term fainting. The dictionary definition is something like.....

Syncope is the sudden transient loss of consciousness and postural tone with spontaneous recovery. The causes of syncope can be classified as vascular: resulting from changes to blood vessels or their reflex responses, cardiac: relating to structural abnormalities of the heart or to changes in its rhythm, neurological: conditions such as migraine or seizures, metabolic: due to ingested or other toxicants e.g. drugs or alcohol and including abnormalities of biochemistry, psychogenic: anxiety, panic and somatisation disorders, and finally, syncope of unknown origin.

Simply put, it puts the person down due to some bodily/medical/drug/alcohol response and thereafter there is the need to revive or remove the casualty to a place of safety.

Suspension trauma is a term normally related to a casualty who is working at height and a fall arrested by means of a harness. The casualty is in the prone position with the possibility of a "heads up" position adopted to effect control of the situation. However, the casualty may be semi or indeed unconscious and is fully prone in the harness, but no matter what, the casualty has to be recovered, normally from height.

The circumstances of a person who becomes a casualty in the Tower has similar considerations, in that they suffer syncope; collapse to a prone position; and remain there until either they revive by themselves; are assisted by trained staff or are removed for further treatment. In any case they are in a prone position similar to the suspended casualty.

When a casualty has been suspended or is lying prone for a time (20 minutes seems to be the turning point), there is a lack of 'muscle pump' and a pooling of blood in the lower limbs. Clothing can restrict or reduce venous return all of which can be exacerbated by a prevailing medical condition and prescribed medication.

These are classic trauma considerations when rescuing a casualty.

Having regard to the foregoing, the circumstances then create a potential for harm when seeking to remove the casualty from height. In the circumstances of removing someone from the Tower then there will be issues with the reinstatement of the blood flow and cardiac efficiency as this would pump any noxious matter which had pooled due to the original syncope. The casualty will be subject to inordinate movements if there is a decision to use the ResQmat. The movements will be across all planes from the horizontal to the vertical and back again. This will increase the

trauma effect not only of the cause of the initial collapse, but also the effect of lying prone for a time.

You will note I have not made mention of those issues such as manual handling, fire management etc, previously discussed.)

Appendix 3: Email From Structural Engineer

From: Alan Ferns [mailto:alan.ferns@patrickparsons.co.uk]
Sent: 05 June 2015 10:48
To: Duncan Morrison
Subject: Victoria Tower - Corner Chamfer

Duncan,

I have carried out a review of the proposals to chamfer the internal masonry corners of the stairwells to allow emergency access and egress. Please see below my comments;

- The design of this structure is reliant on its mass and gravity to maintain stability against horizontal loads (wind)
- From a review of historic information as provided by Inverclyde Council, the internal wall thickness is approximately 460mm thick.
- As a rule of thumb, the maximum corbel projection in masonry is a third of the overall wall thickness, however the proposals are to reduce the existing wall thickness (Currently there is no clear guidance for the formation of a corbel by reducing wall thickness), however by reversing the guidance for the proposals discussed; the maximum thickness the wall can be reduced by is 110mm to 350mm in keeping with the above guidelines.
- From an overlay of historic drawings to understand load paths and structural arrangements of the existing walls and floors the 10th floor and associated tower is built off the internal stair walls
- Therefore the internal walls are load bearing and provide support to the tower and any reduction in wall thickness will
    1. Increasing wall slenderness
    2. Reduce load bearing capacity and stability
    3. Detrimental to the overall tower superstructure
    4. Increase the likelihood of the formation of cracks in the walls and horizontal displacement of walls
    5. Increase deflection of stairs and landings due to the reduced load bearing capacity of the walls

Other issues to consider during the corbelling works would be the ability for the contractor to ensure corbel sizes are kept within required tolerances due to the nature of the brick material and the likelihood of spalling and shattering, thereby increasing the size of the corbel and reduction in load bearing capacity. With regards to health and safety the key issues would be the generation of dust and the removal of masonry material within a confined space.

Therefore with regards to the above discussion we would strongly recommend based on the impact to the stability and load bearing capacity of the existing superstructure the corbelling works should be ruled out.

Regards

Alan

Appendix 4: Fire Safety Strategy

Document available on request by contacting Alan McClintock, Technical Services Manager. alan.mcclintock@inverclyde.gov.uk

Appendix 5: Structural Report

Document available on request by contacting Alan McClintock, Technical Services Manager. alan.mcclintock@inverclyde.gov.uk

Appendix 6: Fire (Scotland) Act 2005

1Subject to paragraph 2, the fire safety measures are—

(a)measures to reduce the risk of—

(i)fire in relevant premises; and

(ii)the risk of the spread of fire there;

(b)measures in relation to the means of escape from relevant premises;

(c)measures for securing that, at all material times, the means of escape from relevant premises can be safely and effectively used;

(d)measures in relation to the means of fighting fires in relevant premises;

(e)measures in relation to the means of—

(i)detecting fires in relevant premises; and

(ii)giving warning in the event of fire, or suspected fire, in relevant premises;

(f)measures in relation to the arrangements for action to be taken in the event of fire in relevant premises (including, in particular, measures for the instruction and training of employees and for mitigation of the effects of fire); and

(g)such other measures in relation to relevant premises as may be prescribed by the Scottish Ministers by regulations.

Appendix 7: CDM Regulations

Designers' responsibilities extend beyond the construction phase of a project. They also need to consider the health and safety of those who will maintain, repair, clean, and eventually demolish a structure. Under CDM2007 designers must also consider the risks that arise from anyone who may have to work in the building being constructed. This will be done by eliminating and reducing potential hazards wherever possible and by passing on information about remaining hazards to the client on non-notifiable projects, or the CDMC on notifiable projects for inclusion in the health and safety file. The hazard must be eliminated unless compared to the risk, it is disproportionate in terms of time, cost and effort to do so.

Appendix 8: Health and Safety Regulation… a Short Guide

Document available on request by contacting Alan McClintock, Technical Services Manager. alan.mcclintock@inverclyde.gov.uk