



To: Parks, Recreation and Cultural Services Committee **Date:** June 7, 2011
From: Dave Semple
General Manager, Parks and Recreation **File:** 11-7141-01/2011-Vol
01
Re: Phoenix Net Loft

Staff Recommendation

That \$250,000 be submitted for the 2012 Capital Budget Program to demolish portions of the Phoenix Net Loft structure that are susceptible to immediate collapse, install lightweight shading elements, and undertake an updated condition assessment report, as outlined in the staff report entitled *Phoenix Net Loft* dated June 7, 2011 from the General Manager, Parks and Recreation.

Dave Semple
General Manager, Parks and Recreation
(604-233-3350)

Att. 4

FOR ORIGINATING DEPARTMENT USE ONLY			
ROUTED TO:	CONCURRENCE		CONCURRENCE OF GENERAL MANAGER
Arts, Culture & Heritage Project Development	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
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REVIEWED BY TAG	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	REVIEWED BY CAO
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Staff Report

Origin

At the April 14, 2009 closed Council meeting, a referral was made to (i) cancel a Request for Proposal for restoring and leasing the Phoenix Net Loft, and (ii) that staff report back to Council with options for alternative uses of the Phoenix Net Loft (including whether to incorporate the Pacific Coast Cannery site, which is owned and operated by the Steveston Harbour Authority, as a potential addition to the Britannia Waterfront node.

The RFP has been cancelled and this report responds to second part of the referral relating to alternative uses of the Phoenix Net Loft. With respect to the Pacific Coast Cannery site, Steveston Harbour Authority has undertaken a reconstruction program at this location to create floats and moorage for the fishing industry. Subsequent staff reports related to the Steveston Harbour Development Concept Plan will address this.

Findings of Fact

The Phoenix Net Loft was acquired by the City from BC Packers during their rezoning process in 2001. It is a two-storey timber superstructure (46m by 21m) with two timber shed appendages (each 6.1m by 18.3m). The superstructures are supported on a timber pile and deck substructure that extends beyond the footprint of the building on one side to form a wharf deck. Most of the wharf structure surrounding the superstructure (which was used for vessel berthing when the facility was operational) has been demolished.

While at the time of rezoning it was envisioned that the Net Loft would remain in use as part of the fishing industry, the deteriorated state of the building and downturn in the fishing industry resulted in the building being vacant. It is currently being used to house City-owned artefacts from the BC Packer's collection, Gateway Theatre props and sets, and an aluminium ramp used at No. 3 Road pier. However, upon recent receipt of a high level re-inspection report for the building, the City is now looking for alternative storage space for these materials as the structure of the facility is neither sound for storage nor safe to occupy. Currently, the facility is secured with a chain link fence that surrounds the building and appropriate signage restricting access to ensure public safety.

Building Condition

A facility assessment report prepared in 2002 outlines the condition of both the substructure and building, as indicated below.

The Substructure

- There is evidence of overloading, mechanical damage, extensive fungal decay and insect infestation to the substructure.
- The substructure has unknown pile length and does not meet building code requirements for seismic stability.
- Preliminary inspection has identified that:
 - 26 piles and 15 pile caps require replacing
 - 12 piles require heading/bracing
 - 2 brace members need replacing
 - 160 linear metres of pile cap need replacement

- 50 linear metres of stringer need replacement
- access decking collapsed and should be demolished and removed
- Significant amounts of tidal debris under the building require removal.

The Building

The Net Loft is a waterfront wood structure in reasonable condition, however a number of building deficiencies were identified including:

- The main roof is leaking badly and requires replacement
- 5% of the upper flooring is water damaged
- 230 square metres of roofing timbers require replacement
- electrical power and lighting is inadequate. (power has been disconnected from the building)
- the building has a fire protection sprinkler system, which is inoperable. No under deck sprinklers are installed
- the building is not rated seismically
- building cladding and siding requires repair and painting.

Since the analysis report in 2002 (and subsequent report to the Public Works and Transportation Committee in October 2002), the building and substructure have continued to deteriorate, with visible rot and missing members along the water line. Portions of the roof have been tarped to prevent extensive leaking into the interior. In late 2010, large sections of the asphalt walkway/apron fell into the river bed at the western section of the building. With DFO's approval, City staff undertook a clean-up operation this Spring and removed the collapsed sections from the water during the low tide season.

In January 2011, Worley Parsons Canada were contracted to provide a high level re-inspection of the Phoenix Net Loft (**see Attachment A**). The consultants advise that deterioration has become progressively worse, and additional components are now showing signs of deterioration. They estimate that the extent of deterioration has increased by approximately 30% and that without repair, the structures can no longer be considered to be in a serviceable condition and should not be used for purposes that require staff or the public to enter the structure.

Water Lot Lease Status

The City owns the Phoenix Net Loft structure, but it does not own the water lot it sits on. The Phoenix Net Loft is located within the eastern end of Water Lot 7990, which is 4.97 hectares, and covers an area from Phoenix (Railway Avenue) westward to No. 1 Road. (See map in **Attachment B**). Water Lot 7990 is leased by the City from Port Metro for \$500 per annum. The agreement expires September 23, 2011.

This situation (of a City-owned structure being located within a leased Water Lot) is common. The No.2 and No.3 Road piers fall within this category and staff do not feel there is a concern with investing capital monies into City infrastructure located on leased water lots.

The Port is undergoing changes and is designing a new lease, which would be presented for Council consideration (likely before the end of 2011). The parameters of a new lease would be influenced by Council's long term vision for the site. The only allowable use under the current lease is for "Boat Moorage and Concrete Pier only and for no other purpose". There can be no fuelling of boats or storage of fuels. All necessary repairs and maintenance are allowable. Express permission from the Port would likely be required for major alterations. The City's rights cannot be sublet or assigned without the prior written consent of the Port and on conditions as the Port may determine.

It is important to note that if a building or structure is not used or maintained on a water lot site, the City is required to remove it (including the piles). This was the case with all the BC Packers buildings that were on a water lot.

Analysis

Following cancellation of the Request for Proposal for Restoring and Leasing of the Phoenix Net Loft, staff have considered options for its future use. With the poor condition of the facility, and given the need to retain a structure on the site so as not to restrict future options, staff recommend that some immediate measures be undertaken:

- Demolish portions that are susceptible to collapse, such as the shed appendages and remaining portions of exposed wharf deck (estimated cost \$140,000). See **Attachment C**.
- Install lightweight shading elements (required to prevent the creation of new marine habitat, as this could inhibit future clean-up operations of a collapsed structure) (estimated cost \$95,000).
- Undertake an updated condition assessment (estimated cost \$15,000).

The total estimated cost to do this is \$250,000, including contingency.

An updated condition assessment is required to assess the current condition of the internal structural components and supporting substructure, and to provide recommendations for any remedial/maintenance work that may be required to maintain the facility in a safe and operational condition, as well as to provide recommendations and costs associated with updating the building to current building codes (in order to allow for re-purposing to a public amenity use).

In summary, staff will be submitting \$250,000 in the 2012 Capital Budget Program to demolish portions of the building that are susceptible to collapse, to install lightweight shading elements and to undertake an updated condition assessment.

Next Steps

Once the updated condition assessment is completed, staff would report back to Council seeking direction on the longer term future of the structure, specifically whether to:

- demolish the structure; or
- repair and/or rebuild the structure

Demolish Structure

The cost to demolish the structure is \$450,000 (pile removal not included) This involves completely demolishing and removing the Phoenix Net Loft structures. FREMP permit approvals would be required for this option to monitor habitat mitigation during the demolition process. Preliminary discussions with DFO have indicated they would have no objection to the pilings remaining in place.

With removal of the Phoenix Net Loft, the City would likely lose the ability for any future development at this site; both in terms of public opinion being against rebuilding a

building on the waterfront once the viewscape is opened up, and due to its potential for reclassification to FREMP's 'red zone' designation¹.

Repair and/or rebuild the structure

If Council wishes to retain a structure at this location, staff could report back to Council with costing once the updated condition assessment report has been completed. Options could include:

1. Repair structure to serviceable condition (i.e. so it can be used for storage).
2. Remove building and restore substructure with platform for public pier (using the footprint of the building to construct a 7,000 ft² public pier).
3. Repurpose the structure for public amenity use (for amenities such as exhibits on maritime heritage, rehearsal and creation spaces, individual artist studios; small performance theatre, kayak and canoe storage, classroom space for boating courses, commercial support such as a coffee shop, etc).

It should be noted the magnitude of cost for these options may range from \$1M to over \$3M and the improvements cannot meet the requirements of current building codes. The existing structure pre-dates any building codes in Canada. The condition assessment report would include structural analysis of the existing structure.

It should also be noted that re-purposing of the building would require a range of permits and approvals from both the City and other agencies, including FREMP and Port Authority approval, an amendment to the FREMP-Richmond Area Designations Agreement, an amendment to the OCP and Steveston Area, a re-zoning, a development permit, a servicing agreement, and various building and demolition permits. A contaminated site profile would also be required for the re-zoning process, in order to determine if uses under the Contaminated Sites Regulations have occurred on the site, along with appropriate remediation recommendations reviewed by the BC Ministry of Environment.

Financial Impact

Staff recommendation is to carry out demolition work to remove portions of the structure that are susceptible to immediate collapse, as well as the installation of lightweight shading elements, and an updated condition assessment report. The cost for this is \$250,000. Funding for this will be submitted in the 2012 Capital Budget Program.

¹ See Attachment D - the site is currently designated as 'Green Zone' (Development may occur provided that reasonable efforts are made to mitigate environmental impacts through appropriate location and design). 'Red Zone' designation states that Shoreline areas having highly productive habitat features. Development may occur provided that mitigation is applied through site location and/or design to avoid impacts on habitat features of the area. Habitat compensation is not an option.

Conclusion

The Phoenix Net Loft was acquired by the City from BC Packers during their rezoning process in 2001. While at the time of rezoning it was envisioned that the Net Loft would remain in use as part of the fishing industry, the deteriorated state of the building and downturn in the fishing industry resulted in the building being vacant. It is currently used for storage. Both the substructure and superstructure are in poor condition, and continue to deteriorate. The building is not considered to be in a serviceable condition. Staff recommend the following immediate measures be undertaken: demolition work to remove portions of the structure that are susceptible to immediate collapse, installation of lightweight shading elements, and commissioning an updated condition assessment report.



Lucy Tompkins
Manager, Parks and Recreation
Projects & Programs

LT:lt



WorleyParsons

resources & energy

WorleyParsons Canada

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April 8, 2011

Proj. No.: 09467
File No.: 09467-00-MA-LET-0001
Rev. 0

City of Richmond
Parks and Recreation Department
5599 Lynas Lane
Richmond, BC
V7C 5B2 Canada

Attention: Marcus Liu, Parks Technologist

RE: Phoenix Net Loft Assessment

Dear Mr. Liu:

WorleyParsons Canada Services Ltd. (WorleyParsons) is pleased to provide the following condition assessment of the City of Richmond's (CoR) Phoenix Net Loft located in Steveston, BC and presentation of remedial options.

1. INTRODUCTION

1.1 Background

The Phoenix Net Loft facility consists of a two-storey timber superstructure measuring 46 m by 21 m in plan with two timber shed appendages each measuring 6.1 m by 18.3 m. These superstructures are supported on a timber pile and deck substructure that extends beyond the footprint of the building on one side to form a wharf deck. Most of the wharf structure surrounding the superstructure, which was used for vessel berthing when the facility was operational, has been demolished.

WorleyParsons (formerly Westmar Consultants Inc.) was requested by the CoR to conduct a condition assessment of the Phoenix Net Loft facility in January 2002. The inspection report is attached in Appendix 1 for reference and contains photographs with general views of the facility at the time of the inspection. The report presented residual life estimates for each of the primary structural resisting components of the facility of between three and ten years from the time of the inspection.

WorleyParsons was requested by the CoR in February 2011 to attend the site and conduct a high level visual assessment of easily accessible structural components. It is our understanding that the CoR is currently using the facility for storage but will be looking to redevelop the site for public amenity space in the future. It is also our understanding that it is the CoR's intention to maintain the facility such that it could be restored to a fully serviceable condition in the future once a usage is determined.



1.2 Scope of Work

WorleyParsons' scope of work for the project is summarized below:

- Preparation of a letter report, which will reference and summarize WorleyParsons' February 2002 inspection report, and provide up to three remedial options with associated estimated capital costs. WorleyParsons was not requested to complete a new visual non-destructive inspection of the structures. Rather, the CoR requested that WorleyParsons' experience and judgement be relied upon to estimate the amount of progressive deterioration that has taken place since the previous inspection.

1.3 Reference Material

The following reference material was utilized during the course of the work and is attached (see Appendix 1):

- WorleyParsons' inspection report dated February 11, 2001 for the Phoenix Net Loft Assessment.

2. SUMMARY OF INSPECTION FINDINGS

The Phoenix Net Loft facility was found to be in a generally serviceable condition in 2002. The term "serviceable condition" is used to describe a structure which still functions in the manner in which it was originally intended. Since that time, deterioration identified on distinct components has become progressively worse and additional components are now showing signs of deterioration. The most significant example of this is the large portion of wharf structure that has collapsed since 2002 from progressive deterioration alone.

The main factors which govern the service life of the Net Loft include:

- Fungal decay in the tops of the piles, pile caps, and deck timbers.
- Overloading of the structural members with subsequent crushing and/or settlement.
- Mechanical damage as a result of vessel impact, or excessive lateral movement including splitting of members.

Based on the 2002 inspection findings, the following repair/maintenance program was recommended to be implemented within 18 months of the inspection to restore the structures to a serviceable condition:

- The replacement of approximately 160 lin. m of deteriorated pile cap.
- The replacement of approximately 50 lin. m of deteriorated stringers.
- The repair/replacement of 26 timber bearing piles.
- The fresh-heading and installation of corbel blocks at 11 pile locations.



- The installation of steel banding at one pile location.
- The repair and/or replacement of approximately 230 m² of roofing timbers, and install new roofing shingles on 1,500 m² of roof (entire area).
- The installation of brace members, both longitudinal and transverse, between Bent Nos. 1 and 5.

It is our opinion that the extent of repairs are estimated to have increased by approximately 30%, except for items which had already accounted for 100% repair, since 2002. It is also our opinion that, without repair, the structures can no longer be considered to be in a serviceable condition and should not be used for purposes that will require the CoR personnel or the public to enter the structures.

3. KEY ISSUES

A significant proportion of the repair work is related to reinstating the original capacity of the timber piles. The capacity of timber piles is primarily related to their maximum unsupported length and the bearing strength at the top. It is noted that the depth of water under the structures has decreased dramatically since the facility was originally constructed due to river sediment accumulation. It is our understanding that there was on the order of 10 m of water depth originally, but is now on the order of 4.5 m. This change has resulted in an increase in the capacity of the piles, which serves to partially offset capacity reductions due to deterioration.

It is our understanding that areas of the shoreline that are currently shaded by the facility must remain shaded in order to prevent the creation of new marine habitat that could prevent the restoration of collapsed structures in the future due to regulatory oversight.

It is our understanding that the CoR is currently using the structures for storage but that the items being stored could be transferred to an alternative location, if required.

4. ALTERNATIVES AND COST ESTIMATES

4.1 No Repairs, No Usage, Continued Monitoring

As noted above, it is WorleyParsons' opinion that the structures are no longer in a serviceable condition. However, the current usage of the facility by the CoR is not essential and could be transferred to alternative locations. For minimal cost, stored items could be removed, portions of the structure that are currently susceptible to immediate collapse could be demolished and removed, and exposed portions of the shoreline could be shaded with lightweight perforated fabric connected to remaining pile stubs.

Until such time as repairs are made to the structure, it is recommended that annual inspections be completed by trained personnel to monitor the progression of the deterioration and make recommendations to prevent a catastrophic collapse of the main building.



The total cost to demolish portions of the structure that are susceptible to collapse, such as the shed appendages and remaining portions of exposed wharf deck, and install lightweight shading elements, is estimated to be approximately \$200,000. This cost does not include moving items currently stored in the structures to alternative locations or annual inspection.

4.2 New Inspection and Repair Structures

A cost estimate was presented in the 2002 inspection report for the complete scope of repair work identified by the inspection. As noted above, it is our estimate that the scope of work has increased by approximately 30% due to the progression of deterioration. If the decision is made to continue with the current usage of the facility, it is recommended that a comprehensive inspection be completed to confirm the current extent of damage and deterioration, and complete repairs as described in the attached inspection report. We estimate that the cost to complete this type of work has increased approximately 20% since 2002.

The total cost for this alternative is estimated to be approximately \$1,000,000, including a new inspection. This cost does not include temporarily removing stored items to allow for repair work to be completed.

4.3 Basis of Estimates

In reviewing the estimated costs, it is important to note the following:

- The estimates do not include contractor mobilization.
- The estimates are based on in-house experience with similar projects and on price quotations from local contractors and suppliers.
- The estimates are based on April 2011 cost levels and do not allow for escalation.
- The estimates include a recommended contingency allowance of 25% of the total estimated cost to cover undefined items. This contingency is not a reflection of the accuracy of the estimate, but covers items of work which will have to be performed, and elements of cost which will be incurred, but which are not explicitly detailed or described due to the level of engineering and estimating which has been completed to date.
- The estimates are considered to be accurate to within $\pm 50\%$.

4.4 Conclusions

The Phoenix Net Loft facility was last inspected in 2002 and found to be in a serviceable condition provided that repairs were made within 18 months of the date of the inspection. Deterioration and damage identified in 2002 has increased in severity. It is WorleyParsons' opinion that, if repairs are not executed as recommended, the facility is no longer in a serviceable condition and should not be used or accessed by the CoR personnel or the public.



**CITY OF RICHMOND
Phoenix Net Loft Assessment**

Two remedial options have been presented and are summarized as follows:

1. Make no repairs, demolish portions of the structure susceptible to immediate collapse, and install lightweight shading structure over portions of exposed shoreline.
2. Complete a new inspection to identify all areas of deterioration and damage and execute repairs.

The current usage of the facility for storage could continue with the implementation of Option No. 2 above, but alternative arrangements are recommended if no repairs are made.

It must be noted that the repair work outlined in the 2002 inspection report will not result in the building being compliant with current building codes. Rather, the repair work is intended to restore the structure to its original design capacity. It is likely that strengthening work in addition to repairs identified during previous and future inspections will be required if the building is renovated to become a public amenity space that must conform with current building code requirements.

We trust that this meets your immediate requirements. Should you require additional information or clarification, please do not hesitate to contact us.

Sincerely,

WorleyParsons Canada Services Ltd.

Daniel Leonard, M.A.Sc., P.Eng.
Senior Marine Structural Engineer



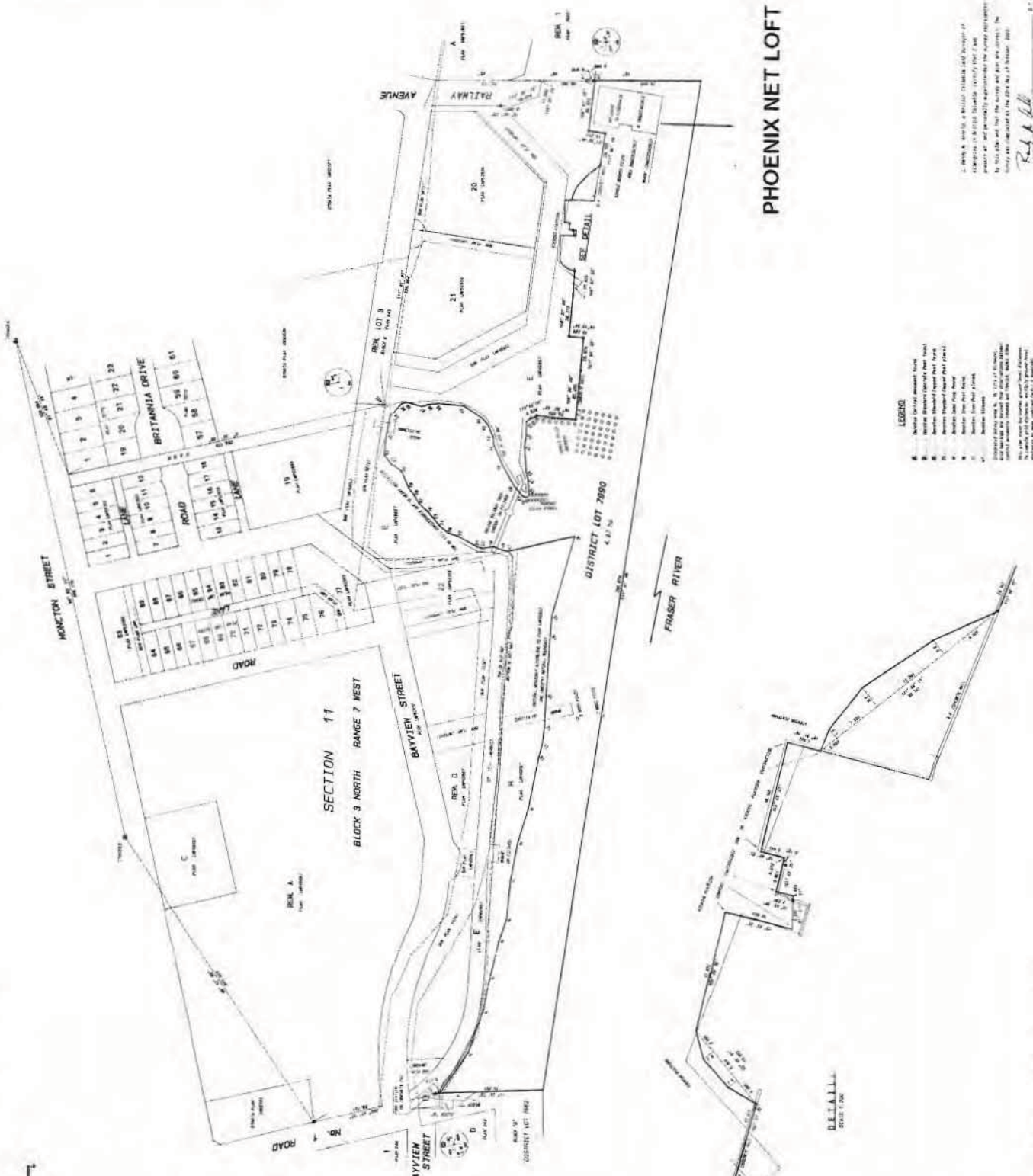
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Encl.

cc: Alden Evans, WorleyParsons Canada Services Ltd.
Mark Ramsden, WorleyParsons Canada Services Ltd.

SURVEY PLAN OF DISTRICT LOT 7990
GROUP 1 NEW WESTMINSTER DISTRICT
B. C. S. 925. 015

SCALE 1:1000
of Dimensions and Areas

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PHOENIX NET LOFT

- LEGEND**
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I, *R. J. A. [Signature]*, a Notary Public and Registrar of the Province of British Columbia, do hereby certify that this plan and the survey and plan are correct. The survey was conducted on the 27th day of October, 2003.

OFFICIAL PLAN
FOR DISTRICT LOT 7990
LAMP ACT
10/27/03



LEGEND:

- [Blue Box] THREE WING ARRANGEMENTS TO PRIMARY NET LOFT STRUCTURE TO BE REMOVED
- [Green Box] ZONE OF PROPOSED WIND BREAKING WALLS TO BE CONSIDERED WITH LIGHT-POINT SHADING ELEMENTS

PRELIMINARY
 THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION
 WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER



						ENGINEERING AND DESIGN STAMPS (As Required)		SHEET SCALE Oneway		MULTIVIEWING PROJECT NO. 09467		PROJECT NO. 09467-00-MA-DAL-0001	
PHOENIX NET LOFT ALTERNATIVE NO. 1 GENERAL ARRANGEMENT		Richmond <small>Richmond is a registered trademark of the City of Richmond, British Columbia, Canada. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the City of Richmond.</small>		Oneway <small>Oneway is a registered trademark of Oneway Engineering Inc. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Oneway Engineering Inc.</small>		ENGINEERING AND DESIGN STAMPS (As Required)		SHEET SCALE Oneway		MULTIVIEWING PROJECT NO. 09467		PROJECT NO. 09467-00-MA-DAL-0001	
A. DRAWING CHECKED FOR LUMP REVIEW	DATE	BY	CHECKED BY	DATE	APPROVED BY	DATE	APPROVED BY	DATE	APPROVED BY	DATE	APPROVED BY	DATE	APPROVED BY
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FREMP_Map

