CITY OF NANAIMO
THE HARBOUR CITY

Operational Space Needs Review
PUBLIC WORKS & PARKS OPERATIONS

REDEVELOPMEN OPTIONS

2019 July 11th

Resource Planning Group Inc.

Resource Planning Group Inc.
205-1525 West 8th Ave.,
Vancouver, BC V6J 1T5
T 604-736-6426 **F** 604-736-4079
E vancouver@rpg.ca

502-703 Evans Ave.,
Toronto, ON M9C 5E9
T 416-498-5205 **F** 416-779-2929
E toronto@rpg.ca

www.rpg.ca

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EXECUTIVE SUMMARY

Purpose and Parameters

The City of Nanaimo worked with consultants to develop Operational Space Needs for Public Works, Engineering, Parks Operations, and Facilities, currently operating out of five site. The needs will be based on when the population reaches **135,000 people**. Or when there are 30,000 more people than currently reside in Nanaimo. This is a 20- to 25-year time frame.

Space Summary

The following table shows the space requirements and assumed area available for redevelopment.

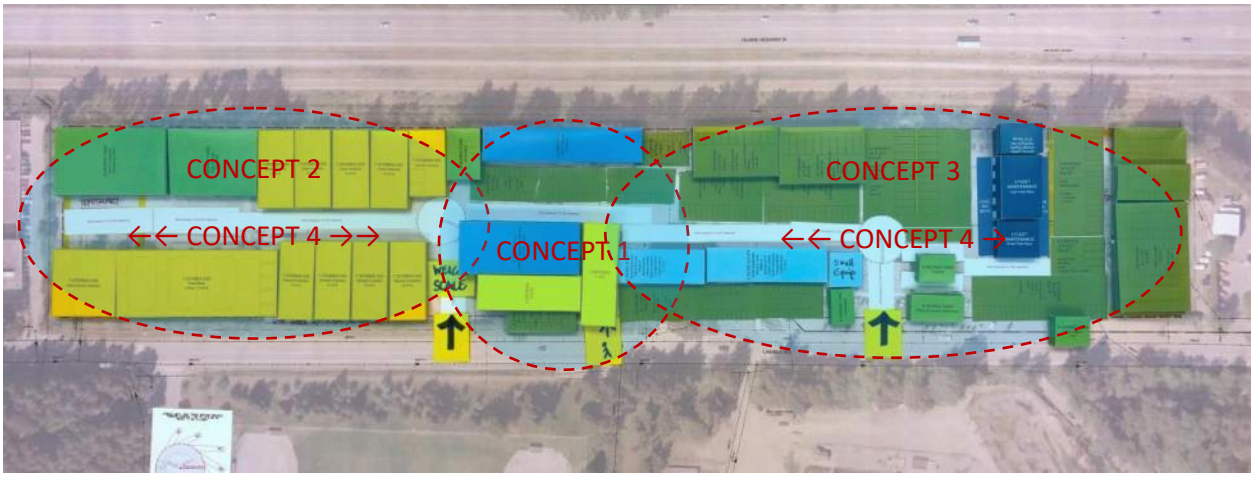
	Future Net Area m2	x Grossing	Future Component	Future Area ha	*Area acre*
INDOOR BUILDING					
OFFICES	1,732		**2,771**		
1 Front of House	501	1.60	801		
2 Offices	1,232	1.60	1,970		
CREW, SHOPS, STORES	7,362		**9,832**		
3 Crew Operations	2,954	1.48	4,367		
4 Work Shops	1,936	1.20	2,324		
5 Fleet Maintenance	2,089	1.23	2,570		
6 Stores Indoor	383	1.49	571		
SUBTOTAL INDOOR m2	9,094	**1.39**	12,603	1.26	*3.1*
OUTDOOR					
YARDS	31,166		**43,206**		
7 Stores Outdoor	7,536	1.50	11,305		
8 Works Yard	3,876	1.35	5,233		
9 Parking & Fleet Equipment	19,754	1.35	26,668		
SUBTOTAL OUTDOOR m2	31,166	**1.39**	43,206	4.32	*10.7*
TOTAL COMPONENT AREA	40,260		55,809	5.58	*13.8*
Site Circulation 474m x 10m & Entry		1.10	5,640		
TOTAL SITE AREA CALCULATED		1.53	**61,449**	6.14	*15.2*
vs					
TOTAL SITE AREA AVAILABLE			**47,400**	**4.74**	***11.7***
Strategies to fit:					
Move Offices Above Ground	1,232		1,970		
Move Horticulture to Roof	364		492		
Move Staff Stalls Above Grade	1,672	49 Stalls	2,257		
TOTAL COMPONENT on GROUND			51,090		
TOTAL SITE AREA PROGRAMMED		1.53	**57,020**	5.70	*14.09*
AREA REMAINING (FUTURE-PROOF)			(9,620)	**(0.96)**	*(2.4)*
ADDITIONAL SITE AREA(S)					
ADD SITE: Fire Hall No. 2			7,800	**0.78**	*1.9*
ADD SITE: Reclaim Temporary Housing Site			5,000	**0.50**	*1.2*
AREA REMAINING (FUTURE-PROOF)			3,180	**0.32**	*0.8*

Preferred Scenario

The preferred scenario is redevelopment at existing 2020 Labieux Road, including acquisition of adjacent areas to accommodate programs:

Concepts

The concepts described on the previous page are captured in this version of redevelopment.



- Concept 1 – Offices, Crew, Stores Central
- Concept 2 – Inventory on West Side
- Concept 3 – Fleet and Shops on East Side
- Concept 4 – Double-load Circulation
- Concept 5 – Offices and Staff Support Above Ground Level
- Concept 6 – Phasing
- Concept 7 – Reduce Parking to 80%

Costs

This redevelopment is expected to be on the order of $98 M.

Introduction

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INTRODUCTION

The City of Nanaimo wants to determine the feasibility of consolidating current operations for Public Works, Engineering, Parks Operations, and Facilities at a single site. These operations are currently housed at five different sites. Despite maintenance efforts, buildings at these sites are near the end of their useful life, many originally intended as only temporary trailers.

PROJECT PURPOSE

The information developed from this project is intended to establish over a 20- to 25-year planning horizon:

- Service and space needs
- Roles of and flows between business units in consolidated and dispersed scenarios
- Relative costs of modelled options
- Phasing and staging to redevelop in place

Public Works Yard at Labieux

PARTICIPANTS

The following people are thanked for their contributions to the Operational Space Needs Review:

Project Steering Committee

Bill Sims	Director, Engineering & Public Works
Poul Rosen	Senior Manager, Engineering
John Elliot	Senior Manager, Public Works
Art Groot	Manager, Facility Planning & Operations
Faron Hayes	Trades & Construction Supervisor
Al Britton	Manager, Parks Operations
Jodie Wilson	Senior Engineering Clerk

User Group Representatives

Angela Mowatt	Clerk/Dispatcher, Public Works
Jason Evans	Manager, Fleet Public Works
Kevin Lamb	Fleet Maintenance Foreman
David Myles	Manager, Roads & Traffic Services
Gary Davenport	Roads Foreman
David Thompson	Manager Sanitation, Recycling, PW Admin
Dean Robinson	General Foreman Storm & Sewer
Ritchie Fulla	General Foreman Waterworks
Bert Tanner	Traffic Management Foreman
Jane Rushton	Manager, Purchasing
Gordon Durkop	Stores Supervisor
Sandy Przada	Clerk/Dispatcher, Parks
Jackie Farrell	Parks Clerk
Margaret Mills	Horticulture Supervisor
Jesse Tranberg	Turf & Parks Supervisor
Tony Clift	Trails & Construction Supervisor
Craig Robertson	Utility Supervisor

Other Municipalities & Design Teams

The following people generously offered information about their operations centre(s) to help us understand different ways of working.

Keith Sharp	Manager, Fleet & Garage, City of Surrey
Darrin White	Manager, Public Works, City of North Vancouver
Vance Harris	Principal Architect, Dialog Design

Resource Planning Group

Mark Mehrer	Senior Principal
Nancy Vo	Planner
Megan Taylor	Planner

BTY Group

Eldon Lau	Partner Cost Consultant
Jacky Yim	Cost Consultant
Ping Pang	Cost Consultant

TIMELINE AND DELIVERABLES

The target for completion of this Operational Space Needs Review is end of June 2019. These are some key milestones:

Early October 2018	project initiation and site tours
Mid November 2018	user group meetings
Mid December 2018	Operational Review – draft working paper
February 2019	Space Needs – draft space lists, user group reviews
Early April 2019	user group meetings – space review
Mid May 2019	Physical Planning – modelling session with various site options
Late May 2019	Cost Calculations – relative costs differences between scenarios
Mid June 2019	Operational Space Needs Review – final document

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Project Context

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PROJECT CONTEXT

Project context is organized under:

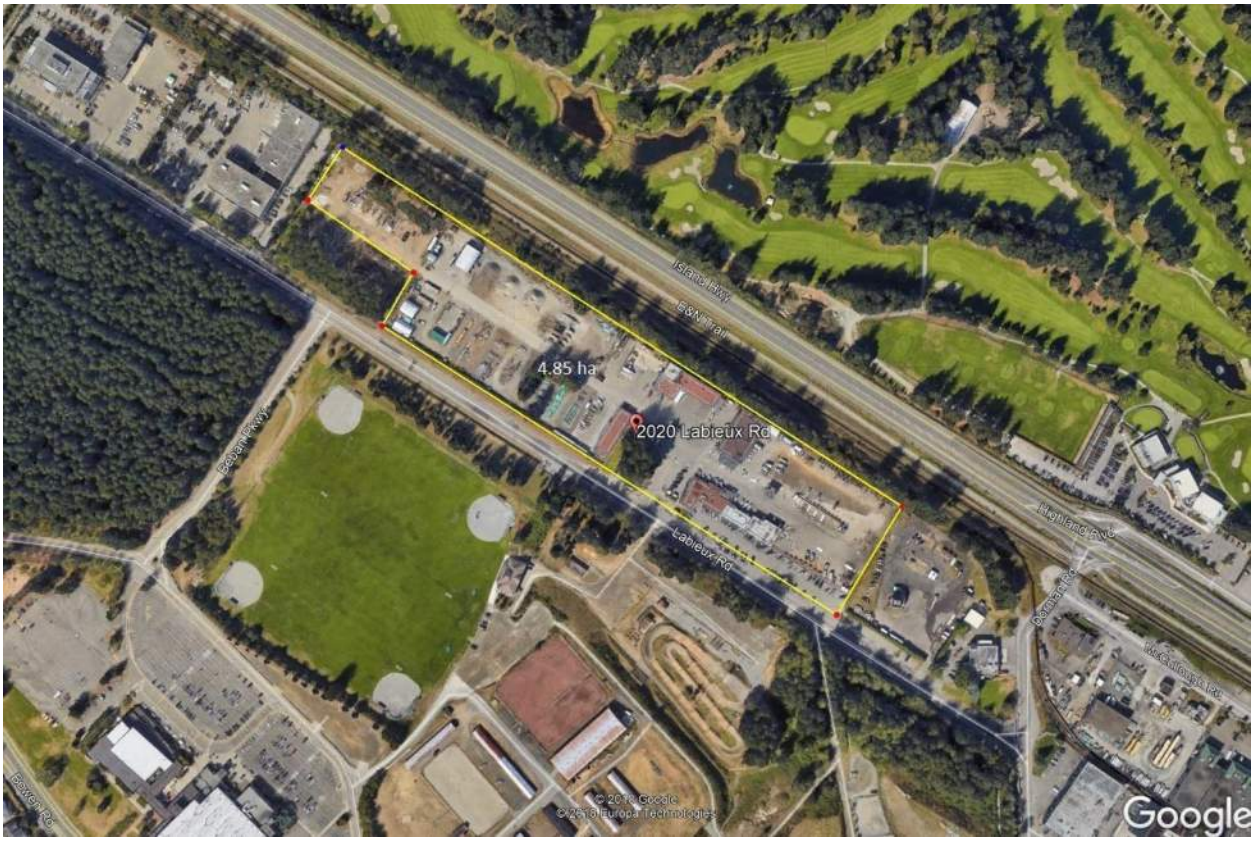
- Site Context
- Building Context
- Staffing Context
- Fleet Context

SITE CONTEXT

Public Works, Engineering, Parks Operations, and Facilities are currently located at five sites

1 Public Works Yard – 2020 Labieux Road
2 Parks Operations Yard – 89 Prideaux Street
3 Parks Operations Annex – 1050 Nanaimo Lakes Road
4 Centennial Shops– 2300 Bowen Road
5 Engineering at SARC – 411 Dunsmuir Street

1 Public Works Yard – 2020 Labieux Road

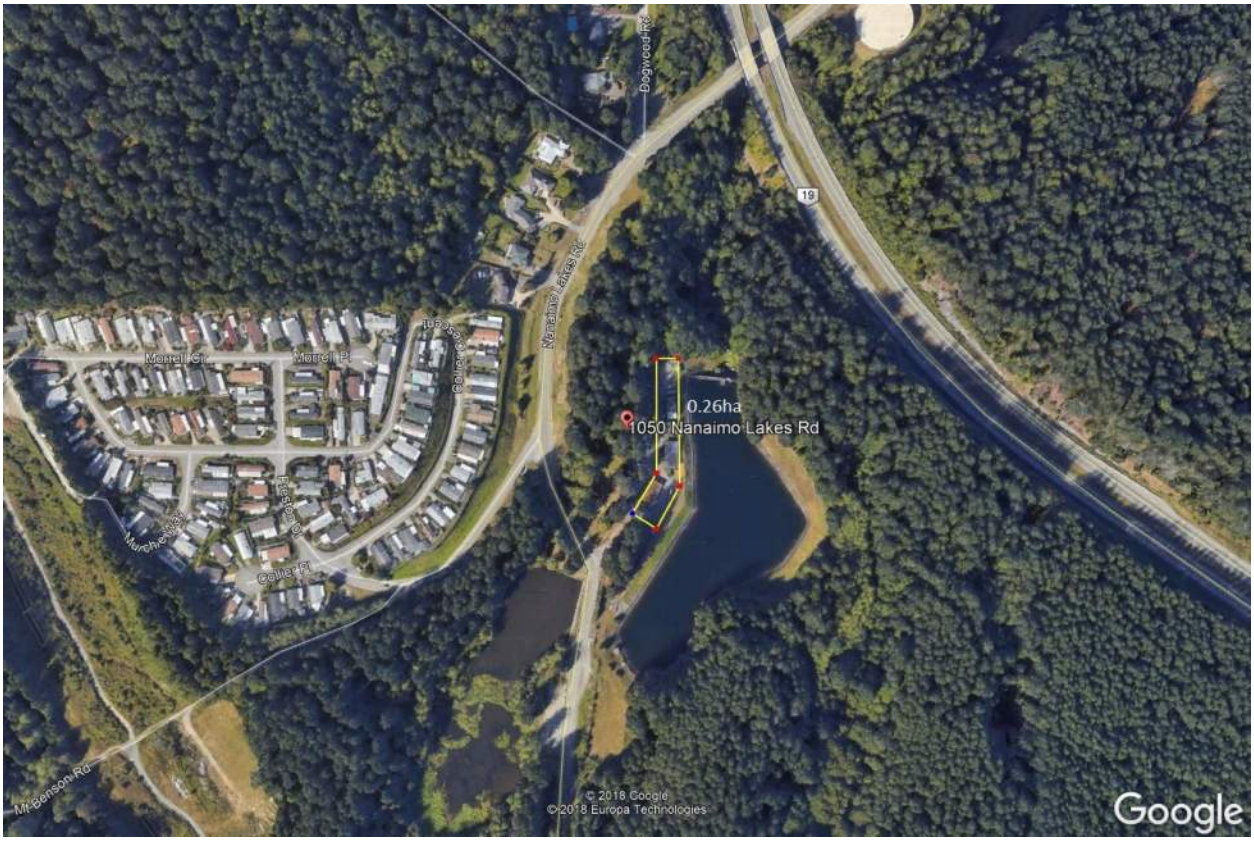


- 4.8 ha (12 acres)
- convenient access to Island Highway
- buffered by compatible neighbours:
  - NE – E&N Trail, highway, golf course
  - SE – fire training grounds – may be decommissioned
  - SW – Beban playing fields, BMX tracks
  - NW – other light industry
- site has room to grow

2 Parks Operations Yard – 89 Prideaux Street

- 0.33 ha (0.8 acres)
- convenient access to Island Highway
- buffered by these neighbours:
  - North – residential
  - East – park, residential
  - South – Campbell Street, parking lot
  - West – railroad tracks, residential
- crowded site

3 Parks Operations Annex – 1050 Nanaimo Lakes Road



- 0.26 ha (0.6 acres)
- reasonable access to Island Highway
- on lakefront, surrounded by green space on all sides
- annex site to resolve crowding at Prideaux

4 Centennial Shops– 2300 Bowen Road

- 0.37 ha (0.9 acres) – occupy a portion of shed shown
- convenient access to Bowen Road
- close to main Public Works Yard
- buffered by these neighbours:
  - North – recreation centre, ice arena
  - East – equestrian stables and arena
  - South – green space
  - West – green space
- retain this location in support of adjacent recreation centre

5 Engineering at SARC – 411 Dunsmuir Street

- Floor 2 of SARC building with storage on Floors 1 and 3
- convenient downtown location for visitors to Engineering
- staff commute between Labieux and SARC, sometimes daily commute back and forth
- explore consolidation at Public Works Yard

BUILDING CONTEXT

The table below summarizes the buildings at the various sites, their age and building gross areas. The information was extracted from Suncorp Valuations dated February 2008.

Location	Building	Appraisal No	Year Built	Age	Gross m2	Gross ft2
Public Works Yard - Labieux	Administration Building	B20	1965	53	859	9,251
Public Works Yard - Labieux	Lunch Room Building	B22	1989	29	42	448
Public Works Yard - Labieux	Casting Storage Building	B24	1966	52	340	3,660
Public Works Yard - Labieux	Purchasing & Stores Building	B25	1985	33	575	6,186
Public Works Yard - Labieux	Truck Barn - Parts, Signs & Lines Shop	B23	1965	53	729	7,850
Public Works Yard - Labieux	Construction Office Trailer	B26	1991	27	22	240
Public Works Yard - Labieux	Garage & Vehicle Repair Shops	B21	1970	48	672	7,228
Public Works Yard - Labieux	Garage & Vehicle Repair Shops Add'n	B21A	2002	16	146	1,573
Parks Ops Yard - Prideaux	Parks Administration Building	B103	1970	48	207	2,233
Parks Ops Yard - Prideaux	Storage Equipment Building	B104	1970	48	186	2,000
Parks Ops Yard - Prideaux	Shop Open Bay Building	B105	1970	48	143	1,544
Parks Ops Yard - Prideaux	Green House				-	
Parks Ops Annex - Nanaimo Lakes	Office & Chlorination Building	B40	1960	58	217	2,338
Parks Ops Annex - Nanaimo Lakes	New Chlorination Building	B40.1	2006	12	-	-
Parks Ops Annex - Nanaimo Lakes	PRV Building #1	B40.2	2007	11	-	-
Parks Ops Annex - Nanaimo Lakes	Workshop & Garage	B41	1960	58	128	1,375
Parks Ops Annex - Nanaimo Lakes	Chlorination Analyzer Building	B42	1964	54	-	-
Parks Ops Annex - Nanaimo Lakes	Compressor Building	B43	1995	23	-	-
Centennial Shops - Beban	Centennial Building	B124	1958	60	156	1,680

Location Subtotals	Gross m2	Gross ft2
Public Works Yard - Labieux	3,385	36,436
Parks Ops Yard - Prideaux	536	5,777
Parks Ops Annex - Nanaimo Lakes	345	3,713
Centennial Shops - Beban	156	1,680

Note that Centennial Shops at Beban is a much larger facility, and not entirely occupied by Parks. A placeholder of 10% of the total building area is being used without knowing actual area occupied.

STAFFING CONTEXT

Staffing levels for the City of Nanaimo have been static since the 1980s. The columns on the far right indicate the number of staff that are needed to operate at right-size capacity, and for future growth. These will change as macros related to city growth are developed to better objectify resource needs.

Engineering & Public Works

Engineering & Public Works Staffing Sorted by Unit	Office	Work station	Shared Computer Access	Shower /Locker /Change	Existing Head Count	Right-size Existing Head Count	Future Head Count
Reception	-	1	-	-	-	-	1
Dispatch	-	4	-	-	3	4	4
Administration	5	3	-	-	8	8	8
Projects Planning	12	13	-	-	19	25	25
Project Construction	5	4	8	6	15	15	15
Water Resources	4	1	-	-	4	5	5
Sanitation	3	1	20	20	18	22	24
Waterworks	1	6	3	3	7	7	7
Water Distribution	2	-	8	6	10	10	10
Storm & Sewer	4	3	14	12	21	22	22
Roads & Traffic	5	5	17	19	23	27	27
Night Patrol	-	-	-	-	-	-	-
Fleet	4	2	11	15	15	15	15
Purchasing & Stores	2	9	-	-	7	9	11
Seasonal /Overload	1	4	17	16	17	21	24
TBD	2	4	3	3	-	-	9
Subtotals	50	60	101	100	167	190	207
Growth						23	40

Engineering & Public Works Staffing Sorted by Component	Office	Work station	Shared Computer Access	Shower /Locker /Change	Existing Head Count	Right-size Existing Head Count	Future Head Count
1 Front of House	-	6	-	-	4	5	6
2 Offices	32	35	-	2	45	59	67
3 Crew Operations	13	13	90	81	99	106	114
4 Work Shops	-	2	-	2	1	2	2
5 Fleet Maintenance	4	2	11	15	15	15	15
6 Stores Indoor	1	2	-	-	3	3	3
Subtotals	50	60	101	100	167	190	207
Growth						23	40

STAFFING CONTEXT continued

Parks & Facilities

Parks & Facilities Staffing Sorted by Unit	Office	Work station	Shared Computer Access	Shower /Locker /Change	Existing Head Count	Right-size Existing Head Count	Future Head Count
Parks Operations	3	2	-	6	8	11	11
Horticulture	1	-	-	6	7	7	7
Turf & Parks	1	-	-	6	6	7	7
Trails & Construction	1	-	-	3	3	4	4
Utility	1	-	-	5	5	6	6
Facilities Planning & Operat	5	1	-	2	3	8	8
Civic Facilities	2	-	-	4	6	6	6
Trades	1	-	-	2	3	3	3
Seasonal /Overload /TBD	-	-	5	19	16	19	19
TBD	3	2	-	6	-	-	11
Subtotals	18	5	5	59	57	71	82
Growth						14	25

Parks & Facilities Staffing Sorted by Component	Office	Work station	Shared Computer Access	Shower /Locker /Change	Existing Head Count	Right-size Existing Head Count	Future Head Count
1 Front of House	-	1	-	-	1	1	1
2 Offices	12	4	-	-	8	11	16
3 Crew Operations	6	-	5	59	48	59	65
Subtotals	18	5	5	59	57	71	82
Growth						14	25

FLEET CONTEXT

Fleet Operations is responsible for the maintenance and management of the fleet of 161 for The City of Nanaimo. These include standard vehicles such as cars and pick-up trucks, as well as large equipment such as dump trucks, backhoes, and sanitation trucks.

The current breakdown by stall type and location is as follows:

Stall Type	Count	PW-Labieux	Parks-Prideau	Parks Annex	Parks-Beban	SARC - Enginee	SARC - Pool	Other/ Off-site	*Future Growth*
standard vehicle 2.75m x 5.8m (Nanaimo bylaw)	**96**	34	16	9	7	2	12	16	*10*
up to 7m (23') length	**22**	14	5	1	-	-	2	-	-
up to 8m (26') length, 13,000 kg (28,000 lb)	**3**	3	-	-	-	-	-	-	-
up to 9.1m (30') length; 16,000 kg (35,000 lb)	**17**	12	3	2	-	-	-	-	*15*
up to 10.7m (35') length; 23,000 kg (50,700 lb) *GVW 64,000 kg	**23**	22	-	-	-	-	-	1	*4*
	-	-	-	-	-	-	-	-	-
	161	85	24	12	7	2	14	17	*29*
	100%	53%	15%	7%	4%	1%	9%	11%	

The current breakdown by operational unit and location is as follows:

Operational Unit	Count	PW-Labieux	Parks-Prideau	Parks Annex	Parks-Beban	SARC - Enginee	SARC - Pool	Other/ Off-site
Bylaw /Fire /RCMP /Pool	**13**	1	1	-	-	-	9	2
Construction	**11**	9	-	-	-	-	-	2
Drainage	**10**	9	-	-	-	-	-	1
Engineering	**5**	-	-	-	-	2	3	-
Facility Maintenance	**9**	-	4	-	4	-	-	1
Fleet	**4**	4	-	-	-	-	-	-
Fleet Loaner	**10**	9	-	1	-	-	-	-
Parks	**17**	-	11	5	1	-	-	-
Parks Utilities	**6**	-	-	5	1	-	-	-
Parks Turf	**8**	-	8	-	-	-	-	-
Roads	**15**	13	-	-	-	-	-	2
Sanitation	**21**	20	-	-	1	-	-	-
Sewer	**6**	4	-	-	-	-	-	2
Stores	**1**	1	-	-	-	-	-	-
Traffic	**6**	5	-	-	-	-	-	1
Water	**19**	10	-	1	-	-	2	6
Total	**161**	85	24	12	7	2	14	17
Total Counted for Programming	**130**	85	24	12	7	2		

** Vehicles that are part of the SARC Pool and at Other Sites will not be counted in stall assignments.*

Future Fleet Growth

At this point, the additional fleet required for planning include:

Stall Type	*Future Growth*
standard vehicle 2.75m x 5.8m (Nanaimo bylaw)	*10*
up to 7m (23') length	-
up to 8m (26') length, 13,000 kg (28,000 lb)	-
up to 9.1m (30') length; 16,000 kg (35,000 lb)	*15*
up to 10.7m (35') length; 23,000 kg (50,700 lb) *GVW 64,000 kg	*4*
	-
	29

The 29 additional Fleet are for:

- 3 Fleet Cars /Pick-up Trucks – right-sizing
- 7 Fleet Cars /Pick-up Trucks – E-charging and future growth
- 2 Sanitation Trucks – right-sizing Public Works & Engineering
- 2 Sanitation Trucks – future growth Public Works & Engineering
- 2 Single-Axles – right-sizing Public Works & Engineering
- 3 Single-Axles – right-sizing Parks & Facilities
- 3 Single-Axles – future growth Parks & Facilities
- 7 Single-Axles – truck E-charging and future growth

In addition to the above count for Labieux, there will be the following for the new Emergency Satellite Module:

- 2 Single-Axles – future growth at Satellite Module

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Parameters

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PARAMETERS

The Operational Space Needs Review is guided by planning parameters discussed and agreed upon with the Project Steering Committee. Parameters are framed within the context of what we know now and can reasonably predict for future state.

Parameters are organized under:

- Growth
- Operational Change
- Redevelopment
- Planning Guidelines

GROWTH

The City of Nanaimo is growing and how that growth is managed has a direct impact on services provided by the City of Nanaimo.

20- to 25-Year Planning Horizon

Nanaimo Economic Development projections predicted a slower growth rate (1.12% annually) than the Census showed between 2011 to 2016 (1.37% annually). It would be reasonable to project that over the next 20- to 25- years, Nanaimo will see a 30% to 40% growth in population.

However, rather than focusing on an exact year, Operational Space Needs will be based on when the population reaches **135,000 people**. Or when there are 30,000 more people.

POPULATION for PLANNING	Base Year 2016	20-Years 2036	Selected Annual Growth Rate	Additional Growth	% Growth
City of Nanaimo	104,936	134,532	**1.25%**	29,596	28%
Area of City km2	91.3	91.3		-	0%
Density (persons per km2)	1,149	1,470 ←		higher density, more condos	

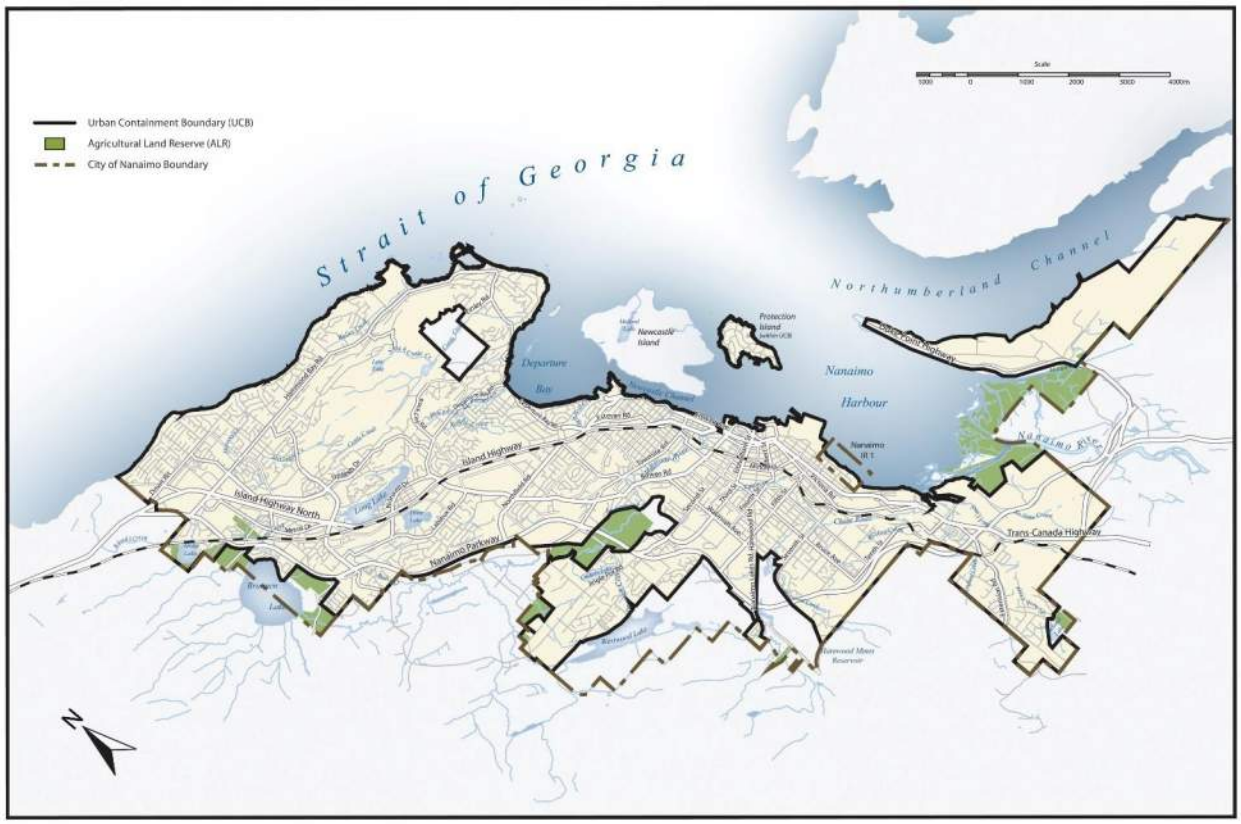
Based on Census Growth Rate	2016	2041	Actual Annual Growth Rate	Additional Growth	% Growth
City of Nanaimo	104,936	147,554	**1.37%**	42,618	41%

Nanaimo ECONOMIC DEVELOPMENT	2016	2041	Projected Annual Growth Rate	Additional Growth	% Growth
City of Nanaimo	104,936	138,467	**1.12%**	33,531	32%

Population Density

planNanaimo – Official Community Plan 2008,[1] (OCP) states that there is an intention to respect the Urban Containment Boundary (UCB), even as the population grows. Thus the previous table shows the density going from 1,149 persons per km^2 to **1,470 persons per km^2**, assuming that the City more or less remains at 91 km^2.

Below is a map from the OCP showing the Urban Containment Boundary, Agricultural Land Reserves, and City of Nanaimo Boundary.



Urban Containment Boundary

Correlation to Services

As this project progresses, assumptions about the impact on services of population growth will be linked to staffing, fleet, equipment, and space. As noted in the previous section, staffing levels have been frozen since 1980s. Projections for future state will be based on right-sized

[1] Consolidated version 2017-November-06th

existing staffing, then correlated to macros for city growth (see *Staffing Levels*).

Satellite Operations

As Nanaimo grows, unstaffed satellite yards to hold equipment, road base, and salt/brine are being discussed for:

- Southern Nanaimo where growth is expected to occur
- Prideaux yard to quickly access Downtown core

Cost calculations will determine if satellite options are feasible to consider. Precedents for satellite operations have been noted at Surrey Public Works.

OPERATIONAL CHANGE

Although it is difficult to predict too far into the future, the following operational changes were discussed in the context of growth and efficiency.

Operating Hours

Currently, there are night staff to monitor systems, respond to emergencies, and provide security 24/7. Most operations follow a typical work week; however, during snowstorms and other emergencies adjustments are made to suit the situation. There may be a rationale to operate some organizational units outside of the normal 5-day work week. These units could be considered as candidates for adjusted days /times because they can be prescheduled and are not typically operating on an emergency response basis:

- Construction
- Fleet Maintenance
- Others?

Mobile Fuelling & Partnerships

To avoid line-up time for fuelling, the City of Nanaimo may want to consider having fleet and equipment fuelled by a mobile service that roves between work sites. Whether this fuelling service is owned or contracted out matters less than reduced line-ups.

Existing partnerships with Petro Canada also alleviate time in line-ups.

Electrical, Alternative Fuel, IT Infrastructure

Electric /CNG fleet may have a significant impact on planning. At Surrey Public Works, there are plans for conversion of 30% of fleet to electric

and the infrastructure is already in place for CNG fuelling and maintenance. For Nanaimo, size electrical load and site weight bearing to be 30% plus of future fleet could be EVs and heavy electric trucks. Also provide infrastructure for CNG fuelling and maintenance.

It is also important to assume a higher level of IT connectivity for fleet. Each major location should be served with fibre in conduit to allow for easy upgrades.

REDEVELOPMENT

Based on discussions thus far, assumptions about redevelopment for long-term planning are for new facilities and maintaining operations throughout construction.

New Facilities

In some projects, renovation of existing facilities makes sense. However, for both Engineering and Public Works at Labieux, and Parks and Facilities at Prideaux, buildings are at the end of their useful life. Trailers erected as temporary solutions are decades old. Given that renovations to bring buildings up to current code typically cost 1.5x to 1.8x new construction costs, it makes less sense to fix a patchwork of buildings and trailers than to redevelop new. Redevelopment scenarios assume new facilities.

New facilities also allow for configurations that stack functions which do not require ground level access, ground level being a precious commodity in a Works Yard. See *Valuable Ground Level Area*

Maintaining Operations

During any redevelopment scenario, maintaining operations is a key requirement. If redevelopment cannot be managed onsite in a way that does not adversely affect operations, interim facilities need to be considered.

PLANNING GUIDELINES

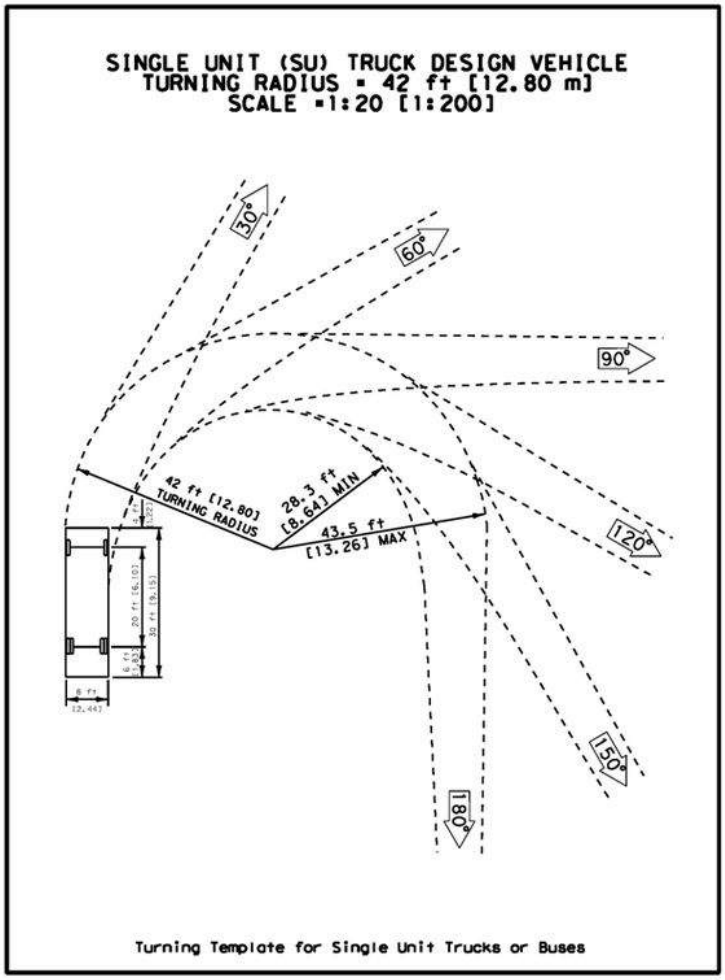
There are planning guidelines that can help to ensure functional facilities and good work yard flows

About Fleet Equipment

Fleet equipment comprise about a third to half of the site area of a Works Yard. Safe and efficient movement of fleet is critical:

- Direct access required to main arterial roads for trucks and large equipment that require wide turning radii up to 12.8m (42’)

- Site must be able to support up to 16,300 kg (36,000 lbs) per axle and 17,250 kg (80,000 lbs) total weight for heavy equipment
- Sanitation trucks typically arrive emptied, but note a GVW of up to 64,000 kg (141,000 lbs) when full
- Any roadways on site that are not level should be graded 7% or less – Note 7% for Interstate (USA) and 10% for International Fire Code D103.2 Grade
- Equipment will operate at atypical hours including through the night to provide service during a weather event and the site should be zoned to separate 24-hour access versus secured daytime access



http://onlinemanuals.txdot.gov/txdotmanuals/rdw/minimum_designs_truck_bus_turns.htm

- Site circulation is currently 10m (32') wide along length of Public Works Yard site but could be reduced to 6.1m (20') width, as long as truck turning radii are met in key locations
- Fuelling, washdown, and charging stations should be located to allow other fleet/equipment to easily pass

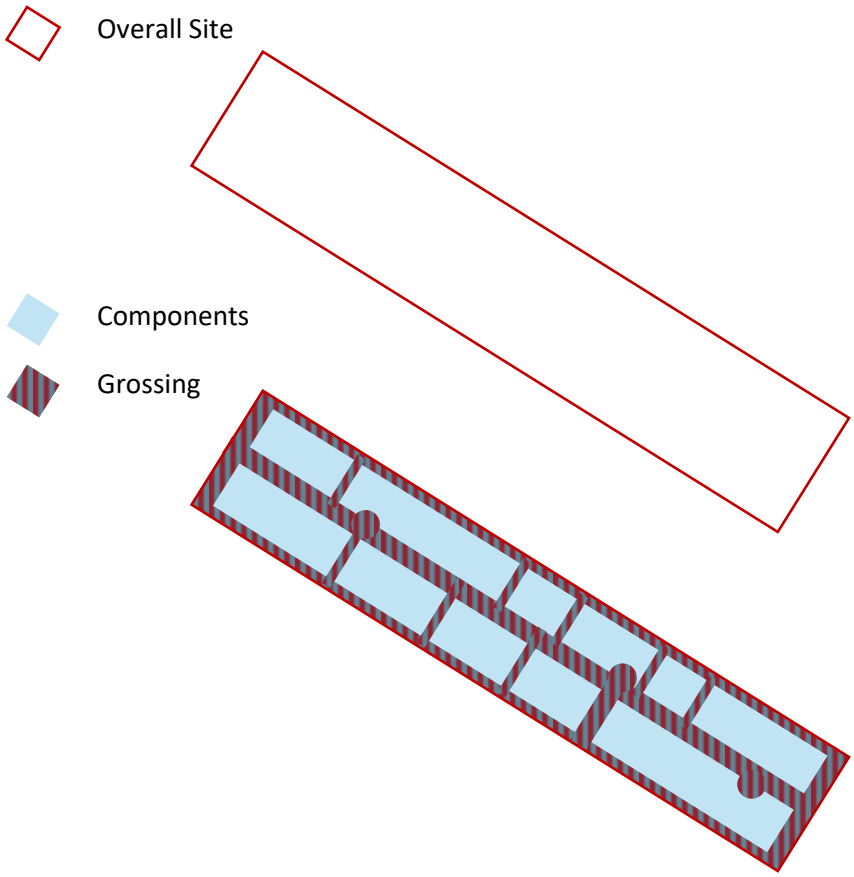
Net Area and Gross Area

The terms net area and gross area are often used in planning. Net area refers to the area for a specific function. For example, a meeting room is 37.2 net m^2 (400 net ft^2). The circulation area required to get to that specific function, along with wall thicknesses is the *component gross-up*, and then along with building systems such as stairs, elevators, mechanical shafts are part of the *building gross-up* to arrive at a building gross area.

In planning a work yards, buildings are one among many components, along with fleet parking, yards inventory, etc. In other words, a building's gross area is treated as site component gross. Then each component has a multiplier to gross-up to overall site area.

Adequate Public Yards Grossing

Experience shows that a site multiplier of 1.5 is reasonable. A lower multiplier could be achieved in scenarios that are more efficiently laid out (e.g., double-loading of circulation) or narrower circulation w bypass areas. To support operational flexibility and efficiency, a higher grossing should be assumed at this time, then tested and refined in design.



Components and Zoning

Work Yards have several different components – offices and public spaces, crew support, shops, maintenance garages, indoor and outdoor inventories, fleet and equipment. These concepts should be addressed during planning and design:

- Group similar space types to better accommodate future change
- Identify which components require ground level access – the rest are candidates for stacking above or below grade
- Within buildings and on the site, zone areas that require 24-hour access versus areas that only operate during the day
- Staff personal vehicles should remain separate from fleet parking areas

Valuable Ground Level Area

Fleet equipment takes up considerable area on a site. Ground level is required for much of this equipment. In a scenario where buildings have more than one-level, a strategy to accommodate future growth of fleet is to provide structured parking for staff personal vehicles, and more stalls than needed in order to free up valuable ground level area for heavy fleet equipment.

Configuring for change

It is useful to remember that by the time the facilities are built, changes to an organization have already occurred. Good design anticipates and accommodates change. For example, grouping similar space types enables expansion or contraction, and often supports better work flows.

GOSS (Government Office Space Standards)

To allocate workstations and offices, the GOSS (Government Office Space Standards) were a useful starting point. However, the 6.5 m^2 (70 ft^2) workstation was replaced with a 7.4m^2 (80 ft^2) workstation for positions that require a third surface for plan drawings or monitors.

	Net ft2	Net m2	Notes
Office			
Director	180	16.7	Office w meeting for 4-5p
Senior Manager	150	13.9	Office w meeting for 3-4p
Manager, Foreman, Superviso	120	11.1	Office w meeting for 2-3p
Sub-foreman, Specialist+	100	9.3	Office w meeting 1-2p
Reception	100	9.3	Wkstn 1800x1800 system + queue
Planner, Specialist	80	7.4	Wkstn 1800x1800 system + plan
Technician, Clerk	50	4.6	Wkstn 1800x1800 system
Drop-in Office	100	9.3	Office w 2 shared wkstns
Drop-in Station	50	4.6	Wkstn 1500x750 + drawer
Touch-down Station	35	3.3	Wkstn 900x600, computer dock

Space Summary

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SPACE SUMMARY

This section is organized under:

- Summary Tables
- Area Available
- Strategies for Accommodation

SUMMARY TABLES

The following tables summarize the space requirements from the next section, Components. These allocations were reviewed and revised in discussion with User Group representatives. However, they remain working assumptions moving forward for physical planning and will change again as the realities of site availability dictate how much can or cannot be accommodated.

Component	Net Area m2	xGross'g Factor	Component Gross Area m2
OFFICES			
1 Front of House	501		801
Entry & Security	94	1.60	151
Dispatch	98	1.60	157
Meeting Rooms & DOC Support	185	1.60	297
Outdoor Assembly /Muster Area	123	1.60	196
2 Offices	1,232		1,970
Office Shared Support	296	1.60	473
Engineering & Public Works	368	1.60	588
Purchasing	65	1.60	104
Parks & Facilities Operations	216	1.60	345
Engineering @ SARC	287	1.60	460
	1,732	1.60	2,771

Summary Table

continued

Component	Net Area m2	xGross'g Factor	Component Gross Area m2
CREW, SHOPS, STORES			
3 Crew Operations	2,954		4,367
Foreman & Supervisor Offices	334	1.60	534
Change Room & Lockers	485	1.60	775
Bull Pen /Lunch Room	262	1.60	418
STAT Storage Indoors	677	1.60	1,084
STAT Storage Outdoor	1,197	1.30	1,556
4 Work Shops	1,936		2,324
Small Equipment	270	1.20	325
Signs & Lines Shop	502	1.20	602
Water & Maintenance Shop	365	1.20	438
Parks Utilities Shop	232	1.20	279
Parks Carpentry Shop	204	1.20	245
Transportation Shop *new*	93	1.20	111
Shop Loading Bays	270	1.20	324
5 Fleet Maintenance	2,089		2,570
Front Service Counter	100	1.60	160
Change Room & Lockers	59	1.60	94
High-head Bays	586	1.20	703
Small Fleet Bay *new*	348	1.20	418
Service Centre Stores	129	1.20	155
Welding /Fabrication Bay	109	1.20	130
Oil & Flammables	56	1.20	67
Fleet Loading Bays	703	1.20	843
6 Stores Indoor	383		571
Stores Service	46	1.60	74
Indoor Inventory	244	1.60	391
Secured, Unheated Inventory	92	1.15	106
	7,362	1.34	9,832

Summary Table

Continued

Component	Net Area m2	x Grossing Factor	Component Gross Area m2
YARDS			
7 Stores Outdoor	7,536		11,305
Stores Shipping & Receiving	246	1.50	370
Stores General Inventory	2,029	1.50	3,043
Crew Inventory	2,100	1.50	3,150
Road Base Inventory	1,968	1.50	2,952
Parks Inventory	445	1.50	668
Salt & Brine Inventory	748	1.50	1,122
8 Works Yard	3,876		5,233
Fleet Equipment Washdown	281	1.35	379
Fuelling	197	1.35	266
Water Station *new*	207	1.35	279
Generators	159	1.35	214
Hydro Excavation Processing *nev	1,484	1.35	2,004
Misc Storage, Recycling	1,184	1.35	1,599
Horticulture	364	1.35	492
9 Parking & Fleet Equipment	19,754		26,668
Staff Personal Vehicles	8,388	1.35	11,324
Visitors & Special Stalls	438	1.35	591
Fleet Vehicles	2,660	1.35	3,591
Heavy Fleet Equipment	5,719	1.35	7,721
Fleet Maintenance Stalls	1,232	1.35	1,663
Salt Spreaders & Plow Blades	1,317	1.35	1,778
10 Parks & Facilities	-		-
11 Satellite Module	1,172		1,581
Emergency Satellite Module*new	803	1.35	1,084
Recycling Transfer Station *new*	369	1.35	497
	32,338	1.38	44,787

AREA AVAILABLE

The site area available at Labieux is 47,400 m^2. However, programmed area is 61,449 m^2, which means a shortfall of 14,049 m^2.

Component	Net Area m2	xGross'g Factor	Component Gross Area m2
OFFICES			
1 Front of House	501		801
2 Offices	1,232		1,970
	1,732	1.60	2,771
CREW, SHOPS, STORES			
3 Crew Operations	2,954		4,367
4 Work Shops	1,936		2,324
5 Fleet Maintenance	2,089		2,570
6 Stores Indoor	383		571
	7,362	1.34	9,832
YARDS			
7 Stores Outdoor	7,536		11,305
8 Works Yard	3,876		5,233
9 Parking & Fleet Equipment	19,754		26,668
10 Parks & Facilities	-		-
11 Satellite Module	-		-
	31,166	1.39	43,206
Total Component Area Programmed (excl 11 Satellite Module)	40,260	1.39	55,809
Total Site Area Programmed		1.53	61,449
Total Site Area Available			47,400
Shortfall			(14,049)

1.53 grossing is based on existing site circulation at Labieux

STRATEGIES FOR ACCOMMODATION

Strategies for accommodation will form the basis for discussions in the next stage, physical planning. The table below demonstrates that there are strategies for fitting on the existing site at Labieux. The easiest is to move offices above ground level, likely above Crew, Shops, or Stores, move horticulture to the roof as a rooftop garden, and move all staff stalls above grade in structured parking or off-site.

	Net Area m2	x Grossing	Component
INDOOR BUILDING			
OFFICES	1,732		**2,771**
1 Front of House	501	1.60	801
2 Offices	1,232	1.60	1,970
CREW, SHOPS, STORES	7,362		**9,832**
3 Crew Operations	2,954	1.48	4,367
4 Work Shops	1,936	1.20	2,324
5 Fleet Maintenance	2,089	1.23	2,570
6 Stores Indoor	383	1.49	571
SUBTOTAL INDOOR m2	9,094	**1.39**	12,603
OUTDOOR			
YARDS	31,166		**43,206**
7 Stores Outdoor	7,536	1.50	11,305
8 Works Yard	3,876	1.35	5,233
9 Parking & Fleet Equipment	19,754	1.35	26,668
SUBTOTAL OUTDOOR m2	31,166	**1.39**	43,206
TOTAL COMPONENT AREA	40,260		55,809
Site Circulation 474m x 10m & Entry		1.10	5,640
TOTAL SITE AREA CALCULATED		1.53	**61,449**
vs			
TOTAL SITE AREA AVAILABLE			**47,400**
Strategies to fit:			
Move Offices Above Ground	1,232		1,970
Move Horticulture to Roof	364		492
Move Staff Stalls Above Grade	8,355	245 Stalls	11,279
TOTAL COMPONENT on GROUND			42,068
TOTAL SITE AREA PROGRAMMED		1.53	**46,820**
AREA REMAINING (FUTURE-PROOF)			580

However, given that costs to build structured parking are considerable, another strategy is shown on the next page.

The table below assumes acquisition of the abutting Fire Hall No.2 training centre to gain ~7,800 m^2 of site. This alone is still not enough to accommodate the program, so reclamation of the temporary housing site is also assumed.

	Net Area m2	x Grossing	Component
INDOOR BUILDING			
OFFICES	1,732		**2,771**
1 Front of House	501	1.60	801
2 Offices	1,232	1.60	1,970
CREW, SHOPS, STORES	7,362		**9,832**
3 Crew Operations	2,954	1.48	4,367
4 Work Shops	1,936	1.20	2,324
5 Fleet Maintenance	2,089	1.23	2,570
6 Stores Indoor	383	1.49	571
SUBTOTAL INDOOR m2	9,094	**1.39**	12,603
OUTDOOR			
YARDS	31,166		**43,206**
7 Stores Outdoor	7,536	1.50	11,305
8 Works Yard	3,876	1.35	5,233
9 Parking & Fleet Equipment	19,754	1.35	26,668
SUBTOTAL OUTDOOR m2	31,166	**1.39**	43,206
TOTAL COMPONENT AREA	40,260		55,809
Site Circulation 474m x 10m & Entry		1.10	5,640
TOTAL SITE AREA CALCULATED		1.53	**61,449**
vs			
TOTAL SITE AREA AVAILABLE			**47,400**
Strategies to fit:			
Move Offices Above Ground	1,232		1,970
Move Horticulture to Roof	364		492
Move Staff Stalls Above Grade	-	0 Stalls	-
TOTAL COMPONENT on GROUND			53,347
TOTAL SITE AREA PROGRAMMED		1.53	**59,570**
AREA REMAINING (FUTURE-PROOF)			(12,170)
ADDITIONAL SITE AREA(S)			
ADD SITE: Fire Hall No. 2			7,800
ADD SITE: Reclaim Temporary Housing Site			5,000
AREA REMAINING (FUTURE-PROOF)			630

About Fire Hall No. 2

Fire Hall No.2 has a training centre, which includes live fires in the training tower and on vehicles. It would be more suitable to relocate these functions away from residential areas, such as at Duke Point. The training tower will be decommissioned in five years. If this strategy is approved, the costs to rebuild a new training centre needs to be included in planning.

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Redevelopment Options

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REDEVELOPMENT OPTIONS

This section is organized under:

- Parameters for Modelling
- Options Modelled
- Organizational Criteria
- Preferred Scenario
- Updated Space Summary

PARAMETERS FOR MODELLING

Parameters for the components and the choice of sites were discussed prior to modelling. With these parameters established, decisions during modelling focused on road access, what could be stacked, and what could be moved off-site. Parameters established include:

- Component area requirements for 10-year horizon
- Components that need ground level access
- Components that need high-head clearances
- Grossing factors for access and turn allowances
- Consolidation at Labieux Road as a key objective
- Additional site area to accommodate growth
- Satellite components

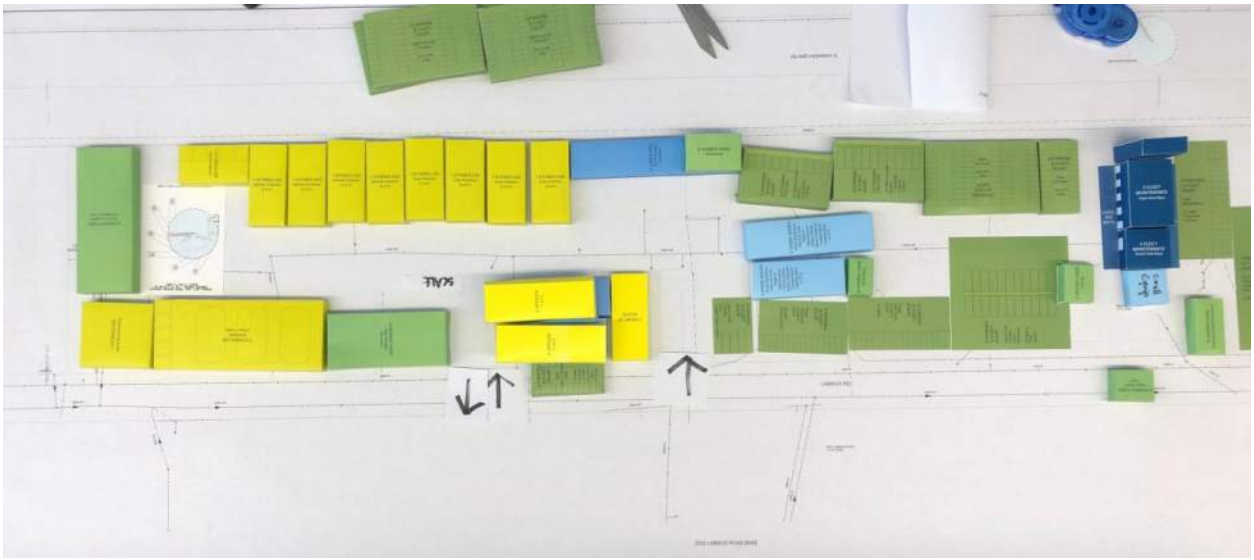
Modelling Pieces to Scale

Modelling pieces for the components were made at a scale of 1:500 with corresponding allowances for ceiling heights, road and turn allowances. Basically, it is the space requirements in 3D

OPTIONS MODELLED

Two groups arrived at two different scenarios when the participants were asked to come up with an ideal layout for the existing site.

Group 1



Group 2

ORGANIZATIONAL CONCEPTS

From the options modelled independently by two groups, and a preferred scenario that developed after discussions, organizational concepts for redevelopment were extracted as follows:

- Concept 1 – Offices, Crew, Stores Central
- Concept 2 – Inventory on West Side
- Concept 3 – Fleet and Shops on East Side
- Concept 4 – Double-load Circulation
- Concept 5 – Offices and Staff Support Above Ground Level
- Concept 6 – Phasing
- Concept 7 – Reduce Parking to 80%

PREFERRED SCENARIO

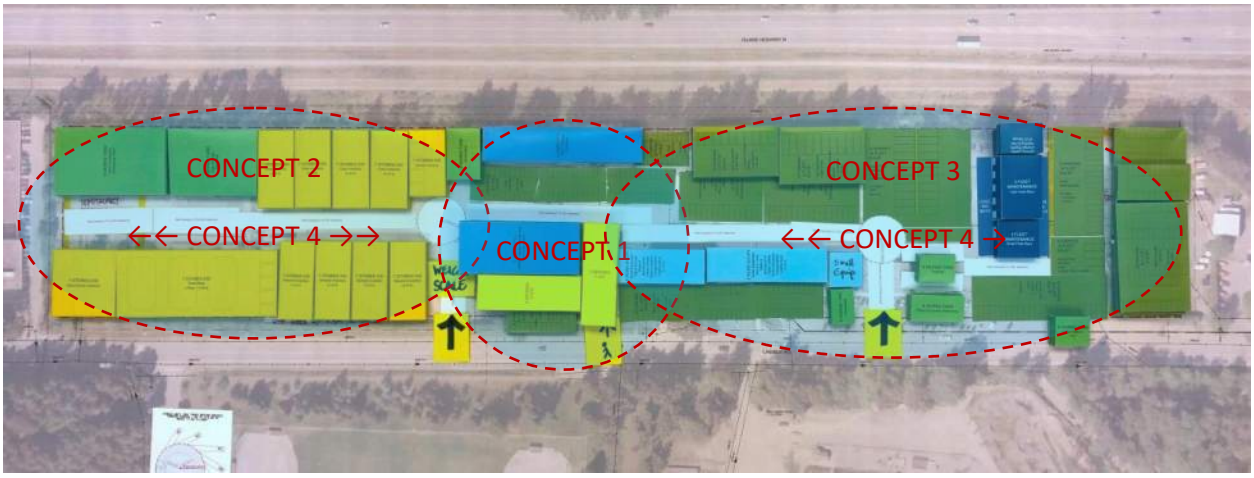
The preferred scenario takes into consideration the above concepts, as well as constraints of the existing site, visible on a satellite plan. Placement was fine-tuned to allow continued operations during redevelopment.

Site Context

6.0ha available for modelling, including site setback of 7.5 metres all around.
6.0ha = 4.7ha existing + 0.5ha temporary housing + 0.8 ha fire training

Preferred Scenario Annotated

The concepts described on the previous page are captured in this version of redevelopment.



Concept 1 – Offices, Crew, Stores Central – centrally located on the site for ease of monitoring and control of access

Concept 2 – Inventory on West Side – consolidated and located on west side of site; truck access point next to Shipping & Receiving with weigh scale; road base, salt & brine, miscellaneous storage at the farthest end of site with larger circulation for turning allowances; stores and crew inventory closer to middle of site

Concept 3 – Fleet and Shops on East Side – consolidated and located on east side of site; fleet access point next to fuelling and washdown stations; fleet maintenance allows for through access of large equipment; workshops adjacent to main building

Concept 4 – Double-load Circulation – as per existing 9.1 m width allows for two-way traffic

Concept 5 – Offices and Staff Support Above Ground Level – functions that do not require ground level access should be stacked above on second or third floors to free-up valuable ground level space; see diagrams on the following pages

Concept 6 – Phasing – if redevelopment occurs in-place, the first phase is construction of the main office/crew/stores building, as well as fleet maintenance shop; the second phase is demolition of existing buildings and construction of workshops, fuelling, and site reorganization.

Concept 7 – Reduce Parking to 80% - comparable to other yards; possible structured parking in much longer-term future

Preferred Scenario Level 2 – Offices, Crew /Fleet Operations, Staff Parking – located above

Preferred Scenario Level 1 – Front-of-House, Crew STAT Storage, Stores - located on ground

Satellites

Potential locations for future satellites include:

- Nanaimo Centre – current Parks site at Prideaux – convenient for downtown support
- Nanaimo South – Sandstone
- Nanaimo North – to be determined

UPDATED SPACE SUMMARY

The space summary has been updated to reflect changes after modelling.

	Future Net Area m2	x Grossing	Future Component	Future Area ha	*Area acre*
INDOOR BUILDING					
OFFICES	1,732		**2,771**		
1 Front of House	501	1.60	801		
2 Offices	1,232	1.60	1,970		
CREW, SHOPS, STORES	7,362		**9,832**		
3 Crew Operations	2,954	1.48	4,367		
4 Work Shops	1,936	1.20	2,324		
5 Fleet Maintenance	2,089	1.23	2,570		
6 Stores Indoor	383	1.49	571		
SUBTOTAL INDOOR m2	9,094	**1.39**	12,603	1.26	*3.1*
OUTDOOR					
YARDS	31,166		**43,206**		
7 Stores Outdoor	7,536	1.50	11,305		
8 Works Yard	3,876	1.35	5,233		
9 Parking & Fleet Equipment	19,754	1.35	26,668		
SUBTOTAL OUTDOOR m2	31,166	**1.39**	43,206	4.32	*10.7*
TOTAL COMPONENT AREA	40,260		55,809	5.58	*13.8*
Site Circulation 474m x 10m & Entry		1.10	5,640		
TOTAL SITE AREA CALCULATED		1.53	**61,449**	6.14	*15.2*
vs					
TOTAL SITE AREA AVAILABLE			**47,400**	**4.74**	***11.7***
Strategies to fit:					
Move Offices Above Ground	1,232		1,970		
Move Horticulture to Roof	364		492		
Move Staff Stalls Above Grade	1,672	49 Stalls	2,257		
TOTAL COMPONENT on GROUND			51,090		
TOTAL SITE AREA PROGRAMMED		1.53	**57,020**	5.70	*14.09*
AREA REMAINING (FUTURE-PROOF)			(9,620)	**(0.96)**	*(2.4)*
ADDITIONAL SITE AREA(S)					
ADD SITE: Fire Hall No. 2			7,800	**0.78**	*1.9*
ADD SITE: Reclaim Temporary Housing Site			5,000	**0.50**	*1.2*
AREA REMAINING (FUTURE-PROOF)			3,180	**0.32**	*0.8*

Relative Costs

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RELATIVE COSTS

This section is organized under:

- Preferred Scenario Costs
- Additional Line Item Costs to Consider

PREFERRED SCENARIO COSTS

For the preferred scenario, the Project Cost is $98.3M in 2019 Dollars, excluding furnishings, fittings and equipment, financing costs, taxes, and escalation. See *Appendix B* for BTY's report.

			Preferred Concept
A.	**LAND COST (Excluded)**		**$0**
A1	Land		0
A2	Legal Fees		0
B.	**CONSTRUCTION**		**$79,748,000**
B1	Demolition / Site Preparation		4,366,900
B2	Buildings & Structures		58,620,100
B3	Outdoor Yards & Site Development		12,761,000
B4	Phasing Allowance for keeping the existing Works Yard in operation during construction		4,000,000
C.	**INFRASTRUCTURE / OFF SITE WORKS**		**$1,000,000**
C1	Roadwork and utilities outside the property lines - Cash Allowance		1,000,000
D.	**PROFESSIONAL FEES**	*12%*	**$9,569,800**
D1	Programming		
D2	Architectural		
D3	Structural		
D4	Mechanical		
D5	Electrical		
D6	Quantity Surveying		
D7	Acoustic		
D8	Equipment Consultant		
D9	Code Consultant		
D10	Other Consultants and Disbursements		
E.	**CONNECTION FEES & PERMITS**		**$2,392,400**
E1	Rezoning Cost		0
E2	DCC & Building Permits	*3%*	2,392,400
F.	**MANAGEMENT & OVERHEAD**	*7%*	**$5,582,400**
F1	Project Management Fee		
F2	Owners Planning and Administrative Cost		
F3	Project Insurance		
F4	Project Commissioning, Move-In		
G.	**FURNISHINGS, FITTINGS & EQUIPMENT (Excluded)**		**$0**
H.	**FINANCING COSTS (Excluded)**		**$0**
I.	**GOODS & SERVICES TAX (Excluded)**		**$0**
	SUB-TOTAL PROJECT COST		**$98,292,600**
J.	**ESCALATION (Excluded)**		**$0**
	TOTAL PROJECT COST (2019 Dollars)		**$98,292,600**

ADDITIONAL LINE ITEM COSTS TO CONSIDER

These are costs in addition to the items in Preferred Scenario, separated for ease of decision making

Items		Amt ($)
SP1	Site Remediation with Fuel Tanks Brought Above Grade	$500,400
SP2	CNG in Fleet Maintenance and Slo-fill for Fleet	$0
	(Fortis will install, operate and maintain the filling station. 10-year contract based on $0.7*0.75/L depends on consumption)	
SP3	EV Charging Stations (Large Truck)	$1,602,300
SP4	Replacement of Fire Training Grounds	$4,878,400

Components

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COMPONENTS

The Work Yards is currently organized under 11 components:

1 Front of House
2 Offices
3 Crew Operations
4 Low-head Shops
5 Fleet Maintenance
6 Stores Indoor
7 Stores Outdoor
8 Work Yard
9 Parking & Fleet Equipment
10 Parks & Facilities
11 Satellite Operations

Note that component 10 Parks & Facilities is a shell component as the intention is to incorporate Parks and Facilities as part of the larger organization that includes Public Works and Engineering.

COMPONENTS AND SUBCOMPONENTS

Component, for planning purposes, means a block of space with similar features that needs to move together within a building or on the site. A component does not necessarily reflect departmental structures. Component areas are generated using **future** staffing and equipment numbers, and uniformly sized where applicable.

Component Groups

The 11 components are grouped under these three categories:

- Offices – public and office hours; low-head spaces
- Crew, Shops, Stores – mid- to high-head spaces
- Yards – inventory, fleet, wash/fuelling, outbuildings

Grossing

Grossing accounts for circulation between spaces inside buildings, and circulation between yard items outside. It should be noted that the net to component multiplier inside a building is more like the net to building gross at 1.6x net area. However, a building is merely one component of many in the works yard, and thus its building gross is being called a component gross, as site circulation to and from the building becomes a factor.

Grossing multipliers vary among components and subcomponents, depending on assumptions about how these spaces are configured. For example, double-loading functions along a circulation route will mean a lower multiplier, as would narrower circulation allowances, or open shops without designated circulation allowances.

1 FRONT OF HOUSE

This component acts as the control point and public interface. It accommodates reception/security and is the first place where visitors and vendors enter and register before moving elsewhere on site. Dispatch is Yard facing and needs clear views of operators coming and going from the Works Yard. Meeting rooms should be available for after-hours access. One meeting room should be configured to serve as a DOC during emergencies.

Zoning Criteria

These spaces should be zoned for:

- Public and after-hours access (24 hours in Dispatch)
- Visual monitoring and security point
- Low- to Mid-Head space

Functional Requirements

This component requires:

Entry & Security

- visual access to front entry and works yard for security and monitoring
- courier drop-off location
- Reception can be separate from Dispatch
- visual access to front entry and yards for security and monitoring

Dispatch

- design for Post-Disaster
- linked to SCADA (Supervisory Control and Data Acquisition), CMMS(Computerized Maintenance Management System)
- monitors showing yard, road conditions, equipment in the field
- server room on ground level with separate entrance could simplify security

Meeting Rooms & DOC Support

- larger meeting rooms should be adjacent to Lobby for crowd spill-out space
- DOC (Departmental Operations Centre) is currently in the large training /meeting room next to the Truck Barn and should be located conveniently but not on display
- DOC supports EOC (Emergency Operations Centre) which is currently located at the Firehall

- plan archives currently held in GABS at the SARC should be located in the same building as the DOC for access during emergencies

Functional Requirements continued

Outdoor Assembly /Muster Area

- placeholder for outdoor assembly space – could be ground level or rooftop

Staffing

These are the future staffing requirements for this component.

Entry & Security

- 1 staff – 1 workstation

Dispatch

- 6 staff – 6 workstations, including one position from Parks

Space Requirements 1 Front of House

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Entry & Security	**1**	**staff**			
01	*Reception/Security, Future Growth*	*1*		*9.3*		*Wkstn 1800x1800 system + queue*
02	Lobby 20-25p	1		47.5		displays, information, seating, spill-out for meetings
03	Waiting, 4-5p	1		11.6		
04	Printer & Supplies Counter	1		7.4		
05	Mail /Courier Drop	1		7.4		separated for Tenders
06	Debrief Room /Meeting 4-5p	1		11.1		2 doors - office & public
	Subtotal, Entry & Security			**94.3**	**151**	**@ 1.60 Net to Building**
	Dispatch	**6**	**staff**			
07	Operator /Dispatcher PW	3	7.4	22.2		Wkstn 1800x1800 system + plan
08	Operator /Dispatcher PW - Overload	1		4.6		Wkstn 1800x1800 system
09	*Operator /Dispatcher PW - Right-size*	*1*		*4.6*		*Wkstn 1800x1800 system*
10	Operator /Dispatcher Parks	1		7.4		Wkstn 1800x1800 system + plan
11	Beverage Counter	1		3.7		
12	Plotter & Copier Room	1		26.0		
13	SCADA /Server Room	1		14.9		UPS, A/C, backup power
14	First-aid Room	1		14.9		Level 2 First-aid
15	Custodial Closet & Washrooms			-		placeholder - distributed as required by code
	Subtotal, Dispatch			**98.3**	**157**	**@ 1.60 Net to Building**
	Meeting Rooms & DOC Support					
16	DOC & Meeting 20-25p	1		46.5		Department Operations Centre
17	DOC Emergency Storage	1		14.9		Storage 2@4.8 lin m
18	Plan Archives Storage	1		32.5		9.5 GABS in fire-/flood-proof, post-disaster - fr SARC
19	*Plan Archives Storage - Future Growth*	*1*		*16.3*		*1 GAB every 4 years = 5 GABS over 20 years*
20	Meeting, 12-15p	1		33.4		
21	Meeting, 8-10p	1		22.3		
22	Meeting, 4-5p	1		11.1		
23	Meeting Storage	1		8.4		15%
	Subtotal, Meeting Rooms & DOC Support			**185.3**	**297**	**@ 1.60 Net to Building**

Space Requirements 1 Front of House, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Outdoor Assembly /Muster Area					
24	Partially Covered Outdoor Area, 100p	1		111.5		standing room, or 60p seated
25	Storage Shed	1		11.1		
	Subtotal, Outdoor Assembly /Muster Area			**122.6**	**196**	**@ 1.60 Net to Building**
	Total			**500.5**	**801**	**@ 1.60 Net to Building**
						*Building Gross, but will be Site Component Gross

2 OFFICES

This component accommodates the offices of the permanent inside staff in the departments of Public Works, Engineering, Parks, Facilities, and Purchasing.

Zoning Criteria

These spaces should be zoned for:

- M-F office hours
- Low-Head space

Functional Requirement

This component requires:

Office Shared Support

- centrally located for ease of access
- control point for visitors with pre-booked City business or visitors redirected from Front of House
- bookable meeting rooms interface between reception and office areas

Engineering & Public Works

- anticipate 15 additional staff in the future
- SCADA/Server room may be grouped with Dispatch, managed by IT /CMMS team
- applies to all business units – 1 confidentiality room per 12 open workstations for phone calls

Purchasing Office

- convenient access to a meeting room for opening tenders available as shared support or Front-of-House

Parks & Facilities Operations

- assume that Beban Park staff remain near aquatic centre, but staff support space is allocated at main site on Labieux Road

Engineering @ SARC

- currently located in SARC building, but could potentially relocate to Public Works
- Archive files stored in GABS should be relocated to Public Works

Staffing

These are the future staffing requirements for this component:

Engineering & Public Works

- 34 staff – 20 offices, 14 workstations

Purchasing

- 8 staff – 1 office, 7 workstations

Parks & Facilities Operations

- 16 staff – 12 offices, 4 workstations

Engineering @ SARC

- 25 staff – 10 offices, 15 workstations

Space Requirements 2 Offices

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Office Shared Support					
01	Reception Counter /Kiosk	1		9.3		cb automated call area
02	Waiting, 4-5p	1		11.6		soft seating
03	Meeting, 12-15p	1		33.4		2 doors - office & public
04	Meeting, 8-10p	1		22.3		2 doors - office & public
05	Meeting, 4-5p	1		11.1		2 doors - office & public
06	Meeting Storage	1		10.0		15%
07	Kitchen & Lunch Room 40p	1		81.8		
08	Plotter & Copier Room	1		26.0		
09	Recycle Storage	1		3.7		2.4 lin m (8 lin ft)
10	Staff Wellness Room	1		46.5		cb fitness equipment
11	Gender Neutral Shower Change	1		3.7		
12	Gender Neutral Toilet w Sink	1		3.7		
13	Bicycle Room	1		32.7		wall mounted, 16 bikes
	Subtotal, Office Shared Support			**295.8**	**473**	**@ 1.60 Net to Building**
	Engineering & Public Works	**34**	**staff**			
14	Director	1		16.7		Office w meeting for 4-5p
15	Sr Manager, Public Works	1		13.9		Office w meeting for 3-4p
16	Sr Project Manager, Construction	1		11.1		Office w meeting for 2-3p
17	Engineering /Accounting Clerk	2	4.6	9.2		Wkstn 1800x1800 system
18	Manager, Construction Projects	2	11.1	22.2		Office w meeting for 2-3p
19	Capital Project Mgmt Specialist	2	9.3	18.6		Office w meeting 1-2p
20	Municipal Services Inspector	3	7.4	22.2		Wkstn 1800x1800 system + plan
21	Manager, Water Resources	1		11.1		Office w meeting for 2-3p
22	Water Resource Specialist	3	9.3	27.9		Office w meeting 1-2p
23	Manager, Sanitation, Recycling	1		11.1		Office w meeting for 2-3p
24	Manager, Roads & Traffic	1		11.1		Office w meeting for 2-3p
25	IT Support	1		9.3		Office w meeting 1-2p
26	*Manager, Projects - Right-size*	*2*	*11.1*	*22.2*		Office w meeting for 2-3p
27	*Manager, Utilities - Right-size*	*1*		*11.1*		Office w meeting for 2-3p
28	*Asset Mgmt Specialist - Right-size*	*1*		*9.3*		Office w meeting 1-2p
29	*Traffic Signal Technician - Right-size*	*1*		*7.4*		*Wkstn 1800x1800 system + plan*

Space Requirements 2 Offices, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
30	*Water Resources Tech - Right-size*	*1*		*4.6*		*Wkstn 1800x1800 system*
31	*Recycling Policy Advisor - Right-size*	*1*		*7.4*		*Wkstn 1800x1800 system + plan*
32	*IT/CMMS Specialist - Future-growth*	*2*	*7.4*	*14.8*		*Wkstn 1800x1800 system + plan*
33	*Management - Future-growth*	*1*		*11.1*		*Office w meeting for 2-3p*
34	*Supervisor- Future-growth*	*1*		*9.3*		*Office w meeting 1-2p*
35	*Planner, Inspector, Specialist - Future-growth*	*2*	*7.4*	*14.8*		*Wkstn 1800x1800 system + plan*
36	*Technican, Clerk - Future-growth*	*2*	*4.6*	*9.2*		*Wkstn 1800x1800 system*
37	Drop-in Office	1		9.3		Office w 2 shared wkstns
38	Confidentiality Room	2	3.3	6.6		1 per 12 open wkstns
	Ancillary					13%
39	Meeting, 4-5p	1		11.1		
40	Beverage Counter	1		3.7		
41	Copy & Supplies Room	1		11.1		plotter at Shared Support
42	SCADA /Server Room			-		see Dispatch
43	Storage	1		11.1		
44	*Ancillary - Future growth*	*1*		*9.3*		
	Subtotal, Engineering & Public Works			**367.8**	**588**	**@ 1.60 Net to Building**
	Purchasing	**8**	**staff**			
45	Manager, Purchasing Stores	1		11.1		Office w meeting for 2-3p
46	Purchasing Admin Clerk	1		4.6		Wkstn 1800x1800 system
47	Buyer	2	4.6	9.2		Wkstn 1800x1800 system
48	*Buyer - Right-size*	*2*	4.6	9.2		Wkstn 1800x1800 system
49	*Buyer - Future Growth*	*2*	*4.6*	*9.2*		*Wkstn 1800x1800 system*
50	Confidentiality Room	1		3.3		1 per 12 open wkstns
	Ancillary					28%
51	Meeting, 8-10p (Tenders)	-		-		at Office Shared Support
52	Beverage Counter	1		3.7		
53	Copy & Supplies Counter	1		7.4		
54	Storage	1		7.4		
	Subtotal, Purchasing			**65.1**	**104**	**@ 1.60 Net to Building**

Space Requirements 2 Offices, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Parks & Facilities Operations	**16**	**staff**			
55	Manager, Parks Operations	1		11.1		Office w meeting for 2-3p
56	Parks & Open Space Planner	1		9.3		Office w meeting 1-2p
57	Parks Projects Coordinator	1		9.3		Office w meeting 1-2p
58	Parks Clerk	1		4.6		Wkstn 1800x1800 system
59	Manager, Facility Planning & Ops	1		11.1		Office w meeting for 2-3p
60	Manager, Infrastructure & Planning	1		11.1		Office w meeting for 2-3p
61	Infrastructure Specialist	1		9.3		Office w meeting 1-2p
62	Manager, Civic Facilities	1		11.1		Office w meeting for 2-3p
63	*Manager, Parks & Recreaion Facilities - Right-size*	*1*		*11.1*		*Office w meeting for 2-3p*
64	*Facility Capital Project Specialist - Right-size*	*1*		*9.3*		*Office w meeting 1-2p*
65	*Project Budget Clerk - Right-size*	*1*		*4.6*		*Wkstn 1800x1800 system*
66	*Director - Future growth*	*1*		*16.7*		*Office w meeting for 4-5p*
67	*Supervisor - Future growth*	*1*		*11.1*		*Office w meeting for 2-3p*
68	*Planner, Inspector, Specialist - Future growth*	*1*		*9.3*		*Office w meeting 1-2p*
69	*Technican, Clerk - Future growth*	*2*	*4.6*	*9.2*		*Wkstn 1800x1800 system*
70	Drop-in Office	1		9.3		Office w 2 shared wkstns
71	Confidentiality Room	1		3.3		1 per 12 open wkstns
	Ancillary					25%
72	Meeting, 4-5p	1		11.1		
73	Confidentiality Room, 2-3p	1		8.4		
74	Beverage Counter	1		3.7		
75	Copy & Supplies Room	1		11.1		plotter at Shared Support
76	Storage	1		11.1		
77	*Ancillary - Future growth*	*1*		*9.3*		
	Subtotal, Parks & Facilities Operations			**215.5**	**345**	**@ 1.60 Net to Building**
	Engineering @ SARC	**25**	**staff**			
78	Sr Manager, Engineering	1		13.9		Office w meeting for 3-4p
79	Sr Engineering Clerk	1		7.4		Wkstn 1800x1800 system + plan
80	Engineering Clerk	1		4.6		Wkstn 1800x1800 system

Space Requirements 2 Offices, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
81	Manager, Municipal Infrastructure	1		11.1		Office w meeting for 2-3p
82	Engineering Svcs Sr Technologist	1		9.3		Office w meeting 1-2p
83	Engineering Svcs Technologist	2	7.4	14.8		Wkstn 1800x1800 system + plan
84	Manager, Transportation	1		11.1		Office w meeting for 2-3p
85	Transportation Specialist	2	9.3	18.6		Office w meeting 1-2p
86	Transportation Technologist	2	7.4	14.8		Wkstn 1800x1800 system + plan
87	Manager, Engineering Projects	1		11.1		Office w meeting for 2-3p
88	Engineering Projects Technologist	3	7.4	22.2		Wkstn 1800x1800 system + plan
89	Project Engineer	1		9.3		Office w meeting 1-2p
90	Civil Design CAD	2	7.4	14.8		Wkstn 1800x1800 system + plan
91	Sr Surveyor	1		7.4		Wkstn 1800x1800 system + plan
92	Surveyor	1		7.4		Wkstn 1800x1800 system + plan
93	Co-op Student Overload	1		4.6		Wkstn 1800x1800 system
94	*Assistant Manager Transportation - Right-size*	*1*		*9.3*		*Office w meeting 1-2p*
95	*Parking Technician - Right-size*	*1*		*9.3*		*Office w meeting 1-2p*
96	*Active Transport Planner - Right-size*	*1*		*7.4*		*Wkstn 1800x1800 system + plan*
97	Drop-in Office	1		9.3		Office w 2 shared wkstns
98	Confidentiality Room	2	3.3	6.6		1 per 12 open wkstns
	Ancillary					22%
99	Meeting, 4-5p	1		11.1		
100	Beverage Counter	1		3.7		
101	Copy & Supplies Room	1		11.1		plotter at Shared Support
102	File Cabinets	12	1.4	16.8		
103	Resource Library	1		11.1		10 bookcases of resources
104	Plan Archive Storage			-		see DOC Support
105	*Ancillary - Future growth*	*1*		*9.3*		
	Subtotal, Engineering @ SARC			**287.4**	**460**	**@ 1.60 Net to Building**
	Total			**1,231.6**	**1,970**	**@ 1.60 Net to Building**

3 CREW OPERATIONS

This component provides the areas where outdoor crews change, marshal, load, and drive to job assignments. This component is reorganized with mustering in a large open space /lunch room. Lockers are provided for permanent and seasonal crew. Storage currently in C-cans is being grouped under STAT storage.

Zoning Criteria

These spaces should be zoned for:

- Ground-level efficiencies – change/muster/load/job site
- Low- to Mid- to High-Head spaces

Functional Requirement

This component requires:

Foreman & Supervisor Offices

- Public Works foremen and Parks supervisors located adjacent to Bull Pen/Lunch Room for morning assignments

Change Room & Lockers

- assume a distribution of 25% female crew, but configure change rooms to be flexible in accommodating a different distribution
- all shower and restrooms are assumed to be gender neutral and accessible

Bull Pen/Lunch Room

- assembly space for 150 people standing or 90 people seated
- assembly space expansion for 25 people standing or 15 people seated
- touch-down computer stations for Crew use one per crew

STAT Storage Indoor

- each unit is allocated a placeholder number of shelving galleys
- high-head for four levels of pallet storage, galley is 2 @7.3 linear metres (24 linear feet) with 3.0m clear aisle for forklift = 48 pallets per galley

STAT Storage Outdoor

- each unit is allocated a placeholder number of sheds and/or covered outdoor storage
- these replace C-can storage units
- locate for easy fleet loading

Staffing

These are the future staffing requirements for this component:

Foreman & Supervisor Offices

- 26 staff in Public Works – 14 offices, 12 workstations
- 6 staff in Parks – 6 offices

Change Room & Lockers

- 88 crew in Public Works
- 59 crew in Parks

Space Requirements 3 Crew Operations

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
		26	**staff Public Works**			
	Foreman & Supervisor Offices	**6**	**staff Parks**			
01	Construction Foreman	1		11.1		Office w meeting for 2-3p
02	Construction Sub-Foreman	1		9.3		Office w meeting 1-2p
03	Sanitation Foreman	1		11.1		Office w meeting for 2-3p
04	General Foreman, Waterworks	1		11.1		Office w meeting for 2-3p
05	Instrumentation Technologist	2	4.6	9.2		Wkstn 1800x1800 system
06	Water Technician	2	4.6	9.2		Wkstn 1800x1800 system
07	Waterworks Dam Inspector	2	4.6	9.2		Wkstn 1800x1800 system
08	Water Distribution Foreman	1		11.1		Office w meeting for 2-3p
09	General Foreman, Storm & Sewer	1		11.1		Office w meeting for 2-3p
10	Drainage Foreman	1		11.1		Office w meeting for 2-3p
11	Drainage Sub-Foreman	1		9.3		Office w meeting 1-2p
12	Sewer Foreman	1		11.1		Office w meeting for 2-3p
13	CCTV Wastewater Operator	1		4.6		Wkstn 1800x1800 system
14	Roads Foreman	1		11.1		Office w meeting for 2-3p
15	Roads Sub-Foreman	1		9.3		Office w meeting 1-2p
16	Traffic Management Foreman	1		11.1		Office w meeting for 2-3p
17	PW Support Crew Overload	2	4.6	9.2		Wkstn 1800x1800 system
18	Consultant 1 - Seasonal	1		11.1		Office w meeting for 2-3p
19	Consultant 2 - Seasonal	1		7.4		Wkstn 1800x1800 system + plan
20	*OHS Officer /Driver Trainer *new**	*1*		*9.3*		*Office w meeting 1-2p*
21	Seasonal Operator	2	4.6	9.2		Wkstn 1800x1800 system
22	Supervisor, Facility Maintenance	1		11.1		Office w meeting for 2-3p
23	Supervisor, Horticulture	1		11.1		Office w meeting for 2-3p
24	Supervisor,Turf & Parks	1		11.1		Office w meeting for 2-3p
25	Supervisor, Utility	1		11.1		Office w meeting for 2-3p
26	Supervisor, Trails & Construction	1		11.1		Office w meeting for 2-3p
27	Supervisor, Trades	1		11.1		Office w meeting for 2-3p
28	Drop-in Office	1		9.3		
29	Confidentiality Room	1		3.3		1 per 12 open wkstns

Space Requirements 3 Crew Operations, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Ancillary					14%
30	Meeting, 4-5p	1		11.1		
31	Kitchenette	1		9.3		
32	Copy & Supplies Room	1		11.1		
33	Storage	1		11.1		
34	Plan Cabinet	2	2.8	5.6		Plan cabinet or equiv 1200x900
	Subtotal, Foreman & Supervisor Offices			**333.6**	**534**	**@ 1.60 Net to Building**
		88	**crew Public Works**			
	Change Room & Lockers	**59**	**crew Parks**			
35	Mud Room	1		27.9		hose, grated, drained floor
36	Male Change Room	1		187.4		75%
37	Female Change Room	1		62.5		25%
38	Gender Neutral Shower Change	15	3.7	55.5		10%
39	Gender Neutral Toilet w Sink	15	3.7	55.5		10%
40	Drying Locker	1		26.0		18.3 lin m (60 lin ft), vented, heated
41	Coverall Exchange	1		37.2		29.3 lin m (96 lin ft)
42	Bicycle Room	1		32.7		wall mounted, 16 bikes
	Subtotal, Change Room & Lockers			**484.7**	**775**	**@ 1.60 Net to Building**
	Bull Pen /Lunch Room					
43	Assembly Area, 150p	1		167.2		standing room, or 90p seated
44	*Assembly Area Expansion, 30p*	*1*		*33.4*		*standing room, or 18p seated*
45	Touch-down Computer Station	13	1.9	24.7		one station per crew unit
46	Tablet Docking Station	13	1.9	24.7		
47	*Supplies Vending Machine *new**	*5*	*2.3*	*11.5*		*replace 5 of 10 vertical cabinets in 6 Stores Indoor - gloves, etc*
	Subtotal, Bull Pen /Lunch Room			**261.5**	**418**	**@ 1.60 Net to Building**

Space Requirements 3 Crew Operations, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	STAT Storage Indoors					dry, secure, indoor cages
48	Shelving Galley - Construction	1		37.2		galley 2@7.3lin m (2@24')
49	Shelving Galley - Sanitation	1		37.2		galley 2@7.3lin m (2@24')
50	Shelving Galley - Water Supply	1		37.2		galley 2@7.3lin m (2@24')
51	Shelving Galley - Water Distribution	1		37.2		galley 2@7.3lin m (2@24')
52	Shelving Galley - Drainage	1		37.2		galley 2@7.3lin m (2@24')
53	Shelving Galley - Sewer	1		37.2		galley 2@7.3lin m (2@24')
54	Shelving Galley - Roads	1		37.2		galley 2@7.3lin m (2@24')
55	Shelving Galley - Roads / Engineering Surveyor	1		37.2		galley 2@7.3lin m (2@24')
56	Shelving Galley - Traffic	1		37.2		galley 2@7.3lin m (2@24')
57	Shelving Galley - Parks Operations & Horticulture	1		37.2		galley 2@7.3lin m (2@24')
58	Shelving Galley - Turf & Parks	1		37.2		galley 2@7.3lin m (2@24')
59	Shelving Galley - Trails & Construction	1		37.2		galley 2@7.3lin m (2@24')
60	Shelving Galley - Utility & Facilities	1		37.2		galley 2@7.3lin m (2@24')
61	Galley Circulation and Loading	1		193.7		3.0m (10') wide w overhead shop doors
	Subtotal, STAT Storage Indoors	**13**		**677.3**	**1,084**	**@ 1.60 Net to Building**
	STAT Storage Outdoor					open covered
62	Shed Storage - Public Works	7	62.7	438.9		10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front
63	Shed Storage - Sanitation	2	62.7	125.4		10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front
64	Shed Storage - Parks	4	62.7	250.8		10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front
65	Shed Loading Area	1		193.7		
66	Open Covered Storage - Public Works	2	62.7	125.4		10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front
67	Open Covered Storage - Parks	1		62.7		10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front
	Subtotal, STAT Storage Outdoor			**1,196.9**	**1,556**	**@ 1.30 Net to Component**
	Total			**2,954.0**	**4,367**	**@ 1.48 Net to Building**

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4 WORK SHOPS

This component accommodates shops that require 4.9m to 6.1m (16' to 20') headroom. This includes shops already at Labieux and shops at Prideaux and Nanaimo Lakes.

Zoning Criteria

These spaces should be zoned for:

- Ground-level access to loading bays
- Ceiling heights from 4.9m to 6.1m (16' to 20')

Functional Requirement

This component requires:

Small Equipment

- 24-hour access by emergency crews
- ventilated for welding bay
- could be grouped with Fleet in the future

Signs & Lines Shop

- Sign shop requires A/C for equipment that gets hot during summer, but shop doors are not meant to open in order to keep space relatively dust-free

Water & Maintenance Shop

- climate control for flush truck and camera trucks

Parks Utilities Shop

- consolidate Parks utilities shops
- ventilated for welding bay

Parks Carpentry Shop

- sawdust extraction
- noise attenuation if located below other spaces

Transportation Shop **new**

- captured in our notes, but need more information about this space

Shop Loading Bays

- single Loading Bay allowance will equal the width of all shops times 3.0m (10') clearance

Staffing

These are the future staffing requirements for this component:

Small Equipment

- 1 drop-in workstation for feet mechanics

Signs & Lines Shop

- 2 staff – 2 workstation permanently inside
- 1 drop-in workstation for traffic marking specialists

Space Requirements 4 Work Shops

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Small Equipment					at Public Works -group w Fleet
01	Transaction & Queue	1		9.3		Accessible by person door
02	Mechanic Drop-in Station	1		4.6		for 3p - inside, yard, *future*
03	Small Engines	1		116.1		13.7m x 9.1m (45' x 30')** Direct access by shop door
04	Equipment Rooms, Parts	4	27.9	111.6		6.1m x 4.6m (20' x 15')** - rm 153, 158, 159, 180, 181
05	Welding	1		27.9		6.1m x 4.6m (20' x 15') - rm 157
	Subtotal, Small Equipment			**269.5**	**325**	**@ 1.20 Net to Component**
	Signs & Lines Shop	**2**	**staff**			at Public Works
06	Sign Designer	1		4.6		Wkstn 1800x1800 system
07	*Sign Designer - Right-size*	*1*		*4.6*		*Wkstn 1800x1800 system*
08	Signs Shop	1		167.2		heated workspace - 18.3m x 9.1m (60' x 30')**
09	Signs Storage Mezzanine	1		41.8		should be ground level
10	Traffic Marking Drop-in Station	1		4.6		for 2p
11	Lines Shop	1		278.7		heated space - 18.3m x 15.2m (60' x 50')**
	Subtotal, Signs & Lines Shop			**501.5**	**602**	**@ 1.20 Net to Component**
	Water & Maintenance Shop					at Public Works (Casting Shed)
12	Maintenance Shop	1		58.5		low head, mezzanine too
13	Flush Truck Bay	1		167.2		high head bay - 18.3m x 9.1m (60' x 30')**
14	CCTV Camera Truck Bay	1		69.7		heated high head bay - 9.1m x 7.6m (30' x 25')**
15	Large Parts /Sweeper Storage	1		69.7		former Paint Booth - 9.1m x 7.6m (30' x 25')**
16	Shelving Galley	-		-		see Crew Ops STAT Storage
17	Heated Storage Locker	-		-		see Crew Ops STAT Storage
	Subtotal, Water & Maintenance Shop			**365.1**	**438**	**@ 1.20 Net to Building**
	Parks Utilities Shop					from Parks Annex
18	Utilities Shop	1		167.2		18.3m x 9.1m (60' x 30')**
19	Welding Bay	1		27.9		6.1m x 4.6m (20' x 15')
20	Utilities Storage	1		37.2		galley 2@7.3lin m (2@24')
	Subtotal, Parks Utilities Shop			**232.3**	**279**	**@ 1.20 Net to Building**
	Parks Carpentry Shop					from Parks
21	Carpentry Shop	1		167.2		18.3m x 9.1m (60' x 30')**
22	Carpentry Storage	1		37.2		galley 2@7.3lin m (2@24')
	Subtotal, Parks Carpentry Shop			**204.4**	**245**	**@ 1.20 Net to Building**

Space Requirements — 4 Work Shops, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Transportation Shop *new*					
23	*Shop Space (placeholder)*	*1*		*55.7*		*6.1m x 9.1m (20' x 30')*
24	*Storage Space*	*1*		*37.2*		*galley 2@7.3lin m (2@24')*
	Subtotal, Transportation Shop *new*			**92.9**	**111**	**@ 1.20 Net to Building**
	Shop Loading Bays					
25	Loading Bay Allowance	1		242.5		sum of width of all shops x3.0m (10')
26	*Loading Bay - Future growth*	*1*		*27.9*		
	Subtotal, Shop Loading Bays			**270.4**	**324**	**@ 1.20 Net to Building**
	Total			**1,936.1**	**2,324**	**@ 1.20 Net to Building**

5 FLEET MAINTENANCE

This component accommodates shops that require 7.6m to 12.2m (25' to 40') headroom and meet CNG requirements. The shop should have thru-bays along a spine to enable work and diagnostics on larger equipment. Smaller fleet will enter into side bays to not take up space in a high-head bay.

Zoning Criteria

These spaces should be zoned for:

- Drive-thru bays
- High-Head CNG space

Functional Requirement

This component requires:

Front Service Counter

- locate close to high-head bays

Change Room & Lockers

- assume a distribution of 25% female crew, but configure change rooms to be flexible in accommodating a different distribution
- all shower and restrooms are assumed to be gender neutral and accessible

High-head Bays

- two bays aligned back-to-back for drive thru access
- diagnostic benches between bays
- welding/fabrication could be next to one of the bays

Small Fleet Bay

- bays on side, with access aisle for drive-thru front and back

Service Centre Stores

- parts and supplies for the shop, staffed
- securable after hours

Welding /Fabrication Shop

- vented welding bays with open area for large parts
- next to a high-head bay would be ideal
- steam wash shed for pre-repair cleaning

Staffing

These are the future staffing requirements for this component:

Front Service Counter, Service Centre Stores, and Welding /Fabrication Shop

- 6 staff (included in count for crew) – 3 office, 3 workstations

Change Room & Lockers

- 15 crew

Space Requirements 5 Fleet Maintenance

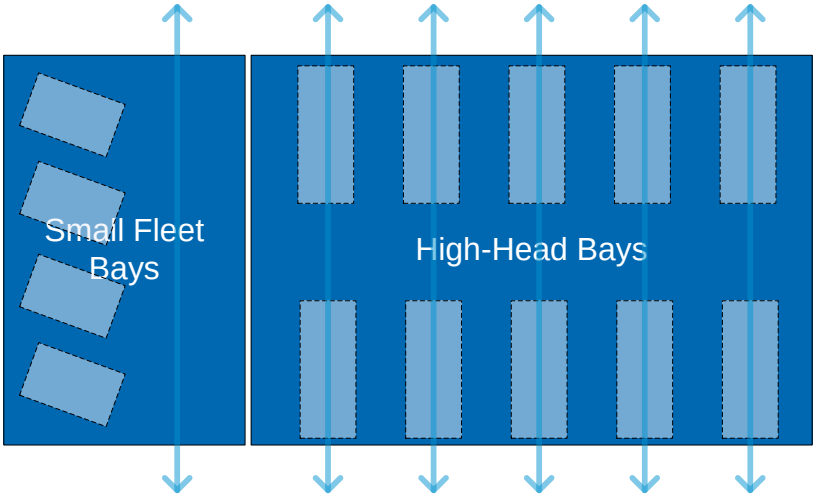
Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Front Service Counter					Locate near High-head Bays
01	Manager, Fleet & PW Facility	1		11.1		Office w meeting for 2-3p
02	Fleet Services Clerk	1		4.6		Wkstn 1800x1800 system
03	Fleet Maintenance Foreman	1		11.1		Office w meeting for 2-3p
04	Fleet Maintenance Sub-Foreman	1		9.3		Office w meeting 1-2p
05	Drop-in Station	1		4.6		
	Ancillary					59%
06	Transaction & Queue	1		9.3		
07	Copy & Supplies	1		11.1		Counter galley
08	Storage & Files	1		11.1		
09	Lunch /Assembly Area, 15-25p	1		27.9		25p standing, 15p seated
	Subtotal, Front Service Counter			**100.1**	**160**	**@ 1.60 Net to Building**
	Change Room & Lockers	**15**	**crew Fleet**			includes staff above
09	Male Change Room	1		19.1		75%
10	Female Change Room	1		6.4		25%
11	Gender Neutral Shower Change	2	3.7	7.4		10%
12	Gender Neutral Toilet w Sink	2	3.7	7.4		10%
13	Drying Locker	1		11.1		7.3lin m, vented, heated
14	Coverall Exchange	1		7.4		dirty exchange
	Subtotal, Change Room & Lockers			**58.8**	**94**	**@ 1.60 Net to Building**
	High-head Bays					All capable of CNG support
16	High-head Bay	2	50.2	100.4		Bay 5.5m x 9.1m (18' x 30'), diagnostic bench between
17	High-head Bay w Crane	1		50.2		overhead crane
18	High-head Bay w Pit	2	50.2	100.4		across two thru bays
19	High-head Bay w In-floor Lift	1		50.2		28,300kg (62,400lb) lift capacity
20	*High-head Bay - Right-size*	*2*	*50.2*	*100.4*		
21	*High-head Bay - Future growth*	*2*	*50.2*	*100.4*		
22	Clearance Aisle	1		83.6		3m (10') between back-to-back bays
	Subtotal, High-head Bays	**5**	thru-bays	**585.6**	**703**	**@ 1.20 Net to Building**
	Small Fleet Bay **new**					
23	Fleet Cars /Pick-up Trucks	4	41.8	167.2		Bay 4.6m x 9.1m (15' x 30') diagnostics at end of bay
24	Drive Through Aisle	1		139.4		7.6m (25') wide
25	Staging Space	1		41.8		
	Subtotal, Small Fleet Bay *new*			**348.4**	**418**	**@ 1.20 Net to Building**

Space Requirements 5 Fleet Maintenance, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Welding /Fabrication Bay					
26	Public Works Maintenance Staff	1		4.6		Wkstn 1800x1800 system
27	Work Bench	1		3.7		
28	Welding /Fabrication Area	1		22.3		3.7m x 6.1 m (12' x 20') next to a maintenance bay
29	Steam Wash Shed	1		78.0		6.1m x 8.5m (20' x 28'), plus 4.6m (10') clear in front
	Subtotal, Welding /Fabrication Bay			**108.6**	**130**	**@ 1.20 Net to Building**
	Service Centre Stores					
30	Service Centre Storekeeper	1		4.6		Wkstn 1800x1800 system
31	*Transaction & Queue *new**	*1*		*9.3*		
32	*Staging /Assembly Area *new**	*1*		*20.9*		*4.6mx4.6m (15'x15')*
33	Parts Storage - Regular	40	1.1	44.0		Shelving Bay 900x450 (36"x18")
34	Parts Storage - Special (Fire)	2	1.1	2.2		Shelving Bay 900x450 (36"x18")
35	*Parts Storage - Future Growth*	*10*	*1.1*	*11.0*		*Shelving Bay 900x450 (36"x18")*
36	Tires Storage	1		37.2		2@ 25lin ft w 10' clear aisle
	Subtotal, Service Centre Stores			**129.2**	**155**	**@ 1.20 Net to Building**
	Oil & Flammables					
37	Flammables Storage	1		27.9		20'x8', 10' clear in front
38	Oil Collection Storage	*1*		27.9		20'x8', 10' clear in front
	Subtotal, Oil & Flammables			**55.8**	**67**	**@ 1.20 Net to Building**
	Fleet Loading Bays					
39	Loading Bay Allowance	10	50.2	502.0		5.5m x 9.1m (18' x 30')
40	*Loading Bay - Right-size*	*2*	*50.2*	*100.4*		*5.5m x 9.1m (18' x 30')*
41	*Loading Bay - Future growth*	*2*	*50.2*	*100.4*		*5.5m x 9.1m (18' x 30')*
	Subtotal, Fleet Loading Bays			**702.8**	**843**	**@ 1.20 Net to Building**
	Total			**2,089.4**	**2,570**	**@ 1.23 Net to Building**

Concept Diagram

This was captured from discussions with staff regarding maintenance bays:



The premise of having the small fleet in a lower head space was two-fold:

- Smaller fleet vehicles not taking up bays required for larger fleet
- Smaller volume of space to ventilate

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6 STORES – INDOOR

This component accommodates the indoor inventory and service and administrative space for Stores staff. Yards staff also monitor and manage the outdoor Public Works inventory.

Zoning Criteria

These spaces should be zoned for:

- Ground-level access to loading bays
- Ceiling heights from 4.9m to 6.1m (16' to 20')

Functional Requirement

This component requires:

Stores Service

- administrative and transaction space
- visual access to inventory and delivery points
- could be connected to kiosk for Stores Outdoor

Indoor Inventory

- *new* staging and assembly area for sorting shipments
- 38 industrial shelving bays sized for pallet shelving, 2 pallets wide per bay – count includes coveralls exchange – sufficient for future growth if coveralls moved to Crew Support
- could move to high-ceiling pallet shelving and forklift access for increased inventory

Secured, Unheated Inventory

- 10 industrial shelving bays for pallet shelving, 2 pallets wide per bay to accommodate 80 pallets
- flammable storage

Staffing

These are the future staffing requirements for this component:

Stores Service & Indoor Inventory

- 3 staff (indoor/outdoor) – 1 office, 2 work stations
- touch-down station provided for Yards staff

Space Requirements 6 Stores – Indoor

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Stores Service	**3**	**staff**			
01	Supervisor Central Stores	1		9.3		Office w meeting 1-2p
02	Stores Clerks	2	4.6	9.2		Wkstn 1800x1800 system
03	Touch-Down Station (O/D Staff)	1		3.3		Wkstn 1500x750 + drawer
	Ancillary					
04	Transaction & Queue	1		17.0		
05	Printer & Supplies Counter	1		7.4		
	Subtotal, Stores Service			**46.2**	**74**	**@ 1.60 Net to Building**
	Indoor Inventory					29.3m x 11.6m (96' x 38')
06	*Staging /Assembly Area *new**	*1*		*20.9*		*4.6mx4.6m (15'x15')*
07	Work Bench & Computer Stn	1		7.4		work bench 2.4 lin m
08	Industrial Shelving Bay	38	5.5	209.0		shelving bay 2400x900 (96"x36")
09	*Supplies Vending Machine *new**			-		*to 3 Crew Operations - replace 5 of 10 vertical cabinets*
10	Vertical Cabinet	5	1.4	7.0		small supplies (existing 10)
	Subtotal, Indoor Inventory			**244.3**	**391**	**@ 1.60 Net to Building**
	Secured, Unheated Inventory					
11	Shed - Pallet Storage	10	5.5	55.0		shelving bay 2400x900 (96"x36") - 4 high, 80 pallets
12	Shed - Flammable Storage	1		37.2		2 @7.6 lin m (25 lin ft), clear aisle 3m (10')
	Subtotal, Secured, Unheated Inventory			**92.2**	**106**	**@ 1.15 Net to Building**
	Total			**382.7**	**571**	**@ 1.49 Net to Building**

7 STORES –OUTDOOR

This component accommodates the outdoors inventory which is under the mandate of Stores, as well as outdoor inventory for business units. A useful addition in the future would be a truck weigh scale and a RFID control point. Overhead cover for UV sensitive inventory will reduce degradation

Zoning Criteria

These spaces should be zoned for:

- Heavy loading 17,250 kg (36,000 lb) per axle
- Large turning radius for equipment
- Secured after hours

Functional Requirement

This component requires:

Stores Shipping & Receiving

- sized for trucks 9.1m (30') length, but configure to accommodate 10.7m (35') length equipment

Stores General Inventory

- PVC pipes should be covered to minimize UV exposure
- inventory are more general sized items

Crew Inventory

- inventory specific to each unit – does not matter from a space point of view, but tracking as such for ease of identification

Salt & Brine Inventory

- current configuration requires large turning radius; may want to reorient

Staffing

See component 6 Stores – Indoor

Space Requirements 7 Stores – Outdoor

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Stores Shipping & Receiving					gated drive-thru
01	Queue & Kiosk	1		61.6		tbd - kiosk attached to Stores Indoors
02	Weigh Scale & Gate	1		61.6		RFID control point
03	Loading Bay	1		61.6		trucks up to 9m (30') length
04	Staging Area Covered	1		61.6		next to shop door
	Subtotal, Stores Shipping & Receiving			**246.4**	**370**	**@ 1.50 Net to Component**
	Stores General Inventory					
05	Project Job Staging Area	1		278.7		30m x 9.1m (100' x 30')
06	PVC Pipe Covered	3	350.0	1,050.0		35m x 10m (115' x 32')
07	Concast Boxes, Pipe Fittings	1		350.0		35m x 10m (115' x 32')
08	Fittings, Lumber	1		350.0		35m x 10m (115' x 32')
	Subtotal, Stores General Inventory			**2,028.7**	**3,043**	**@ 1.50 Net to Component**
	Crew Inventory					
09	Storm Drain Concast, Covers	1		525.0		35m x 15m (115' x 50')
10	Street Light Poles	1		525.0		35m x 15m (115' x 50')
11	Roads Concast	1		525.0		35m x 15m (115' x 50')
12	Waterworks Special Fittings	1		525.0		35m x 15m (115' x 50')
	Subtotal, Crew Inventory			**2,100.0**	**3,150**	**@ 1.50 Net to Component**
	Road Base Inventory					
13	Road Base Type 1, 2, 3	3	525.0	1,575.0		28m x 15m (90' x 50') w 7m (23') clear in front (1,000 tons)
14	Road Base in Bins	4	98.2	392.8		6.1m x 9.1m (20' x 30') w 7m (23') clear in front
	Subtotal, Road Base Inventory			**1,967.8**	**2,952**	**@ 1.50 Net to Component**
	Parks Inventory					
15	Asphalt, Fields, Turf Bins	4	89.1	356.2		6.1m x 7.6m (20' x 25') w 7m (23') clear in front
16	Bin - Future Placeholder	1		89.1		6.1m x 7.6m (20' x 25') w 7m (23') clear in front
	Subtotal, Parks Inventory			**445.3**	**668**	**@ 1.50 Net to Component**

Space Requirements 7 Stores – Outdoor, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Salt & Brine Inventory					
17	Covered Salt Bin	1		442.3		15.2m x 20m (50' x 65') w 9.1m (30') clear in front
18	Covered Brine Tanks	4	41.1	164.4		3.0m x 4.6m (10' x 15') w 9.1m (30') clear in front
19	Sand Pile	1		90.6		6.0m x 6.0m (20' x 20') w 9.1m (30') clear in front
20	Brine Machine Shed	1		50.7		3.7m x 4.6m (12' x 15') w 9.1m (30') clear in front
	Subtotal, Salt & Brine Inventory			**748.0**	**1,122**	**@ 1.50 Net to Component**
	Total			**7,536.3**	**11,305**	**@ 1.50 Net to Component**

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8 WORKS YARD

This component accommodates various outdoor functions that are not inventory. These include fleet and equipment wash, fuelling, generators, storage, greenhouse, and recycling. Some storage does not "belong" as part of the Works Yard, but is held as part of service to the City, such as Bathtub Race and Soapbox Carts.

Zoning Criteria

These spaces should be zoned for:

- Heavy loading 17,250 kg (36,000 lb) per axle
- High-head and large turning radius for equipment
- Specialized containment for potential contaminants

Note that Drainage & Sewers Storage is grouped under 3 Crew Operations STAT Storage.

Functional Requirement

This component requires:

Fleet Equipment Washdown

- decontamination pit and drive-through wash with pass-by

Fuelling

- existing underground diesel and gasoline tanks move above grade in redevelopment
- expansion would include CNG fuelling station
- CNG slow fuelling banks are being considered and space requirements accounted under Parking & Fleet Equipment

Water Station *new"

- Parks' trucks fill up for watering jobs

Generators

- if power goes out in the City, Public Works Yard needs to be operational

Hydro Excavation Processing

- environmental concerns need to be addressed
- contract out?

Miscellaneous Storage, Recycling

- includes miscellaneous storage maintained as public service

- new recycling transfer station

Horticulture

- Parks greenhouse and outdoor nursery
- heated Gardeners' shed
- wood is usually chipped and used on site to reduce green waste storage

Staffing

N/A

CNG Slow Fuelling

https://www.government-fleet.com/155075/designing-a-cng-fueling-station

Space Requirements 8 Works Yard

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Fleet Equipment Washdown					
01	Decontamination Pit	1		93.5		up to 10.7m (35') length; 30,000 kg (66,000 lb) GVW
02	Drive-through Wash	1		93.5		
03	Pass-by allowance	1		93.5		assume near entry
	Subtotal, Fleet Equipment Washdown			**280.5**	**379**	**@ 1.35 Net to Component**
	Fuelling					
04	Pumps Diesel & Gasoline	1		110.6		10m (34') covered length;4 pumps
05	*Tanks 40,000L - Gas & Diesel*	*2*	*20.4*	40.9		need to move above grade
06	*CNG Fuelling - new*	*1*		*45.8*		*3.0m x 6.1m (10' x 20') w 4.5m (15') drive allowance*
07	*CNG Slow Fuelling Banks - new*			-		*see Parking & Fleet Equipment*
	Subtotal, Fuelling			**197.2**	**266**	**@ 1.35 Net to Component**
	Water Station **new**					
08	*Water Tank*	*1*		*83.6*		*9.1m x 9.1m (30' x 30') placeholder*
09	*Filling Stall Hook-up*	*2*	*61.6*	*123.2*		*trucks up to 9m (30') length*
	Subtotal, Water Station *new*			**206.8**	**279**	**@ 1.35 Net to Component**
	Generators					
10	Generator - SCADA, etc	1		33.7		9.1m x 3.7m (30' x 12') on concrete pad
11	Generator - Yards	1		33.7		placeholder to be sized in design
12	*Mobile Generator Trailer, Covered - new*	*2*	*45.8*	*91.5*		*placeholder to be sized in design*
	Subtotal, Generators			**158.8**	**214**	**@ 1.35 Net to Component**
	Hydro Excavation Processing **new**					Currently a tailings pond
13	Facility - Placeholder	1		1,303.0		21.3m x 45.7m (70' x 150') w 4.6 m (15') clear two sides
14	Rubble, Metals, Recovery Bin	1		181.2		9.1m x 19.8m (30' x 65')
	Subtotal, Hydro Excavation Processing *new*			**1,484.2**	**2,004**	**@ 1.35 Net to Component**

Space Requirements 8 Works Yard, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Misc Storage, Recycling					
15	Non-profit Storage (bathtubs, floats, soapbox carts)	2	92.9	185.8		6.1m x 15.2m (20' x 50'), covered
16	Asphalt Equipment Shed	1		181.2		9.1m x 19.8m (30' x 65'), covered
17	Drainage & Sewers Storage			-		see Crew Operations
18	By-law Impound	1		92.9		6.1m x 15.2m (20' x 50'), covered
19	RCMP Exhibit Holding	1		92.9		6.1m x 15.2m (20' x 50'), covered
20	Roads & Water Used Material Storage	1		600.0		120m x 5m (20' x 50') along edge of site
21	Parks Trimmings Bin	1		31.5		8.5m x 3.7m (28' x 12')
	Subtotal, Misc Storage, Recycling			**1,184.3**	**1,599**	**@ 1.35 Net to Component**
	Horticulture					at Parks
22	Greenhouse	1		100.3		9.1m x 11.0m (30' x 36')
23	Outdoor Growing Area	1		181.2		9.1m x 19.8m (30' x 65')
24	Gardeners' Shed, Heated	1		62.7		10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front
25	Green Waste Can	1		20.0		
	Subtotal, Horticulture			**364.2**	**492**	**@ 1.35 Net to Component**
	Total			**3,876.0**	**5,233**	**@ 1.35 Net to Component**

9 PARKING & FLEET EQUIPMENT

This component accommodates parking for staff and visitor vehicles, as well as fleet vehicles. Roads equipment such as salt spreaders and de-icing tanks are included as part of this component since options can be explored where trucks are parked underneath spreaders.

Since vehicles take up valuable ground floor area, personal vehicles are a good candidate for structured parking.

Zoning Criteria

These spaces should be zoned for:

- Personal vehicles are outside of Yards security zone
- Ground-level access for fleet used on daily basis
- Heavy loading 17,250 kg (36,000 lb) per axle
- Low- to Mid-head for staff/visitor parking and some fleet
- High-head and large turning radius for equipment
- 24/7 access to salt and brine equipment required

Functional Requirement

This component requires:

Staff Personal Vehicles

- stall allocations assume 90% of all staff, including seasonal
- other Operation Centres allocate for 80-85% of permanent staff

Visitors

- regular and e-charging stalls – to be confirmed during design
- accessible stalls require access aisle between

Fleet Vehicles

- mostly pick-up trucks that fit a standard stall

Heavy Fleet Equipment

- source fleet inventory list reviewed for sizes and counts
- allocations linked directly to data sheet
- CNG Slow Fuelling allowance between 30 truck stalls

Fleet Maintenance Stalls

- for incoming (broken) and outgoing (fixed) equipment

Salt Spreaders

- based on current counts
- plough blades

Staffing	N/A

Space Requirements 9 Parking & Fleet Equipment

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Staff Personal Vehicles					excl staff w assigned fleet
01	Engineering & Public Works Staff	149	34.1	5,094.5		standard vehicle 2.75m x 5.8m (Nanaimo bylaw)
02	Parks & Facilities Staff	57	34.1	1,933.5		
03	Seasonal/Overload Staff E&PW	22	34.1	750.2		90%
04	Seasonal/Overload Staff Parks	17	34.1	579.7		90%
05	Secured Bicycle Locker	10	3.0	30.0		2 bikes per locker
	Subtotal, Staff Personal Vehicles	**245**		**8,387.9**	**11,324**	**@ 1.35 Net to Component**
	Visitors & Special Stalls					
06	Visitor Standard Vechicle Stall	6	34.1	204.6		
07	Accessible Stall	2	51.7	103.4		
08	E-Charging Vehicle Stall	2	34.1	68.2		
09	Delivery Truck Lay-by	1		61.6		up to 9.1m (30') length; 16,000 kg (35,000 lb)
	Subtotal, Visitors & Special Stalls	**11**		**437.8**	**591**	**@ 1.35 Net to Component**
	Fleet Vehicles					
10	Fleet Cars/ Pick-up Trucks	68	34.1	2,318.8		standard vehicle 2.75m x 5.8m (Nanaimo bylaw)
11	*Fleet Cars/ Pick-up Trucks - Right-size*	*3*	*34.1*	*102.3*		*Manager of Utilities, Traffic Signal Tech, General Use*
12	*Fleet Vehicle E-Charging Station & Future-growth*	*7*	*34.1*	*238.7*		*10%*
	Subtotal, Fleet Vehicles	**78**		**2,659.8**	**3,591**	**@ 1.35 Net to Component**
	Heavy Fleet Equipment					
13	Tandem-Axle Dump Truck, Sanitation	22	93.5	2,057.0		up to 10.7m (35') length; 23,000 kg (50,700 lb) *GVW 64,000 kg
14	Single-Axle Dump Truck, Street Sweeper	17	61.6	1,047.2		up to 9.1m (30') length; 16,000 kg (35,000 lb)
15	Wheel Loader / Line Truck	3	57.2	171.6		up to 8m (26') length, 13,000 kg (28,000 lb)
16	Service Walk-in Van, Backhoe Loader, Tractor	20	53.9	1,078.0		up to 7m (23') length

Space Requirements — 9 Parking & Fleet Equipment, continued

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
17	*Tandem-Axle Dump Truck, Sanitation - Right-size E&PW*	*2*	*93.5*	*187.0*		*Refuse Collector*
18	*Tandem-Axle Dump Truck, Sanitation - Future growth E&PW*	*2*	*93.5*	*187.0*		*Refuse Collector*
19	*Single-Axle Dump Truck, Street Sweeper - Future growth E&PW*	*2*	*61.6*	*123.2*		*Future Growth Engineering & Public Works*
20	*Single-Axle Dump Truck, Street Sweeper - Right-size Parks*	*3*	*61.6*	*184.8*		
21	*Single-Axle Dump Truck, Street Sweeper - Future growth Parks*	*3*	*61.6*	*184.8*		*Future Growth Parks & Facilities*
22	*Truck E-Charging Station & Future-growth*	*7*	*61.6*	*431.2*		*10%*
23	*CNG Slow Fuelling Banks - new*	*15*	*4.5*	*67.5*		*20%*
	Subtotal, Heavy Fleet Equipment	**74**		**5,719.3**	**7,721**	**@ 1.35 Net to Component**
	Fleet Maintenance Stalls					
24	Broken Parking Stall	10	61.6	616.0		up to 9.1m (30') length; 16,000 kg (35,000 lb)
25	Fixed Parking Stall	10	61.6	616.0		up to 9.1m (30') length; 16,000 kg (35,000 lb)
	Subtotal, Fleet Maintenance Stall	**20**		**1,232.0**	**1,663**	**@ 1.35 Net to Component**
	Salt Spreaders & Plow Blades					Could park w Dump Trucks
26	Salt Spreaders, Large	7	73.6	515.1		High-head shed = 3.7m x 11m (12' x 36'), plus 9.1m (30') clear in front
27	Salt Spreaders, Small	9	58.0	521.7		High-head shed =3.7m x 6.7m (12' x 22'), plus 9.1m (30') clear in front
28	Liquid De-ice Tank, Large	2	73.6	147.2		
29	Liquid De-ice Tank, Small	1		58.0		
30	Plough Blades	25	3.0	75.0		Allowance in front of Parking
	Subtotal, Salt Spreaders & Plow Blades			**1,316.9**	**1,778**	**@ 1.35 Net to Component**
	Total			**19,753.7**	**26,668**	**@ 1.35 Net to Component**

10 PARKS & FACILITIES

This is a shell component because the intention is to incorporate Parks and Facilities as part of the larger organization that includes Public Works and Engineering. However, in case there is interest in exploring scenarios where Parks and Facilities remain off-site, information would be captured under this heading.

Zoning Criteria

Zoning criteria will be developed if Parks and Facilities are off-site.

Functions

Functions that generate space in Parks and Facilities are currently grouped under these components:

1 Front of House

2 Offices

3 Crew Operations

4 Work Shops

7 Stores Outdoor

8 Works Yard

9 Parking & Fleet Equipment

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11 SATELLITE MODULES

Unstaffed satellites at the South and North ends of the City may be considered as viable options for reducing travel time during weather events. These will be explored further in modelling scenarios.

Zoning Criteria

These spaces should be zoned for:

- Heavy loading 17,250 kg (36,000 lb) per axle
- High-head and large turning radius for equipment
- 24/7 access to salt and brine equipment required

Functional Requirement

To be discussed.

Space Requirements 11 Satellite Modules

Ref	Space Name	Units x	Net m2 /Unit	Net m2	Gross m2	Remarks
	Emergency Satellite Module *new*					
01	*Security Office Support*	*1*		9.3		Office w 2 shared wkstns
02	*Office Support*	*1*		11.1		placeholder
03	*Equipment Shed*	*1*		*62.7*		*10.6m x 4.6m (35' x 15'), plus 3.0m (10') clear in front*
04	*Salt Spreaders, Large*	*2*	*73.6*	*147.2*		*High-head shed = 3.7m x 11m (12' x 36'), plus 9.1m (30') clear in front*
05	*Covered Salt Bin*	*1*		*148.6*		*6.1m x 15.2m (20' x 50') w 9.1m (30') clear in front*
06	*Brine Tank*	*1*		*41.1*		*3.0m x 4.6m (10' x 15') w 9.1m (30') clear in front*
07	*Sand Pile*	*1*		63.0		4.6m x 4.6m (15' x 15') w 9.1m (30') clear in front
08	*Brine Machine Shed*	*1*		50.7		3.7m x 4.6m (12' x 15') w 9.1m (30') clear in front
09	*Gravel, Cold Mix, Asphalt Bins*	*1*		*89.1*		*6.1m x 7.6m (20' x 25') w 7m (23') clear in front*
10	*Single-Axle Dump Truck, Street Sweeper*	*2*	*61.6*	*123.2*		*up to 9.1m (30') length; 16,000 kg (35,000 lb)*
11	*Wheel Loader / Line Truck*	*1*		*57.2*		*up to 8m (26') length, 13,000 kg (28,000 lb)*
	Subtotal, Emergency Satellite Module*new*			**803.1**	**1,084**	**@ 1.35 Net to Component**
	Recycling Transfer Station *new*					
06	*Rubble, Metals, Recovery Bin*	*1*		*245.3*		*9.1m x 19.8m (30' x 65') w 7m (23') clear in front*
13	*Truck Staging*	*2*	*61.6*	*123.2*		*up to 9.1m (30') length; 16,000 kg (35,000 lb)*
	Subtotal, Recycling Transfer Station *new*			**368.5**	**497**	**@ 1.35 Net to Component**
	Total			**1,171.6**	**1,581**	**@ 1.35 Net to Component**

Precedents

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PRECEDENTS

The purpose of looking at operation centres in other urban areas is to gain insights into new ways of doing business and accommodating operations in more innovative ways. Some of these innovations may have application for the City of Nanaimo

This section is organized under:

- Summary Table
- Consolidated Operations
- Distributed Complementary Operations
- Small Operations

SUMMARY TABLE

The following table summarizes key metrics of operations centres scanned. In some cases, further information was provided by contacts who responded to our queries by e-mail or through tours (see Appendix A – Feedback). The content for this table was generated using Google Earth mapping tools for site area, and Wikipedia data for population and area of city. For Manhattan, the information was gathered through DSNY (Department of Sanitation New York) and Dattner Architects.

Location	Population 2016	Area of City km2	Density p/km2	Yards Site Area ha	km2 served /ha site
City of Nanaimo, BC	104,936	91.3	1,149	5.0	18.3
City of Burnaby, BC	232,755	90.6	2,569	3.8	23.8
City of Vancouver, BC	631,486	115.0	5,491	5.0	23.0
District of West Vancouver, BC	42,473	30.0	1,416	*2.0*	15.0
City of North Vancouver, BC	52,892	11.8	4,471	1.5	7.9
City of Surrey, BC	517,887	316.4	1,637	8.4	37.7
City of Port Coquitlam	58,612	29.2	2,009		-
City of Calgary, AB	1,239,220	825.3	1,502	30.0	27.5
Manhattan, NY - Salt Shed & 1/2/5 Garage	1,645,000	59.1	27,820	1.0	4.9
Manhattan, NY - Battery Park City Parks	1,645,000	59.1	27,820	0.2	24.6

An interesting pattern emerged – ~25 km^2 served /ha of site seems to be a reasonable "macro" for operation yards. Low km^2 served /ha of site is an indication of inefficiency. High km^2 served /ha of site is an indication of pressure for more resources, or missing satellite operations in our research. Note that Manhattan figures are divided by 12 because there are 12 garages distributed across Manhattan, and the macro can apply even for these atypically small sites.

Staffing Levels

Location	Population 2016	Area of City km2	Density p/km2	Staff	pop /Staff
City of Nanaimo, BC	104,936	91.3	1,149	224	468
City of Nanaimo, BC - Right-sized	104,936	91.3	1,149	261	402
City of Nanaimo, BC - Future Growth	134,532	91.3	1,474	289	466
City of Nanaimo, BC - Future Growth	134,532	91.3	1,474	224	601
City of Burnaby, BC	232,755	90.6	2,569	385	605
City of Vancouver, BC	631,486	115.0	5,491	400	1,579
District of West Vancouver, BC	42,473	30.0	1,416	143	297
City of North Vancouver, BC	52,892	11.8	4,471	85	622
City of Surrey, BC	517,887	316.4	1,637	500	1,036
City of Port Coquitlam	58,612	29.2	2,009	99	592
City of Calgary, AB	1,239,220	825.3	1,502	1,500	826

The population of City of Nanaimo, existing (from 2016 census) and future targets was divided by the staff counts for another macro, population per staff. The results for Nanaimo are shown in blue.

In theory, even at existing staffing levels, a 600 pop per staff is comparable to Burnaby, North Vancouver, and Port Coquitlam. Municipalities such as Vancouver, Surrey, Calgary seem to demonstrate that there are efficiencies gained as the city grows, and staff levels are not a direct correlation to population growth.

CONSOLIDATED OPERATIONS

Worth noting are operations which are comprehensive and consolidated at one main site. These municipalities were able to establish their work yards before land became an issue. In the case of the City of Calgary, a large site also corresponds to a large area served.

City of Calgary – Manchester Yards – 30 ha

27.5 km^2 served /ha site,
Density 1,502 people/km^2

The mix of users on the site results in economies of scale for considerations such as maintenance, operating activities, energy distribution, and commute-times for inter-BU activities. – Cameron D Gilles, City of Calgary

City of Surrey – 8.4 ha

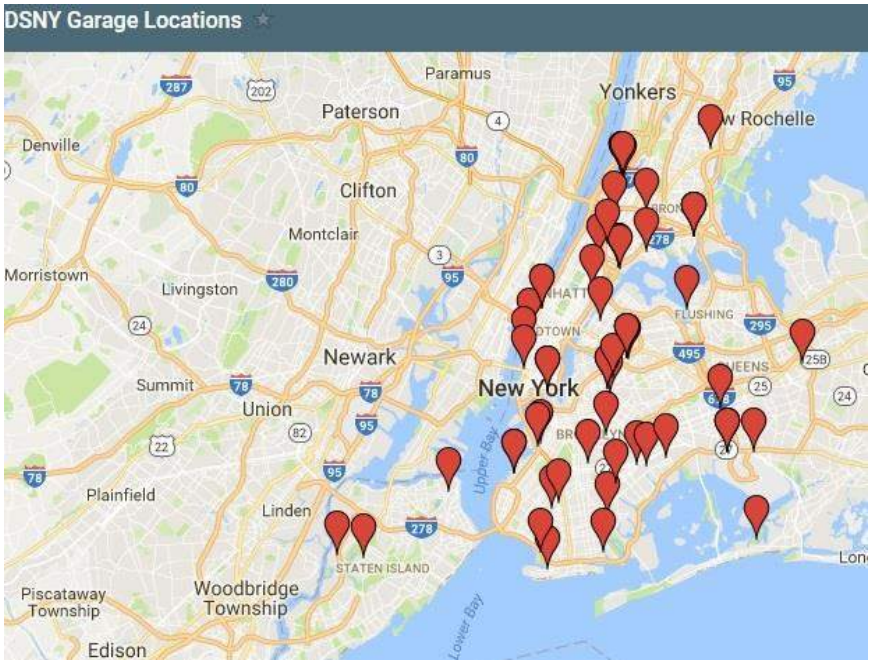
37.7 km^2 served /ha site,
Density 1,637 people/km^2

Taylor Kurtz +RDH Ema Peter Photography

The newly redeveloped Surrey Works clearly separates public and staff spaces, while remaining open and welcoming. Natural light was considered early in planning and design. Stacking offices on several floors freed up valuable ground space for large fleet and equipment.

DISTRIBUTED COMPLEMENTARY OPERATIONS

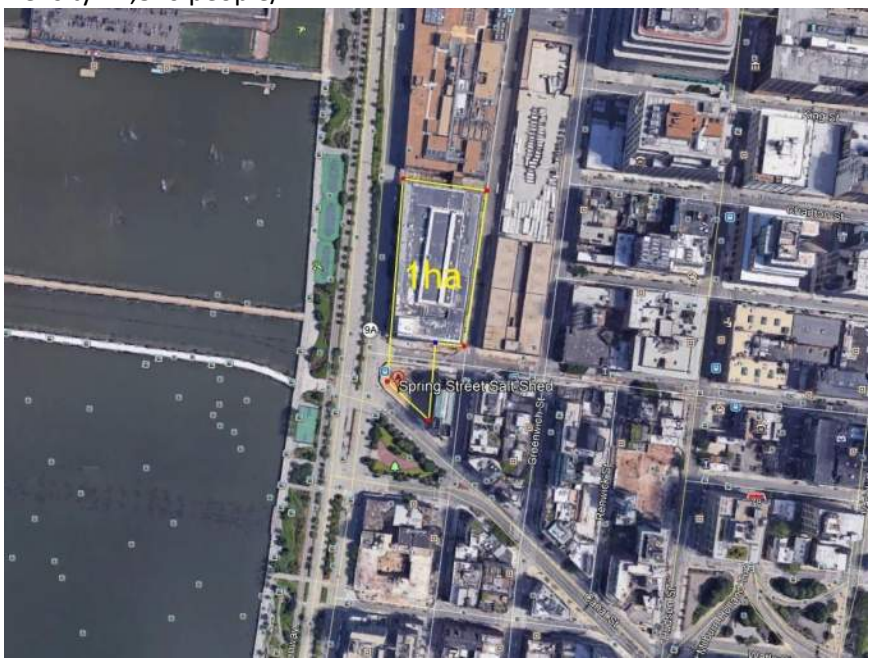
Small distributed operations were where we expected to find them – a dense urban city. The NYC Department of Sanitation, DSNY operates 59 district garages, 12 of these in Manhattan, serving over 1.6 million people.



Spring Street Salt Shed — Dattner Architects

NYC Manhattan – Spring Street Salt Shed & 1/2/5 Garage

4.9 km^2 served /ha site,
Density 27,820 people/km^2



Spring Street Salt Shed & 1/2/5 Garage Dattner Architects

Located on adjacent sites sanitation vehicles, vehicle wash, fuelling, repair shops, crew support, and offices are at 1/2/5 Garage. The Salt Shed is highly visible and easily accessible near Hudson River.

NYC Manhattan – Battery Park City Parks & Maintenance

24.6 km^2 served /ha site,
Density 27,820 people/km^2

Battery Park City Parks & Rec by Dattner Architects

The DSNY has a garage for electric/low emission Parks equipment and maintenance facilities in Battery Park. This garage occupies 0.2ha of the city block, with a residential tower on the remainder of the city block. Other uses in the garage complex include classrooms and offices above that overlook the garage atrium, and retail on ground level.

SMALL OPERATIONS

The City of North Vancouver had the smallest area of city served.

City of North Vancouver

7.9 km^2 served /ha site,
Density 4,471 people/km^2

Comments from Dialog post-occupancy interviews with users:

- Tight site means no opportunity to expand as operations expand – rail, street, and riparian edges
- Meeting rooms are well used
- Reduced parking has proved trickier than anticipated – one stall, thus swap personal vehicle for fleet vehicle

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Appendices

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APPENDIX A – TOURS

Information is presented here for the following sites toured:

- City of North Vancouver
- City of Surrey

CITY OF NORTH VANCOUVER

A tour was offered by the architect and Manager of Public Works. Key findings from this tour are working with site constraints and establishing good work flows

City of North Vancouver – Operations Centre Bewicke

Population:	52, 898
City Area km^2:	12
Site Area ha:	1.5

Site Plan

Redevelopment as Land Swap

- Completion 2011, $14.5M – site and buildings
- P3 – completed in less than a year

- Original site was remediated for residential use

Site Constraints

- Tight site means no opportunity to expand as operations expand – rail, street, and riparian edges
- Main building is ~1,500 m^2 (16,500 ft^2)

Mandates

- EOC (Emergency Operating Centre) in map room
- NOT entirely Post-Disaster Design, but tried to plan for alternative access routes - next to pathway

Outside Staff

- 80 permanent outside staff
- 20 seasonal outside staff

Gender Distribution

- 10% Female Crew

Crew Work Flows

- Crews flow across two spines - Main Building spine, Shed + Fleet spine
- Main Entry to corridor lined with vented personal lockers (enough for seasonal and permanent staff)
- Move to locker rooms to change
- Move across hall into muster rooms, which have heated coverall and boots storage
- Move outside to fleet and supply sheds, then off-site to jobs
- Two access gates

Dispatch

- Non-existent – work crews get jobs directly from supervisors

Parking

- Staff + Fleet Parking – mixed due to space constraints
- Reduced parking has proved trickier than anticipated – one stall, thus swap personal vehicle for fleet vehicle
- 90 fleet vehicles

- Electric charging stations provided near entry

Road Base, Salt & Brine

- Road base shed, Salt shed – on-site
- Does not need to be a significant inventory because small area served (12 km^2)
- Ramp used to load salt into spreaders

Fuelling

- Tanks (gas, diesel) underground

Mechanics Shop

- 2 high-head garage bays back-to-back for drive through
- Mezzanine storage with lift to load did not work out – needs ground level

Neighbours

- Highway ramp to West
- Riparian edge to North
- Rails to South

Partnerships

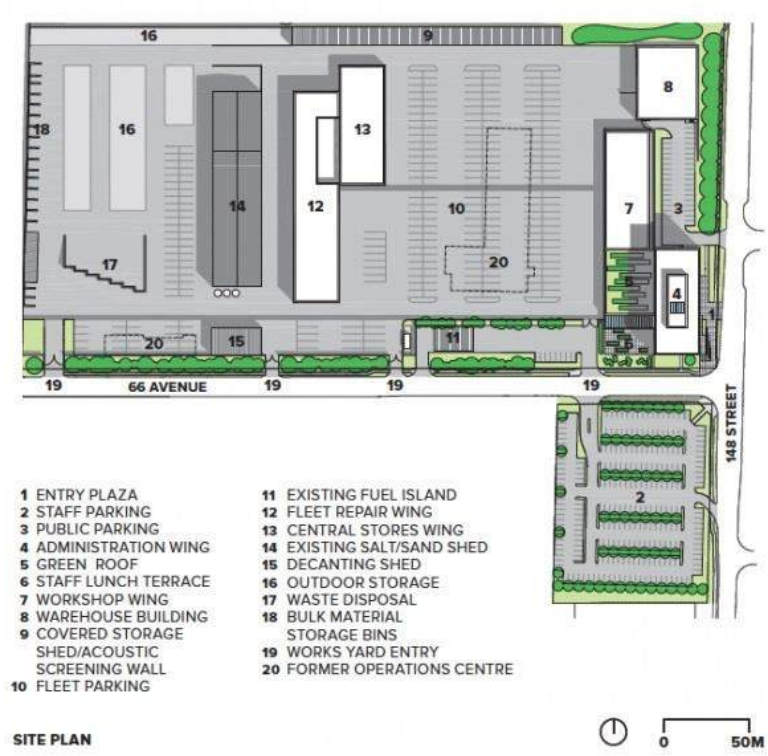
- North Shore Rescue is attached to the Shed Building, but outside the security zone

CITY OF SURREY

A tour was offered by the Fleet and Garage Manager.

City of Surrey – Operations Centre & Works Yard

Population:	517,887
City Area - km^2:	316.4
Site Area - ha:	8.4



Taylor Kurtz + RDH

Redevelopment in Place

- Completion in 2015, $65 million
- 2.5 years completion
- Redevelopment occurred on parking lot, with minimal disruption to existing operations
- Staff parking relocated across 66th Avenue
- 10,500 m^2 (114,000 ft2) Administration and Crew building
- 5,000 m^2 (54,000 ft^2) Fleet Maintenance building
- 1,300 m^2 (14,000 ft^2) Warehouse

Mandates

- Engineering
- Operations
- Facilities
- Parks
- *New* - Bylaw Enforcement and Licensing

Outside Staff

- 300 permanent outside staff
- 75 seasonal outside staff

Gender Distribution

- ~10% Female Crew

Crew Work Flow

- Crew enter from staff parking and muster upstairs in offices
- Change in centralized locker rooms downstairs and exit into yard
- Crew STAT stores inside a warehouse with dedicated cage for each unit – pallet shelving and forklift access
- Dedicated shop door with loading area

Dispatch

- Co-located with Fleet Repair – rely on real-time mapping for road conditions

Parking

- Staff Parking – stalls are provided for ~80% of staff

- Fleet Parking – separate from staff parking
- 500 fleet vehicles, including sanitation trucks
- 6" asphalt helps with wear and tear

Road Base, Salt & Brine

- Road base – did not see
- Salt shed max capacity 14,000 tonnes
- Brine tanks outside
- Two satellite locations – north, south – which makes sense for the large area serviced

Fuelling

- Gas and diesel pumps outside of security gates
- CNG fuelling in place
- Partnership with Petro Canada for fuelling

Mechanics Shop

- 19 high-head garage bays 7 drive-through bays, back-to-back along a spine
- Support includes workbenches, welding, parts, offices
- 2 separate Drainage garage bays
- Washdown shed attached to Drainage

Neighbours

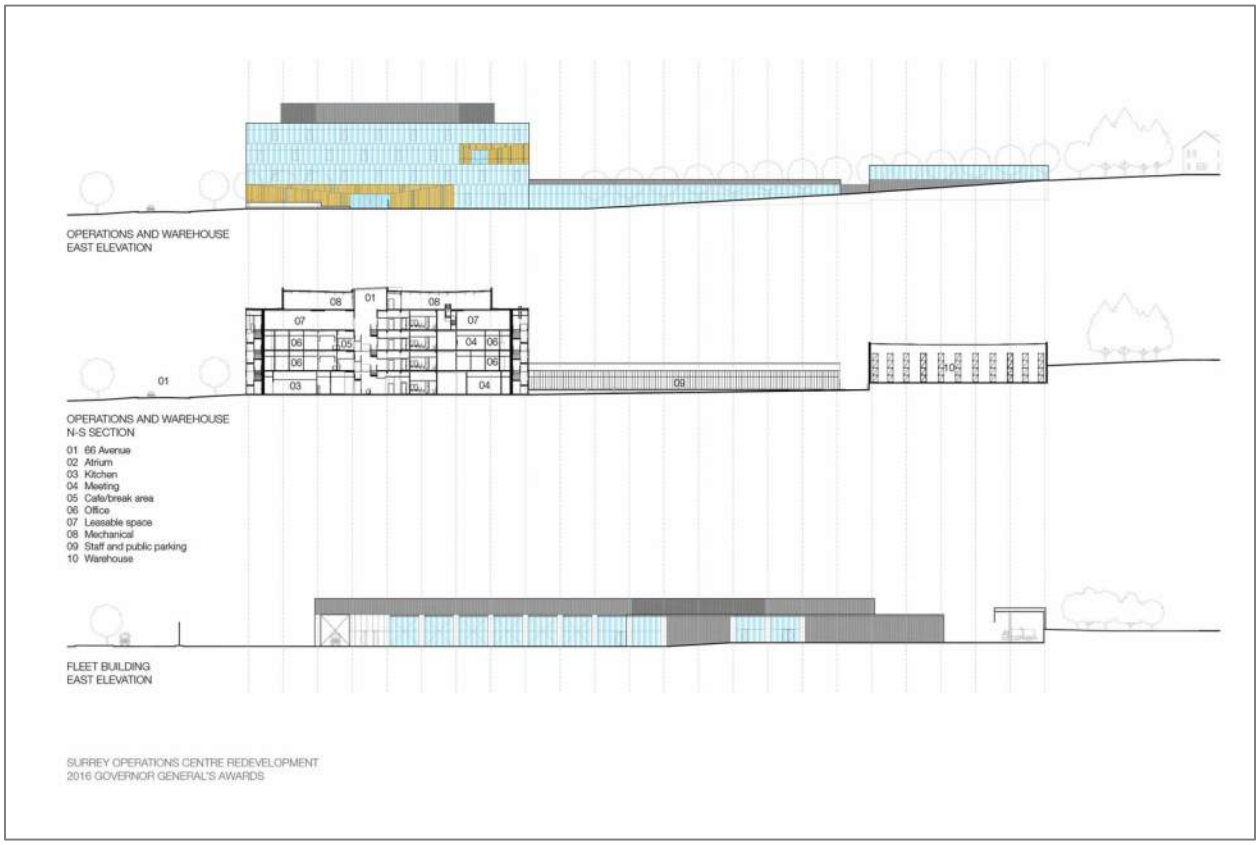
- Single family residential neighbours, east and north
- Public front faces residents on east side, shed roofing and planting on north side
- Industrial neighbours to south and west

Partnerships

- Surrey is large enough that it makes sense to do most things in-house – economies of scale

Surrey Crew STAT Supplies in cages

Taylor Kurtz + RDH Ema Peter Photography

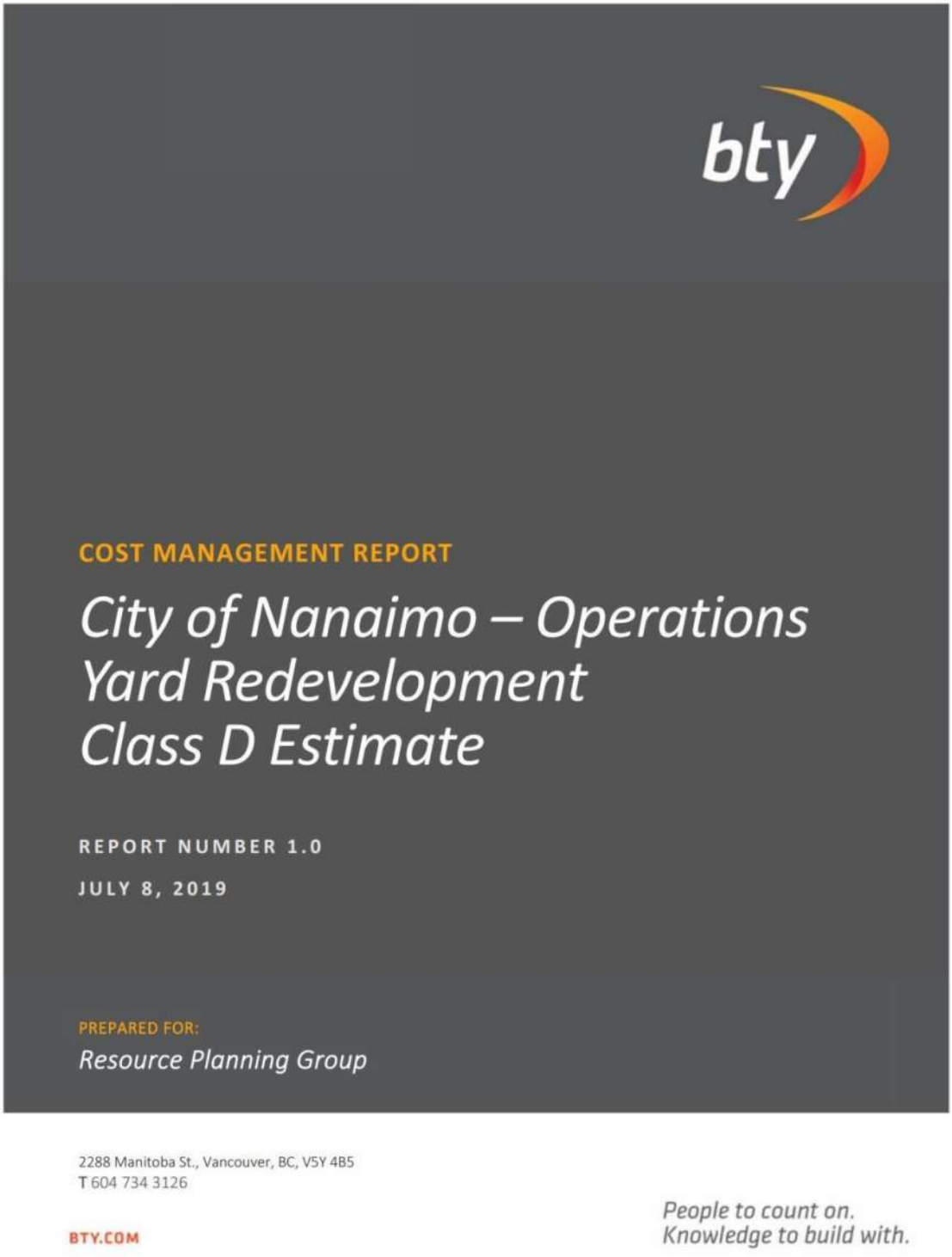


Elevation and Section Taylor Kurtz + RDH

APPENDIX B – COST CALCULATIONS

The following cost management report was developed by BTY for the preferred option and is attached on the following pages.

- *City of Nanaimo – Operations Yard Redevelopment Class D Estimate* 2019, July 08th
  Appendix II of the report is excluded as the content is repeated from the main body of this document.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COST MANAGEMENT REPORT
City of Nanaimo – Operations Yard Redevelopment Class D Estimate
REPORT NUMBER 1.0
JULY 8, 2019
PREPARED FOR:
Resource Planning Group
2288 Manitoba St., Vancouver, BC, V5Y 4B5
T 604 734 3126
BTY.COM
People to count on.
Knowledge to build with.

bty

Contents

Prepared By	Reviewed By	Date
Jacky Yim	Eldon Lau	7/8/2019

T:\1 - Vcr\1 - CP\Gov Mun\Other\1-10459 - Nanaimo Operations Yard\3 - Estimates\1 - Class D - Jul 2019\2 - Report\1 - Word\Nanaimo Op Yards Class D Estimate#1.0 - Jul 08 19 - EL.docx

1.0 *Introduction*

1.1 Instructions Received

This report has been prepared by BTY Group ("BTY") at the request of Resource Planning Group (the "Client").

Resource Planning Group has appointed BTY to provide an Order of Magnitude estimate developed for the Public Works & Parks Operations project in Nantaimori, B.C. (the "Project"). The Project will be delivered using a Stipulated Price Contract construction model and, therefore, BTY strongly recommends that estimates are prepared at each of the key design milestones.

Information related to the Project for the purposes of this report was received by BTY on August 27, 2019. Please refer to Section 14.0 for a list of information received in producing this report.

1.2 Report Reliance

This report has been prepared in accordance with the scope of our Fee Proposal, dated July 4, 2018, which was prepared in response to the email, dated June 29, 2019, and is subject to the terms of that appointment. This report is for the sole and confidential use and reliance of the Client. BTY Group, its Directors, staff or agents do not make any representation or warranty as to the factual accuracy of the information provided to us on behalf of the Client or other third-party consultants or agents. BTY Group will not be liable for the result of any information not received which, if produced, could have materially changed the opinions or conclusions stated in this report. This report shall not be reproduced or distributed to any party without the express permission of BTY Group.

Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the report as a whole. The contents do not provide legal, insurance or tax advice or opinion. Opinions in this report do not an advocate for any party and if called upon to give oral or written testimony it will be given on the same assumption.

1.3 Contacts

Should you have any queries regarding the content of this report, please do not hesitate to contact either of the following:

Jacky Yim
Senior Cost Consultant
Tel: 604-734-3126
Email: jackyyim@bty.com

Eldon Lau
Partner
Tel: 604-734-3126
Email: eldonlau@bty.com

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2.0 *Executive Summary*

2.1 Report Purpose

The purpose of this report is to provide a realistic estimate of the Project cost based on the information available at the time of writing.

The opinion expressed in this report has been prepared without the benefit of detailed architectural, mechanical, electrical or processing system drawings and should, therefore, be considered an Order of Magnitude (Class D) estimate. Based on the documents reviewed, our estimate should be correct within a range of approximately +/- 20% to 25%.

In order to provide an accurate cost estimate for the Project, BTY Group strongly recommends that a professional Quantity Surveying organization, such as BTY Group, be retained to provide a detailed analysis of any design information produced on behalf of the Client during the remaining stages of design.

2.2 Project Background and Description

The project involves the redevelop the existing city's and park's operation buildings and yards. The new construction includes the following components:

1. Buildings & Structure – Administrative and Operations
2. Outdoor Yards & Site Development
3. Offsite Infrastructure

Additional cost items are also included in Section 7.0 of this report.

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Executive Summary (Cont'd)

3.0 *Development Cost Summary*

The current estimated cost of the project may be summarized as follows:

	Item	Estimated Costs ($)
A	Land Cost (Excluded)	0
B	Construction	79,748,000
C	Infrastructure / Off-site Works	1,000,000
D	Professional Fees	9,569,800
E	Connection Fees & Permits	2,392,400
F	Management & Overhead	5,582,400
G	Furnishing, Fittings & Equipment (Excluded)	0
H	Financing Costs (Excluded)	0
I	Goods & Services Tax	0
	Sub-Total Project Cost	**$98,292,600**
J	Escalation (Excluded)	0
	Total Project Cost (July 2019 Dollars)	**$98,292,600**

Please note that, where zero dollar values are stated, BTY has excluded these costs and the values should be carried in a separate budget (if applicable).

4.0 *Basis & Assumptions*

The construction estimate is based on the following list of assumptions:

1. Foundations will consist of strip and pad footings with concrete foundation walls
2. No under slab insulation to Storage Buildings
3. Exterior metal cladding will be commercial grade products
4. No ceiling finishes to the exposed structure in Operations and Storage Buildings
5. No heating to Storage Building
6. Total yard area is 43,206 m², which includes 2,257 m² above grade parking
7. Please refer to Appendix II for complete list of assumptions

Please note that BTY is not qualified to act as design consultant. The assumptions in our estimate should be reviewed and corrected by the design team.

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5.0 *Exclusions*

The construction estimate includes all direct and indirect construction costs derived from the drawings and other information provided by the Consultants, with the exception of the following:

1. Land costs
2. Legal fees and agreement costs / conditions
3. Temporary facilities for user groups during construction
4. Removal of hazardous materials from the existing site and buildings (if any)
5. Site remediation with fuel tanks brought above grade (separate price item)
6. CNG in fleet maintenance and slo-fill for fleet (separate price item)
7. EV charging stations (separate price item)
8. Replacement of the existing fire training grounds (separate price item)
9. Compressed air system equipment
10. Geothermal system
11. Vehicle washing equipment
12. Operational equipment
13. Loose furnishings and equipment
14. Solar PV
15. Unforeseen ground conditions and associated extras
16. Environmental remediation outside building footprint
17. Decanting & moving
18. Erratic market conditions, such as lack of bidders, proprietary specifications
19. Cost escalation past July 2019

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6.0 *Project Cost Summary*

The estimated project capital cost may be summarized as follows:

			Preferred Concept
A.	**LAND COST (Excluded)**		**$0**
A1	Land		0
A2	Legal Fees		0
B.	**CONSTRUCTION**		**$79,748,000**
B1	Demolition / Site Preparation		4,366,900
B2	Buildings & Structures		58,620,100
B3	Outdoor Yards & Site Development		12,761,000
B4	Phasing Allowance for keeping the existing Works Yard in operation during construction		4,000,000
C.	**INFRASTRUCTURE / OFF SITE WORKS**		**$1,000,000**
C1	Roadwork and utilities outside the property lines - Cash Allowance		1,000,000
D.	**PROFESSIONAL FEES**	*12%*	**$9,569,800**
D1	Programming		
D2	Architectural		
D3	Structural		
D4	Mechanical		
D5	Electrical		
D6	Quantity Surveying		
D7	Acoustic		
D8	Equipment Consultant		
D9	Code Consultant		
D10	Other Consultants and Disbursements		
E.	**CONNECTION FEES & PERMITS**		**$2,392,400**
E1	Rezoning Cost		0
E2	DCC & Building Permits	*3%*	2,392,400
F.	**MANAGEMENT & OVERHEAD**	*7%*	**$5,582,400**
F1	Project Management Fee		
F2	Owners Planning and Administrative Cost		
F3	Project Insurance		
F4	Project Commissioning, Move-In		
G.	**FURNISHINGS, FITTINGS & EQUIPMENT (Excluded)**		**$0**
H.	**FINANCING COSTS (Excluded)**		**$0**
I.	**GOODS & SERVICES TAX (Excluded)**		**$0**
	SUB-TOTAL PROJECT COST		**$98,292,600**
J.	**ESCALATION (Excluded)**		**$0**
	TOTAL PROJECT COST (2019 Dollars)		**$98,292,600**

Please note that, where zero dollar values are stated, BTY has excluded these costs and the values should be carried in a separate budget (if applicable).

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7.0 Additional Cost Items

The following items are not include in base estimate as below:

Items		Amt ($)
SP1	Site Remediation with Fuel Tanks Brought Above Grade	$500,400
SP2	CNG in Fleet Maintenance and Slo-fill for Fleet	$0
	(Fortis will install, operate and maintain the filling station. 10-year contract based on $0.7*0.75/L depends on consumption)	
SP3	EV Charging Stations (Large Truck)	$1,602,300
SP4	Replacement of Fire Training Grounds	$4,878,400

8.0 Areas

The gross floor area of the buildings and years as indicated in the program documents are summarized as follows:

Location	Total
Operations and Workshops	9,832 m²
Indoor Building - Offices	2,771 m²
Outdoor Building - Parkade	2,257 m²
Total Building Area	**14,860 m²**
Total Outdoor Year Area exclduing Parkde (2,257 m²)	**40,949 m²**

9.0 Taxes

The estimate includes the Provincial Sales Tax (P.S.T.) where applicable.

The estimate excludes the Goods & Services Tax (G.S.T.).

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10.0 Project Schedule & Escalation

No cost escalation allowance has been included in the estimate. BTY strongly recommends that the client establish a separate budget to cover the escalation cost from the date of this estimate to the mid-point of construction for the project. Our current projected escalation rates are shown below.

	2019	2020	2021
Current BTY Group Forecast	6% - 8%	4% - 6%	3% - 4%

11.0 Pricing

The estimate has been priced at current rates taking into account the size, location and nature of the project. The unit rates utilized are considered competitive for a project of this type, bid under a stipulated lump-sum form of tender in an open market, with a minimum of five (5) bids, supported by the requisite number of sub-contractors.

The estimate allows for labour, material, equipment and other input costs at current rates and levels of productivity. It does not take into account extraordinary market conditions, where bidders may be few and may include in their tenders disproportionate contingencies and profit margins.

12.0 Risk Mitigation

BTY Group recommends that the Owner, Project Manager and Design Team carefully review this document, including exclusions, inclusions and assumptions, contingencies, escalation and mark-ups. If the project is over budget, or if there are unresolved budgeting issues, alternative systems/schemes should be evaluated before proceeding into the next design phase.

Requests for modifications of any apparent errors or omissions to this document must be made to BTY Group within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

It is recommended that BTY Group design and propose a cost management framework for implementation. This framework would require that a series of further estimates be undertaken at key design stage milestones and a final update estimate be produced which is representative of the completed tender documents, project delivery model and schedule. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. BTY Group is unable to reconcile bid results to any estimate not produced from bid documents including all addenda.

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13.0 Contingencies

13.1 Design Contingency

No design contingency has been included in the estimate to cover modifications to the program, drawings and specifications during the design.

13.2 Construction Contingency

No contingency has been included in the estimate for changes occurring during the construction period of the project. This amount may be expended due to site conditions or if there are modifications to the drawings and specifications.

14.0 Documents Reviewed

The list below confirms the information that we have reviewed in order to prepare our opinion contained within this report:

	Description	Date
Reports		
	Working Paper #2: Operational Review & Space Needs	April 18, 2019
	Working Paper #3: Redevelopment Options	June 18, 2019
	RPG Notes	July 4, 2019

APPENDIX I

Cost Plan

3 PAGES

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People to count on.
Knowledge to build with.

City of Nanaimo - Operations Yard Redevelopment **July 08, 2019**
Program Estimate #1.0

Description	Quantity	Unit	Rate	Amount
B1 ***Demolition / Site Preparation***				
Existing Site - 4.7ha				
Allowance for demolition of the existing buildings / structures	1	sum	450,000.00	450,000
Allowance for removal of the existing paving and capping off the existing utilities	1	sum	853,000.00	853,000
Allowance for site preparation including stripping of top soil, and general site regrade	47,400	m2	22.50	1,066,500
Adjacent Sites - 0.8ha & 0.5ha				
Allowance for demolition of the existing buildings / structures	1	sum	250,000.00	250,000
Allowance for removal of the existing paving and capping off the existing utilities	1	sum	325,000.00	325,000
Allowance for site preparation including stripping of top soil, and general site regrade	12,800	m2	33.00	422,400
Environmental Costs				
Allowance for removal of asbestos and contaminated soils	1	sum	1,000,000.00	1,000,000
Total Demolition / Site Preparation				***$4,366,900***

BTY GROUP **A1-1**

City of Nanaimo - Operations Yard Redevelopment **July 08, 2019**
Program Estimate #1.0

Description	Quantity	Unit	Rate	Amount
B2 *Buildings & Structures*				
Indoor Building - Crews, Shops, Stores, Crew Operations and Workshops				
Industrial buildings - steel frame pre-engineering structure with energy efficient envelope design (single storey, metal cladding, double high spaces, metal roofing, minimum windows) and standard interior finishes	9,832	m2	3,850.00	37,853,200
Indoor Building - Offices				
Commercial building - steel frame structure with energy efficient envelope design (2 storeys, panel cladding, membrane roofing, curtain walling) and high-end interior finishes	2,771	m2	4,500.00	12,469,500
Outdoor Building - Parkade				
Above grade parkade for staff parking - concrete frame multi-storey building - total 49 stalls	2,257	m2	3,600.00	8,125,200
Extra over for Horticulture to roof	492	m2	350.00	172,200
Total Buildings & Structures				***$58,620,100***

BTY GROUP **A1-2**

City of Nanaimo - Operations Yard Redevelopment **July 08, 2019**
Program Estimate #1.0

Description	Quantity	Unit	Rate	Amount
B4 ***Phasing Allowance for keeping the existing Works Yard in operation during construction***				
Outdoor Yards - Store Outdoor, Works Yard, Parking & Fleet Equipment				
Allowance for outdoor yards including heavy duty hard paving, outdoor lighting, misc. pits and curbs, barriers, misc. metal structure, canopies, fencing & gates (total 43,026 m2, excluding the above grade parking of 2,257 m2)	40,949	m2	275.00	11,261,000
Allowance for site development Retaining walls Street furniture Driveways Hard & soft landscaping On-site utilities	1	sum	1,500,000	1,500,000
Total Phasing Allowance for keeping the existing Works Yard in operation				***$12,761,000***

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