Fairwinds Resort Community
Schooner Cove
Neighbourhood Plan Servicing Report
November 26, 2009

Introduction

This report has been prepared as part of the Neighbourhood Planning Process for Fairwinds Resort Community, Schooner Cove Neighbourhood, to provide details of the proposed servicing for the development area. The site servicing is for the planning area within the Schooner Cove Urban Containment Boundary (UCB) identified in the Regional District of Nanaimo's (RDNs) Regional Growth Strategy. It has a plan area of 46,338 m^2 (11.45 acres) located on the water front on the Nanoose Peninsula at the southern edge of the Cove east of Dolphin Drive. It should be noted in reading this report to refer to the enclosed concept plans for neighbourhood water distribution, sanitary sewer collection, rain water collection system, and street hierarchy as Drawings numbered 9919-051-120, -122, -124, and -126, enclosed at the rear of this report.

Expansion of the RDN's and Ministry of Transportation and Infrastructure (MOTI) infrastructure will be needed to accommodate development in the Schooner Cove Neighbourhood Plan (SCNP) area. Future servicing will satisfy the functional demand created by planned population growth.

Background information and reference details are contained in the separate Fairwinds Resort Community, Schooner Cove Existing Servicing Inventory Report, October 2009, and its Drawings numbered 9919-051-119, -121, -123, and -125.

Reference should also be made to the Fairwinds Resort Community, The Lakes District, Existing Servicing Inventory Report, October 2009 and to Drawings No. 9919-017-124, -126, -128, and -130, enclosed at the rear of that report.

Water Servicing

1. Supply

The existing supply of water to the marina at Schooner Cove, Schooner House apartments and adjacent lands on Outrigger Road is under the previous Nanoose Local Service Area (LSA) portion of the now integrated Regional District of Nanaimo (RDN) Nanoose Bay Peninsula Water Service Area (NBPWSA) system. Originally supplied from Enos Lake under the Eagle Heights private water utility system, source supply was changed to groundwater from wells in the vicinity of Northwest Bay Road and Claudet Road when the RDN took over operation of the system in approximately 1977.

Water supply beyond that previously available from the Nanoose LSA for the former Schooner Cove Hotel (on Lot A) and the 50-unit allowance for previously approved development on Lot C, would be from new sources.
Supply of water for the Fairwinds urban containment boundaries as identified within the RDN's RGS should be the responsibility of the RDN through a combination of groundwater from wells and surface water through the Arrowsmith Water Service (AWS). Fairwinds Resort Community (Fairwinds) is charged a Development Cost Charge (DCC) to cover water supply, transmission and bulk storage from the AWS system. Earlier phases of AWS included construction of the Arrowsmith Dam water storage facility, construction of an increased volume Industrial Park Reservoir (a joint venture with the City of Parksville), capacity increase at the downstream site of the existing City of Parksville intake, supply main extension along Northwest Bay Road to Nanoose Road, plus metering and interim pumping facilities along this main route.

The RDN has continued to develop some extra groundwater, to support some losses of capacity from its existing wells through a combination of deteriorating quality and diminishing yields. This is also required to be maintained as the RDN is obligated to supply a percentage of groundwater supply in accordance with the AWS agreement. Concurrently, the City of Parksville and the Town of Qualicum Beach have continued to develop their independent local groundwater sources at a rate to meet development growth demands, allowing a postponement of their AWS supply need. This has delayed completion of the full AWS system, which was initially planned to have a new intake, treatment needs, and distribution piping system phased into full operation during the years 2007 to 2009, for full supply volume availability by this time. Instead, the site and construction of the intake and treatment plant, and necessary connecting works, remain in the earliest concept stage with pre-design study recently having commenced.

Fairwinds has been advised by the RDN that AWS source supply cannot be expected before the year 2015. Even then, there is no guarantee that date will stand. For Fairwinds development to continue to proceed before increased AWS bulk water is available, the RDN has advised that Fairwinds has to find, pay for, and connect additional groundwater source to support the additional development, in accordance with RDN standards.

As a second and interim option for water supply as described in this report, it is assumed that additional wells are required to support the planned build-out of Fairwinds UCBs, and that with improved conservation measures as detailed herein, water use per new unit well below present bylaw requirements will be achieved. There is an existing well supply of 380 imperial gallons per minute (Igpm) capacity connected to the system, documented as supporting the existing 702 units of previous Fairwinds development. Recent well exploration by Fairwinds on property southeast of the Terrien Road intersection with Northwest Bay Road (known as the "Madrona Well Site" but now called the Wall Brook Well Site) has produced a total theoretical capacity rating of 479.6 Igpm. This would support an additional 1,115 new units based on the RDN bylaw requirement of 0.43 Igpm/unit.

The additional units supported by the recently constructed "Madrona 7 Well", on the Wall Brook Well Site, can supply the RDN requirement for existing approved Fairwinds subdivision. The Wall Brook Well Site could support new development of the Lakes District and Schooner Cove Neighbourhoods. Beyond the 1,115 new units, supply would be from AWS, or additional groundwater sources. Groundwater availability would need to be from sources close to the existing Northwest Bay Road trunk supply main or from the Island Highway area.

Due to a delay in implementation of adequate AWS water supply to support ongoing Fairwinds development, initial phases of the development would be supplied from the Wall Brook Well Site. Existing drilled wells on this site would be connected to the water system at Fairwinds' cost, in accordance with the terms of a recently completed Letter of Intent (LOI) agreement between the RDN and Fairwinds. Water supply for future redevelopment and development of the SCNP beyond the needs of agreed existing and proposed water demands would be in accordance with this concept.

2. Water Demand for Schooner Cove Neighbourhood

Water demand requirements for the Schooner Cove Neighbourhood will be considerably less than that indicated in the current (outdated) RDN Bylaw 500 Water Standards. Current demand requirements are based on an older RDN statistic of around 2.4 to 2.5 people per housing unit (ppu), derived from the typical more rural housing within the RDN areas beyond municipal boundaries. This also almost exclusively based on single family style of housing. In contrast, the proposed SCNP UCB development is targeted to be urban style, with a mixture of multi-family units and low-impact neighbourhood commercial development. The current Statscan data, showing existing Fairwinds area development at 1.9 ppu for multi-family is to be assumed for the SCNP. Based on the 1.1 m^3/person/day maximum day demand adopted in the RDN Nanoose System Integration Water Study Review, February 2007, design maximum day water demands of 0.32 Igpm/unit for multi-family development are obtained for design purposes. Commercial demands will be calculated based on anticipated water-use from fixture-unit count following detailed design, to be formalized based on actual recorded flow records over the first two years of full operation of the applicable commercial space.

As the SCNP development will adopt many modern water-saving methods and Team Watersmart philosophy, actual multi-family unit water demands should prove to be even lower. With the reduction in irrigation water-use achieved in well-planned multi-family developments, demand per capita should be even further lowered from the design flows shown above.

3. Water Storage

Water storage reservoirs provide peak demand storage and fire demand storage for the SCNP. Water storage is supplied from the NBPWSA Dolphin Beach, Eagle Heights, and Beachcomber Reservoirs. As detailed in the RDN Nanoose System Integration Water Study Review, February 2007, a future additional reservoir of 660 m^3 size will be needed

on the Nanoose Peninsula when system population reaches 9,250 people (in approximately year 2028). This will satisfy the full storage needs of the entire Nanoose Peninsula, including this Neighbourhood, to build-out.

The additional required capacity will be located at the existing Arbutus Reservoir site. It is understood that the RDN has recognized the need to renew the aging Arbutus Reservoir in the future. With this in mind, cost recovery will be established for all future Nanoose development (including the SCNP) and existing system users to share in costs for construction of an integrated larger new reservoir with two separate cells, for operational flexibility. Timing of construction would be in the 2015 to 2020 year range, well ahead of the projected year 2028 requirement, advanced as needed to co-incide with the need to replace the existing structure. Alternatively, a new reservoir could be built with 660 m^3 capacity adjacent to the existing old tank, which would be replaced separately at the end of its useful life.

Upsizing of the existing Arbutus Pump Station and Pressure Reducing Valve (PRV), located at the intersection of Fairwinds Drive and Anchor Drive, will also be required in conjunction with an increase in Arbutus Reservoir size.

4. Water Pressure Zones and Water Distribution Mains

Drawing No. 9919-051-120 – Water Distribution System Concept, illustrates the proposed water distribution system for the SCNP. The water distribution mains are installed in extensions of the existing varying pressure zones, to provide appropriate operating pressures throughout the neighbourhood. The pressure zones are designated by the static pressure head in metres, generally based on the normal reservoir full water level, known as the hydraulic grade line (HGL). Actual system pressures drop as reservoir levels fluctuate, particularly for taller, standpipe-type of storage reservoirs. Peak-use pressures in the water distribution system also drop as a result of pipe friction causing pressure losses between the system reservoirs or pumps and the point of water use. Sometimes, where practical or necessary for provision of adequate service, additional supporting flow is provided to a pressure zone through pressure reducing valves (PRVs) (which supply water to lower ground areas from a higher HGL pressure zone).

Improved supply to the SCNP can be provided from the 85 m HGL Pressure Zone 1A, through new connections off existing adjacent watermains. Properties on Outrigger Road outside the SCNP, and Schooner House condominium, would continue to be supplied from the 65 m HGL pressure zone, served from the three system reservoirs named Beachcomber, Eagle Heights and Dolphin Beach, all with common top water levels of 65 m elevation. Twin pressure reducing valves on Andover Road reduce the Fairwinds Reservoirs 125 m Pressure Zone 2 to 85 m HGL Pressure Zone 1A, to provide suitable service to the low-lying areas of Fairwinds. Secondary pressure reducing valves on Dolphin Drive near Sherbrooke Road provide an additional feed to this zone, to maintain pressures at peak demand periods. Due to the proximity of this improved pressure zone, improved service to the SCNP will be achieved through obtaining new connections off

this zone. The 20 m higher head provides a static pressure of just over 100 psi at the 10 m site elevation.

Water mains and service connections within the neighbourhood will be installed in conjunction with the network of roads, other services, and building construction. Pipe sizing will be checked by hydraulic network analysis as the design stage approval submissions are made for each of the various development phases. All works will be designed and constructed in accordance with the applicable RDN bylaw standards in effect at the time.

5. Water System Operation and Maintenance, and Fire Protection

Following completion of development phase or building servicing as applicable, all water system infrastructure, including that within strata properties, will be turned over to the RDN to carry out operation and maintenance under the integrated NBPWSA. This will include all water system distribution piping and services to the meter box location, meters, fire hydrants and flushouts, air valves, and any other water system appurtenances. The operation and maintenance agreement extends to strata properties, in which the RDN has appropriate registered rights-of-way to allow necessary access. Similar rights-of-way and access provisions are provided for mains within back and side yards of private properties and, where necessary, along the frontages and elsewhere within strata developments where mains and fire hydrants are often located beyond the road allowance. This permits localized metering and smaller looped mains to be installed, providing improved water quality through looping, and simplified maintenance considerations by removing much of the infrastructure from development or strata responsibility. It also ensures health and safety responsibility under the Health Act is designated to an authority experienced, qualified, and insured to carry out the task.

Fire protection from existing and additional fire hydrants to be suitably located with development in the SCNP will be provided by the Nanoose Volunteer Fire Department, from its firehall on Nanoose Road. Buildings will include fire retardant materials and fire demand reduction construction, to reduce exposure factors and consequent design fire flows. Detailed fire flow requirements will be calculated during building detailed design, in accordance with the Fire Underwriter Survey as required by the RDN bylaw standards. Fire flows will be planned from the existing hydrant at the north side of the intersection of Dolphin Drive / Outrigger Rd./ Redden Rd. and additional hydrants as agreed with input from the Nanoose Volunteer Fire Department.

Sanitary Sewer System

1. Background

Fairwinds sanitary sewage flows, including those from the existing development within the SCNP and Schooner House condominium, are presently directed to the Nanoose Water Pollution Control Centre (WPCC) at the west end of Dolphin Lake. The existing

primary treatment plant, built and paid for by Fairwinds, has a capacity of 1,250 units, and is owned and operated by the RDN. The existing RDN Liquid Waste Management Plan for Nanoose shows the next expansion of the WPCC to be using secondary treatment processes. In accordance with the existing Fairwinds servicing agreement with the RDN, start on design for the expansion is timed at 1,100 total contributing units, to allow the plant construction to be completed by the 1,250 unit level. This lot count includes flow contributions from initial phases of the SCNP.

The RDN is presently completing a Liquid Waste Management Plan (LWMP) for Nanoose, to better determine future needs. This includes a review of the most suited location for a secondary-level treatment plant for the entire anticipated service area, which has been recommended in the Nanoose OCP. In addition to the current Nanoose WPCC site, it is believed that other more central sites for treatment, which are located in a less urbanized area, will be reviewed. As construction of the new plant at a more central and rural site is both a preference for the Fairwinds SCNP and The Lakes District neighbourhoods, and is in the best interest of existing Nanoose developed areas, Fairwinds will work with the RDN to achieve this concept.

Fairwinds contribution towards the cost of treatment facilities beyond the 1,250 unit level will be by way of Development Cost Charges (DCCs), in accordance with a Bylaw to be implemented by the RDN. Multi-family and commercial development (as applicable to SCNP development properties) DCCs will be charged at the time of building permit issue, when the exact building floor area or number of housing units as applicable can be accurately determined.

2. Sewer Design Flows for the Schooner Cove Neighbourhood

The RDN anticipates updating its sanitary sewer design standards in year 2010. It is assumed that this will allow for the significant reduction in inflow and infiltration component which has been achieved in new systems. This has occurred with gasketed PVC pipe and improved manhole construction, complemented by video inspections of pipe and manhole interiors at initial construction and one year later. System design should also be based on pipes flowing 90% full at peak capacity.

For the SCNP, where water-use reduction and green conservation will be fully integrated into the housing and commercial units, reduced sanitary sewage flows will be achieved. Due to the expected demographic distribution of the development, suiting more mature residents with many retired or partly retired with home-based businesses, times of peak sewage discharge are more spread out than in a typical urban setting, reducing peak-flow factors. This will be allowed for in developing pipe and pump station design flows, for facility sizing. As for water demand prediction, sewage flows will be based on 1.9 ppu for multi-family units, for the LDNP. Commercial development sewage flows will be calculated based on anticipated flow from fixture-unit count following detailed design.

Offsite sanitary facilities will be reviewed with RDN input during detailed design with allowance being made for possible future units contributing flow from outside the

Fairwinds UCB, leading to the existing Nanoose WPCC. This would be accounted for in facility sizing, with the oversizing component (and possibly proportional unit-benefit costing) eligible for latecomer fee collection if these areas proceed within the time frame allowable (presently within 15 years of the agreement date). As obtained from existing RDN reports on potential sewering of the existing properties adjacent to the SCNP alongside Dolphin Drive, 351 units from Dolphin are potential additional flow contributors to the SCNP offsite servicing. This additional allowance is subject to future confirmation and direction from the RDN. Allowance for such flows along alternative routing would be included in reviewing an off-site location for the new and upgraded WPCC.

3. Proposed Sanitary Sewer Collection System and Services

Drawing No. 9919-051-122) – Sanitary Sewer Collection System Concept illustrates the proposed system for the SCNP. Conceptual routing is shown for future gravity sewers and flow directions leading to the existing sanitary sewer pump station on Dolphin Drive. The recently installed gravity sewer extension on Outrigger Road has been designed to meet present needs, and has a capacity for over 500 total units, which is sufficient to meet the anticipated increased flow from adjacent development and redevelopment land. Sanitary sewer pump stations at low points within the development areas, and sanitary sewer forcemains from the proposed pump stations to their point of discharge to the gravity flow system, are shown schematically.

SCNP sewer flows connect to the existing adjacent trunk sewer on Dolphin Drive, from where mains and pumping stations are already suitably sized for delivery to the NWPCC. Sizing review of the existing pump stations would be required to confirm any upgrading needs. The two stations on Dolphin Drive and Schooner Cove Drive have been designed as triplex pump stations. Their construction has included most of the controls and sizing to suit the ultimate three pumps, but only two pumps are currently installed in each station. The third pump was anticipated for (re) development at the Schooner Cove neighbourhood at a level exceeding the 250 Igpm capacity of the two pumps, and for full connection of the existing, unsewered areas along Dolphin Drive with incorporation into the Fairwinds Sanitary Sewer Local Service Area.

An overall sanitary sewer model will be developed during the first phase of the SCNP design, to establish facility sizing in all areas beyond the immediate phase and ensure that any oversized facilities are appropriately planned for and constructed. This model would then be updated as the various phases proceed to design stage approval, when additional details confirming development units, exact grades, routing, pipe lengths, and manhole locations are finalized. The model would include mains, service connections, and pump stations within the SCNP and facilities leading to the Nanoose WPCC.

Detailed drawings will be produced at the design stage approval for each phase of the SCNP development. These show gravity sanitary sewer mains to which the individual building services connect, with manholes for inspection and maintenance purposes. Manholes are located at road intersections and other junctions, bends, significant grade

changes, and at maximum 120 m spacing on straight runs to suit operation and maintenance parameters. Cleanouts are installed on the upstream end of mains with shorter length or those having few service connections, where manholes are not necessary. Inspection chambers, cleanouts or manholes will be installed as applicable at the interface between the RDN piping and the private building piping. Gravity sanitary sewer mains lead to pump stations located at the low point of each sub-system. A pressure main (forcemain) from each pump station moves the collected sewage to the next suitable downstream gravity sewer main, from sub-system to sub-system, until it is delivered to the Nanoose WPCC. Forcemains have air release valves installed at any high points along their length to release any sewage gases, with blowdowns at low points for flushing of any sediment build-up.

All piping, appurtenances and pump stations, including those on private property, are to be turned over to the RDN following completion of each phase or building for the SCNP development servicing. The RDN carries out operation and maintenance under a Local Service Area arrangement. This agreement extends to the strata properties, over which appropriate registered rights-of-way in favour of the RDN would be provided to allow necessary access.

Rain Water Management

1. Stormwater Collection System

Drawing No. 9919-051-124 – Storm Sewer Collection System Concept illustrates the proposed rain water management system for the SCNP. The piping systems flow to the adjacent Strait of Georgia and Schooner Cove.

The stormwater facilities for the SCNP will be owned and maintained by the Ministry of Transportation and Infrastructure (MoTI). Piped storm sewers with manholes that are complemented by ditches and swales, all built to normal municipal standards following the Department of Fisheries and Oceans (DFO) Urban Stormwater Guidelines as approved by MoTI, will be installed within the SCNP.

An overall Stormwater Management Plan and a Hydrological Assessment will be undertaken in accordance with the RDN policy and commitments in the Environmental Impact Assessment. This will be developed during the first phase of the SCNP design and will include a stormwater hydraulic network model to establish facility sizing, which will be updated as the various buildings and development phases proceed to design stage approval, when additional details confirming exact grades, routing, pipe lengths, and manhole locations are finalized.. Integration and cross-referencing with the appropriate environmental consultant of the design team will be included.

Rights-of-way and access provisions will be established to allow MoTI access for maintenance, for mains and drainage courses which cross the developed property within the SCNP. All other drainage facilities within strata developments, including piped storm

sewer systems away from the through-drainage course, and all catch basins, will remain the responsibility of the strata to own, operate, and maintain.

2. Stormwater Discharges

Rainwater from storm sewer service connections, roadway gutters and parking lot catch basins, site area lawn basins, parking areas, and public plaza areas will be directed to the piped storm sewer mains. 'Green' stormwater management methods and facilities will be utilized where possible, and subject to approval of the proposed Project Specific Street Standards, to make the most use of natural infiltration and detention in reducing high runoff flows to complement traditional rainwater drainage facilities.

On-site detention of rainwater flows will be utilized if determined to be needed during the Hydraulic analysis, to avoid concentration of outlet flows. This would be achieved through use of methods such as on-site tank and pipe storage systems, on-site infiltration ground beds, and road and boulevard subgrades constructed of natural or imported angular clean rockfill which can also function as detention areas.

Where an individual development site has a large paved area, where 20 or more exterior at-grade parking stalls are being created (typically over 500 m^2 paved), an oil/water separator will be installed on the system. A separator will also be installed for each underground parking lot, to be installed downstream of its entrance drainage grating. These separators will be used to remove oils and grit from the off-site discharge to remain within acceptable design levels.

Outrigger Road west-end storm drainage will be directed towards Dolphin Drive, leading to Schooner Cove. Drainage from site development of the waterfront land parcels and upland roadways will be piped directly to the adjacent Strait of Georgia. The status of the present older drainage outlet from Dolphin Bay Road and existing drainage rights-of-way controlled by MoTI will be investigated. It is likely that upgrading, modernizing, and perhaps upsizing of this outlet will be required.

The major discharges at the downstream ends of main site development areas should have a temporary pond or tank installed to provide primary sediment removal and detention, with a control outlet, in accordance with Ministry of Environment (MoE) standards. This would be installed during the early stage of immediately upstream site development, and remain in place until approximately 75% of the building and final landscaping has been completed in its tributary area.

Temporary covering of exposed soils, interim ground cover, and inlet siltation-control measures should be carried out during all site development construction, to limit sedimentation and siltation of storm flows or excessive turbidity until final site landscaping is complete. Some temporary site tankage may be needed to assist in silt and sediment reduction, with removal of deposited material between storm events. It is the responsibility of the contractor to follow environmental laws during the construction work. Green solutions should be used wherever practical.

Road Network

1. Background

DrawingNo. 9919-051-126 – Conceptual Road Network shows the proposed roadway network for the SCNP. Residential local streets will access and service the new development, connecting to the adjacent Dolphin Drive collector road. Re-alignment and new construction of a portion of Outrigger Road and right-of-way is included. An emergency-access road, providing secondary access and egress, will also be installed. Construction ot the integrated network of roads and land parcel accesses, including re-alignment on Outrigger Road, will occur with appropriate planned phasing as the SCNP development proceeds.

Fairwinds, Schooner Cove Neighbourhood, is accessed off Highway 19 via Northwest Bay Road from two trunk roads, Powder Point Road which becomes Fairwinds Drive, and Stewart Road which becomes Dolphin Drive with access and looping through the existing development site. In accordance with Ministry of Transportation (MoTI) requirements for network roads to the development, Fairwinds Drive was completed in conjunction with the first phase of Fairwinds, to provide a looped trunk road. Future MoTI requirements include the completion of Schooner Cove Drive as the second trunk road through the site, as development of The Lakes District Neighbourhood proceeds.

2. Road Standards

Project-Specific Street Standards are being considered by MoTI for use in the SCNP area of Fairwinds, in response to the designation as an Urban Containment Boundary (UCB) for more urban development, local topography and environmental conditions. Improved pedestrian sidewalks, along and parallel to Dolphin Drive will be included.

Dolphin Drive was constructed prior to any Fairwinds development, approved to earlier and less stringent MOTI design standards. The right-of-way width is 20 m, with an additional 2.5 m dedication width having been acquired each side of the existing boundary from new development in adverse terrain. The MoTI District Development Office presently requires this widening as a 2.5 m wide no-build covenant adjacent to Dolphin Drive along the frontage of the SCNP, in lieu of a full dedication of additional width. This would allow widening of the roadway, its shoulder, or parallel pathway or utilities over the private property in the future, if needed by the MoTI.

Sidewalks

It is understood that Fairwinds is pursuing an arrangement under which the RDN would assume maintenance responsibility of sidewalks, given its designation of Fairwinds as an UCB. This would include sidewalks in the SCNP and The Lakes District, to be built in accordance with a Trail Management Plan that will be developed with the RDN.

As part of the detailed design for the SCNP, improved pedestrian sidewalks and adjacent streetlights will be installed along and parallel to Dolphin Drive, to meet the needs of the local development and the agreed overall Trail Management Plan. Re-development may provide an opportunity for a safe sidewalk or trail system along the Schooner Cove ocean frontage of Dolphin Drive, and the opposite side by the old quarry in this area, where wide shoulders presently provide relatively safe trail use over a limited roadway length.

Power Distribution

B.C. Hydro provides power distribution to Schooner Cove. Three-phase power is available off generally overhead pole lines on Fairwinds Drive, Dolphin Drive, and the existing constructed portion of Schooner Cove Drive. Existing three-phase BC Hydro services to the marina site and former hotel are provided from both Dolphin Drive and Outrigger Road.

As development in the SCNP proceeds, it should be decided whether to convert existing overhead three phase sections to underground service. Regardless of these considerations, underground service will be provided to all new units, to eliminate any further overhead distribution and service wiring. As part of redevelopment design, confirmation of adequate capacity and distribution requirements will be obtained from the utility company.

Gas Service

SCNP is provided with gas service from the Terasen Gas underground distribution system on Outrigger Road. All facilities will be underground, except for service entrance piping, the meter, and shutoff at the buildings' exteriors. Service requirements for the buildings will be determined during the detailed design stage for each building or phase, in discussion with the utility company, and construction arrangements finalized.

Telephone and Cablevision Service

SCNP lands are provided with telephone, cablevision, and internet service by Telus and Shaw Cablesystems. Proposed development will connect to the existing underground systems on Redden and Sherbrooke Roads at Dolphin Drive. Alternatively, the utility companies may require service from a new drop from a suitable pole, with pilasters installed for protection as the cabling runs down the pole into new underground conduits. As part of development detailed design, confirmation of capacity, routing, and servicing requirements will be obtained from the utility companies.

Streetlighting

Streetlighting and development-area lighting will be provided, using the modern 'dark sky' compliant lights. These have the lamp shielded from side view, directing most of the light downward towards the ground, and significantly eliminating glare towards oncoming vehicles and into adjacent residences and businesses. As energy-efficient LED lamps become available at viable cost, use of this style will be considered. The proposed lighting scheme and illumination levels for the new site development, in conjunction with adjacent roadway streetlighting, should be reviewed for satisfactory integration prior to installation of any additional lights.

The only existing streetlighting is provided at the west side of both the Redden and Sherbrooke Road intersections with Dolphin Drive, which were installed with the adjacent Fairwinds subdivisions. System extension to provide full suitable coverage will occur with development of the SCNP.

The proposed streetlight system within road rights-of-way will be approved, owned, and operated by the RDN as an extension of the existing Local Service Area (LSA) Utility, with charges levied against properties within the LSA. For limited areas along Dolphin Drive, with overhead BC Hydro distribution on poles, standard BC Hydro pole-mounted, ornamental streetlights are in place. These are each operated off local pole power, and have individual photocells to control operation during periods of darkness.
For building area, commercial areas, and development parking and driveway areas, lighting will be part of the building servicing, installed to the building designer's specifications, and owned and operated by the applicable individual strata corporation after its establishment.

Summary report prepared by:

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DRAFT

Nankivell Point

Schooner Cove

Strait of Georgia

0 40 120

SCALE, 1:2,000 (METRES)

SCHOONER HOUSE CONDOMINIUM

OUTRIGGER ROAD

DOLPHIN BAY RD.

DOLPHIN DRIVE

DOLPHIN DRIVE

PRV 5

PRV EX

CAP AND ABANDON EXISTING WATER SERVICE.

REDDEN ROAD

SHERBROOKE ROAD

KOERS & ASSOCIATES ENGINEERING LTD.
Consulting Engineers

FAIRWINDS

SCHOONER COVE NEIGHBOURHOOD PLAN CONCEPTUAL WATER DISTRIBUTION SYSTEM CONCEPT

LEGEND

- FAIRWINDS URBAN CONTAINMENT BOUNDARY
- SCHOONER COVE NEIGHBOURHOOD BOUNDARY
- WATER DISTRIBUTION MAIN
- FUTURE WATER DISTRIBUTION MAIN
- PRV 1 — PRV = PRESSURE REDUCING VALVE
- PRESSURE ZONE STATIC HEAD, 65m HYDRAULIC GRADE LINE
- PRESSURE ZONE STATIC HEAD, 85m HYDRAULIC GRADE LINE
- PRESSURE ZONE STATIC HEAD 125m HYDRAULIC GRADE LINE

9919–051–120

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Strait of Georgia

Schooner Cove

SCHOONER HOUSE CONDOMINIUM

OUTRIGGER ROAD

DOLPHIN BAY RD.

DOLPHIN DRIVE

REDDEN ROAD

SHERBROOKE ROAD

0 40 120

SCALE, 1:2,000 (METRES)

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Consulting Engineers

FAIRWINDS

SCHOONER COVE NEIGHBOURHOOD PLAN CONCEPTUAL SANITARY SEWER COLLECTION SYSTEM CONCEPT

LEGEND

- FAIRWINDS URBAN CONTAINMENT BOUNDARY
- SCHOONER COVE NEIGHBOURHOOD BOUNDARY
- PROPOSED GRAVITY SANITARY SEWER
- PROPOSED PUMPED SANITARY SEWER
- EXISTING GRAVITY SANITARY SEWER
- EXISTING PUMPED SANITARY SEWER
- ARROW DENOTES FLOW DIRECTION
- EXISTING SANITARY CAPPED STUB
- PROPOSED MANHOLE / CLEANOUT
- EXISTING MANHOLE / CLEANOUT
- PS EX — EXISTING SANITARY PUMP STATION
- PS P — PROPOSED SANITARY PUMP STATION

9919-051-122

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FAIRWINDS

SCHOONER COVE NEIGHBOURHOOD PLAN CONCEPTUAL STORM SEWER COLLECTION SYSTEM CONCEPT

LEGEND

- FAIRWINDS URBAN CONTAINMENT BOUNDARY
- SCHOONER COVE NEIGHBOURHOOD BOUNDARY
- FUTURE STORM DRAIN
- EXISTING STORM DRAIN
- ARROW DENOTES FLOW DIRECTION
- EXISTING DITCH FLOW DIRECTION
- MANHOLE / CLEANOUT
- OGS — OIL / GRIT SEPERATOR

N

0 40 120

SCALE, 1:2,000 (METRES)

Nankivell Point

Schooner Cove

Strait of Georgia

SCHOONER HOUSE CONDOMINIUM

OUTRIGGER ROAD

DOLPHIN BAY RD.

DOLPHIN DRIVE

REDDEN ROAD

SHERBROOKE ROAD

DRAINAGE DIRECTED TO WATER FEATURE

DRAINAGE DIRECTED THROUGH RAIN GARDEN

9919-051-124

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Nangivell Point

Schooner Cove

Strait of Georgia

SCHOONER HOUSE CONDOMINIUM

OUTRIGGER ROAD

DOLPHIN DRIVE

DOLPHIN BAY RD.

DOLPHIN DRIVE

REDDEN ROAD

SHERBROOKE ROAD

N

0 40 120

SCALE, 1:2,000 (METRES)

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FAIRWINDS

SCHOONER COVE NEIGHBOURHOOD PLAN CONCEPTUAL ROAD NETWORK

LEGEND

- FAIRWINDS URBAN CONTAINMENT BOUNDARY
- SCHOONER COVE NEIGHBOURHOOD BOUNDARY
- COLLECTOR
- MINOR COLLECTOR
- LOCAL RESIDENTIAL STREET
- EMERGENCY ACCESS ROAD

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