

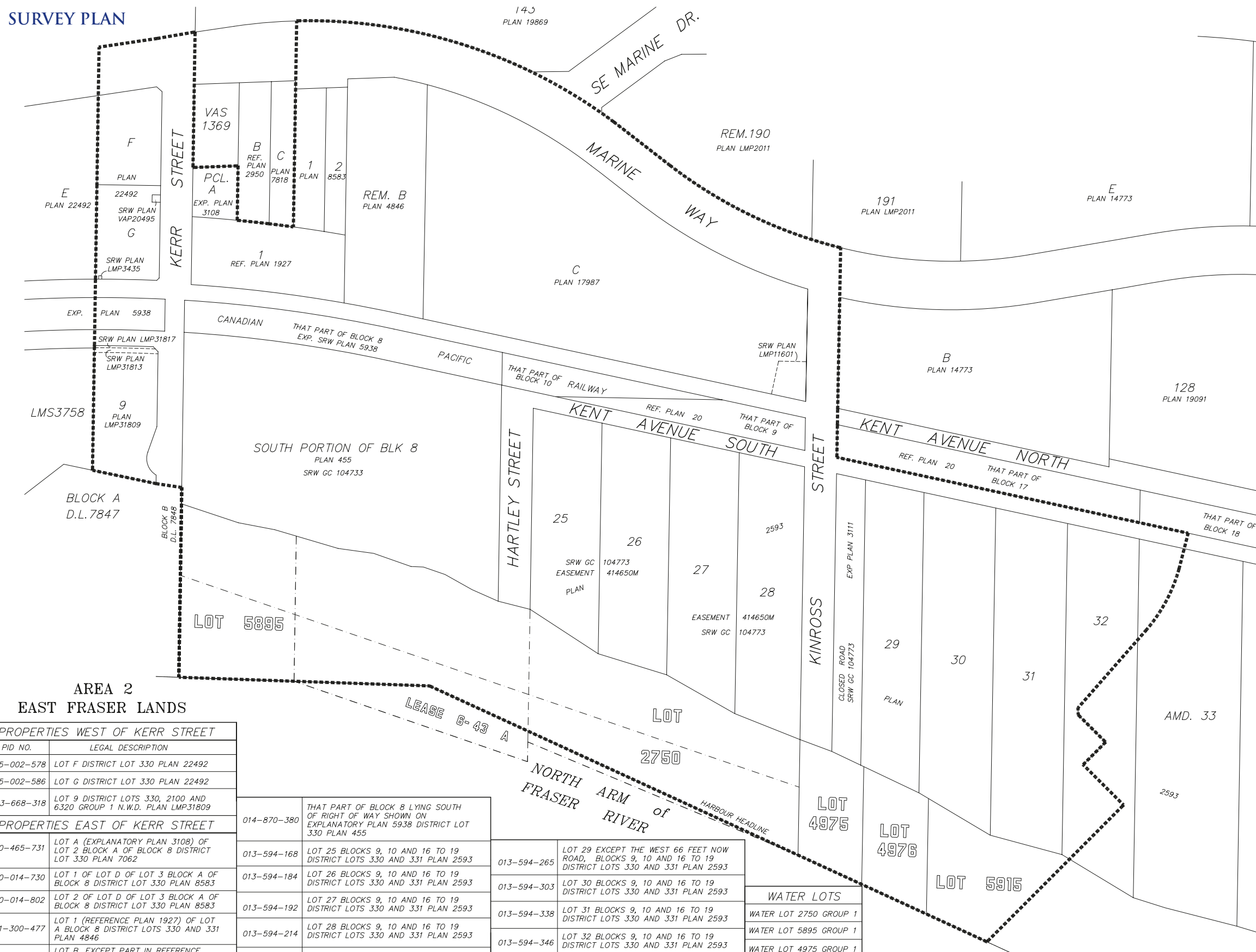


APPENDICES

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SURVEY PLAN



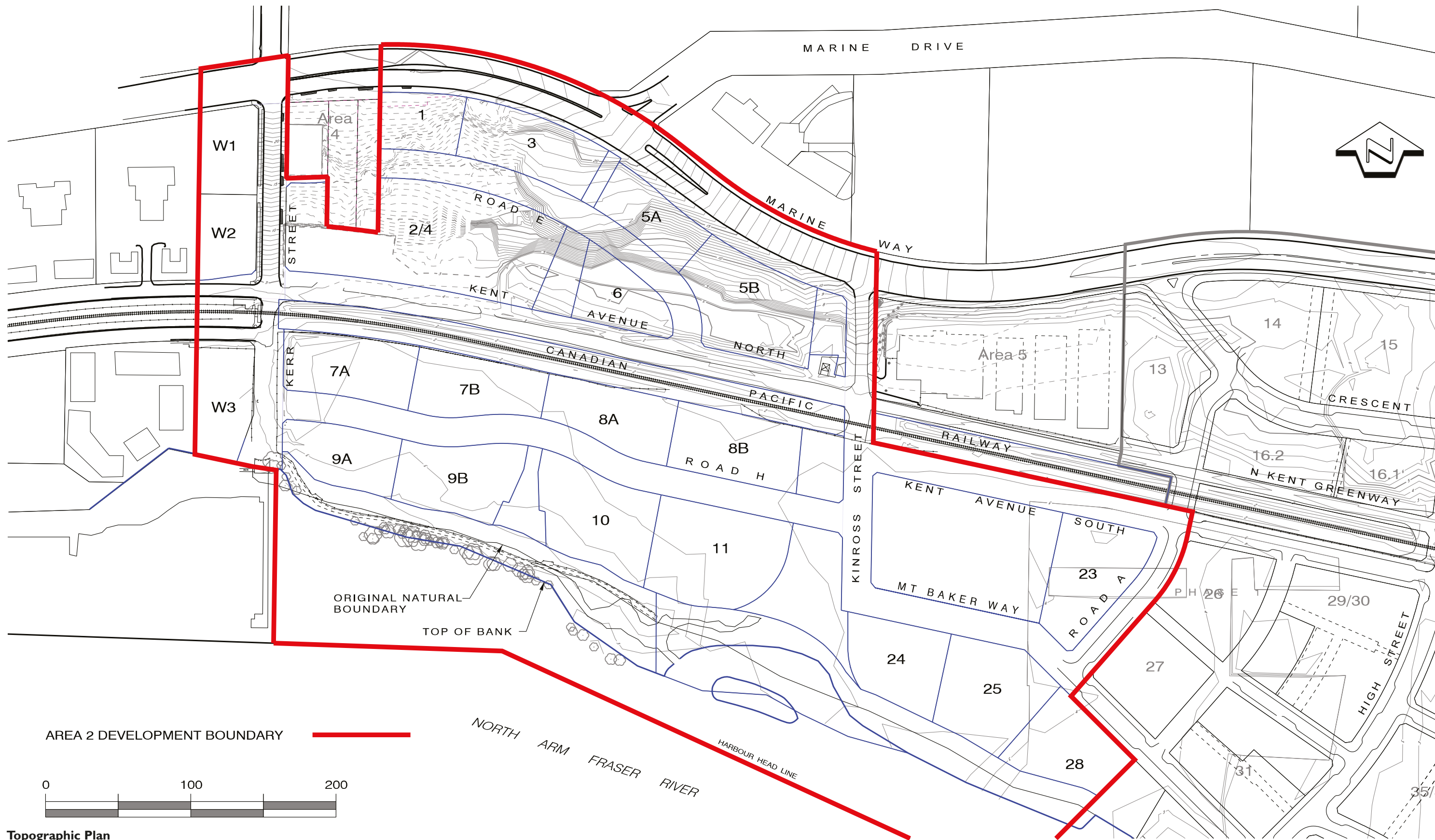
**AREA 2
EAST FRASER LANDS**

PROPERTIES WEST OF KERR STREET		PROPERTIES EAST OF KERR STREET		WATER LOTS	
PID NO.	LEGAL DESCRIPTION	PID NO.	LEGAL DESCRIPTION	PID NO.	LEGAL DESCRIPTION
015-002-578	LOT F DISTRICT LOT 330 PLAN 22492	014-870-380	THAT PART OF BLOCK 8 LYING SOUTH OF RIGHT OF WAY SHOWN ON EXPLANATORY PLAN 5938 DISTRICT LOT 330 PLAN 455	013-594-265	LOT 29 EXCEPT THE WEST 66 FEET NOW ROAD, BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593
015-002-586	LOT G DISTRICT LOT 330 PLAN 22492	013-594-168	LOT 25 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593	013-594-303	LOT 30 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593
023-668-318	LOT 9 DISTRICT LOTS 330, 2100 AND 6320 GROUP 1 N.W.D. PLAN LMP31809	013-594-184	LOT 26 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593	013-594-338	LOT 31 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593
PROPERTIES WEST OF KERR STREET		013-594-192	LOT 27 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593	013-594-346	LOT 32 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593
010-465-731	LOT A (EXPLANATORY PLAN 3108) OF LOT 2 BLOCK A OF BLOCK 8 DISTRICT LOT 330 PLAN 7062	013-594-214	LOT 28 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593	013-594-419	AMENDED LOT 33 (SEE 53754K) BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593
010-014-730	LOT 1 OF LOT D OF LOT 3 BLOCK A OF BLOCK 8 DISTRICT LOT 330 PLAN 8583	013-594-770	THE CLOSED PORTION OF KINROSS STREET SHOWN ON EXPLANATORY PLAN 3111 BLOCKS 9, 10 AND 16 TO 19 DISTRICT LOTS 330 AND 331 PLAN 2593		
010-014-802	LOT 2 OF LOT D OF LOT 3 BLOCK A OF BLOCK 8 DISTRICT LOT 330 PLAN 8583				
011-300-477	LOT 1 (REFERENCE PLAN 1927) OF LOT A BLOCK 8 DISTRICT LOTS 330 AND 331 PLAN 4846				
011-301-155	LOT B, EXCEPT PART IN REFERENCE PLAN 10523, NOW ROAD, BLOCK 8 DISTRICT LOTS 330 AND 331 PLAN 4846				
007-236-417	LOT C DISTRICT LOT 330 PLAN 17987				

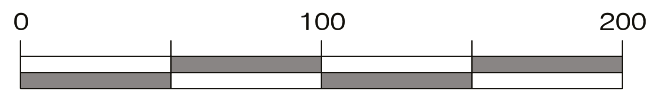
Existing Legal Plan

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TOPOGRAPHIC PLAN



AREA 2 DEVELOPMENT BOUNDARY



Topographic Plan
1:2500

3.0 FIRE PROTECTION AND FIRE FIGHTING PROVISION

This section will provide a general description of fire protection/fire fighting provisions for Area 2 of the East Fraserlands (EFL) development (also refer to the attached Fire Access & Fire Fighting Provisions Concept drawing as part of this section). This section will also provide a brief outline of the contemplated construction-types for the various parcels, as they are currently shown on the Area 2 Rezoning Area block plans. All references in this section to the "EFL site" will be to the Area 2 area only.

The overall site will be serviced by two existing VFRS fire halls; Hall No. 17 located at 7070 Knight Street and Hall No. 5 located at 3090 East 54th Avenue. Since both of these fire halls are located relatively close to the EFL site, it is anticipated that the fire department response time will be less than 5 minutes (once a signal is received). For fire department/emergency access, the EFL site will be well served by a network of new and existing roadways with a total of 3 existing and 3 new signalized intersections on Marine Way, that will connect with 3 new surface-level crossings over the existing CPR line (2 crossings within Area 2 as illustrated on the attached plan).

All new roadways will be designed in accordance with City of Vancouver Engineering Department standards and the minimum requirements of the Vancouver Building By-law 2007 (VBBL) for fire department access, as referenced in Articles 3.2.5.5. and 3.2.5.6. of the VBBL and further clarified in the City of Vancouver Bulletin 2003-010-BU, "Building By-law Guidelines for Fire Fighting Provisions". The main roadway criteria for access routes or streets providing fire fighting access to the various buildings on the EFL site, will be:

- Access provided to within not less than **3.0 m (10 ft.)** but not greater than **15 m (50 ft.)** of the principal entrance or entrances to each building,
- Minimum clear width of **6.0 m (20 ft.)** exclusive of vehicle parking on sides of roadways,
- Turning radius not less than **12 m (centerline radius)**,
- Maximum gradient of not more than 1:12.5 over a minimum distance of 15 m (which is intended to avoid extreme crests or dips on roadways),
- Provided with a solid, all-weather driving surface (i.e., **asphalt, concrete or other solid material**) and designed to support the expected fire fighting vehicle loads, and
- Provided with turnaround facilities for any dead-end portion of the access route greater than **90 m** long.

In addition to the above, all buildings on the site will be protected with a system of automatic sprinklers in accordance with the applicable sprinkler design standards referenced in the VBBL and this feature will provide a high level of fire protection and life safety for individual buildings in the overall development.

As illustrated on the attached site plan, the majority of the new buildings to be located on the site will be directly accessible and facing a minimum of one street, in accordance with the fire access/fire fighting provision criteria for sprinklered buildings (i.e., facing one "street"). This will typically be the case for any multi-storey residential building, with the main exception being some of the smaller "side-by-side" townhouse buildings (or row houses) located within the Parcel 2, 4 and 6 areas of the site (proposed locations for these smaller building types have been highlighted on the reduced site plan drawing).

It is noted that the majority of the proposed building types comprising the Area 2 parcels will be residential buildings, with the exception of one commercial building located in the W3 parcel. In some cases, the larger residential parcels may also incorporate multiple components including a "high building" residential tower component that will be served by

a separate private entrance/elevator lobby for the tower. This multi-component residential design may necessitate the use of a fire alarm system sequencing/operation strategy, whereby the Fire Department will be directed to the specific building component in alarm, to enable more efficient emergency response to a specific address.

Small Building Types with "Cut-off" Access

In conjunction with the detailed design of these primarily housing components, a fire department access and fire fighting concept will be developed which will be consistent with the VBBL criteria for "cut-off" buildings, such as in-fill and row housing referenced above. Typical access route features that will possibly be included in this concept are outlined below:

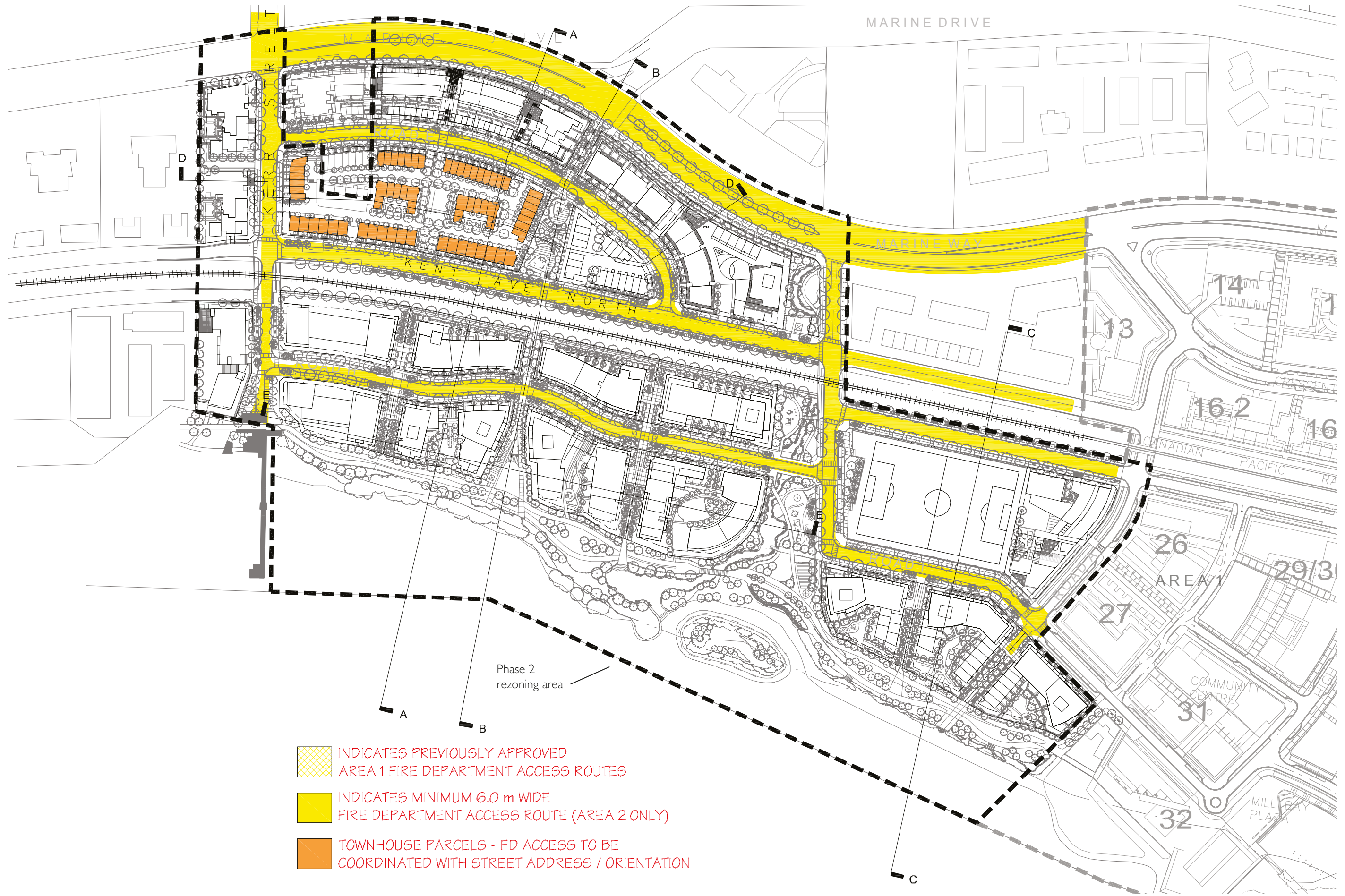
- The maximum unobstructed path of travel for firefighters from the fire department response point (i.e., pumper vehicle staging area) to the entrance(s) of the cut-off building will not exceed 45 m (150 ft.) and the path of travel will be required to be a solid unobstructed surface not less than 2 m wide,
- The fire department response point for each cut-off building area will need to be coordinated with the above-noted travel distance as well as the building addressing location and fire fighting installations for the "cut-off" building as noted below,
- Each "cut-off" building component will be provided with its own fire fighting equipment and provisions, such as remote fire alarm annunciator/control panel (exterior; weather-proof type), siamese connection for sprinkler systems and graphic signage for orientation purposes, and
- Exterior strobe lights connected to the fire alarm system serving each building will be installed in the vicinity of the exterior entrance doors to each suite/unit, in order to provide a visual indication of an alarm during a fire condition within a specific unit.

In conclusion, the fire fighting/fire protection criteria and concepts outlined above for the East Fraserlands Project, will be reviewed and discussed with the City of Vancouver and Vancouver Fire Rescue Services as the Project proceeds further through the Rezoning and Development Permit process.

General Building Classifications

As noted above, the larger residential parcels may also incorporate multiple components including a "high building" residential tower component that will be served by a separate private entrance/elevator lobby for the tower. Consequently, the building area/building height of each separate building component will need to be considered in determining the applicable construction, fire and life safety requirements in accordance with the VBBL (including the additional requirements for high buildings > 18 m high as referenced in Subsection 3.2.6.).

It is anticipated for the purely residential buildings not exceeding 6-storeys in building height (i.e., no mixed-use component), that wood-frame construction will be utilized for the above-grade construction, in accordance with the recent B.C. Building Code changes and subject to City of Vancouver adoption of these changes (further discussion with City staff required). In addition, some of the mixed-use parcels may incorporate a "high building" residential tower component that will require that specific building area to consist of noncombustible construction (i.e., reinforced concrete). All buildings will be provided with automatic sprinkler protection in accordance with the applicable NFPA 13 standard and standpipe systems will be provided for all buildings exceeding 3 storeys in building height.



- INDICATES PREVIOUSLY APPROVED AREA 1 FIRE DEPARTMENT ACCESS ROUTES
- INDICATES MINIMUM 6.0 m WIDE FIRE DEPARTMENT ACCESS ROUTE (AREA 2 ONLY)
- TOWNHOUSE PARCELS - FD ACCESS TO BE COORDINATED WITH STREET ADDRESS / ORIENTATION

4.0

GEOTECHNICAL STRATEGY

Site Location

The former White Pines sawmill site on the south side of Kent Avenue is a flat, industrial development and the existing site grades are generally below the City of Vancouver's flood proofing elevation of 3.6 metres geodetic. The City of Vancouver's lands on the north side of Kent Avenue and on Marine Way are undeveloped and covered with mature trees and dense undergrowth. These properties are relatively flat with grades around 2 to 6 metres geodetic, while the property on the north side of Marine Way at Boundary Road contains grades that range from 6 to 14 metres geodetic.

Ground Conditions

The site is located along the southern flanks of the Burrard Uplands geologic area in East Vancouver. Information on subsurface conditions was obtained during Golder Associates 2003 Geotechnical Drilling Program. Additional site investigation was conducted by GeoPacific Consultants in May and July of 2005 and in May 2009. The northern fringe of the site is underlain by dense tills or dense pre-glacial near the ground surface. The till-like soils dip down towards the south and are overlain by fluvial sediments deposited by the Fraser River. These Fraser River sediments are recent post-glacial deposits that are normally consolidated and increase in thickness towards the south.

The soil profile at the site consists of fill over natural soils which consist of hogfuel or peat over low plastic silt to clayey silt over silty to clean sand then dense pre-glacial sand or glacial till. Along the south side the dense sand and glacial till are over 30 metres deep and these areas are underlain by layered silts and sands and normally consolidated marine silts. The static groundwater table is approximately 2 metres below grade and is expected to vary seasonally and tidally closer to the Fraser River.

Site Preparation

The concept plan consists of mixed heavy concrete high rises through to wood framed townhouses and other low rise condominium type buildings. The parcels would be accessed by new on-site roads and parking areas.

The portion of the site south of Kent Avenue is a former saw mill and thus we expect that there will be areas where significant amounts of wood waste may be buried. In addition, the fill soils are underlain by topsoil, peat, and other wood debris. The organic soils will be removed and replaced with compacted mineral fills. This work would likely precede filling of the land to flood proofing elevations. As well, the organic soils would be removed from beneath all road and building areas prior to development. Roads and services would be constructed on fill soils or native soils in conjunction with residential and commercial building construction.

Buildings**Zone 1 Sites**

High-rise buildings at the north side of Marine Way can be constructed using conventional foundations. A groundwater cut-off wall may be required for excavations below the water table.

Mid-rise and low-rise buildings can be constructed on pre-loaded and densified ground after the peat has been removed, or on piles with no ground improvements.

Zone 3 Sites

All types of buildings can be supported at the north end of the site on pile foundations.

Along the south end, pre-loading and removal of the near surface peat soils would be required for all types of buildings.

High-rise buildings can be constructed on raft foundations after pre-loading and ground densification has been completed.

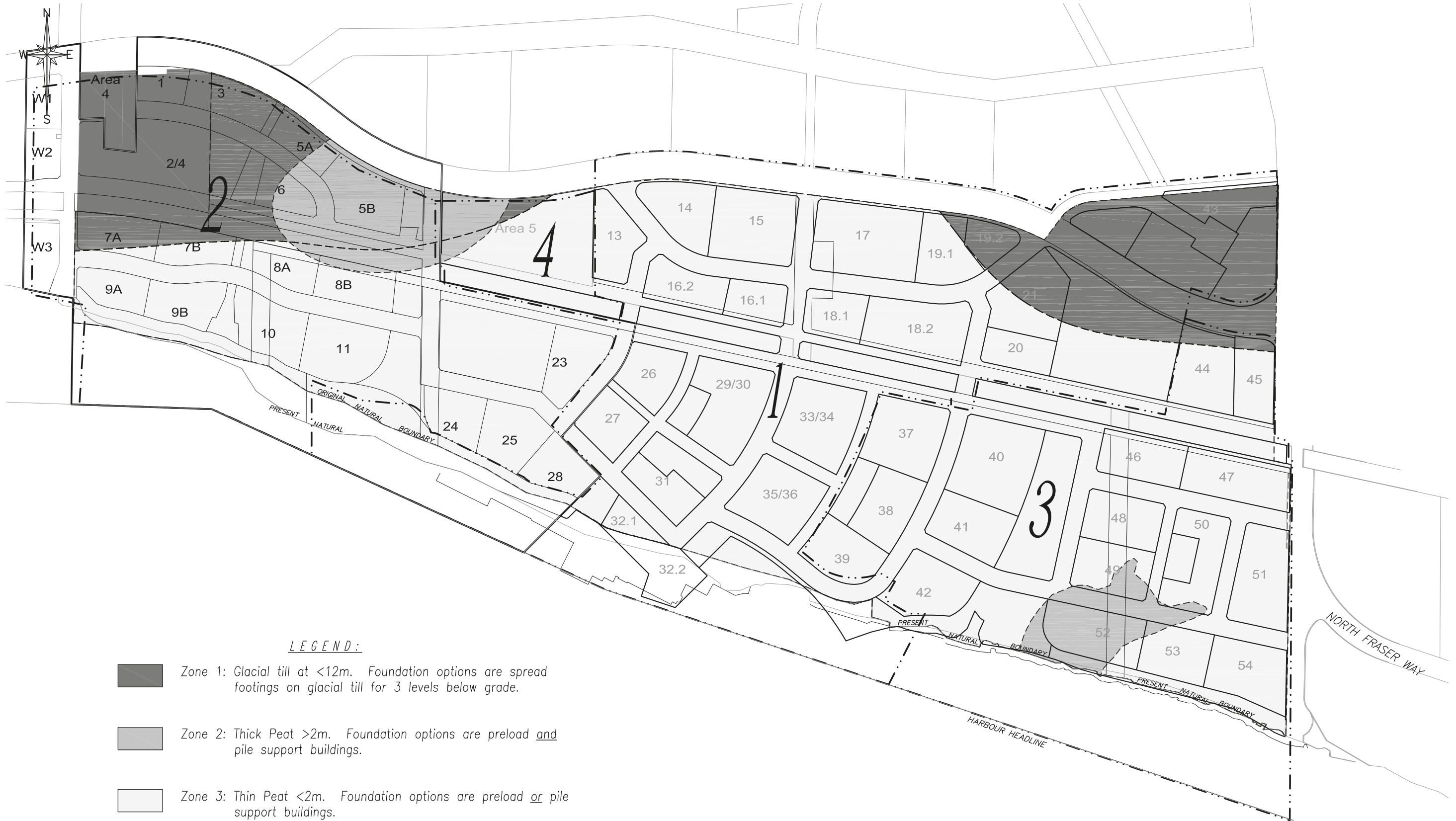
Low-rise buildings can be constructed at grade on pre-loaded ground using conventional foundations. Below grade parking would require ground improvements and raft foundations.

Mid-rise buildings constructed at grade, or with one level of underground parking would require to be constructed on pre-loaded and densified ground after the peat has been removed.




Seismic Considerations

The site contains some thickness of Fraser River sediments, mainly silts and sands with local peat. Some of the sands and non-plastic silts are loose and therefore prone to softening under seismic-induced ground shaking. Liquefaction can be expected to occur below a depth of about 3.0 metres in the soil profile, where the soils are mainly sandy. A seismic dyke will be constructed along the southern perimeter of the site to limit the amount of soil movement during a seismic event. Buildings constructed on the dense glacial till on the north side of the site are not liquefiable and will not require special foundations.

Light structures constructed over thick mineral fills will not likely require special foundations as there is sufficient thickness of non-liquefiable soil (fill and native deposits) to preclude punching of foundations. Mid-rise to high-rise buildings would require ground improvement and/or special foundations to meet the serviceability requirements of the 2005 National Building Code.



LEGEND:

-  Zone 1: Glacial till at <math>< 12\text{m}</math>. Foundation options are spread footings on glacial till for 3 levels below grade.
-  Zone 2: Thick Peat >2m. Foundation options are preload and pile support buildings.
-  Zone 3: Thin Peat <math>< 2\text{m}</math>. Foundation options are preload or pile support buildings.

Geotechnical Zone Plan
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