



Kootenay Lake Development Permit Area Review

Kootenay Lake Buffer Analysis

List of Acronyms

DP – Development Permit

EDPA – Environmental Development Permit Area

ESDP – Environmentally Sensitive Development Permit

GSC – Geodetic Survey of Canada Datum

MFLNRORD – BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development

OCP – Official Community Plan

QEP – Qualified Environmental Professional

RAPR – Riparian Areas Protection Regulation

RP Bio – Registered Professional Biologist

SPEA – Streamside Protection and Enhancement Area

WDP – Watercourse Development Permit

Background

Riparian areas are defined as “the areas bordering streams, lakes, and wetlands that link water to land. The blend of streambed, water, trees, shrubs and grasses directly influences and provides fish habitat” (BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development – MFLNRORD). They typically span about 30 metres upland of the natural boundary of a watercourse but can be much larger depending on the complexity of the ecosystem. Riparian areas are highly valuable ecosystems that maintain stream health and productivity by providing:

- sources of large organic debris, such as fallen trees and tree roots;
- areas for stream channel migration and flooding;
- vegetative cover to help moderate water temperature;
- food, nutrients and organic matter to the stream;
- stream bank stabilization; and
- buffers for streams from excessive silt and surface run-off pollution (MFLNRORD, 2021).

Preservation of riparian areas is crucial, as they provide critical fish and wildlife habitat, migratory corridors for wildlife, and play a pivotal role in preventing shoreline erosion and flooding by absorbing and dissipating wave energy.

There are two distinct areas within the same physical space that are often referred to as the riparian area but are different:

1. The Streamside Protection and Enhancement Area (SPEA), which is comprised of the land adjacent to a stream that links aquatic to terrestrial ecosystems and is capable of supporting streamside vegetation. The SPEA is critical in supporting fish and fish habitat. Its size varies and is determined by the characteristics of the stream itself and the areas adjacent to it. Typically on Kootenay Lake the SPEA can range in size from 15 to 30 metres.
2. The floodplain, which is designated for lands where flooding may occur. Specific to Kootenay Lake, the floodplain is designated as all areas adjacent to the Lake that are below 536.5 metres GSC (above sea level) and/or 15.0 metres upland from the natural boundary of the Lake.



Floodplains are designated under Section 524 of the *Local Government Act* for the purpose of identifying flood hazard areas & reducing the risks of building within/near them. While they provide regulatory guidance to the same physical space as riparian areas, and may prevent development within the SPEA, their purpose is to protect private property and human safety and not necessarily the natural environment. Designating a floodplain can only prevent a floor system or landfill required to elevate a floor system from being located within the floodplain. Other land alteration activities within the SPEA are not prevented by the *Regional District of Central Kootenay Floodplain Management Bylaw No. 2080, 2009*. Designating an Environmental Development Permit Area (EDPA) under Section 488 of the *Local Government Act* is the appropriate mechanism for regulating land alteration activities within the riparian area.

Regulatory Environment

At the Provincial level, the *Riparian Areas Protection Regulation (RAPR)* protects riparian areas by requiring an assessment by a Qualified Environmental Professional (QEP) or Registered Professional Biologist (RP Bio) prior to development or disturbance. However, the *RAPR* only applies in certain parts of the Province, and the RDCK is not one of them.

In the RDCK, the responsibility to ensure development above the natural boundary of a watercourse is sensitive to the natural environment falls largely on local governments. The RDCK has Watercourse and Environmentally Sensitive Development Permit (WDP/ESDP) Areas designated in the Official Community Plans (OCPs) for Electoral Areas 'A', 'D', 'E', 'G', and 'H' to help protect riparian areas. The existing EDPA's require the Provincial *RAPR* to be used as the standard for QEPs to evaluate development activities within riparian areas.

The physical area that the WDP/ESDP Areas cover, as measured from the natural boundary of a watercourse, varies between OCPs as follows:

- 15 metres – Electoral Areas 'A' (ESDP) and 'E' (WDP);
- 30 metres – Electoral Areas 'D' and 'H' (WDP); and,
- Dependant upon watercourse – Electoral Area 'G' (WDP). The WDP Area covers 30 metres for larger creeks, rivers and lakes, and 15.0 metres for smaller watercourses and wetlands.

The purpose of EDPA's is not to prohibit development adjacent to watercourses; rather, it is to ensure that development activities are undertaken in a way that is consistent with a community's expectations, which should be embedded into an EDPA's guidelines. Specific to an EDPA for watercourses, such as Kootenay Lake, this usually means carrying out development in a way that is sensitive to the surrounding riparian area. Generally, the preference is to direct development away from riparian areas where suitable building sites are available to do so.

While it is preferred to avoid disturbance of riparian areas altogether, development within them is not prohibited. On smaller or otherwise constrained sites, development within a riparian area may be the only option available. However, requiring a Development Permit (DP) ensures professional oversight by a QEP to understand and recommend mitigation strategies to minimize impacts to sensitive riparian areas and the SPEA when development takes place.

Implementation Challenges

There have been a number of implementation challenges since the WDP and ESDP Areas were introduced, including (but not limited to):

- General awareness of the WDP and ESDP Areas and the requirement for a DP prior to works along Kootenay Lake's shoreline.
 - Can be addressed in part through outreach and public education.

- Awareness naturally increases over time where a climate exists that has normalized DP requirements.
- A ‘willful blindness’ or knowingly completing works without a permit.
 - Can be addressed through strict enforcement of the EDPAs and penalties for works completed without permit such as: complete remediation of disturbance at the expense of the property owner, increased permitting fees for DPs triggered by non-compliance, and in extreme cases legal action.
- Having clear EDPA guidelines and exemptions that are understandable to the layperson, pragmatic, and not overly officious.
 - Can be addressed by laying out expectations for development directly in the guidelines rather than referencing the *RAPR*.
 - Better representing community values in EDPA guidelines.
 - Offering more flexibility for minor works within the EDPA.
 - Keeping EDPA content simple and including more technical detail of requirements in the Terms of Reference for Riparian Assessment Reports.
- Inconsistent applicability of EDPAs on Kootenay Lake across Electoral Areas (15 m in Areas ‘A’ and ‘E’; 30 m in Area ‘D’; and, no EDPA for Area ‘F’).
 - Can be addressed by having a consistent application of an EDPA based on the characteristics of a watercourse, which is the case for Area ‘G’. For example, Kootenay Lake having a 30 m wide EDPA would result in greater consideration of riparian areas and less SPEA loss.
 - Large creeks or adjacent areas with increased flood risk could have a larger EDPA, whereas smaller ones with lower flood risk could have a smaller EDPA adjacent to them.

The last implementation challenge in the list has led to the question: what is the appropriate size of an EDPA adjacent to Kootenay Lake?

While a 30 m wide EDPA would be more consistent with environmental conservation best practices and is common elsewhere in the Province (all areas where *RAPR* applies), there is a concern that it would limit the development potential of properties around the Lake that have significant size and topographical constraints. However, having a 15 m EDPA or no EDPA in place at all will, and has, led to a permanent loss of the SPEA over time as well as the normalization of building within the 15 m floodplain. This results in the permanent loss of natural fish and wildlife habitat as well as greater susceptibility to the impacts of climate change by reducing the natural environment’s ability to mitigate flooding and sequester carbon (riparian areas are massive sponges for both water and carbon).

To address the question of what the appropriate size of an EDPA for Kootenay Lake is, a buffer analysis of Kootenay Lake was completed as part of the Kootenay Lake Development Permit Area Review. The analysis demonstrates the number of properties that could be affected by an EDPA, and what sorts of constraints would need to be considered for these properties. It will ultimately be used to inform the recommended size of the EDPA (15 m or 30 m) surrounding Kootenay Lake, what kinds of guidelines the EDPA will contain, and how impacts to constrained properties can be minimized through guideline and exemption design.

Parcel Classification

1723 parcels are included in the Kootenay Lake Analysis. Parcels are included based on whether they have a Parcel Identifier (PID) number. Although not all lands along the shoreline of Kootenay Lake have a PID number, the vast majority of private properties do, making it a suitable metric to base the analysis off of.

Contemporary development is seen as impractical on a single parcel of land less than 250 m² (2691 ft²) in area. There will be challenges developing properties this small regardless of whether they fall within an EDPA. As such, parcels smaller than 250 m² were removed from the analysis, as they typically have either buildings spanning over a number of contiguous parcels with the same owner or are consolidated with adjacent properties when developed. These parcels are characteristic of subdivisions from the late-19th to early-20th century and are commonly found in settlement areas like Lardeau and Ainsworth Townsite.

Parcels within the incorporated areas of the Village of Kaslo and City of Nelson were also removed from the analysis, as they are subject to the Development Permit Areas in those communities' OCPs.

For the purposes of the analysis, parcels along Kootenay Lake are classified as:

- Very small – 250-600 m² (approximately 0.06-0.15 acres)
- Small – 601-1000 m² (approximately 0.15-0.25 acres)
- Medium – 1001-4000 m² (approximately 0.25-1.0 acres)
- Large – larger than 4000m² (larger than 1.0 acre)

The relationship between a parcel's size and how it is classified from 'very small' to 'large' is based on what the typical limitations to shoreline development would be. It is not based on the size of the parcel relative to other parcels, as a 'small' parcel in the rural context is likely to still be able to accommodate a buildable area entirely outside of the SPEA or WDP/ESDP Areas.

The classes are used to understand how many individual parcels have size constraints when evaluating shoreline development regulations.

Analysis

Designated setback areas are incorporated into the analysis recognizing that, ideally, development would avoid these areas. As a large portion of the area surrounding Kootenay Lake is unzoned, the following minimum required setbacks are used:

- 4.5 m from front property line (MoTI minimum);
- 2.5 m from interior property lines (typical minimum spatial separation under BC Building Code); and,
- 15.0 m from natural boundary (Floodplain Bylaw).

The average minimum width of the smallest parcels in the analysis is about 10 m while the average minimum depth of these same parcels is about 25 m. The minimum site area required for front and interior property line setbacks would be on average 45 m² and 125 m², respectively. As such, 170 m² is subtracted from the total area of parcels that falls outside of the riparian area to understand exactly how much area is available for a building envelope. The 15 m floodplain setback is not factored into the analysis because it is already included within the 15 m and 30 m buffer areas.

Parcels are thought to exhibit site constraints where it is not possible to accommodate a 93 m² (1000 ft²) building envelope outside of the 30 m riparian area and designated setback areas. Other factors, such as site topography, are not considered as they would require more complex analysis. As such, the number of constrained parcels in areas where topographical limitations are present is not captured in the analysis.

Already developed parcels are less likely to be subject to hardship as a result of topographical constraints. Although topographical constraints were not analysed for each parcel, details on the development status (developed/undeveloped) of parcels is included in each classification to give a general idea of where topographical constraints may inflate the number of parcels impacted.

Very Small Parcels

There are 37 parcels along the shoreline of Kootenay Lake that are 250-600 m² (approximately 0.06-0.15 acres), representing about 2.2% of the parcels in the analysis. 26 of these parcels are constrained as they would be unable to accommodate a 93 m² (1000 ft²) building envelope entirely outside of a 30 m wide riparian area. The locations of these parcels and their development status is provided in Table 1 below.

Table 1 - 'Very small' parcels unable to accommodate a 93 sqm. building envelope outside of the riparian area.

Electoral Area	Developed Parcels	Undeveloped Parcels	Total
A'	0	0	0
D'	3	4	7
E'	9	1	10
F'	6	3	9
Total	18	8	26

14 of these 26 parcels would be unable to avoid disturbance within a 15 m wide SPEA. 10 of these parcels are already developed.

Small Parcels

There are 79 parcels that range from 601-1000 m² (approximately 0.15-0.25 acres) in size, accounting for 4.6% of parcels included in the analysis. 20 of these parcels are constrained. The locations of these parcels and their development status is provided in Table 2 below.

Table 2 - 'Small' parcels unable to accommodate a 93 sqm. building envelope outside of the riparian area.

Electoral Area	Developed Parcels	Undeveloped Parcels	Total
'A'	4	0	4
'D'	4	2	6
'E'	4	1	5
'F'	4	1	5
Total	16	4	20

2 of these 20 parcels would be unable to avoid disturbance within a 15 m wide SPEA. One of these parcels is already developed. It is also worth noting that the single undeveloped parcel in Electoral Area 'F' is under Provincial Crown ownership.

Medium Parcels

There are 724 parcels that are 1001-4000 m² (approximately 0.25-1.0 acres), which makes up 42% of all parcels included in the analysis. There are 28 constrained medium-sized parcels. A breakdown of their locations and development status is provided in Table 3 below.

Table 3 - 'Medium' parcels unable to accommodate a 93 sqm. building envelope outside of the riparian area.

Electoral Area	Developed Parcels	Undeveloped Parcels	Total
A'	3	1	4
D'	1	6	7
E'	9	4	13
F'	3	1	4
Total	16	12	28

One of the 28 parcels would be unable to accommodate a building platform outside of a 15 m SPEA. It is not currently developed but has an approved Floodplain Exemption (F1004E) and Development Permit (DP2003E).

Large Parcels

Parcels larger than 4000m² (larger than 1.0 acre) make up the majority of shoreline parcels in the analysis at 883, accounting for 51.3% of the parcels. All large parcels are able to accommodate a 93 m² (1000 ft²) building envelope entirely outside of a 30 m wide riparian area. The smallest area available for a building platform on a single large parcel is 611 m² (6577 ft²).

Analysis Summary

There were a total of 1723 parcels included in the Kootenay Lake Analysis, which account for the majority of privately-owned parcels along Kootenay Lake's shoreline (parcels without a PID are excluded). There are 74 parcels with size constraints, accounting for 4.3% of shoreline parcels. They are considered to be 'constrained', as they are unable to accommodate a 93 m² (1000 ft²) building envelope entirely outside of a 30 m wide riparian area. 17 of the 74 parcels (slightly less than 1%) would be unable to avoid development/disturbance within a 15 m wide SPEA based on their size. A summary of these parcels is provided in Table 4 below.

Table 4 - Summary of parcels in the analysis and number of constrained parcels.

Parcel Size	Number of parcels	(%)	Number of parcels unable to avoid:	
			30 m Riparian Area	15 m SPEA
Very Small (250-600 m ²)	37	2.2%	26	14
Small (601-1000 m ²)	79	4.6%	20	2
Medium (1001-4000 m ²)	724	42.0%	28	1
Large (+4000 m ²)	883	51.2%	0	0
Total Number of Parcels	1723	100.0%	74	17

50 of the 74 constrained parcels are already developed, and of the 17 parcels where disturbance or development within a 15 m wide SPEA is unavoidable, 11 are already developed. Under the *RAPR*, development may be permitted where a site is subject to "undue hardship" as defined in the *Regulation*. These 11 parcels, as well as 2 others that are undeveloped, likely qualify as sites subject to undue hardship and development could be permitted on areas that have already witnessed human disturbance.

There were six major clusters of constrained parcels observed in the analysis:

1. Ainsworth Townsite (Electoral Area 'D') – 11 parcels:
 - 4 are classified as 'very small'; 4 are 'small'; and, 3 are 'medium' sized.
 - 7 are developed, while the remaining 4 are undeveloped.
 - 4 have development spanning across multiple parcels.
2. Queens Bay on the east side of Highway 31 after the Balfour Golf Course (Electoral Area 'E') – 7 parcels:
 - All 7 parcels are classified as 'very small'.
 - 6 of the 7 parcels are developed.
 - It is unclear whether development spans across multiple parcels, as the canopy cover often obstructs the aerial view of structures.
3. South of Keiran Road (Electoral Area 'F') – 5 parcels:
 - All 5 parcels are classified as 'very small'.
 - 4 of the parcels are developed.

- BC Assessment data shows that 4 of the 5 parcels are under Crown Provincial ownership.
4. Kuskanook (Electoral Area 'A') – 3 parcels:
 - All 3 parcels are classified as 'small' and are already developed with development contained on single parcels.
 5. Green Road (Electoral Area 'E') – 7 parcels:
 - 4 parcels are classified as 'small' and 3 are 'medium' sized.
 - All 7 parcels are developed and none appear to have development spanning over multiple parcels.
 6. Procter Point (formerly Kootenay Lake Village, Electoral Area 'E') – 6 parcels:
 - All 6 parcels are classified as 'medium' sized.
 - 2 of the parcels are developed and the remaining 4 are undeveloped.
 - None of the parcels appear to have development spanning across multiple properties.
 - This cluster is explored in further detail in the section below.

Case Study – Procter Point (Kootenay Lake Village)

Procter Point (originally Kootenay Lake Village) is a strata subdivision with 32 shoreline parcels in Electoral Area 'E', in east Procter. It serves as a somewhat unique case as it was approved in 2007, prior to there being an OCP or EDPA's in place in Area 'E'. Additionally, it was approved when the previous Floodplain Management Bylaw (No. 1650, 2004) was in effect, which required a 7.5 m floodplain setback from Kootenay Lake opposed to the current 15 m setback.

Given the timing of the subdivision's completion (2007), only a small number of parcels were developed prior to there being an EDPA and larger floodplain setback in place. As such, how building platform areas would affect the SPEA and a 15 m floodplain on each property were not considered by the RDCK and the Provincial Approving Officer at the time of subdivision. In many cases building platforms were established partially or entirely within the SPEA and 15 m floodplain setback. Figure 2 shows the shoreline parcels in Procter Point as well as 15 m and 30 m buffers from the natural boundary of Kootenay Lake.



Figure 2 - Procter Point (Kootenay Lake Village).

Development of Procter Point has underscored two challenges in WDP implementation as a result of untimely regulation changes:

1. The change to the required floodplain setback from Kootenay Lake has led to the parcels most constrained by size and topography requiring site-specific exemptions to the Floodplain Bylaw.
2. The 15 m WDP Area often does not cover the entire SPEA. As an example, the three eastern-most parcels in the subdivision span across a 190 m long stretch of shoreline. Within that span QEP assessments have revealed that the SPEA ranges from 15 m at its narrowest point up to 30 m at its widest. As such, even when development takes place entirely outside of the current 15 m wide WDP Area (as has been the case on 11 parcels) it has likely led to a permanent loss of the SPEA and, as a result, a loss of fish and wildlife habitat in the area.

Such has been the case with the development proposals for 4 of the 6 most constrained properties in the subdivision, where permanent loss of the SPEA is unavoidable. These property owners have encountered issues with meeting the WDP Area Guidelines while achieving their preferred site layout and/or house design due to how the building platform areas were laid out at the time of subdivision. These properties may be considered consistent with the *RAPR* where they are subject to “undue hardship”. However, this would require a decision on every possible variance that would reduce impacts to the SPEA (ex. Front and side yard setback reductions, which are not regulated by any zoning).

Each strata lot, whether it is developed, its parcel area, and how much of the parcel would fall outside of required minimum setback areas as well as a 15 m and 30 m buffer area are shown in Table 5.

Table 5 demonstrates that many of the constrained sites (shown in **bold**) in Procter Point have already been or are currently going through the permitting process. It should be noted that topographical constraints along the access points to these properties, which often fall outside of the 30 m buffer, can further reduce the site area feasible for development. As such, the areas actually suitable for a building platform are likely smaller than those shown in the 15 m and 30 m buffer columns of Table 5.

The information in the Table provides a general sense of how many constrained sites have yet to see development. Outside of Strata Lots 31, 32, and 36, which are in process or have been approved but not yet developed, Strata Lots 19 and 21 remain as the most constrained undeveloped sites in Procter Point. These two parcels are likely to be subject to DP requirements and their development may result in a permanent loss to the SPEA, depending on where the building platforms were established following subdivision.

16 parcels are undeveloped without active permit applications in Procter Point. Aside from Strata Lots 19 and 21, none of the remaining undeveloped parcels exhibit the same severity of size constraints as those already approved for development or currently under consideration.

Table 5 - Procter Point (Kootenay Lake Village) Breakdown – sorted top to bottom by parcel area (m²).

STRATA LOT	DEVELOPED?	PARCEL AREA (m ²)	Area including setbacks (m ²) outside of:		Notes
			30m BUFFER	15m BUFFER	
21	NO	650	40	399	Constrained
22	YES	673	98	409	SFD outside 15m EDPA
23	YES	1001	253	651	SFD outside 15m EDPA
25	YES	1019	256	648	SFD outside 15m EDPA
2	NO	1055	335	838	-
19	NO	1065	90	608	Constrained
24	NO	1099	320	739	-
36	DP IN-STREAM	1121	50	505	DP2106E - Constrained
18	NO	1137	189	653	-
4	YES	1138	445	905	Approval pre-EDPA
32	DP APPROVED	1195	-170	79	DP2003E - Constrained
1	YES	1217	385	913	DP1601E
17	YES	1237	276	731	Approval pre-EDPA
15	NO	1255	417	862	-
16	NO	1282	376	862	-
26	NO	1402	168	747	-
31	DP IN-STREAM	1418	-58	516	DP2109E - Constrained
6	NO	1442	492	985	-
3	NO	1443	433	924	-
7	NO	1629	691	1209	-
20	YES	1754	-84	893	DP1507E - Constrained
5	NO	1759	737	1359	-
14	NO	1797	1016	1474	-
34 & 35	YES (34) NO (35)	1992	459	1313	SL34 SFD outside 15m EDPA
12	YES	2094	1610	1871	SFD outside 15m EDPA
8	NO	2115	857	1462	-
13	YES	2242	1624	2018	SFD outside 15m EDPA
33	YES	2686	827	1756	SFD outside 15m EDPA
10	YES	2910	1837	2280	SFD outside 15m EDPA
11	NO	2957	1779	2269	-
9	YES	3992	2631	3254	SFD outside 15m EDPA

Recommendations

Based on the results of the analysis, it is clear that there will be a small number of parcels along Kootenay Lake's shoreline that will be unable to avoid development within the SPEA. However, upwards of 90% of shoreline parcels on Kootenay Lake could avoid development within a 30 m wide buffer adjacent to Kootenay Lake, depending on their size. Additionally, upwards of 95% could likely avoid disturbance of the SPEA with development.

Given that the majority of shoreline parcels are able to achieve a site design that is sensitive to the riparian area and, in most cases, able to avoid the SPEA, a 30 metre wide EDPA for all of Kootenay Lake is recommended. Continuing to use a 15 metre wide EDPA, or no EDPA at all, will result in permanent loss of the SPEA and a

resulting loss in fish and wildlife habitat, as evidenced by the Procter Point Case Study. A 30 metre wide EDPA will ensure better alignment with environmental best conservation practices, the Shoreline Guidance Document, and result in less permanent loss of fish and wildlife habitat. It will also help to address a number of the top values and concerns identified in the initial public engagement phase of the Kootenay Lake DPA Review, including:

- Importance of the natural environment;
- Clean and abundant water;
- Maintaining healthy fish habitat; and,
- Reducing the impacts of development pressures, environmental degradation, and pollution and contamination.

For small, constrained properties that are pre-existing, flexibility within the EDPA guidelines can help to ensure that properties unable to avoid disturbance of the SPEA still have development opportunities. An example of a guideline that could be used to account for these situations is as follows:

Development or disturbance within the SPEA shall only be considered in instances where all of the following criteria are fulfilled:

- a) *The parcel was created by subdivision in accordance with the laws in force in British Columbia at the time the parcel was created;*
- b) *The applicant demonstrates that size or topographical constraints severely limit the ability to develop elsewhere on the property;*
- c) *Every alternative site and building design that could minimize the impact on the SPEA has been explored, which may include variances or reductions in all possible requirements (including, but not limited to, setbacks and height);*
- d) *Development is directed to areas already subject to human disturbance; and,*
- e) *On-site environmental values will be restored in accordance with a restoration plan prepared by a QEP or RP Bio.*

In the drafting of EDPA Guidelines, there will be a specific focus on subdivision to deter the continuation of harmful development patterns of the past. Ensuring all proposed lots are able to accommodate a buildable area that does not impact the SPEA prior to subdivision approval is one way to curb this issue.

The Kootenay Lake DPA Review will proceed giving careful thought to guidelines and exemptions that ensure a balance is achieved between protecting sensitive riparian areas and developing privately owned parcels along Kootenay Lake in a way that is practical.