# Terms of Reference
## Professional Reports and Technical Studies

## Introduction

The purpose of this document is to describe the general expectations for professional reports and technical studies that may be required as part of the development approval process. The Terms of Reference (TOR) contained in this document serve as a reference guide for property owners and developers to assist in determining the scope of work required by qualified registered professionals to meet the intent of District of Summerland bylaws.

Professional Reports may be requested to address the requirements of Development Permit, Rezoning, Subdivision or Building Permit applications to demonstrate how environmental and design objectives will be met. The overarching purpose is to ensure that the property is suitable for the use intended. The proposed development plans must reflect the results and recommendations of the assessment and provide a reasonable building, servicing and living envelope.

Applicants are encouraged to discuss TOR requirements with District staff early in the development application process to confirm parameters and clarify any requirements, especially where there may be circumstances unique to the specific development proposal, prior to commencing the professional reporting or study. The information contained within this document is intended as a guide only and may not be a comprehensive list of requirements. It is the responsibility of the applicant to work with the professionals engaged to coordinate the TOR of other agencies involved in application review, reference between multiple reports or studies, and/or recommendations. In all cases, qualified registered professionals need to prepare their reports through an integrative process whereby recommendations concerning one aspect of development (e.g. storm water management) are integrated with other aspects (e.g. fish habitat protection) to ensure there are no inconsistencies or conflicts in their recommendations. It is the responsibility of the applicant to confirm the specific requirements prior to initiating the assessment and to ensure that all applicable guidelines, policies, bylaws, master plans and other regulations are strictly followed.

The applicant may be required to register the professional report against the title of the subject property at the Land Title Office by way of a restrictive covenant to notify future property owners of site conditions and specific development requirements.

Other studies not listed in this document may be required as part of the development approval process. In such circumstances, staff will work with the applicant to develop TOR for the specific professional report or technical study as needed.

The requirements are detailed as follows:

**General**

1. Professional standards (applicable to all technical and professional reports)
2. Security (applicable to all remediation work)
3. Location of project and mapping

**Specific**

4. Geotechnical Assessment
5. Environmental Impact Assessment
6. Wildfire Hazard Assessment

## 1.0 Professional Standards

1. Reports are to be prepared by, signed and sealed by a Professional Registered in British Columbia (e.g. RPBio, PEng, MBCSLA, RPF, PGeo) and signed off within the document or by a covering letter bound into the document. A photocopy signature and seal is not acceptable; an original signed and sealed report will be retained in District files. The person and corporation who prepared the report and the person or corporation who provided the funding, or at whose request the report was prepared, must be identified.
2. The qualified professional personnel should include, at minimum, a Registered Professional with extensive experience in the Okanagan region and a familiarity with standard development and published Best Management Practices. The professional must be prepared to work within a comprehensive design process where the development proposal adapts to requirements from multiple approval agencies.
3. The report must reflect the site conditions prior to disturbance and the anticipated site conditions post development.
4. The report must acknowledge off-site developments (both existing and those permitted by current regulation) and the impact these developments may have on the subject site and adjacent lands.
5. The report must conform to all regional bylaws, federal and provincial legislation, regulations and standards.
6. The assessment must reference the legislative framework that triggers the Assessment (i.e. OCP Development Permit Area designation pursuant to Sections 488 to 491 of the *Local Government Act*; Section 86 of the *Land Title Act*, Building Permit pursuant to Section 56 of the *Community Charter*, etc.) and clearly describe any mitigation requirements that are necessary to ensure the land may be used safely for the use intended.
7. The assessment must consider and integrate all known relevant findings and recommendations from other studies completed or underway that relate to the site.
8. Where a report is deemed 'Incomplete or Deficient' by the Director of Development Services, the applicant will be notified in writing of the nature of deficiencies and the timeframe to resubmit the corrected assessment.
9. Methods used in the assessment must be repeatable and results based on agency or scientific standards appropriate to the landscape and scope of the development being assessed.
    a. All personnel working on the report and their contributions must be acknowledged.
    b. A one-page Biography or C.V. of each professional and technical staff contributing to the results and interpretations in the report must be included as an addendum.
    c. The level of effort in terms of personnel and time spent on site evaluations must be clearly stated including time of year and length of site evaluations. Site conditions likely to be absent during the period of evaluation need to be documented and assessed by alternative methods.
    d. All data and non-standard methods contributing to the results and interpretations contained in the report must be included in the report or in the appendices, either copies of hand-written field sheets or the data as entered in a digital format.

## 2.0 Security

If development conditions include mitigation, maintenance or monitoring plans, the applicant shall post maintenance or monitoring bonding or other security in a form and amount determined by the qualified professional and deemed acceptable by District staff. The security shall be sufficient to guarantee that all required mitigation measures will be completed and continue to function as prescribed. Security shall also be required for restoration of significant natural features and buffers (i.e. ecological corridors), which may or may not have been part of the mitigation or maintenance plan. The security shall be split into two (2) components: Performance Security and Maintenance Security.

## 2.1 Performance Security

Performance security guarantees the completion of the required work according to the contract terms and conditions. In the event that a developer or contractor defaults or does not complete the work as described in the contract, the funds will be available to finish the construction, prescribed environmental mitigation or compensation works.

## 2.2 Maintenance Security

Maintenance security may be required after construction to guarantee the performance and proper functioning of the works (e.g. to protect against design defects and/or failures in workmanship) and to guarantee regular and adequate maintenance throughout the identified maintenance period. Maintenance security may be used to correct any faulty work on the part of the contractor or to replace of defective materials.

## 2.3 Security Amount

Generally, performance security in an amount equal to 125% of the estimated cost of the prescribed works (including monitoring) is required to satisfy District bylaws. Security is provided via a cash deposit or an Irrevocable Letter of Credit issued by a financial institution with terms and conditions acceptable to the District. Maintenance security is generally in the amount of 5% of the off-site capital costs.

## 2.4 Duration

The duration of maintenance/monitoring obligations shall be established by the District based on the nature of the proposed mitigation, maintenance or monitoring work and the likelihood and expense of correcting failures with respect to design and ecological functioning as applicable.

Performance Security shall remain in effect until the District has been notified, in writing, by the qualified professional that Substantial Completion of the work(s) has been achieved to the standards identified in the TOR or issued permit, as applicable.

If a maintenance period is defined the District shall:

a. Return the performance security less 5% to cover deficiencies during the Maintenance Period;
b. Establish the date of commencement of the Maintenance Period; and
c. Advise the Owner of the terms of the Maintenance Period.

Generally, maintenance security will be held for a minimum of 1 year (one growing season) to ensure that the required mitigation or restoration works have been fully implemented and demonstrated to function (ecologically or as designed). Security may be held for longer periods if, throughout the initial maintenance period the persistent failure of the works is documented.

# 3.0 Location and Project Mapping

## 3.1 Submission Requirements

The proponent will be expected to provide the following in the submission:

1. **Location Map** at appropriate scale (1:20,000) indicating the regional setting overlaid on the most current cadastral map including all surrounding property boundaries. Map legends should show clear descriptions of all symbols used as per provincial standards.

2. **Site Plan** (Minimum 1:200 scale/Maximum 1:5,000 scale) including:
    a. Civic address;
    b. Legal Description (i.e. lot number, District lot, plan number, etc.);
    c. Dimensions of lot(s), existing and proposed streets;
    d. Outline of existing and proposed buildings, driveway accesses and activities (accurately measured and dimensioned);
    e. Easements, right-of-way and covenant areas;
    f. OCP designation, Zoning and Agricultural Land Reserve (ALR) status;
    g. Landforms, surface and ground water features, including swales, wetlands, draws, spring discharge areas, floodplains, top of bank, highwater mark(s);
    h. Project components and activities, including works and services;
    i. Map Legend [with clear descriptions]; and
    j. North Arrow, scale, any other relevant plan identification.

    The plan must be overlaid on the most current orthographic photograph and cadastral map outlining all surrounding property boundaries. For large parcels, UTM coordinates of the site location where specific works will occur may be required.

3. **Site Profiles and Cross-sections** in sufficient number to demonstrate terrain conditions prior to disturbance and intended conditions post development. When development is proposed on or near slopes that are greater than 20%, contours lines at intervals of 1 to 5 metres shall be included on the site plan to show the natural and post-development slopes and topographic information.

4. **Site Plan/sketches/maps** to be provided in full-size, colour format and at least one copy must be printed to scale. Any additional copies at a reduced size must be clearly marked “Not to Scale”.

5. **Colour photographs** indicating site features and activities identified in relation to easily identifiable landmarks to document and confirm field work on the ground.

6. Proximity to designated environmentally sensitive or hazard areas including those identified in the District of Summerland Official Community Plan (Sensitive Environment High Hazard, Wildfire Hazard, etc.).

7. Final Submission shall include the following at a minimum:

    a. 2 colour hard copies of the Final Report, signed and sealed by the appropriate professional;
    b. One (1) digital copy in searchable PDF format on CD or flash drive submitted with the report, including all mapping, documentation and appendices; and

c. Plans and maps shall be submitted in colour format printed to scale as applicable. Hard copy submissions of any drawings shall be presented in 11” x 17”. Larger drawings (i.e. 24” x 36”) will also be accepted as long as each 24” x 36” copy is accompanied by an 11” x 17” sized map to enable copying. Any additional copies at a reduced size must be clearly marked ‘Not to Scale’.

8. All documents submitted (both digital and hard copy) must be dated, including any subsequent revision dates.

9. **GIS Data**: Where available, digital copies of supporting information presented in a format compatible with the ESRI platform (shapefiles) in NAD83 UTM Zone 11 would be appreciated for consideration relative to the District of Summerland GIS.

10. All image and data sources to be appropriately referenced and dated to certify that the most up-to-date information available was used in completing the relevant assessments.

## 3.2 Basic Assessment Requirements

1. The assessment must conform to all District bylaws and master plans, regional, provincial and federal legislation, regulations, applicable standards and best practices.
2. The assessment must reflect the site conditions prior to the proposed disturbance, including any previous site disturbance and the anticipated site conditions post-development.
3. The assessment must take into consideration existing off-site developments and the impact these developments may have on the subject property.

## 3.3 Peer Review

The District may require a professional peer review for conformance to good professional practice and adherence to these guidelines on a case-by-case basis. The peer review shall be completed by a qualified professional with the District selecting from a list of consultants proposed by the applicant. Any costs incurred by the District to conduct a peer review shall be borne by the owner/developer. The professional engaged by the District shall notify the responsible professional in writing of the peer review.

## 3.4 Incomplete or Deficient Assessment

If it is determined by the Director of Development Services that an assessment is incomplete or deficient, the applicant will be notified in writing of the nature of the deficiencies and the timeframe to resubmit the corrected assessment.

The peer review may identify deficiencies in field investigations, analysis and/or reporting. All deficiencies will need to be resolved prior to issuance of permits.

## 4.0 Geotechnical Assessment

A Geotechnical Assessment is required to assess slope stability on sites that exceed 20% natural grade (a slope angle exceeding 20% or greater for a minimum horizontal distance of 10 metres), or otherwise identified as being susceptible to hazardous development conditions, including but not limited to the threat of debris torrent, sloughing, erosion, groundwater seepage, landslide, land slip, rockfall, subsistence or similar events. Development must take place on lands containing less than 30% natural grade, with the exception of small pockets of land along with more gentle slopes; a maximum of 10% of the terrain required for a building envelope should be altered.

The scope of the Geotechnical Assessment to be conducted is dependent upon the purposed use for which it is being prepared. At the time that a change in land use designation is contemplated it is important to be aware of the capability of the site to support the type and intensity of development proposed. Generally, as part of the development application process, in anticipation of the proposed development, a Preliminary Assessment Report is required to provide Council and the community comfort that the property can be safely developed for the use intended. Additional detail and site-specific information is required as the proposal moves through the development approval process to satisfy the Subdivision Approving Officer and later, the Building Official that all relevant factors have been taken into consideration.

There are three levels of assessment:

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| 1. | Land Use Designation (OCP/Zoning) | Preliminary Assessment |
| 2. | Subdivision Application | Full Assessment |
| 3. | Building Permit Application | Building-site specific analysis |

### 4.1 Assessment Level 1: Preliminary Geotechnical Assessment

The preliminary assessment is requested on the basis that the change in land use designation is for the purpose of subdivision and/or more comprehensive development that will trigger a subsequent detailed assessment of site conditions (pursuant to OCP Development Permit Guidelines *Local Government Act* s. 488 to 491) at later stages of development. The scope of work for a preliminary assessment includes a desk review of all available mapping; field reconnaissance limited to visual observation, air photo interpretation, consideration of applicable legislation, findings and recommendations from all known relevant studies completed or underway for the subject site; a description of the existing site conditions, proposed land use and anticipated site conditions post-development. The study is subjective in nature and relies on the professional judgment and experience of the writers and consideration of existing and potential geotechnical hazards. The assessment and recommendations are based on information available and site conditions at the time of the study.

1. Certification that a site is safe for the use intended will only be accepted from a professional engineer with experience in Geotechnical Engineering or a Geoscientist licensed in British Columbia.

2. The Geotechnical Engineer shall notify the District immediately if s/he becomes aware of any changes or new information which may cause the Geotechnical Engineer to conclude that unsafe conditions exist.

3. Where the Engineer's report indicates that the land may be used safely subject to conditions set out in the report, those conditions shall be set out in format that can be incorporated into a development permit.

4. Where the assessment is prepared for a Development Permit prior to an application to change the land use designation (zoning) of the property, the calculations for the proposed conditions must be based on the maximum build out potential (determined by the proposed development scenario) of the highest capacity use, unless limited through other means.

5. The geotechnical report will identify potential hazards to the subject land and to neighbouring properties from existing or proposed development.

6. The Geotechnical Engineer will determine whether the proposed development is feasible in a safe manner. The report must clearly state that the site(s) being proposed for development are "safe for development". Safe areas are to be shown on the site plan and drawn to scale.

7. A Site Plan will include:
    a. topographic features including but not limited to spot elevations, swales, knolls, ridgelines, bedrock outcrops, cliffs and slope transitions;
    b. seasonal and permanent watercourses; top of bank and break lines;
    c. drainage routes;
    d. vegetation; and
    e. current and proposed roads.

## 4.2 Assessment Level 2: Geotechnical Assessment

The preliminary geotechnical assessment is expanded upon to include detailed on-site assessment of the potential hazards. In accordance with *Local Government Act* s. 489, no land within an identified High Hazard Development Permit Area can be subdivided, altered or constructed on until a Development Permit has been issued to address the applicable guidelines. Coincidently, the Subdivision Approving Officer may request an assessment pursuant to Section 86 of the *Land Title Act.* Generally, the submission of the detailed assessment will be a condition of the Preliminary Layout Review Letter issued by the Approving Officer.

If the subject property is proposed for residential development, the assessment must include a completed Landslide Assessment Assurance Statement from APEGBC's Guidelines for Legislated Landslide Assessment for Proposed Residential developments in BC completed by the professional completing the report [Guidelines for Legislated Landslide Assessment for Proposed Residential Developments in BC, Appendix D - Landside Assessment Assurance Statement, p.55-57]. The assessment report must also describe any mitigation requirements necessary to ensure the land may be used safely for the use intended. These measures are incorporated as the terms and conditions of the Development Permit. Issuance of a Development Permit containing the findings of the assessment is required prior to approval of the subdivision (Approving Officer signature on the subdivision plans) and deposit of the plans at the Land Title Office. The registration of restrictive covenants confirming the terms and conditions of the Geotechnical Report may also be required coincident with approval of the subdivision plan. Satisfaction of the Development Permit conditions may occur as development proceeds.

The scope of work for a full Geotechnical Assessment applies for the purposes of the subdivision. Additional information is required as follows:

1. An analysis consistent with Ministry of Transportation and Infrastructure guidelines of probability of occurrence of 1:475 or 10% probability in 50 years for a damaging landslide or the prevailing standard as set by the B.C. Building Code.

All development should include a level of safety of a 0.5% probability of failure occurring in a 50 year period for a life-threatening or catastrophic landslide. Map preparation and hazard delineation should be completed so that annual probability of a hazard occurrence corresponds to safe building areas being defined.

2. The Geotechnical Engineer will complete all necessary surface and subsurface investigations that they consider necessary to provide the review and design recommendations to assess:
    a. physical properties of the soil and rock;
    b. hydrology (surface water);
    c. hydrogeology (ground water); and
    d. slope stability.

    The report should describe the specific information reviewed and onsite tests conducted to arrive at the conclusions and recommendations. The District will rely on the Geotechnical Engineer's analysis to prevent any damage to property and/or injury to persons for occurring as a result of problems with soil slippage, soil instability, stormwater management or groundwater seepage related to the proposed development.

3. Rockfall hazard analysis should be undertaken. Where any mitigation such as terrain modification and scaling is proposed, maintenance of the natural vegetation and the hillside aesthetic should be addressed.

4. The Geotechnical Report will address hydro-geological concerns; any hydro-geological or geotechnical impacts which affect any adjacent lands should also be included in the assessment.

5. The assessment will confirm that there will be no net decrease in overall slope stability (including seismic and static stabilities) resulting from the proposed development, and that off-site slope instabilities will be mitigated to provide for sale, occupation and use of nearby lands.

6. The Geotechnical Engineer will provide the review, design and supervision such that, in the Engineer's opinion, the site is suitable for the use intended and the proposed development does not compromise nor is likely to reduce the stability of the soil on-site or soil on lands which are adjacent or near and will not cause or contribute to such soils becoming susceptible to land slip, land slide, rock fall, mud/land flow, debris flow, debris torrent, erosion, slumping, creeping, settling, avalanches or other such occurrence *(or increased groundwater seepage, surficial groundwater discharge, slope stability or other geotechnical impact).*

7. The Geotechnical Engineer will provide a professional opinion that, in the event of any land slip, landslide, rock fall, mud flow, debris flow, debris torrent, erosion, slumping, settling, groundwater seepage, surface water accumulation, or other such occurrence, which transpires after the proposed development is completed, the extent of the property damage and damage to life and limb which occurs in not likely to be in any way any greater than the damage or harm which would occur prior to the development taking place.

8. **Site Grading, Drainage and/or Stormwater Management Plan**(s) that mitigate the potential impacts onsite and downslope including at a minimum:
    a. Existing and proposed topography;
    b. Pre and post development hydrological conditions;
    c. Key cross sections showing cuts and fills related to development/building site(s), roads and retaining walls;
    d. Protection of natural drainage patterns or watercourses;

e. Drainage control on the development site (i.e. around future buildings and between upper and lower lots);
f. Erosion and sedimentation control and protection;
g. Stormwater quality and treatment; and
h. Control and discharge of roof and footing drainage (if applicable).

9. A **Landscape Restoration Plan** may be required to protect and/or mitigate to the greatest extent possible the natural vegetation on the site. For disturbed portions of the site, a development permit may include measures for rehabilitation, including landscaping, retaining wall or other suitable methods; recommendations should be included in the report as applicable.

10. Where a Geotechnical Assessment is prepared in anticipation of a subdivision application the report should define as applicable:
    a. required setbacks to the top of, or toe of, steep slopes;
    b. building site envelopes;
    c. practical and safe driveway access for each proposed lot;
    d. no disturbance areas to be protected by restrictive covenant; and
    e. any special requirements for construction of roads, utilities, buildings or structures.

11. Where a potential hazard is identified:
    a. a **Construction Management Plan** must be developed and monitored by the Geotechnical Engineer. A site-specific preparation and construction work schedule should be defined, including a monitoring plan and regular reporting.
    b. Specific geotechnical assurance, provision of insurance (both provided by the Geotechnical Engineer) and security (provided by the applicant) will be required to ensure the safe completion of on-site and off-site works and services.

12. If residential development is proposed for the subject property, the assessment must include a **Landslide Assessment Assurance Statement** from APEGBC's Guidelines for Legislated Landslide Assessment for Proposed Residential developments in BC completed by the professional completing the report.

13. The scope of work may include the provision for, upon completion of a development, building or structure, as applicable a statement certified by a Professional Engineer that the construction was carried out in compliance with the conditions specified in the report.

## 4.3 Assessment Level 2 Conclusions and Recommendations

A Level 2 Assessment should present conclusions and recommendations including:

- Site suitability for development (before earthworks)
- If the site is determined suitable for development
    - A statement regarding the change in overall slope and soil stability as a result of the proposed development.
    - Recommendations for:
        - items that should be included in restrictive covenants;
        - erosion and sediment controls for water and wind;
        - any special requirements for construction of roads, utilities and buildings or structures
        - roof drains and perimeter drains; and
        - construction of detention or infiltration ponds, if applicable.

  - A statement that off-site slope instabilities will be mitigated by the owner/developer to provide for the safe occupation and use of the development lands and adjacent nearby land.
  - Other factors which the professional Geotechnical Engineer considers relevant to the review, including an assessment of risk, potential consequences and recommendations to ensure slope/soil stabilities over time.
- Site Grading Plan
- Drainage or Stormwater Management Plan
- Site Restoration Plan (if applicable)
- Landslide Assessment Assurance Statement (if applicable)
- Construction Management Plan

## 4.4 Assessment Level 3: Certification of B.C. Building Code Schedules

At the time of building permit approval an owner must provide certification to the Building Official completed by a suitably qualified professional that pursuant to Section 56 of the *Community Charter* that the land may be used safely for the use intended if the land is used in accordance with the conditions specified in the professional's report. Submission of a Landside Assessment Assurance Statement [Guidelines for Legislated Landslide Assessment for Proposed Residential Developments in BC, Appendix D, p.55-57] may be required.

Also, at the time of building permit approval an owner must provide certification pursuant to the BC Building Code in the form of a completed Schedule B Assurance of Professional Design and Commitment for Field Review and a Schedule C-B Assurance of Professional Field Review and Compliance prior to issuance of an Occupancy Permit.

# 5.0 Environmental Impact Assessment

Environmental Impact Assessments (EIA) should be performed generally in accordance with the B.C. *Environmental Assessment Act* (2002) by a Registered Professional Biologist (RP Bio). The policy, legislation, bylaw or regulatory framework (e.g. Environmentally Sensitive Area Development Permit) that triggers the preparation of the Environmental Impact Assessment must be clearly described within the introductory section of the EIA. The TOR for any specific project will usually be required within the regulatory framework and the associated District policies. The regulatory/policy framework will determine the actual issues addressed in the EIA.

A complete Environmental Assessment (EA) consists of three phases:

1. **Inventory Phase:** Or pre-planning phase, based on existing biological and physical conditions, or such conditions prior to any recent site disturbances which renders a biophysical inventory that stratifies and maps environmentally sensitive areas; and determines a development footprint respectful of sensitive ecosystems.
2. **Impact Assessment Phase**: Outlines the impact of proposed or intended developments to be addressed in the EA. A habitat balance sheet, a cumulative effects assessment and a gap analysis to be included in this phase.
3. **Protection, Mitigation, Compensation and Implementation Strategy:** Presents recommendations to prevent or minimize impacts from development activities on the natural environment.

## 5.1 Inventory Phase

A fundamental task within the Inventory Phase is the stratification of communities occurring within the study area based on their environmental sensitivity. This is a key element in the planning process as it identifies area constraints and opportunities (avoidance/conservation, mitigation and restoration) thus encouraging a more integrated and sustainable development plan. The following four-class rating system adapted from the works of local Registered Professional Biologists is widely applied throughout the Okanagan Valley:

1. **ESA – 1 (High) -** These areas contain locally and provincially significant ecosystems (e.g. vegetation and wildlife characteristics) representing a diverse range of sensitive habitat, extremely rare and/or areas of critical importance to rare wildlife species. These features contribute significantly to the overall connectivity of the habitat and ecosystems. The primary objective for ESA-1 should be avoidance and conservation. If development should occur within these areas, compensation to promote no net loss of equivalent functioning habitat may be required only after it proves impossible or impractical to maintain the same level of ecological function.

2. **ESA – 2 (Moderate) -** These areas contain ecosystems local and provincially of moderate significance, uncommon and important to rare wildlife species that contribute toward the overall diversity and contiguous nature of the surrounding natural features. The primary objective for ESA-2 areas should be avoidance, but development may be pursued in portions of this area where strong rationale is provided documenting why this is necessary (e.g. servicing or road access to the lot or development consistent with existing zoning cannot be accomplished without impacting ESA-2 area). If development is pursued in these areas portions of the habitat should be retained and integrated to maintain the contiguous nature of the landscape. Some loss to these ESAs can be offset by habitat improvements to the remaining natural areas found on property.

3. **ESA – 3 (Low) -** These areas are typically polygons delineated as low to moderate conservation values because of important to wildlife (e.g. significance representing disturbed habitats or fragmented features). These areas contribute to the diversity to the landscape, although based on the condition and adjacency of each habitat the significant function within the landscape is limited. The primary objective for ESA-3 is mitigation of development impacts. If development is pursued in these areas the impacts should be offset by habitat improvements in other more sensitive natural areas found on property.

4. **ESA – 4 (Not Sensitive) -** These delineated areas contribute little or no value or importance as wildlife habitat (e.g. overall diversity or vegetation, soils, terrain and wildlife characteristics of the area). Development is encouraged to be focused to these sites before consideration developing higher rated sites of the area. These areas shall not be considered as areas for restoration and enhancement or as recruitment as higher value ESA in offsetting development in other areas.

   **ESA Criteria -** A complexity of factors may contribute to an area's environmental sensitivity rating. Principle components will be required in evaluating communities/polygons. At a minimum, communities/polygons will be stratified and evaluated in terms of habitat/ecosystem rarity, wildlife habitat suitability, rare and endangered species' occurrence potential, Critical Habitat for species at risk listed on Schedule 1 of the Federal Species at Risk Act (SARA); functional condition (i.e., ecological connectivity, level of disturbance, seral stage, structural stage etc.), and fragility.

   ESAs differ in their biological value within the study area and within the surrounding region and their biological value at the time of assessment can be thought of as falling somewhere along a continuum from very high to not sensitive biological value depending on a number of factors.

   The inventory phase will include the use of background information, field review and inventory to formulate an overview of all habitats and features within the subject property including consideration of the following:

   a) Vegetation – an overview of the various plant specifies and plants communities;
   b) Terrestrial/aquatic wildlife – list of species found, likely or possible including fish distribution, methods of assessment and expected/potential terrestrial/aquatic wildlife use; if species at risk are known or suspected to potentially use the site, a species-specific inventory conducted in the appropriate season will be required, unless there is an accepted rational for why one is not required;
   c) Adjacent lands including protected areas, agricultural status (ALR) and local government zoning if appropriate; and
   d) Other existing environmentally value resources as defined within: Development with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia published by the provincial Ministry of Environmental.

   The primary components to be considered during the ranking and mapping of ESAs include the following. Not all will be relevant at each site and other factors than these may require consideration as well.

   e) Ecosystem mapping refined to 1:5,000 or less, including structural stage and seral association or condition. *(Note: BEC site series is the base unit for TEM, but designed for forested ecosystems)*;
   f) Rarity in the region, province, country, including historical loss;
   g) Landscape context including continuity to other ESAs (buffering function) and whether the area is vital to health of ecosystems beyond its boundaries (water catchment, storage/recharge zone);
   h) Habitat suitability for provincially ranked and/or federally listed or significant species and presence of mapped Critical Habitat for species at risk listed on Schedule 1 of the Federal

Species at Risk Act (SARA), observations and/or records of federally listed (endangered, threatened or special concern, provincially rated (Red or Blue), or regional significant species and plant communities for all life stages);

i) Presence of important environmentally valuable resources (e.g. breeding/spawning areas, hibernacula, migration stop over, connectivity corridors, reported sightings of uncommon species, ungulate winter range);
j) Species diversity/habitat complexity;
k) Ecosystems at risk in the Okanagan including riparian (including subsurface flow and recharge areas), wetlands, grasslands rock outcrops, talus and cliffs, old growth and low elevation forest);
l) Vulnerability to anthropogenic disturbance (e.g. sol disturbance, road conflicts, pets, invasive plants);
m) Current condition (biological integrity) function, structure, stability and probability of restoration to a functional level or ecological capability; and
n) Cumulative impacts from surrounding land uses.

Stratifying ESAs may be completed from a primarily objective approach relying on existing information, field review, inventory and a professional understanding about the functional requisites for respective wildlife, communities, and ecosystems. Local information should be sought from other interested parties including local experts, current and past owners, neighbours and other local groups to make up for the typical short timeframe and limited fieldwork undertaken to complete EAs. The specific criteria/rating system developed and used in the evaluation will be appended to the EA report. It must be clear which factors were considered in determining the biological value of a site. Where ESA evaluations require a more subjective approach, a clearly articulated discussion/rationale will be provided in the report.

Pre-existing information for the site collected by government agencies or in published literature should be gathered, assessed and presented. Inventory and mapping tools such as the Sensitive Habitat Inventory and Mapping (SHIM), Foreshore Inventory and Mapping (FIM), Conservation Data Centre's (CDC) online Ecosystem Explorer, Ministry of Environment's Conservation Framework, Canada Open Data Portal, BC IMAP including layers like Species Inventory Databases (SPI) are to be considered. Information gaps should be identified, and recommendations made on the best ways to fill the gaps. Information gaps may also be filled from local information sought from other interested parties including local experts, current and past owners, neighbor and other local groups to make up for the typical short timeframe and limited fieldwork undertaken to complete EAs. Qualified Environmental Professionals may need to undertake further detailed assessments depending on the project scope and site conditions. Where facts are incomplete or surmised, the levels of confidence or reliability in the environmental knowledge will be assessed and documented. Knowledge gaps required for an assessment outline in a specific TOR that could not be filled will be assessed and the impact of a lack of such knowledge documented.

## 5.2 Impact Assessment Phase

The scope of this second phase will depend on the specific Terms of Reference (TOR) for any given project based on the regulatory and policy framework, which required the preparation of an EIA. The TOR will need to specify which impacts are being addressed, and the level or possible mitigation, enhancement and or replacement. These will clearly be based on the facts as based on the assessment (Inventory Phase). At a minimum the Assessment shall:

1. Provide measurable parameters that will help establish whether the proposed development will cause impacts during or after construction or if mitigation can be successfully achieved.

2. Describe how the development options may impact the key factors and environmental quality of the study area and discuss the significance of these impacts to the existing environmental conditions of the study area and of the related area beyond considering:

    a. Magnitude
    b. Geographic extent
    c. Timing
    d. Duration
    e. Frequency
    f. Reversibility; and
    g. Likelihood of occurrence.

3. Consider and integrate findings from other studies completed or underway that relate to the site and impact assessment.

4. Discuss the sensitivity of environmental factors to potential development based on the inventory and ESA stratification and include an Environmentally Sensitive Area (ESA) base map(s) overlaid on site maps showing project components.

5. Identify potential areas of conflict and describe the potential sensitivity of different environmental factors to anticipated alterations of the landscape by the proposed development.

6. Consider surrounding lands and their uses and impacts in a **Cumulative Impact Analysis**. In most cases on very small lots, individual environmental impacts may be small and therefore difficult to measure and/or assess, or seem negligible in total impact. However, cumulative impacts of the same nature on adjacent lots, or all similarly-zoned lots, or all land with similar future use, may be large or even extreme. GIS information is available to assist in the Cumulative Impact Analysis on request.

7. Habitat or biological assessments completed to satisfy legal requirements of other levels of government (e.g. Riparian Areas Regulation) may be included within an EIA, but should be identified as to the requirements they are addressing and assessing, and their relationship to any District requirements.

## 5.3 Protection, Mitigation, Compensation and Implementation Strategy Phase

District of Summerland Official Community Plan Sensitive Environment policies encourage protection of unique or special natural features through diligent site design. As per the ESA rating system and criteria outlined in the inventory section, the recommended protection, mitigation, compensation and implementation strategies must demonstrate that avoidance and conservation of ESA-1 designations is the primary objective in developing the recommendations.

Reporting in this third phase must:

1. Provide development options that illustrate workable relationships between key factors or sensitive features of the site and proposed development of the site (e.g. zoning, land uses, infrastructure components, buffers, protection and rehabilitation zones, etc.) and clearly present these options on site plans. Avoidance must be the priority action before mitigation and compensation options are considered.
2. Recommend environmental works in order to mitigate fish, wildlife or environmental impacts (i.e. by providing modifications to development design, increased buffers, fencing, footprint, timing, equipment or providing on/off-site habitat or environmental improvements to avoid or minimize adverse impacts). Describe efforts taken to avoid impacts to and Moderate Environmentally Sensitive Areas (ESA) including but not limited to locating buildings and infrastructure development footprints and zones of disturbance outside of ESAs.

3. Provide protection, mitigation, compensation and enhancement recommendations for the design, preconstruction and construction phases of the project to prevent or minimize development impacts

and/or improve environmental values. Provide 'typical' design drawings in addition to text. Clearly present recommendations on site plans to make other members of the development team aware of the technical considerations to be incorporated into the design.

4. **Habitat Balance Sheet** - Where it has been demonstrated that avoidance of High to Moderate ESAs is not possible, provide a habitat balance sheet identifying the following:
    a. Proposed locations, amounts ($m^2$), and types of habitat lost or negatively impacted
    b. Proposed locations, amounts ($m^2$) and target habitat types to be gained through habitat construction, restoration or enhancement. Indicate whether the replacement habitat is of the same type as the lost habitat (i.e., in-kind or out-of-kind) to ensure 'like for like' compensation.
    c. Identify proposed impacted areas and proposed mitigation or compensation areas on an accompanying map indicating proposed development and ESAs overlap.
    d. Describe and provide rationale for each impact to High and Very High ESAs, efforts taken to avoid impacts, and proposed mitigation or compensation measures with appropriate compensation ratios.
    e. Where projects affect aquatic habitat, and compensation for loss of aquatic habitat is necessary and acceptable to the District and Province (FLNRORD), compensation ratios must take into account factors such as:
        - Time lags in achieving habitat replacement.
        - Risks associated with the success of compensation measures; the relative significance of the impacted habitat (e.g. does it support threatened, endangered and / or economically important species).
        - Whether compensation is occurring on site of off-site; and
        - Whether the replacement habitat is of the same type as the lost aquatic habitat
        - Demonstration of a no-net loss or a net gain in productive capacity of aquatic habitat.

5. Recommend strategies to deal with linear parks including the identification of existing trails, those areas not suitable for trails ("no go zones"), as well as suitable locations for formal trails, viewing locations, access points and riparian crossings, taking into consideration sustainable trail design and construction details. Ensure coordination of linear access corridors with riparian management area requirements as per the District of Summerland OCP.

6. Provide drafts for proposed Restrictive Covenants, Statutory Right of Way Agreements, Easements and/or Zoning options to indicate extent of protection and limits of activity.

7. Provide details stating how the works or strategies for mitigation and/or enhancement have been or will be carried out including clearly articulated performance standards that are based on the best available science and that reflect the structural and functional objectives of projects.

8. Identify who (e.g., agencies, departments, developers and/or personnel) will be responsible for monitoring potential impacts, and propose a monitoring schedule including identifying the expertise of personnel required to perform the monitoring and itemize recommended monitoring and reporting milestones, including approximate cost estimates (See Bonding).

9. Provide recommendations for future assessments (e.g. procedures, protocol, TOR).

10. Identify who is accountable for potential impacts that might occur, and who would be responsible for unintended but foreseeable impacts.

## 5.4 Environmental Report and Data Deliverables

1. Where a **Habitat Restoration Plan** is required it shall be:
   - Prepared, signed and sealed by a Qualified Professional;
   - Identify and recommend areas for restoration; and
   - Detail those measure necessary to restore the subject property(s) to a level acceptable to the District, including but not limited to:

     a. A Landscape Plan that includes: descriptions of all polygon treatments proposed, representative descriptions and images for each treatment type and a recommended schedule for inspections and maintenance;
     b. A Cost Estimate that includes the anticipated costs to implement the Landscape Plan and which includes provisions for inspections, maintenance and environmental effectiveness monitoring; and
     c. A Completion Report may be requested upon completion of the habitat restoration work as a condition of the Development Permit that:
        i. describes and justifies any departures from the proposed restoration prescriptions;
        ii. provides images and descriptions for each treatment type completed;
        iii. recommends additional mid to long term measures to enhance the success of the project; and
        iv. includes a summary of final project costs.

2. Where an **Environmental Monitoring Plan** is required it shall be prepared, signed and sealed by a Qualified Professional and assure that project construction activities comply with environmental provisions defined in applicable legislation, authorizations and permits, District of Summerland environmental management guidelines and policies and Industry best practices.

   An Environmental Monitoring Plan shall:
   - Assure that appropriate levels of protection are in place to prevent or to minimize impacts to environmental resources, including but not limited to the installation of temporary or permanent fencing to clearly delineate ‘no disturbance areas’ around ESAs and other areas designated for protection;
   - Prepare timely, accurate and unbiased reporting including but not limited to a pre-construction meeting onsite between the QEP and contractors to insure all site workers are aware of non-disturbance areas and a final ‘substantial completion’ report to confirm the work completed is consistent with the environmental assessment;
   - Include authorization for the monitor or District to stop work if they believe that on-site conditions are in contravention of the conditions of a permit; and
   - Include a cost estimate for all monitoring and associated works.

3. In addition to hard copies provided to the District for review, applicants must also submit:
   a. A digital version (.pdf) of the complete document(s) must also be provided with the understanding that all information contained within professional reports are available to the public. Digital reports may be posted on the District website and archived.
   b. All new and/or updated information (e.g. Rare Element Occurrences and revised TEM polygons and databases) will be provided to appropriate groups and agencies such as the BC Conservation Data Center and the RDCO. All data will be provided in digital format such that it may be incorporated into current works in process such as the Sensitive Habitat Inventory and Mapping (SHIM), and Sensitive Ecosystem Inventory (SEI), both of which are paramount in providing current spatially accurate information used in responsible planning and development.

## 6.0 Wildfire Hazard Assessment

Conditions such as, but not limited to, the topography, dominant vegetation, pattern of development and available fire protection services in urban areas in closed proximity to forested and natural areas, referred to as “interface areas”, can present a high risk of wildfire. Special precautions must be taken in interface areas to mitigate potential fire hazards. Development in areas rated as high hazard need to be managed in a way that minimizes the risk of damage to people or property from wildfire in balance with the preservation of forested and natural areas near the community. The assessment should also consider environmental concerns including compliance with the *Migratory Birds Convention Act* and *Species at Risk Act*.

A **Wildfire Hazard Assessment** evaluates the susceptibility of the subject property to wildfire from conditions both on and off site, including neighbouring lands that may present a wildfire hazard. A Wildfire Assessment must be submitted as part of an application for a Natural Hazards - Wildfire Interface Development Permit. Typically, the application is processed as a Technical Development Permit prior to subdivision, rezoning or building permit.

A **Wildfire Hazard Mitigation Report** prepared, signed and sealed by a Qualified Professional, assures that project construction activities comply with Natural Hazards - Wildfire Interface management principles defined in applicable legislation including but not limited to the District of Summerland’s urban wildfire interface management guidelines and policies and industry best practices, including the following:

A Wildfire Hazard Mitigation Report shall:

1. Utilize the BC Ministry of Forest’s supported assessment methodology.

2. Be prepared by a Registered Professional Forester (RPF) licensed in BC specializing forest wildfire assessments.

3. Evaluate the site as it pertains to the existing and proposed land use or subdivision proposed in the application.

4. Include consideration of a range of factors including but not limited to fuel hazards and history of wildfire. occurrence.

5. Recommend a Mitigation Strategy that shall become the conditions of a Development Permit and/or registration of a restrictive covenant.

6. The assessment of the site for susceptibility to wildfire requires evaluation from conditions both on and off-site including neighbouring lands that may present a wildfire hazard to the site in question.

7. The assessment and subsequent recommendations must consider evaluation of the proposal for wildfire susceptibility, site modification requirements and any requirements for subdivision or building construction including but not limited to:
   a. A site hazard assessment which includes map(s) showing existing and proposed vegetation, identification of fuel breaks, defensible space, building and structure locations, trails, access points, and firebreaks on the subject property and adjacent lands;
   b. Fuel hazard assessment including the identification of ground, ladder and crown fuel areas and fuel modification prescriptions for the identified priority zones [as per FireSmart Guidelines (i.e. 10m, 30m and 100m from proposed building sites)], around all existing and proposed structures. Fuel modification prescriptions for these zones shall be developed based upon proximity to structure and target stand conditions;
   c. Fire Mitigation Plan that makes recommendations on the establishment of defensible space [strategic firebreaks adjacent to structure and hazardous fuel types], fire resistant building and landscaping materials to form an appropriate buffer zone or protection buffer, roads, access to lands for land and fire hazard

maintenance. Firebreaks adjacent to structures and hazardous fuel types may also serve as recreational trails. Breaks shall be a minimum of 1.5m wide with a 100mm minimum gravel base;

d. Current fire suppression capabilities and recommendations for water infrastructure design to reduce the susceptibility of the subject property to wildfire (i.e. fire hydrant locations optimized to protect forested parks);
e. Location of emergency access points to the development and distance to the nearest fire hall. Roadway planning for evacuation [egress from the site] and fire control should be addressed. Access points, for emergency and maintenance vehicles, from the roadway between lots to provide access to public land beyond containing natural vegetation as required for land maintenance and fire hazard management. Hydrants shall be located in the road dedication adjacent to the access point; and
f. A structure hazard assessment which includes information regarding roofing, building and exterior materials, decks and other extensions from existing and proposed buildings such as eaves, vents and other openings.
g. A Mitigation Strategy to address anticipated site conditions.

8. The Natural Hazards - Wildfire Interface Development Permit Guidelines must be considered; the report should outline how the proposal meets the guidelines. The development permit design guidelines developed within the document "*FireSmart, Protecting Your Community from Wildfire*" supported by the Alberta Department of Sustainable Resource Development, the British Columbia Forest Service, Natural Resources Canada, most Canadian provinces and endorsed by the report of the Province of BC "2003 Firestorm Provincial Review" should also be considered.

9. Where a large remainder (e.g. a property greater than 8 hectares) abuts a lot one (1) hectare in size or smaller, the wildfire hazard report must include methods for reducing hazard along that property line to "moderate" or less and must address management of the interface.