Memo

City of Kelowna

Date: November 10/09

File: 6660-01

To: City Manager

From: Ryan Smith, Subdivision Approving Officer

Subject: City of Kelowna Hillside Development Guidelines

Report Prepared by: Ryan Smith

Recommendation:

THAT Council receive, for information, the report from the Subdivision Approving Officer dated November 10, 2009;

AND THAT Council endorses Schedule "A" City of Kelowna Hillside Development Guidelines attached to the report dated November 10, 2009;

Background:

Through work completed in preparing the Official Community Plan (OCP), which was adopted in 1995, the City of Kelowna began examining alternative Hillside Development Standards. The existing OCP at that time contained Hillside Development Objectives and Policies to be followed in the subdivision, development and building on hillside lands. These objectives and Policies outlined the City's philosophy of environmental protection and sensitive hillside development, however as the City gained more experience in the evaluation and approval of actual developments, the need for more specific regulations and standards has became apparent. Urban Systems was hired in 1995, to prepare Hillside Development Guidelines that would be specific to the Kelowna experience and context. A series of stakeholder meetings that included City staff, utility representatives, residents associations and other parties were held to outline and prioritize issues to be considered in the preparation of the Guidelines. One thing that became apparent in the early discussions was that alternative standards for Hillside Development involved evaluating the costs and benefits of public convenience and safety, ease of maintenance, and construction costs relative to the less tangible aesthetics of reduced impacts on the hillside environment. In the fall of 2001, Council supported a Hillside Guideline document to supplement Official Community Plan policy, as well as updates to design and engineering standards that were incorporated into Kelowna's Subdivision and Development Servicing Bylaw.

Despite the implementation of new hillside development policy and standards, staff, Council (of the day) and the broader community remained unimpressed with most of the resulting hillside development. The City of Kelowna commissioned UMA Engineering Ltd. (now known as: AECOM), in 2006, to review whether hillside development projects were meeting the City's objectives of being: aesthetically pleasing, functionally appropriate and environmentally sensitive. A report was prepared in the fall of 2006, which considered the effectiveness and appropriateness of past practices and regulations, to determine if hillside projects were attaining the desired results. The

Hillside Development Audit contained specific recommendations which were unanimously adopted by City Council in October 2006. AECOM was engaged to assist staff with preparing an Implementation Strategy.

Since the results of the 2006 Hillside Audit, staff has begun to implement some of the process changes which did not require a change to bylaw or policy. Other changes (policy and bylaw) which required a much more significant time investment have proceeded more slowly as a result of staffing shortfalls to complete the work during the real estate market boom.

Summary:

The new Hillside Development Guidelines are part of larger tool kit that staff has been creating to encourage greater flexibility, innovation, and variation in design standards. The creation and endorsement of these guidelines will be one of the first big steps towards the implementation of recommendations from the 2006 Hillside Audit. The guidelines are meant to succinctly express the City's varied objectives for Hillside development; however, staff is not expecting that every guideline be met with every project. The goal is to have a coordinating professional (on behalf of the developer) apply (and justify to staff) the guidelines (and bylaw standards) that best suit a particular Hillside location.

While the endorsement of this Hillside Development Guidelines document is a step forward, many bylaw changes are required to support this new policy direction. Changes to the City's Building Bylaw No.7245 will be the first bylaw change related to the Hillside Audit Implementation process. These will be closely followed by changes to the City's Zoning Bylaw (the creation of new Hillside specific residential zones), Subdivision and Development Servicing Bylaw (more flexible standards), Development Application procedures Bylaw (update process and application requirements for technical reports) and finally to the City's Official Community Plan. Bylaw changes listed above are also supported by a set of technical guidelines (retaining walls, lot grading, visual assessment, wildfire, geotechnical, storm water management) and checklists by which consultants and staff can report on and review development. These documents have been completed and are ready for use, pending the endorsement of this Hillside Development Guidelines document.

In the long run, staff and the development community are hoping to streamline the development approval process by providing greater clarity at the outset and eliminate un-necessary bureaucracy (such at the Development Permit Waiver process).

Internal Circulation:

Development Engineering Branch
Infrastructure Planning Department
Kelowna Fire Department
Civic Operations Department

Existing Policy:

Existing policy was adopted in October of 2001 and audited in October of 2006.

Financial/Budgetary Considerations:

One of the major themes that the City's consultant on this project has re-enforced throughout the process is that good hillside development is more expensive for all involved. It requires more technical work up front for the developer, is more labour intensive for city staff to review, is more expensive to build, more expensive to buy and more expensive for the City to maintain. This was highlighted in recommendations 15 and 16 of the 2006 Hillside Audit report.

Staff has already faced challenges with maintaining development designed to current Hillside standards. Existing snow removal equipment is generally not suitable to be plowing narrower road and smaller cul-de-sacs. This same equipment may also be challenged with steeper road grades. The same challenges also exist for fire fighting equipment, school buses and street cleaning equipment. Over the next several decades, the overwhelming majority of Kelowna's single family development will occur in the City's hillsides. Much of this development has already been approved through the Official Community Plan and Area Structure Plans and some is already zoned. Moving forward, Council will have to consider increased capital investment in maintenance equipment (snow plows, sewer maintenance equipment, fire fighting equipment) which is better suited to narrower, steeper and more diverse design which will be the hallmark of the flexibility that hillside development requires to be more sensitive to the landscape/environment.

In summary, without improved maintenance equipment and the appropriate staffing to utilize this equipment, Kelowna's Civic Operations Department will face some challenges in maintaining current levels of service to Kelowna's hillsides which will continue to evolve in form with the implementation of new hillside development policy. Without the proper budgetary support for operations/maintenance, service levels to hillside areas may suffer and it will be more difficult to achieve buy-in from operations/maintenance staff for flexible hillside standards. Staff from impacted departments has been involved in the process and are aware that there will be increased demands related to hillside development in the future.

Personnel Implications:

In addition, to capital expenditures on new equipment, hillside neighborhoods are already proving more time consuming to maintain at the same level as the City's flatland development and therefore, the future will likely bring greater demands for staffing if Council wishes to maintain consistent levels of service.

External Agency/Public Comments:

UDI/CHBA Hillside Review Committee: A UDI/CHBA Hillside Guidelines Review Committee worked closely with Staff and AECOM on the wording of the Hillside Development Guidelines document. This committee will continue to work with staff to review and provide feedback on bylaw changes as they proceed through the City's system.

Fortis: In 2010, the City will be working with Fortis and other shallow utility companies towards joint trenching standards which will help to reduce the required road right of way and increase flexibility for developers in hillside developments.

Communications Considerations:

Staff has worked with the consultant on a communications plan for this project. Updates and training for the development industry and staff will be scheduled as required during the roll-out of bylaw changes and technical guidelines.

Considerations not applicable to this report:

Technical Requirements: N/A
Alternate Recommendation: N/A
Legal/Statutory Authority: N/A
Legal/statutory Procedural Requirements: N/A

Submitted by:

R. Smith, Subdivision Approving Officer

Approved for inclusion: JV John Vos

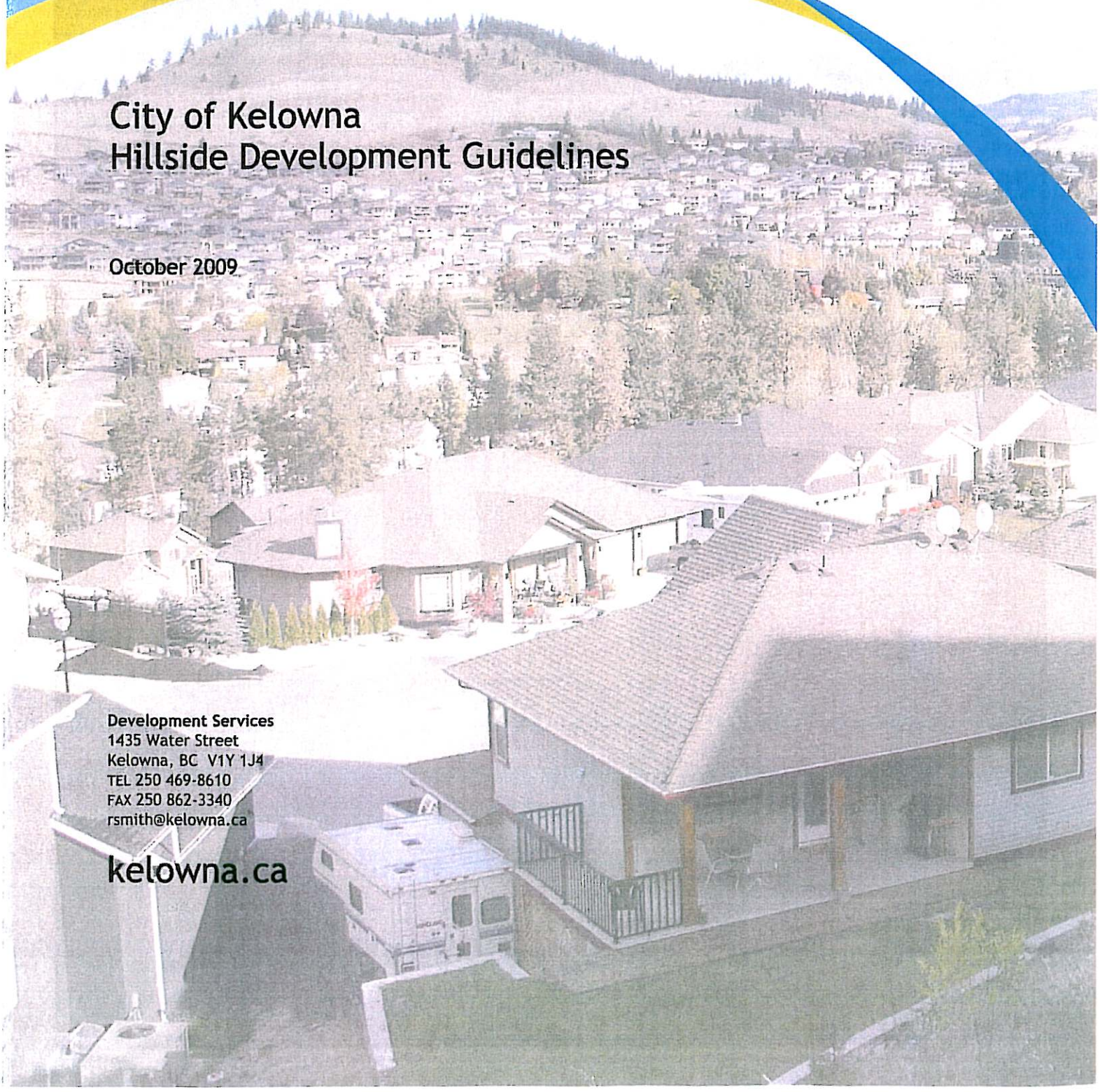
CC: Land Use Management Department
Development Engineering Branch
Policy and Planning Department
Infrastructure Planning Department
Kelowna Fire Department
Civic Operations Department

SCHEDULE "A"

City of Kelowna

City of Kelowna
Hillside Development Guidelines

October 2009



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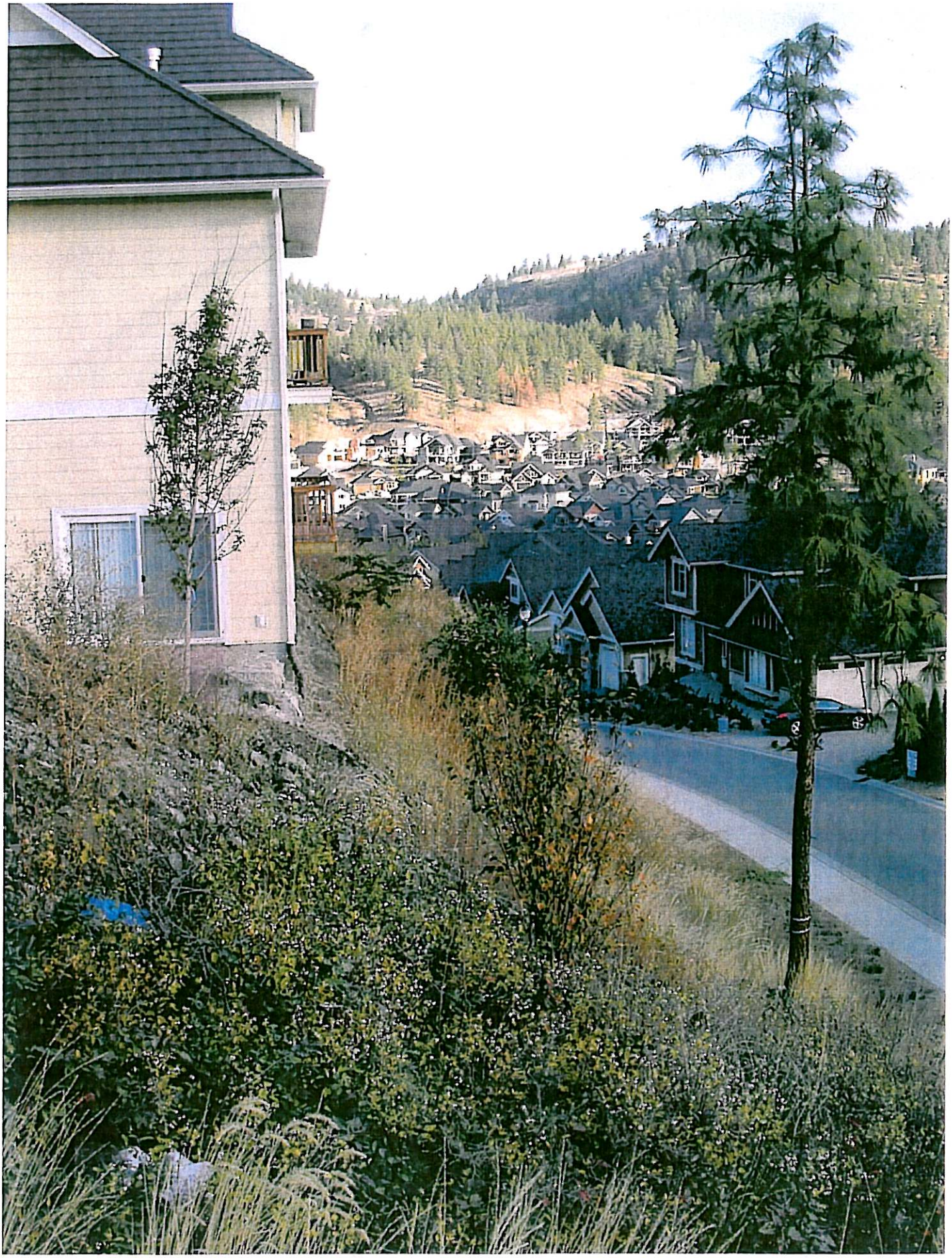

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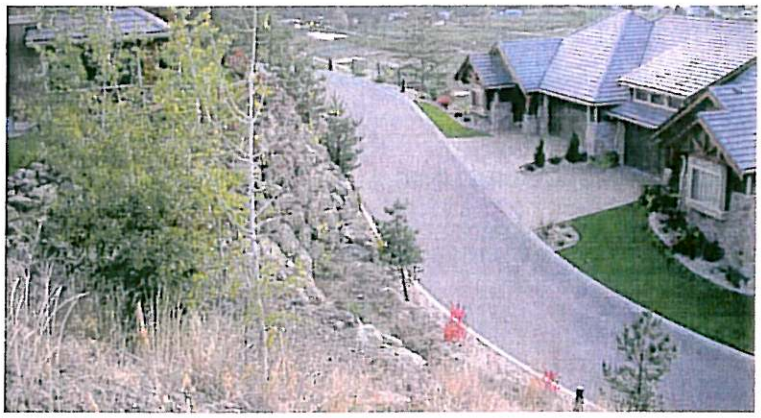
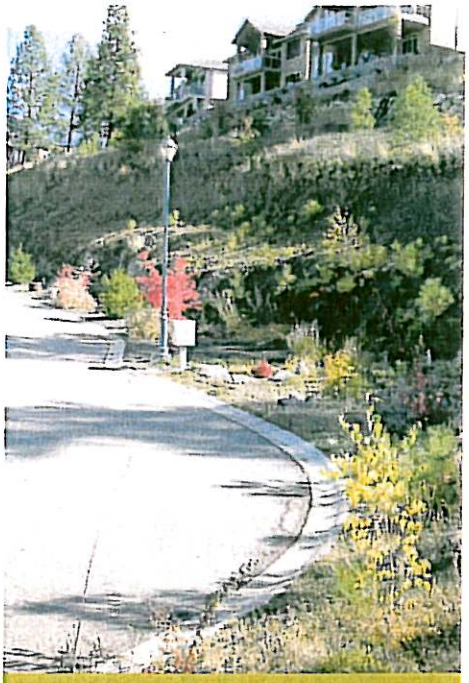


VISION

Hillside developments can be environmentally sensitive, functionally appropriate, aesthetically pleasing and economically feasible.



It is anticipated these guidelines will provide clarity, tools and a common understanding when submitting development and building permit applications within hillside areas.

It is important to consider these guidelines prior to forming preliminary subdivision plans, determining built form, establishing development yield expectations or deciding on a house plan.

PRINCIPLES FOR HILLSIDE DEVELOPMENT

Development applications within hillside areas should work to achieve the vision for hillside development by focusing on the following principles:

- Damage to the environment and natural features should be avoided
- Suitable density and diversity of housing type mitigates impacts
- All users are accommodated on neighbourhood streets
- Views are preserved for residents and visitors
- Locally appropriate, drought tolerant plants are used
- Building sites are safe.

Traditionally land development projects have been constrained by detailed bylaw or policy requirements. These types of regulations impact the designer's ability to be innovative and flexible – the foundation for good hillside planning! The Hillside Design Guidelines provide City staff and designers with a clear set of objectives which need to be met to achieve the vision for hillside development. How the objectives are met is up to the designer. The design guidelines presented in this document are examples of how the objectives may be met; however they do not negate the opportunity for new, or alternate ideas to be explored and implemented.

To respect these principles greater emphasis on the cluster housing form is desired. By concentrating higher density and avoiding the impacts of development, hillsides can be sensitive to the environment, aesthetically pleasing and functionally appropriate, while maintaining suitable economic returns for the developer – a more sustainable approach. Further, it may not be practical, or desirable, to accommodate swimming pools, recreational vehicle storage and large flat yard space for all lots – hillside terrain may preclude some uses.

WHERE DO HILLSIDE DEVELOPMENT GUIDELINES APPLY

Hillsides are defined as lands with a slope angle of 20% or greater for a minimum horizontal distance of 10 metres and/or which can be viewed from pre-determined significant viewpoints. These significant viewpoints are attached to this document.

APPLICATION REQUIREMENTS

Consistent interpretation by City staff, consultants and the development industry is key to successful implementation of hillside objectives. "Rules", such as bylaw requirements, should only be used as a fall-back, as hillside designs require flexibility and innovation. Negative development impacts, which include visual, geotechnical, environmental, hydro-geological and grading, should be avoided or mitigated where necessary.

A pre-application meeting is likely necessary to determine application requirements. Hillside Development Permit applicants may be required to submit reports, prepared by qualified professionals, to address visual, geotechnical, hydro-geological, environmental, wildfire, grading/retaining, and stormwater management needs. City staff can describe which reports are necessary.

Development Permit checklists, which are attached to this document, provide typical application requirements. Each application should address these requirements, where applicable, to the extent possible. Not all applications warrant the same level of detail; therefore City staff will provide direction at the pre-application meeting to the applicant. A single application should address all issues where a property is in more than one Development Permit Area.

COORDINATING PROFESSIONAL

Designing hillside projects requires a coordinated approach due to competing objectives – it is neither practical nor possible to equally and simultaneously satisfy all design objectives; hence compromises and design coordination is important to ensure one design element does not dominate at the expense of others. The developer is strongly encouraged to hire a coordinating professional, who recognizes that trade-offs may be necessary, in order to clearly identify where compromises are needed and are rationalized. Compromises should be clearly articulated at the outset.

Occasionally, it may be necessary to engage an independent peer review of hillside designs, reports or City requirements. A peer review would analyze the specific issue and provide non-binding commentary to assist with advancing project approvals.

PROFESSIONAL REPORT AND TECHNICAL GUIDELINES

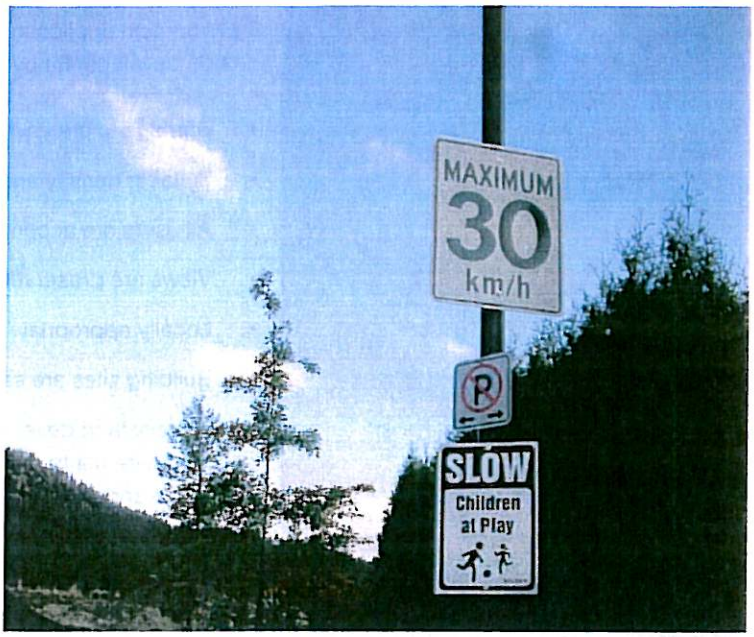
Professional report and technical design guidelines will:

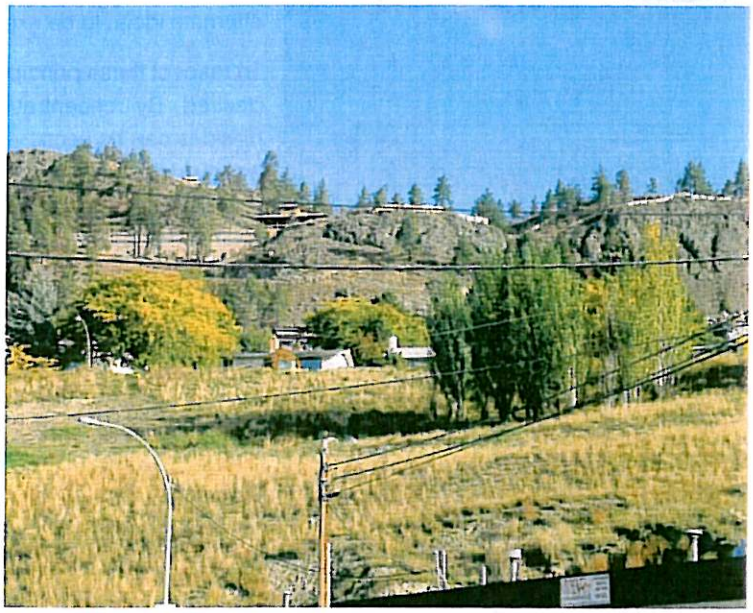
- Assist staff with processing development applications by ensuring sufficient detail and information is provided
- Create consistency with the level of effort required to obtain project approvals
- Provide clarity to the development community and applicants with respect to the City's expectations.

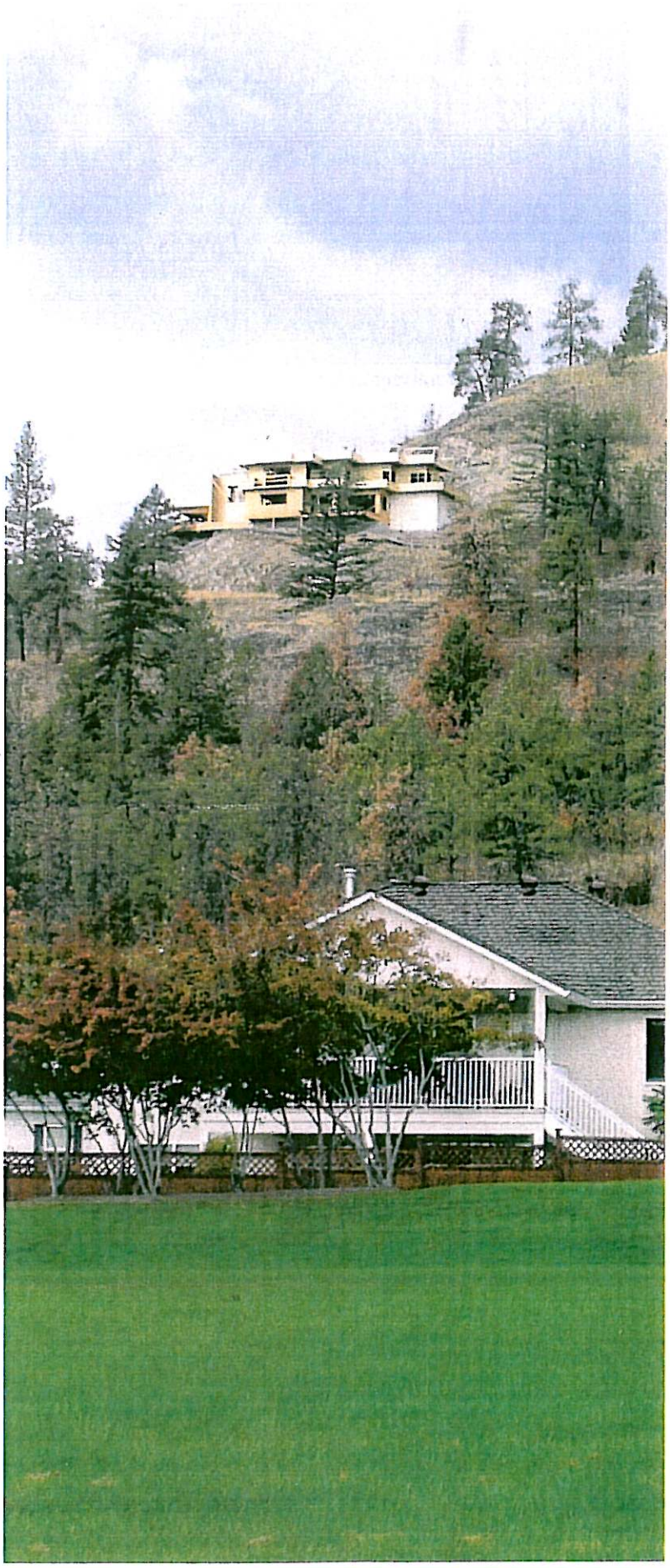
Specific technical guidelines, which address key hillside development impacts, are attached to this document.

BYLAWS

Embracing a new vision for hillside development requires amendments to the Development Application Procedures, Zoning, Building and Subdivision, Development and Servicing Bylaws to foster good hillside planning and development. Applicants are encouraged to review the relevant sections within each bylaw pertaining to hillside areas.







EDUCATION

Communicating the vision for hillside development leading towards desired outcomes will be necessary for all stakeholders. Methods of improving performance through educating the hillside resident and visitor can be accomplished through a variety of means including:

- Signage informing the public that hillside streets and private spaces are treated differently
- Covenants registered on title to inform residents some conveniences may not be provided on hillside projects, such as mobility, access and some service levels

A homeowner's information package describing hillside issues can be provided with the building permit application and at occupancy.

INNOVATION AND FLEXIBILITY

The following Hillside Development Guidelines must be considered with Development Permit applications in hillside areas to the extent determined at the pre-application meeting – not all guidelines apply in every instance! The Hillside Development Guidelines have been structured to encourage innovation and flexibility, rather than dictating specific standards or requirements. Designers will have freedom to prepare the most appropriate design given the characteristics of the site.

OBJECTIVES AND DESIGN GUIDELINES

Objectives shall be considered as goals for the designer to work towards. Each objective requires careful consideration and must be addressed with each submission; whereas, design guidelines offer suggestions how to achieve those objectives.

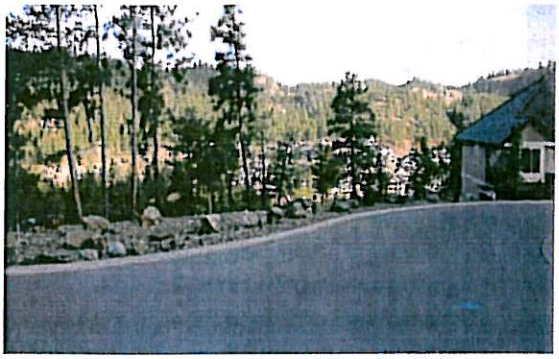
It is recognized all objectives cannot be equally or simultaneously attained.

VISUAL OBJECTIVES

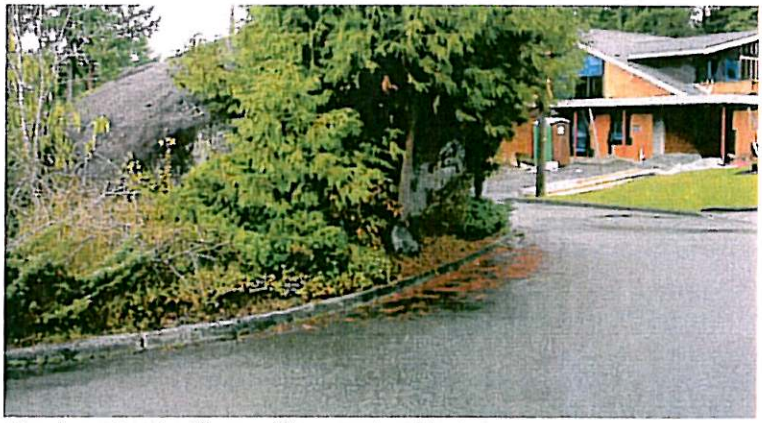
- The impact of development on views should be mitigated to ensure:
  - Kelowna's scenic beauty and hillside character is not compromised and trees are retained, where possible
  - Structures and building faces do not dominate the landscape
  - Structures are screened through effective use of landscape materials
  - Significant natural features and landforms, including ridgelines, are retained or enhanced
  - Street and building lighting is not dominant
- The project is designed to benefit all by ensuring view corridors from the project are maintained.

House blends into natural vegetation

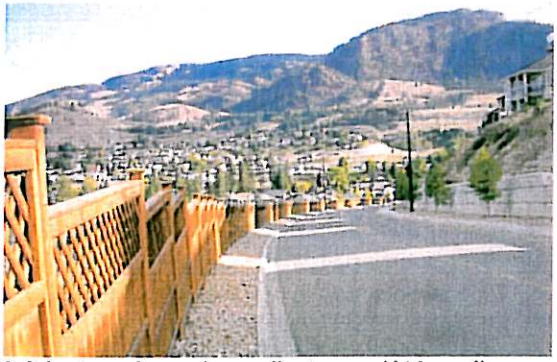
Natural feature within lot is left "in tact"



Portion of street affords vista of attractive hillside

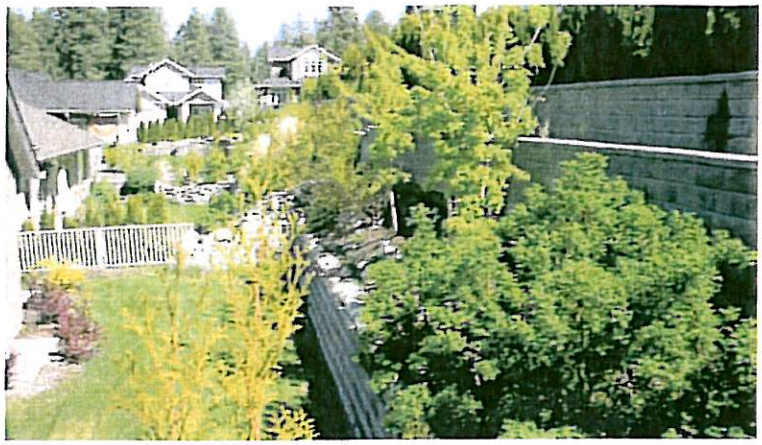


Road constructed "around" large natural feature



Solid privacy fence along collector road hides valley views

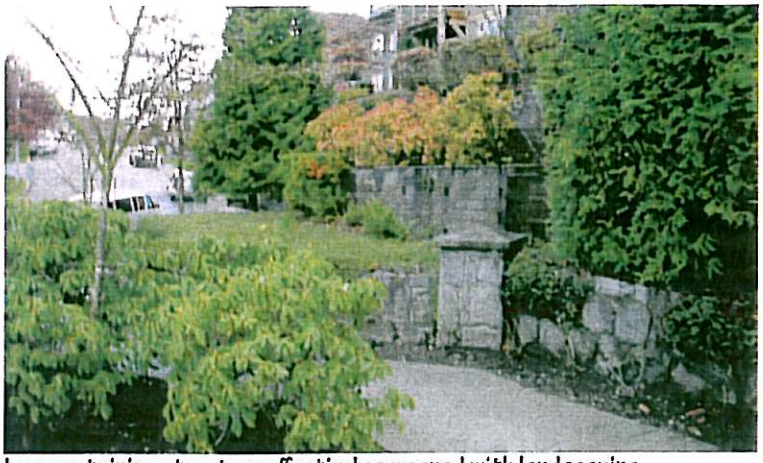
Stark landscape can be improved with strategic placement of mature trees



Retaining wall mitigated with landscape treatment

Views from street retained by lowering building elevations

House orientation offers valley views from the street



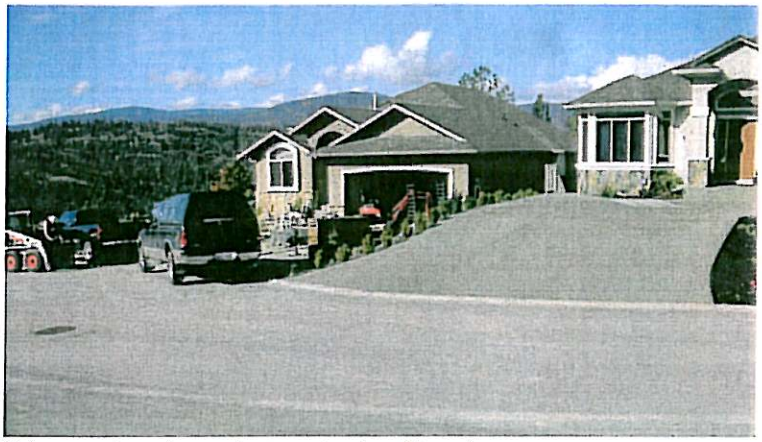
Large retaining structure effectively screened with landscaping

VISUAL DESIGN GUIDELINES

- Rather than clearing the entire site of existing trees, buildings and roads should be sited to retain trees and natural vegetation, where possible
- Buildings should be sensitive to the visual impacts associated with development along ridgelines and edge of cliffs – sensitivity can be achieved through extensive screening with mature landscape materials, providing greater rear yard setbacks, stepping back second and third stories, limiting building heights, eliminating fences and providing public access, where appropriate
- Unavoidable interruptions along ridgelines should be re-vegetated with natural landscaping
- Scenic natural features should be incorporated into the subdivision design as natural open space - City is encouraged to assume ownership of these areas
- Cluster development is strongly encouraged for the purpose of maintaining natural open space and protecting steep slopes and ridgelines, otherwise larger lots should be considered
- View potential can be optimized through strategic placement of roads, parks and vacant land, staggered lot configuration, sensitive lot grading, transparent fencing, etc.
- Buildings, retaining walls and fences should be set back from the edge of a natural feature, such as a cliff, rock knoll or outcrop
- Linear roads, utility cuts, retaining walls and uniform building rooflines should be avoided, or mitigated with mature landscaping
- Landscaping is capable of hiding views of imposing building facades, reflective glass, retaining walls, roadways and utility corridors, while protecting views from the site
- Timely restoration is able to mitigate impacts; consider using mature vegetation
- Building and retaining design, color and finish can complement natural features and terrain
- Landscaping can minimize encroachment on viewscapes
- Landscaping should occur in clusters to mimic the natural environment
- View corridors can be created by designing lower rooflines, stepped rooflines and staggered lots
- Building ground floor elevations and heights should consider up-slope views
- Views from the street should not be blocked with solid fences.

GRADING/RETAINING OBJECTIVES

- Site grading and retaining walls respect existing terrain; that is, large cuts/fills are not used to create 'build-able lots' or flat yards. Driveway grades follow the natural terrain, large single level building platforms are avoided, final lot grades mimic the natural slope and slopes are promptly re-vegetated
- Lot grading/disturbance should occur at the building stage in order to design buildings which accommodate existing terrain and vegetation to the extent possible
- Road, driveway, retaining wall and fence layout and design conforms to the natural terrain, where possible
- Significant natural scenic features, such as gullies, rock outcrops and knolls are at a minimum retained and preferably enhanced
- Manufactured grades mimic natural slopes
- Site and lot grading does not compromise visual objectives
- Retaining structures integrate well with the onsite architectural character and natural environment
- Visual dominance as a result of development is reduced by sensitive grading.



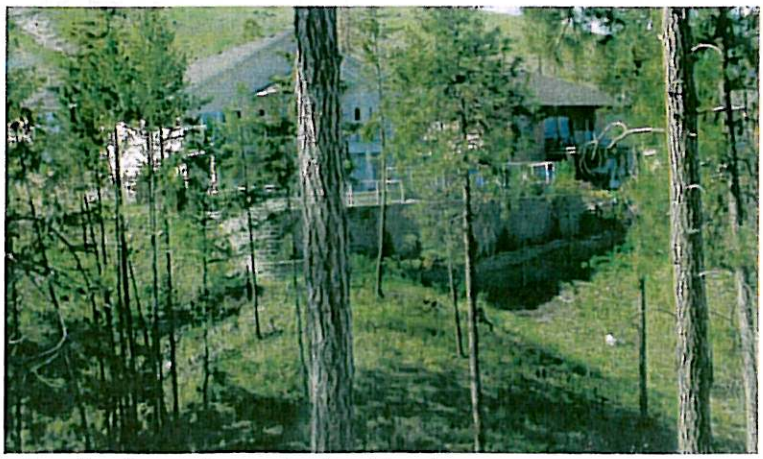
Driveway slope does not respect natural terrain

Natural feature retained and incorporated within subdivision design

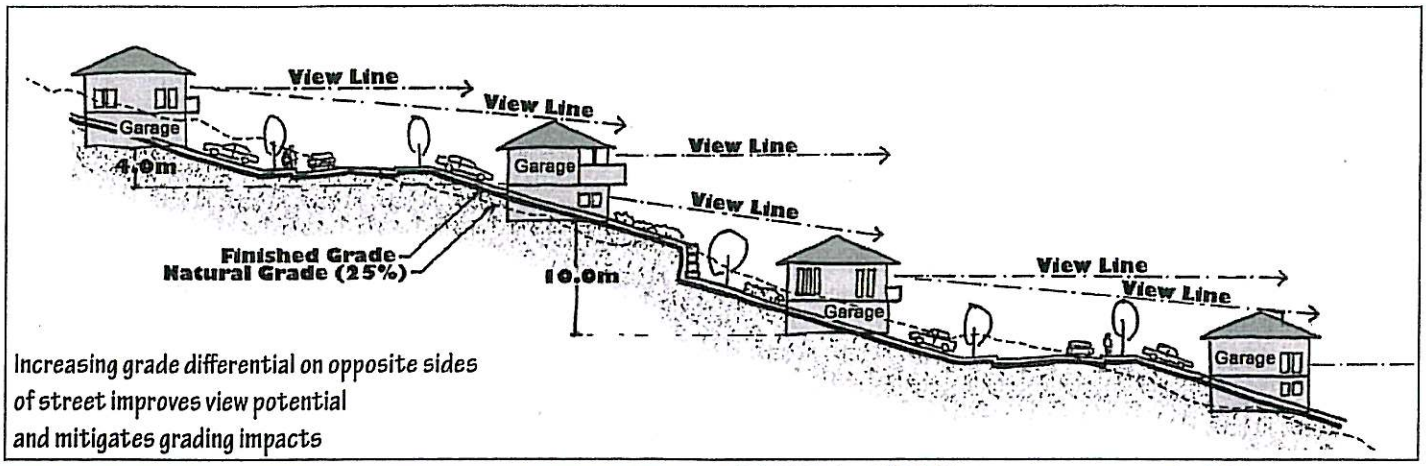
Downhill home well below road elevation

Garage elevation accommodates steep terrain

Retaining wall in appropriately used to improve views and create a flat rear yard

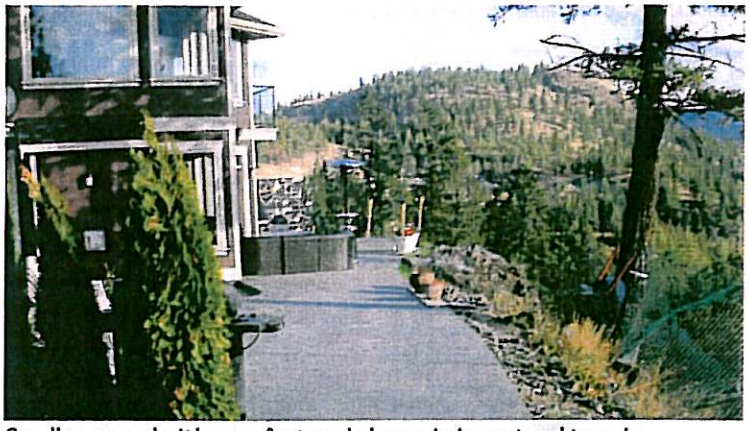


Lot grading does not respect natural terrain



Increasing grade differential on opposite sides of street improves view potential and mitigates grading impacts

Steep driveway slopes reduce grading



Small rear yard with manufactured slope mimics natural terrain

House and yard construction respects natural slope

GRADING/RETAINING DESIGN GUIDELINES

- Consider grade difference on opposite sides of the street; opposing slab elevations should be set at a higher grade than the natural slope
- Manufactured slopes can be placed behind buildings
- Avoid retaining walls within the front yard
- Retaining walls can be used to reduce slope disturbance, rather than modify natural terrain – lot sizes should increase as the natural slope increases
- Use single loaded streets or split lanes and narrow roads to avoid scenic features and reduce grading
- Excess fill material should be taken offsite; avoid side-casting material along road frontages
- Boulevards and driveways can be graded from the curb to match existing terrain
- Consider terraced building foundations, where the bottom slab elevation matches existing terrain, multiple lots with shared access/driveways, detached garages, pan-handle lots, etc.
- Extreme grades may necessitate detached garages
- Position driveways to minimize lot grading requirements and reduce the impact on adjoining properties
- Combine service connections, utilities and utility cuts in a single trench, where necessary
- Consider alternate road-ends.

GEOTECHNICAL AND HYDRO-GEOLOGICAL OBJECTIVES

- Risks are appropriately identified and quantified prior to site disturbance
- Changes to natural slopes are structurally sound and avoid or mitigate hydro-geologically sensitive areas
- Mitigation strategies/recommendations are implemented during subdivision development and building construction
- Where appropriate, geotechnical recommendations are filed at the Land Title Office
- Mitigation strategies are prepared to reduce impacts to groundwater supplies and surface run-off for both minor and major storm events, while retaining natural features/vegetation/trees, where possible
- Impervious surfaces are minimized and irrigation needs are addressed.

GEOTECHNICAL AND HYDRO-GEOLOGICAL DESIGN GUIDELINES

- Geotechnical/hydro-geological issues, including down-slope potential impacts, should be considered prior to subdivision design in order to avoid development in unsuitable areas
- Recommendations should be carried forward into the design process, grading plans should be signed off by the design team and the coordinating professional should monitor implementation recommendations
- Regular monitoring and test results should be provided for all construction, including that on private property
- Quality assurance systems should be employed by professional consultants
- Sign-off from the geotechnical engineer(s) should be provided at appropriate stages of construction, such as pre-clearing, pre-site grading, post-site grading, upon substantial completion, before foundation pour, and prior to occupancy
- Covenants may be registered upon subdivision approval
- Technical guidelines attached to this document shall be incorporated into the geotechnical/hydro-geological review.

Development values enhanced through retention of natural features

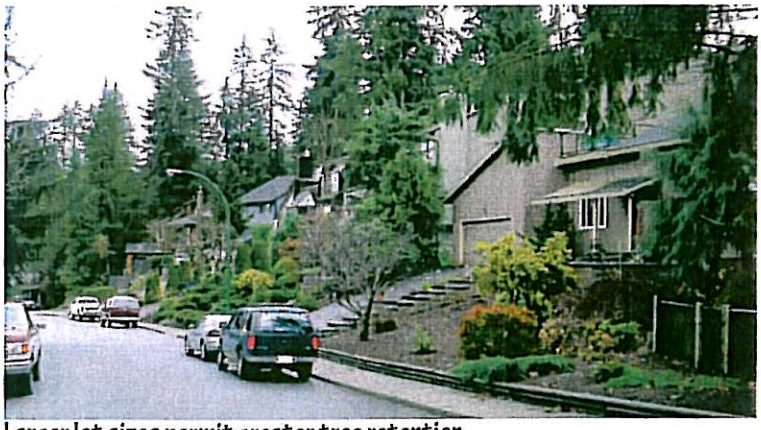
Potential slope instability

Stringent road standards may contribute to instability concerns

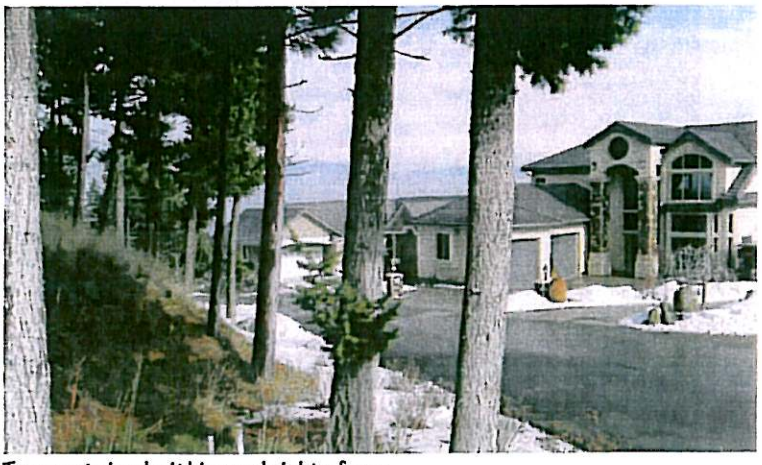
Foundation settlements are difficult to repair

Natural wetland preserved

Low-impact street drainage



Larger lot sizes permit greater tree retention



Trees retained within road right of way

ENVIRONMENTAL AND WILDFIRE OBJECTIVES

- ESA polygons are established and verified onsite prior to site disturbance
- ESA-1 areas are protected and/or enhanced, where appropriate
- Integrity of ESA-2 areas is maintained
- Development takes advantage of natural environment features; natural vegetation and landforms are retained to extent practical – landscape is a key determinant of where development should and should not go
- Ecological linkages are maintained
- Development is sensitively integrated to minimize impacts
- Native landscape materials complement existing natural environment
- Development meets provincial and federal regulations
- Wildland fire risk is mitigated in a way sensitive to the ecosystem.

ENVIRONMENTAL AND WILDFIRE DESIGN GUIDELINES

- Reference SEI inventory mapping and environmental inventories available at the City
- Consider higher density cluster housing to protect significant natural environments, where appropriate
- Create natural open spaces in the subdivision design to retain natural vegetation
- Use varied lot size and configuration to retain trees and natural vegetation
- Retain substantive trees and natural features within the road right of way, to the extent possible – consider alternate road design
- Integrate wildlife corridors into the subdivision layout
- Replant with native species, limit non-xeriscape landscape treatment
- Retain and create natural open ditch environments with minimal maintenance requirements
- Augment natural environments with improved habitat features, where appropriate
- Conduct wildfire hazard reduction through accepted practices, such as thinning and removal of fuel sources, which are also designed to improve forest health.

Natural slope retained between houses

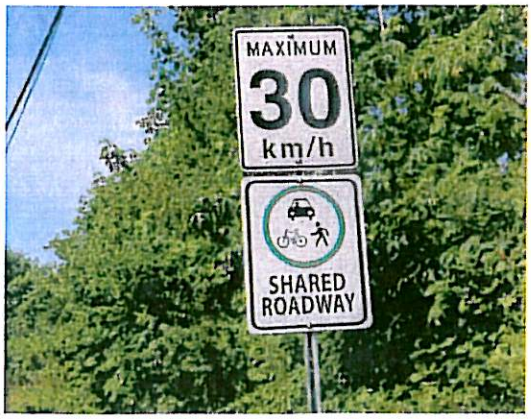
STREETSCAPE DESIGN OBJECTIVES

- Neighborhood streets are narrow, designed for a low design speed
- Automobiles are tolerated; resident, pedestrian and cyclist needs dominate
- Low-impact design standards are utilized
- Road aesthetics are valued as a significant contributor to the character and quality of a neighbourhood.

STREETSCAPE DESIGN GUIDELINES

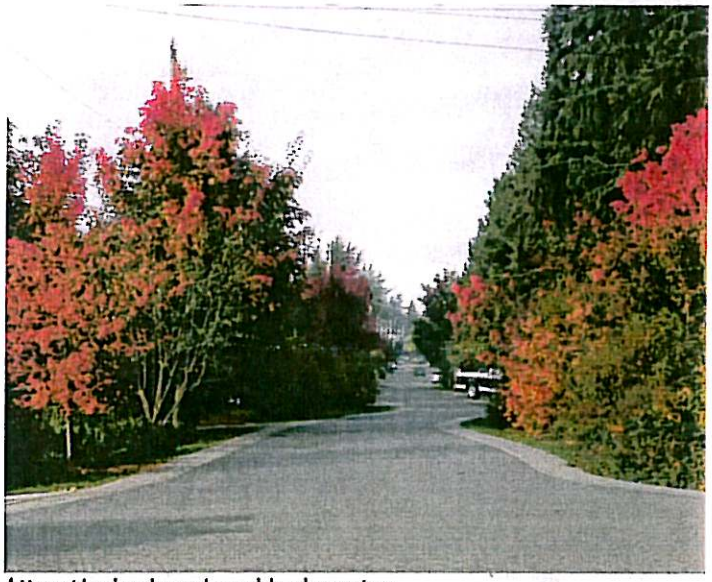
- Consider 3-D computer modeling to create an attractive streetscape design, one which favors pedestrian and neighbourhood activities and creates amenity space capable of accommodating all users, including children
- Consider adopting a 20-40 kph design speed for selected local streets, where appropriate
- Consider open drainage systems, where appropriate, and reduced impervious surfaces, xeriscape boulevard landscaping, lower ambient lighting levels, streets without curbs or flat curbs, pervious parking bays, street furniture, fewer or no sidewalks, etc.
- Reduce impervious surfaces to extent possible, incorporate bio-swales where appropriate, consider alternate surface treatments
- Consider mature street trees and heavily landscaped boulevards on all roads, including local streets
- Reduce right of way requirements and conflicts with outside utility providers by sharing utility corridors.

Alternate road design accommodates difficult terrain



Hillside roads require non-traditional design standards

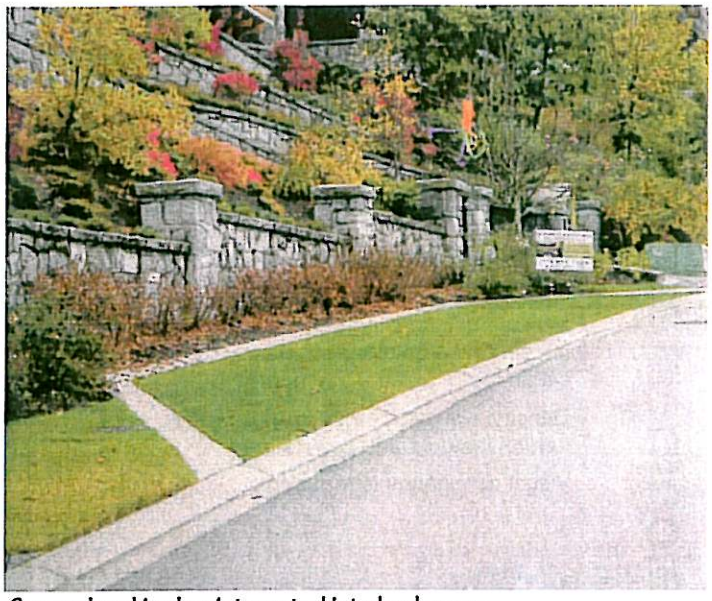
Automobiles tolerated with narrow pavement width and parking bays



Attractive landscaping adds character

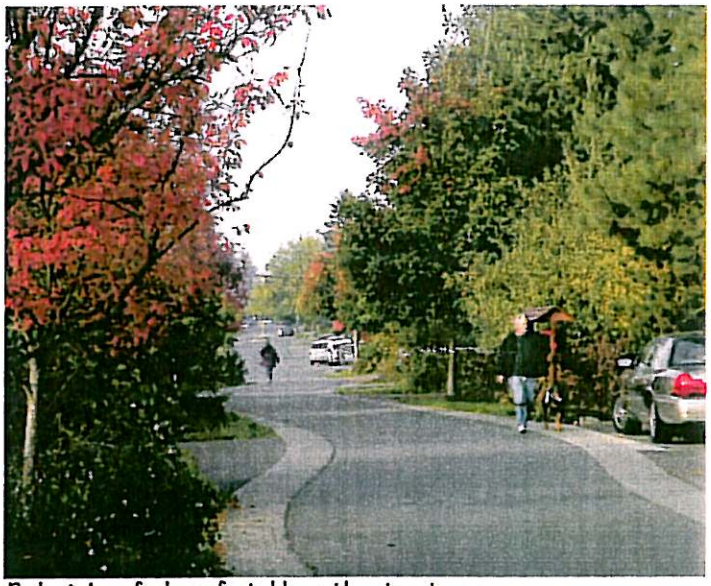
Narrow pervious road surface with parking bays

Narrow street with tight radius



Grassed parking bay integrated into landscape

Attractively landscaped boulevards improve aesthetics



Pedestrians feel comfortable on the street

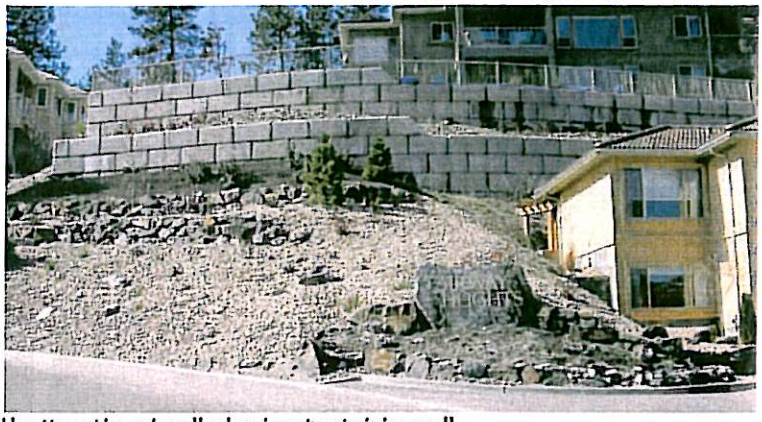
Alternate road standards and housing mix can reduce impacts

Low-impact street design

HOUSING DIVERSITY AND DESIGN OBJECTIVES

- Cluster housing is used to retain significant natural areas or avoid/mitigate development impacts
- Colors blend into the natural landscape for all structures, including retaining walls and fences; reflective roof materials and glass are discouraged
- Multiple-unit housing becomes an acceptable housing type on hillsides; otherwise larger single family lots are the 'norm'
- Density is influenced by visual impacts, slope, natural features and vegetation
- Visual dominance is reduced.

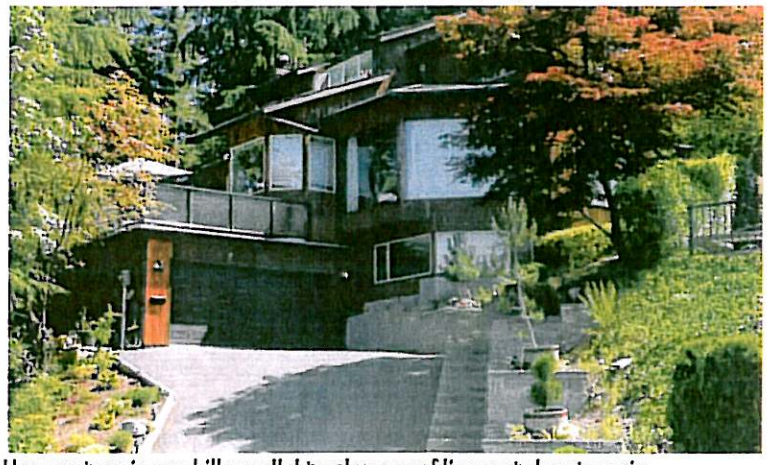
House orientation reflects slope rather than road layout



Unattractive, visually dominant retaining wall

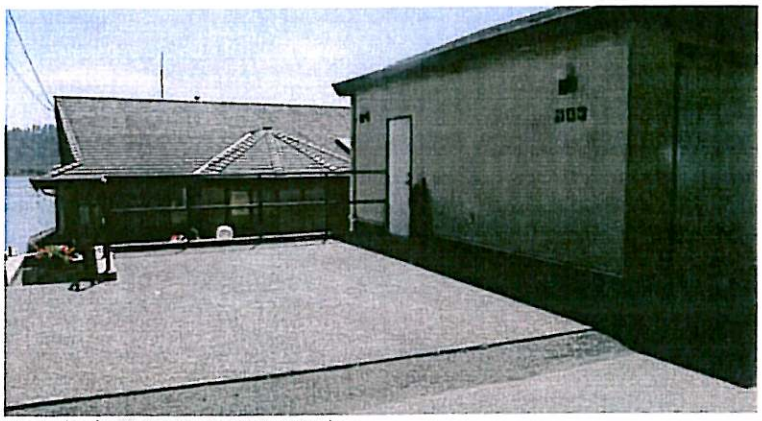
Flat roof and low-profile blend into natural terrain

House colors blend into natural landscape



House stepping up hill parallel to slope, roof line matches terrain

Extreme grade differential respects slope



Detached garage respects terrain

Roof pitch follows natural slope

House blends into natural landscape

HOUSING DIVERSITY AND DESIGN GUIDELINES

- Consider alternatives to single family housing
- Create building design schemes, in cooperation with the City to attain performance
- Engage a coordinating architect to administer and monitor design guidelines
- Work with City staff to assist with design guideline implementation
- Consider using local, site-specific natural building and retaining materials, where practical
- Building and retaining design, color and finish can complement natural features and terrain
- Consider reduced setbacks to minimize the extent of grading
- Orient buildings to run parallel to the natural slope
- Articulate buildings to reduce mass, vary rooflines
- Avoid large vertical planes, step back stories above second level
- Terrace back yards to reduce grading/retaining
- Dispose excess excavated material offsite
- Buildings, retaining walls and fences should be appropriately set back from the edge of a natural feature, such as a cliff, rock knoll or outcrop
- Landscaping can hide views of building facades, reflective glass, retaining walls, roadways and utility corridors, while protecting views from the site
- View corridors can be created with lower rooflines, stepped rooflines and staggered lots
- Steeper roof pitches can increase view potential between structures and align with natural slopes
- Building ground floor elevations and heights should be sensitive to up-slope views
- Driveway grades follow the natural terrain, large single level building platforms are avoided, final lot grades mimic the natural slope and slopes are promptly re-vegetated
- Manufactured slopes can be placed behind buildings
- Retaining walls are avoided within the front yard
- Consider terraced building foundations where the bottom slab matches existing terrain
- Consider multiple lots with shared access/driveways
- Extreme grades may necessitate detached garages
- Replant with native species, limit non-xeriscape landscape treatment.

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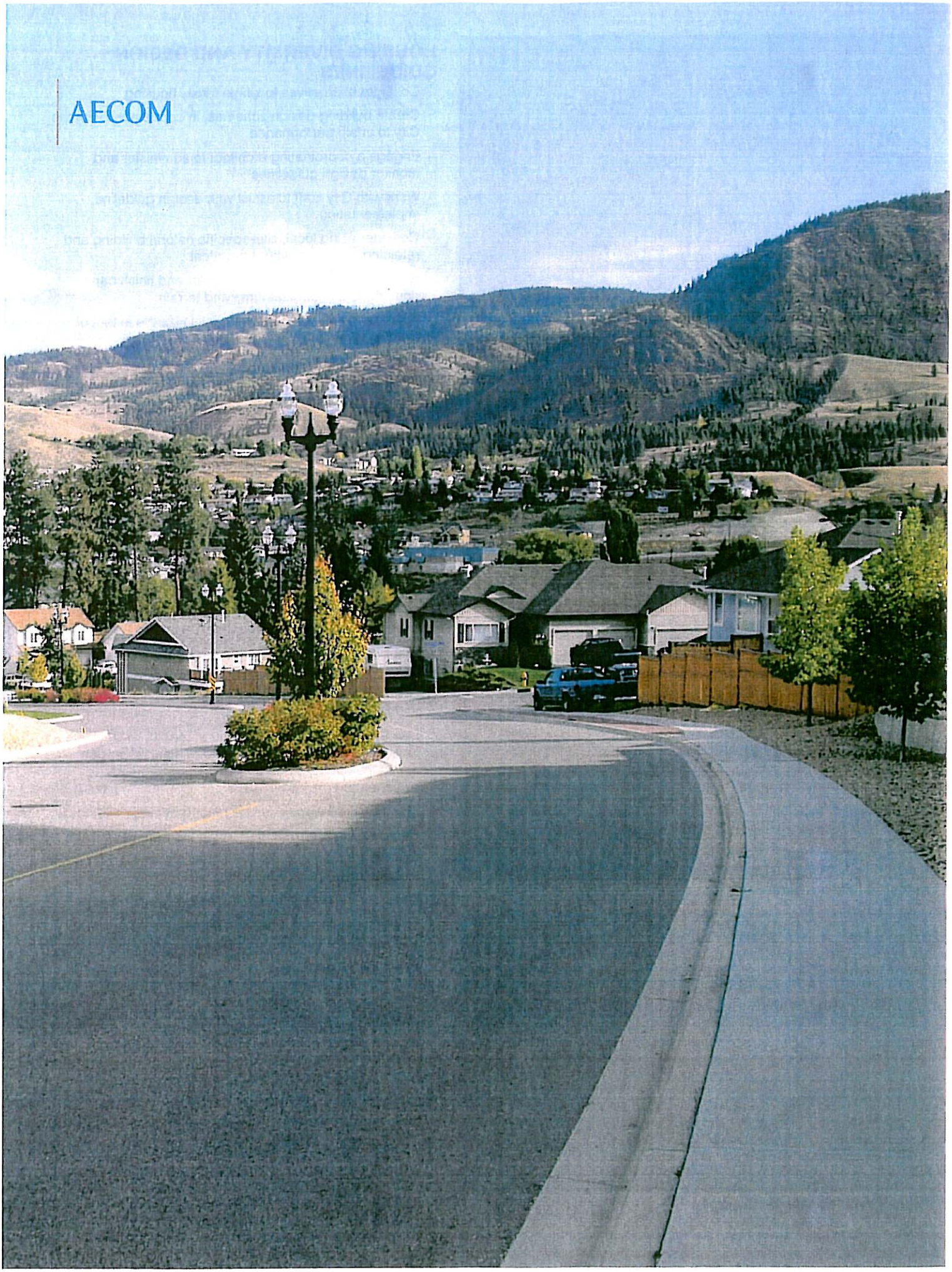
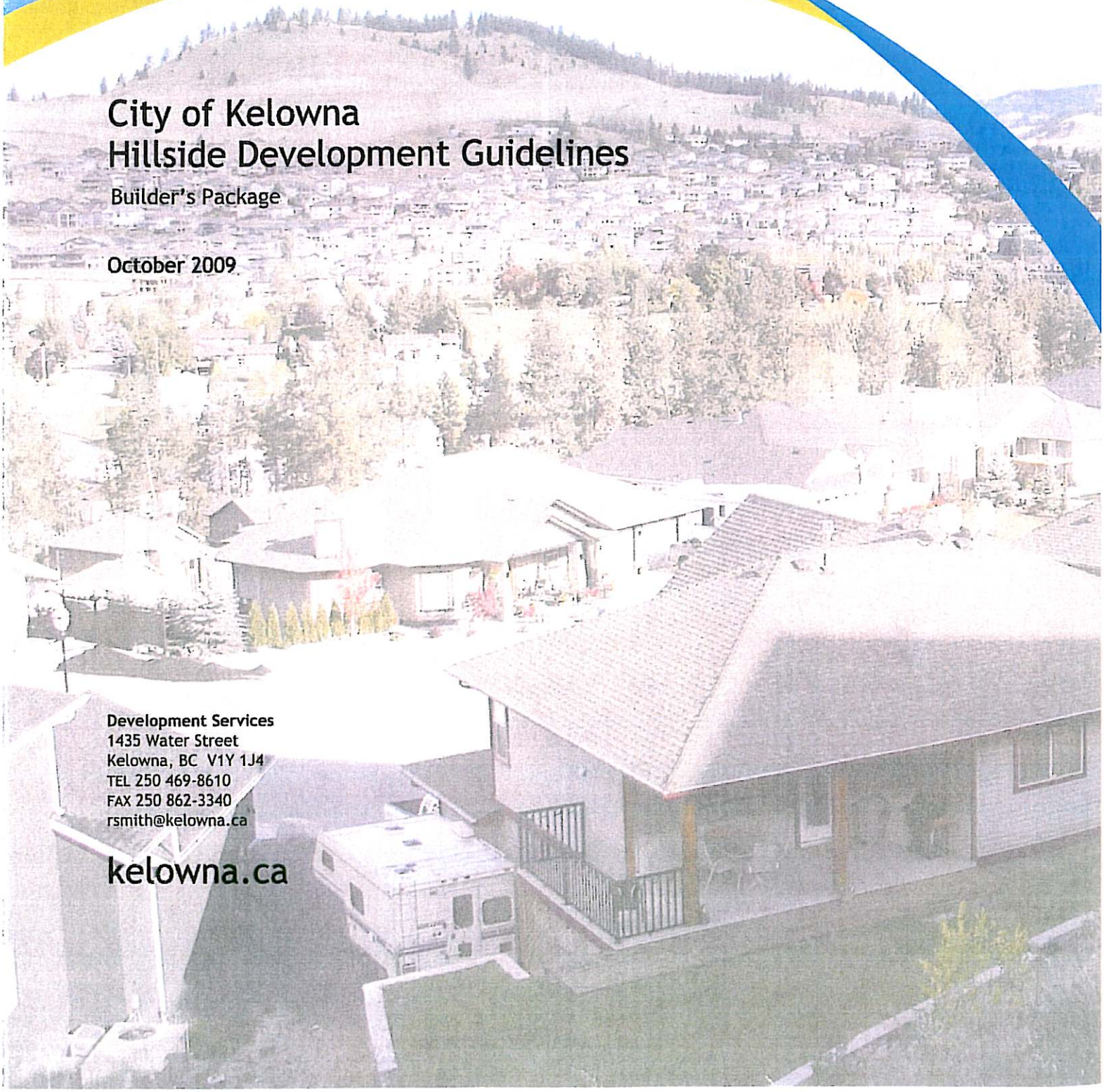


City of Kelowna

City of Kelowna
Hillside Development Guidelines

Builder's Package

October 2009



Development Services
1435 Water Street
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rsmith@kelowna.ca

kelowna.ca

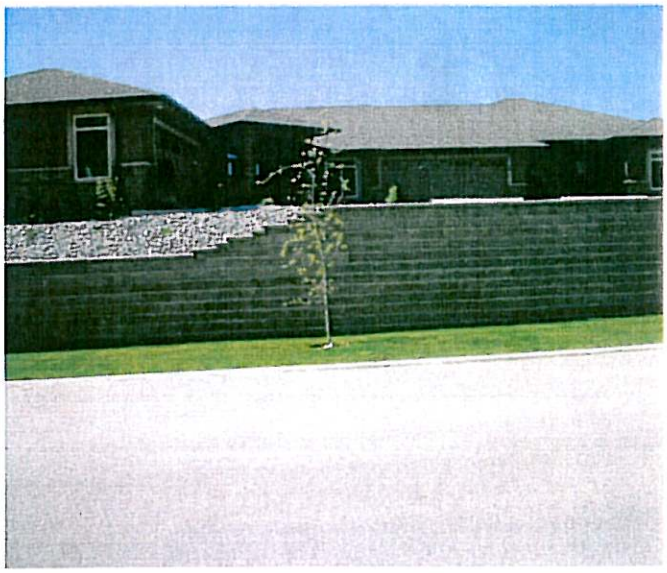
The City of Kelowna has adopted a series of objectives and ways of meeting those objectives in order to produce hillside development projects which are environmentally sensitive, functionally appropriate, aesthetically pleasing and economically feasible. For each hillside project the developer is required to obtain a Development Permit in accordance with the City's Hillside Development Guidelines. Each building permit located on hillsides should refer to the Hillside Development Guidelines and the specific Development Permit issued by the City to determine what is expected. The Hillside Development Guidelines contain photographic examples and suggestions on how everyone can make Kelowna's hillsides more attractive.

To assist the single family building permit applicant, the following should be considered:

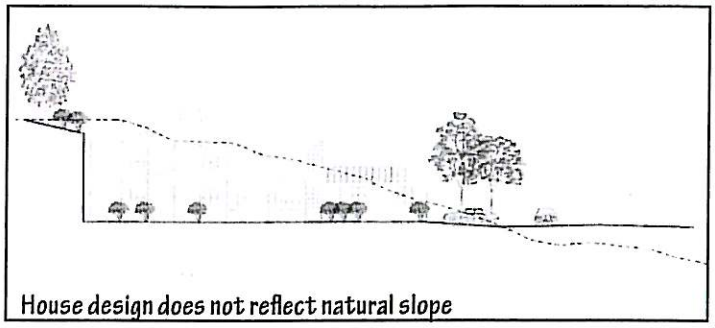
- Building Code requirements
- Geotechnical review of footings/foundations
- Grading and Retaining Wall Guidelines are appended to the Hillside Development Guidelines - lot grading and retaining wall construction should meet the intent of those guidelines
- Lot Grading Plan prepared by the developer indicates proposed elevations - requests for variations must address impacts to adjoining properties, streets, etc.
- Position driveways to minimize lot grading requirements and reduce the impact on adjoining properties
- The house design respects the natural terrain, to minimize grading, reduce visual impact and reduce the difference from the rear slab to finished elevation
- Retaining walls are referenced on the Lot Grading Plan - requests for modifications or additional retaining walls must address impacts to adjoining properties
- Accepted Development Permit typically includes building design guidelines for colors, materials, finishes, architectural styles, articulation, roof lines, roof pitch, landscaping, etc. - details should be provided by the developer
- Large horizontal and vertical planes are avoided by stepping back storeys, stepping foundation walls, varying roof pitch, etc.
- Excess excavation material should be disposed offsite
- Fences are setback from natural areas and consider views to/from the site
- Landscape screens or filters building facades, reflective glass and retaining walls
- Oriente house parallel to slope, where practical
- Xeriscape landscape materials is encouraged.

Small rear yard respects steep slope

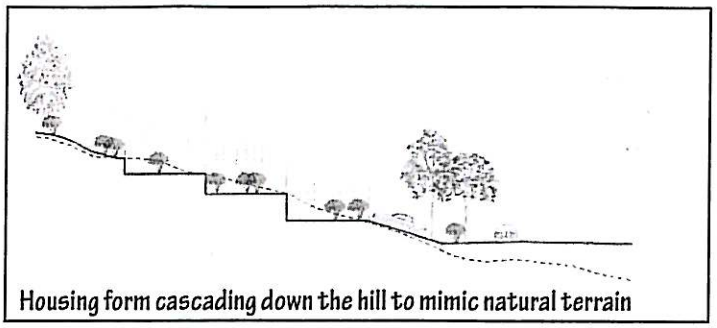
Roof pitch follows natural slope



Avoid front yard retaining walls which do not relate to streetscape

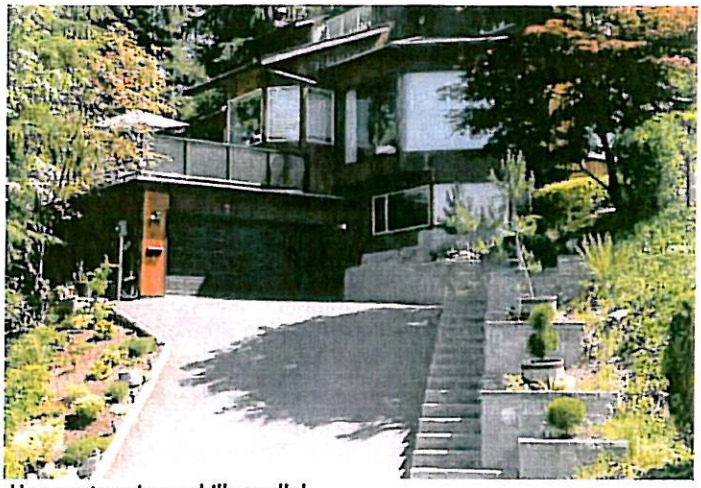


House design does not reflect natural slope

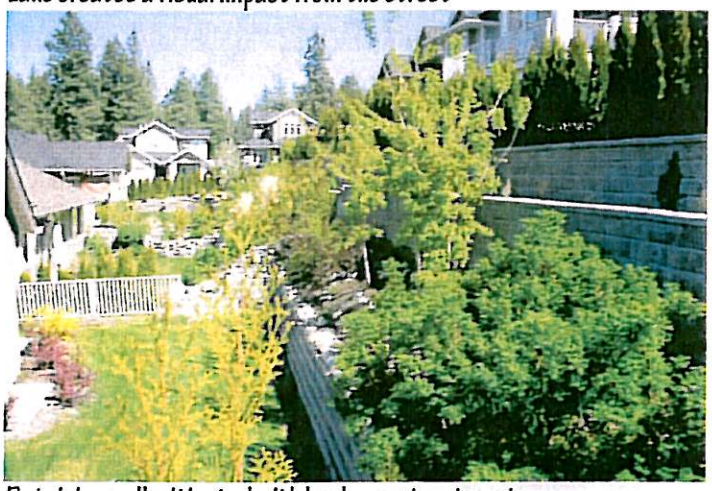


Housing form cascading down the hill to mimic natural terrain

Artificial grading to improve views to the Lake creates a visual impact from the street

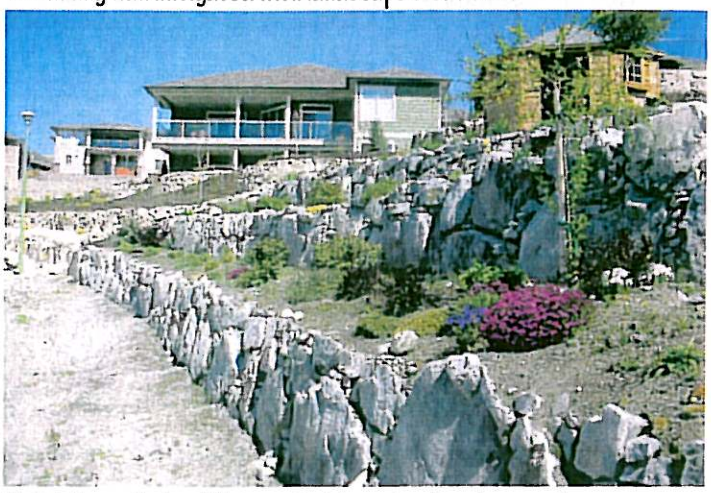


House stepping up hill parallel to slope, roof line matches terrain



Retaining wall mitigated with landscape treatment

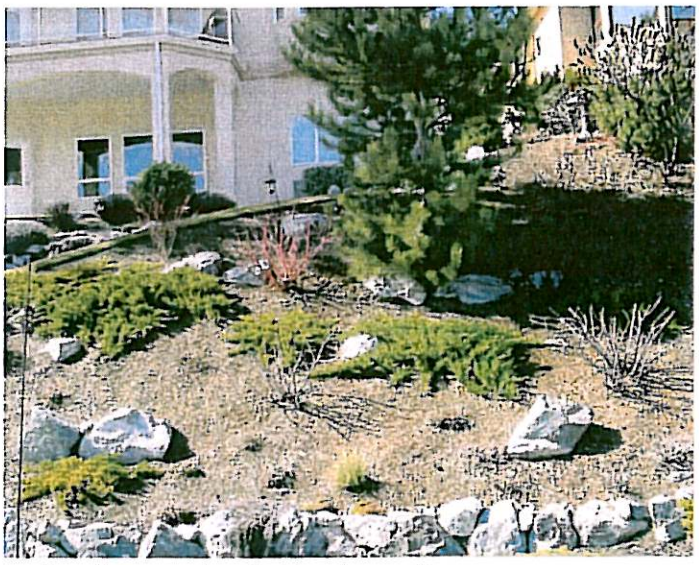
Detached garage respects terrain



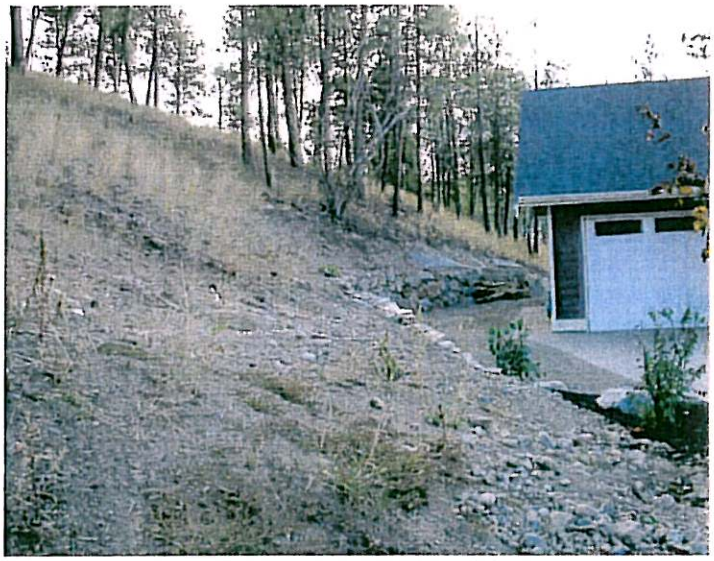
Retaining wall should integrate into natural environment

Attractive building articulation

Stark landscape can be improved with strategic placement of mature trees



Landscaping respects natural environment



House and yard construction respects natural slope

House blends into natural landscape

House orientation reflects slope rather than road layout

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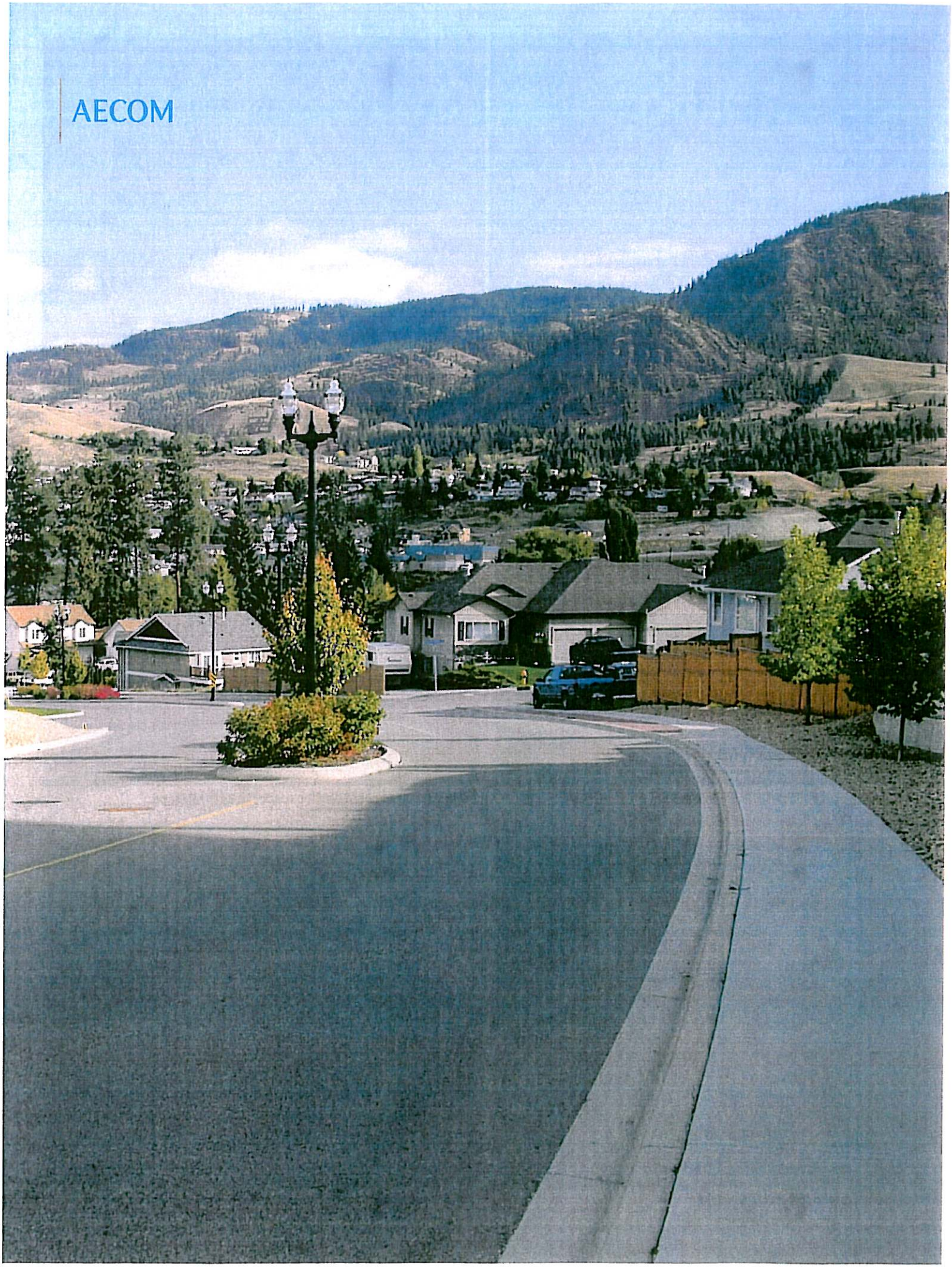

UMA | AECOM

City of Kelowna

Hillside Development Audit

Source: City of Kelowna

Prepared by:

UMA Engineering Ltd.
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Burnaby, BC V5G 4W3
Tel: 604.438.5311

1694-165-00

Date: October 20, 2006

This Report (the "Report") has been prepared by UMA Engineering Ltd. ("UMA") for the benefit of the City of Kelowna ("Client") in accordance with normal professional standards, including that degree of care, skill and diligence normally exercised by competent professionals performing the same or similar services as UMA, and is subject to the budgetary and time constraints set forth in UMA's agreement with Client (the "Agreement").

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1.0 Introduction

The City of Kelowna commissioned UMA Engineering Ltd. to undertake a review and audit of City policies, practices and regulations pertaining to hillside development projects. The objective of this review is to determine whether policies and regulations need to be changed to achieve hillside development that is aesthetically pleasing, functionally appropriate, and environmentally sensitive.

This report documents the first thorough review undertaken by the City since the inception of Hillside Development Guidelines in January 2002. This review considers the effectiveness and appropriateness of past practices and regulations to determine if hillside projects are indeed attaining the City's desired objectives.

This report reviews what was promised with the adoption of hillside guidelines (the City's expectations) against what is being accomplished by developers (the developer's delivery). During the course of the audit the UMA project team:

- Ascertained whether hillside development principles are being followed
- Conducted random tests to verify if hillside development conditions are being imposed
- Analyzed the types and extent of hillside development conditions imposed
- Compared Kelowna's experiences with other jurisdictions
- Tested the final product against anticipated outcomes

This review involved:

- an assessment of Kelowna's existing hillside-related bylaws, policies, practices and procedures,
- research of "state of the art" hillside development processes in other jurisdictions,
- input of appropriate City staff, service providers, developers and Kelowna residents, and
- analysis of the input received, coupled with our own expertise, to provide recommendations whether and how policies and regulations need to be changed to achieve stated objectives.

There are relatively few examples of hillside guidelines or standards used within British Columbia (BC) municipalities. Hillside policies contained within Official Community Plans (OCPs) and related bylaws or minor amendments of Subdivision Servicing Bylaws, have been used to manage development on steep terrain. Recently a number of municipalities have considered special regulations for hillside zoning, development permit guidelines and subdivision requirements as a result of increasing demand being placed on hillsides. The definition of hillside development is not consistently applied across municipalities within the province, as some municipalities consider slopes 10%+, while others consider 20% or higher as hillside or steep terrain. Kelowna's OCP defines hillside development as lands in their natural state that have a slope angle of 10% or greater for a minimum height of 6 metres.

Each of the BC municipalities canvassed as part of this review are experiencing difficulties associated with hillside development. As a result, the comments on Kelowna's current policies and practices

regarding hillside development contained within this audit should be viewed in light of the inherent challenges associated with creating attractive and sensitive development projects, while recognizing market influences.

Reasons for Undertaking the Audit

With the initiation of hillside road standards, a vision of abundant green space interspersed with cluster housing when viewed from afar was created. In contrast, there is a concern that hillside subdivisions are being created with densities equivalent to typical flat-terrain projects with clear-cut landscape which is difficult to re-establish due to climatic conditions. This is further exacerbated because some properties have been "pre-zoned" creating expectations of development yields and a general lack of recognition that not all portions should be developed.

As a result, some Kelowna staff believes hillside development is creating a loss of representative ecosystems and natural features that provide a "sense of place". Those elements that set Kelowna apart from other municipalities include sharp cliffs, enclaves of Ponderosa Pine, prominent ridgelines, rock faces, knolls, and hoodoos. A fundamental question is whether hillside development is achieving stated OCP objectives of protecting the natural characteristics and environment of hillsides, minimizing disturbance and reducing impact. Directly related to this is a question of whether Development Permit Guidelines and processes are effectively achieving these broad OCP objectives. The audit is also designed to ascertain how the development industry has responded to the guidelines and stated planning objectives.

The report describes the study process, briefly summarizes relevant components of applicable planning documents, reviews stakeholder input, and compares Kelowna's issues to some other local governments. Some commentary on two local development examples are followed by a series of recommendations.

Source: City of Kelowna

2.0 Study Process

The study process utilized for this audit included a multi-faceted approach including:

- an initial orientation and review of the key issues surrounding hillside development including a review of relevant documents
- an examination of development application files to determine conditions, exceptions/waivers and enforcement on representative projects
- preparation of 5 separate questionnaires targeting specific stakeholder groups
- interviews with senior City staff, service providers, developers and residents (approximately 45 in total)
- resident survey (both hillside and valley floor)
- a field review and analysis with key City staff, including the subdivision approving officer
- intra-municipal comparisons
- comparisons to other local governments employing hillside guidelines
- an analysis of stakeholder input and research obtained
- attendance at a Public Open House
- preparation of a draft report and presentation to Council, followed by a final report

Questionnaires, surveys and field checklists are included as Appendix 1.

The UMA project team consisted of senior professionals with expertise in planning, engineering, development processing, landscape architecture and urban design. Materials supplied by City staff were supplemented with UMA's resource literature on file, coupled with significant experience working within the development industry.

3.0 Background Information

During the course of this audit City staff supplied background materials and information and unfettered access to all relevant information at City Hall. An analysis of the potential inconsistencies between documents and short-comings are noted below derived from discussions with City staff and field reviews to determine whether policy statements have been translated into reality.

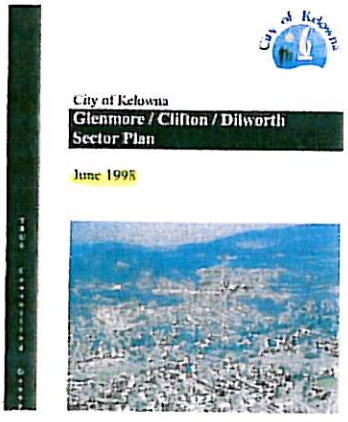
A summary review of background City documents including issues related to inconsistencies or problems associated with implementation are noted below (detailed comments are provided in Appendix 3). Other documentation was also reviewed, and a full listing is provided in Section 8.0.

Kelowna 2020 – Official Community Plan

- OCP sets out goals and overall objectives for hillside development; it would be beneficial to also provide some detail as to how goals/objectives could be accomplished (Appendix 2)
- OCP defines hillside development; the OCP also specifies where hillside guidelines may apply. The OCP limits development to slopes less than 30%, yet contradicts Development Permit applications for Hazardous Conditions on slopes greater than 30%
- Environmental Development Permits are not required for hillside development, which is inconsistent with the OCP goals pertaining to hillside development
- OCP references importance of retaining ridgelines; however the OCP fails to define ridgeline locations or areas which should remain free from development or where development densities should be limited
- OCP provides limited guidance on what should be preserved/protected on hillsides, and what could be considered unacceptable/acceptable development
- OCP focuses on single family densities for steep slope areas (new neighbourhood plan areas), which is inconsistent with "emphasizing cluster housing" to protect environmental features

Sector Plans

- Overall, Sector Plans lack direction on how to administer or implement hillside development; if not provided by the OCP, the Sector Plans should provide some additional detail to guide developers and assist staff with processing applications
- Stated goals are rather vague and open to interpretation and policy statements are relatively generic, similar to OCP statements, hence they provide limited "added value" when considering hillside projects – policy statements could be developed to provide more direction to staff
- Assessments noted in the Sector Plan are not consistently obtained by staff when considering development applications, for example visual assessments
- Lack of follow-through on Sector Plan policies, for example, the consultants were not able to find any "hillside storm run-off standards" designed to reduce erosion and downstream flooding
- Cluster housing is not being utilized on hillside projects, as intended – found no examples with an overall density of 4.5 units per hectare – most projects have "flat-terrain" development densities, or greater
- There are no apparent examples of innovative terrain adaptive housing
- View retention, either to the project or from the project, is not being consistently reviewed by staff during application review, or monitored by staff in the field



Strategic Plan – 2004 Edition

- Goal is to maintain, respect and enhance the natural environment, which is consistent with the OCP, yet it is difficult to find actual examples where development projects have accomplished this stated goal,
- Monitoring of the challenges of hillside development appears to be virtually non-existent, we could not find references to limiting impermeable surfaces, identification of view corridors or preparation of recreational plans which capture the benefits of hillside views.

Hillside Development Guidelines (HDG)

- HDG provides a strong statement of how the guidelines are to be used, "....each proponent of a project has an obligation to demonstrate how each relevant guideline has been addressed". With 86 separate guidelines this is not realistic or necessary – innovation and flexibility are key to successful hillside projects and is acknowledged in the statement "each development will have site specific opportunities and constraints to be dealt with through the Development Permit process".
- Objectives should be tempered with reality, for example developing hillsides will not "....preserve the scenic character of hillsides" as natural surroundings are being replaced with housing.
- Some guidelines offer potentially conflicting statements, for example, "safety cannot be compromised" versus "road patterns conform to topography".
- Some guidelines lack clarity which could be improved with graphic depictions.
- Some guidelines emphasize engineering standards, which generally conflict with planning objectives, particularly when these standards reflect traditional flat-terrain thinking. Standards would best be incorporated in existing regulatory bylaws, rather than as guidelines.
- Many guidelines apply to all forms of development, not specifically to hillside projects, making the number of guidelines longer than necessary.

Subdivision, Development and Servicing Bylaw No. 7900

- Focuses primarily on road standards, however there is no consideration of impervious surface management, reduction of downstream floodwaters, enhanced boulevard landscaping, flexibility for sanitary sewer pumping, storm water pumping – all of which are necessary to accomplish planning objectives for hillside development.
- Road standards are strongly orientated towards automobile use on local roads, rather than the liveability principles by offering "walking, hiking, cycling and alternative commuting choices...."

Zoning Bylaw No. 8000 (ZBL)

- ZBL exclusions noted for multiple family housing are inconsistent with OCP statements regarding hillside development.
- ZBL contains limited flexibility, or opportunity to be innovative, when considering hillside projects. For example, the 15% for driveway grades could potentially cause unnecessary grading in hillside developments.

- ZBL offers option for reducing road standards, however, there is little incentive to use the "h" designation. For example, the ZBL does not require buildings to "follow the natural slope", i.e. step-back as the building moves up or down the slope,
- Numerous building hillside guideline objectives are not incorporated within the Zoning Bylaw, for example, landscaping, massing, rooflines, various access options for individual lots.

Community Resource Handbook

- Natural Environment and Hazardous Condition Development Permit applications are exempt from Advisory Planning Commission (APC) review and are referred to Council for issuance of a Development Permit. The APC might have a role in reviewing how well hillside projects meet overall OCP and Hillside Guideline objectives.

Development Permit (DP) Files

- There is a lack of information provided by applicants for staff to adequately process the application and evaluate whether the hillside guidelines have been addressed. In particular, incomplete or inadequate geotechnical analysis and visual impact assessments limit staff's ability to provide a complete review.
- Procedural issues related to information provided at too late a stage in the process, and/or an unclear relationship between various hillside development procedures. A checklist and file tracking system geared specifically for hillside developments would greatly improve development processing.
- Questionable corporate commitment to hillside development guidelines as exemplified by general unwillingness to question the analysis provided by applicants or to follow through on guidelines and other requirements.
- Enforcement is virtually non-existent, partially due to lack of structure and resources in processing hillside applications.
- Staff could not locate any examples of cluster housing projects within the City, yet this form of housing is emphasized and strongly encouraged within the OCP, Sector Plans and the Hillside Development Guidelines.
- Developers appear to be unwilling to set aside "developable land" to create cluster housing.
- Visual impacts become apparent after houses are constructed, not before.
- Significant natural features are being consumed by development and opportunities to introduce public amenities give way to developer interests.

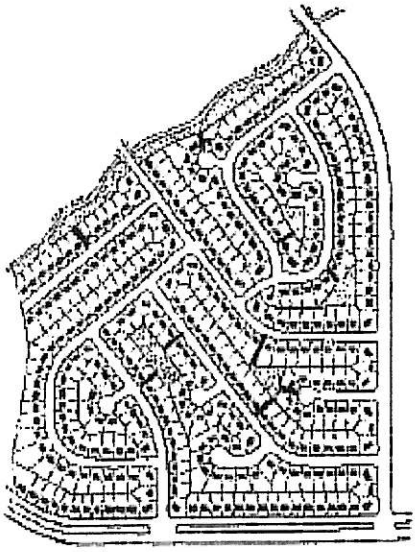
More specific details on the findings following the review of development permit files are contained in Appendix 4.

Subdivision Plans for two hillside projects: Denali Ridge and Wilden

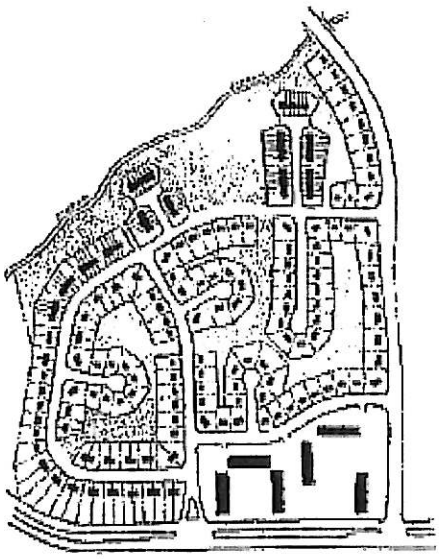
A review of subdivision plans was undertaken for portions of the Denali Ridge and Wilden neighbourhoods. The results depict significantly different development objectives, and as some believe vastly different results.

The Denali Ridge subdivision plan contains approximately 50 single family lots with an average lot size of 830 m². In contrast, the Wilden subdivision plan contains approximately 80 single family lots with an average lot size of 1250 m² - about 50% larger than Denali Ridge. This compares to a minimum lot size for flat terrain subdivisions of 550 m². For comparison purposes, an average lot size of 687 m² has been assumed for a typical flat terrain subdivision - about 25% greater than the minimum permitted in the Zoning Bylaw. On this basis, the following conclusions can be made:

- Lots in Denali Ridge are approximately 20% larger than a typical flat terrain development. Within this extra lot size this subdivision must accommodate steep slopes, protect natural features and retain "extra" open space in order to fulfill some of the objectives provided in the City's OCP, Sector Plans and Hillside Development Guidelines.
- Lots in Wilden are approximately 80% larger than typical flat terrain projects. This is evident in the field with the protection of steep slopes and natural vegetation, protection of some natural features and some open space.
- Both subdivisions tend to be orientated towards traditional development patterns, without consideration of alternate building forms, such as cluster housing. The benefits of cluster housing are illustrated in the following graphic taken from the City of Nanaimo's Steep Slope Development Permit Area Guidelines.

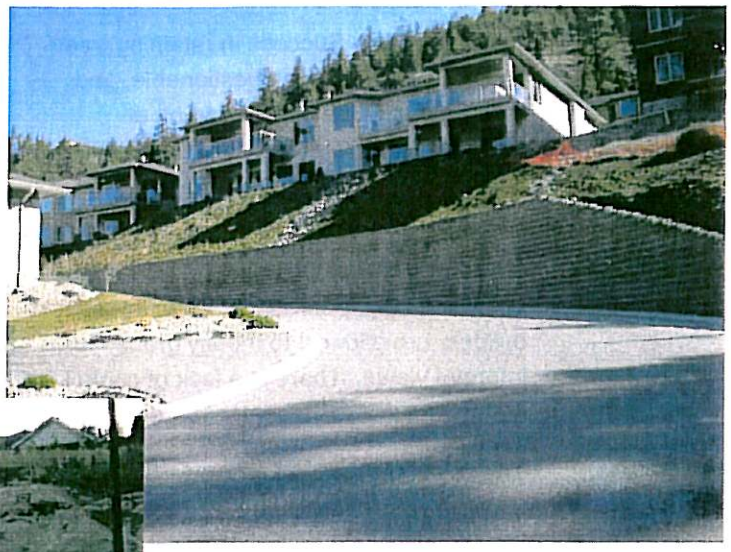


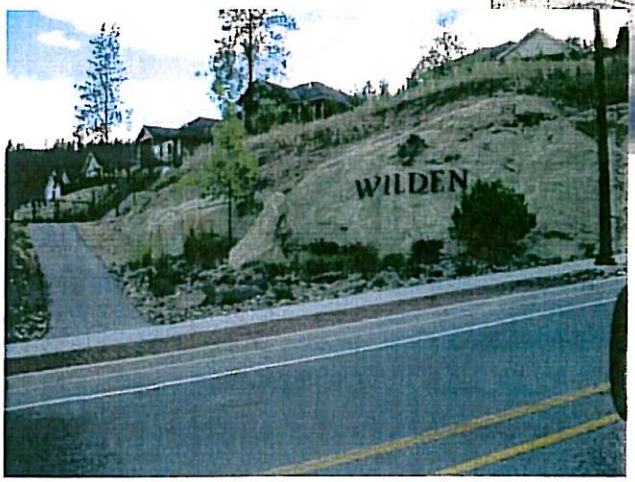
Typical single family subdivision



Subdivision with cluster housing – more open space

The review of the Denali Ridge and Wilden subdivisions suggests than when hillside lots are substantially larger than typical flat-terrain lots, there is greater retention of natural features, including slopes, as well as more open space. Although much of this is accomplished within individual lots rather than as public space, the benefit is a more visually appealing project.





4.0 Stakeholder Input

Stakeholders included City staff, utility providers, developers and City residents. To garner the input of stakeholders during the study process the following was undertaken: interviews with representatives stakeholders, distribution of targeted questionnaires to City staff, utility providers and developers, a field trip with City staff, and the administration of a survey to City residents. The results of these efforts are summarized below.

4.1 Interviews

Interviews with senior City of Kelowna staff, service providers, developers and residents were undertaken. This included about 45 interviews. Key issues arising from the interviews have been categorized into two broad areas: design and process–based comments. A summary of the key issues are outlined below:

Design-based comments:

- Density – Hillside projects are as dense or perhaps more dense than flat land projects because with narrower right of ways developers are able to have more units. Developers yield expectations may be unreasonable – there is a major gap between conceptual plans prepared at Development Permit stage versus final subdivision plans.

- Tree retention - Success in retaining trees and existing slopes is questionable, and grading should be considered on all applications from rezoning to building permit.
- Grading - Road grades and standards are affecting cut/fill slopes and the look and feel of hillside neighbourhoods. Developers and builders are allowed to modify grades to improve views. There is a lack of control, monitoring and enforcement on grading plans.

- Streetscapes - A 3-D streetscape analysis early in the planning stage to assist staff and developers understand the visual impact of their subdivision plans might be helpful. More attention could be paid to creating "liveable streets" – through more extensive urban design input.
- Subdivision Layout - Cluster housing concept is not well understood and rarely used.
- Ridgelines - Housing tends to dominate ridgelines when viewed from afar.
- Open Space - Public access is not being retained. Most valuable property is for the sole benefit of individual property owners, rather than the benefit of the community as a whole.
- Environmental Protection - Protection of unique natural features is not often achieved.

Process-based comments:

- Change management – A willingness to adopt change and overall buy-in by staff is fundamental to moving forward. Departments must all work towards the same goals/objectives.
- Clearer guidelines required – as an example, a number of geotechnical issues have arisen, which can be addressed through more diligent reporting by applicant.
- Insufficient staff resources – Lack of innovation and flexibility are a product of staff time available to process applications – innovation takes significant staff resources to follow-through. Takes more staff time to process development on complex terrain, yet current turnaround times are consistent with less complex project reviews – can utilize design professionals to assist staff with processing applications.
- Tracking – Not all staff have access to the development application tracking system.
- Development Permit waiver process – Waiver process may be over-used and short-circuit a full objective review of Development Permit issues.
- Application of hillside guideline reviews – limited to "h" zoning or slopes greater than 30% - should be a wider application and include environmental Development Permit – staff question enforceability of guidelines that can be accomplished through Development Permit process
- Dispute resolution process - Developers use the dispute resolution process to obtain "common-sense" decisions – too much gets referred to the respective Director for resolution.
- Competing interests - Lack of recognition that there are choices, and the impact each choice has on competing objectives, such as safety versus minimizing impact on terrain.

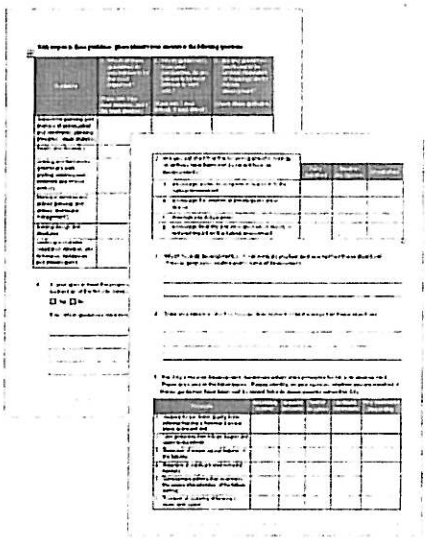
- Risk management - Staff generally risk adverse, concerned with ongoing liability/maintenance/legal issues/post-development issues.
- Developer perspective- offers a different view-point, albeit usually from a financial perspective, as opposed to doing the right thing; no acknowledgement of current issues with hillside projects; more willing to take risk.
- Lack of follow up - No one canvases how residents feel after they move into their new hillside home – concerns with safety, access, slope stability, aesthetics, snow removal, etc.
- Lack of consistency and clarity – There are too many guidelines, many of which are too subjective. The guidelines should focus on key objectives. The development process for hillside sites lack clarity.
- Parks issues not always represented - In Council reports or PLA's some park issues are not being addressed. There is a perception that the City must acquire all non-developable land yet Parks does not have sufficient funds to do so.
- Subdivision Development and Servicing Bylaw applied too literally – the bylaw treats hillside development almost the same as flat-terrain projects.
- Information requirements - Standard of reports supporting applications are weak and there are limited requests for further, follow up information.

4.2 Questionnaires

Five separate questionnaires targeting specific stakeholder groups were prepared for City staff (planning, parks and transportation), developers, utility providers and City residents. Results from the questionnaires received from staff, utility providers and developers are summarized below. Results from the survey of City residents are provided in section 4.4.

- Subdivision site planning was consistently ranked as most important, while road design was ranked as most difficult to work with. As a result, road design receives greater attention and detail during the development process, than subdivision site planning issues. More emphasis is required up-front at the planning stage and greater flexibility is necessary when designing roads.
- There is general dissatisfaction with current hillside projects; and Wilden was often cited as the best example of hillside development.
- It was agreed that housing designs do not typically suit the natural terrain.
- A concern that there is a strong emphasis placed on the cost to maintain infrastructure, at the expense of "good projects".
- A belief that not all staff are "on board" with implementing hillside design guidelines suited towards principles which enhance aesthetic qualities and the protection of natural terrain, while offering sustainable design, flexibility and innovation.

4.3 Field trips



During the course of this audit two field trips were conducted with City staff in order to gain "first hand" impressions of hillside project development in Kelowna. Projects visited include:

- HighPointe
- The Quarry
- South Ridge
- Westpoint
- Kirschner Mountain
- Denali Ridge
- Quail Ridge
- Wilden
- College Heights.

A formal evaluation of a select group of projects was carried out by staff. The results are contained in Appendix 5. Each project was evaluated against the following audit criteria:

- Aesthetically pleasing
- Functionally appropriate
- Environmentally sensitive.

In addition guidelines extracted from the OCP and other community plans formed the basis of a more in-depth analysis of each hillside project. The guidelines which consistently ranked the lowest for all hillside projects are:

- Provision of cluster housing to retain open space
- Infrastructure that addresses public safety, cost-effectiveness and sustainability
- Housing designs that minimize visual impacts and complement sloping terrain.

4.4 Resident surveys

During the course of this audit, City staff decided to solicit a greater level of feedback from interested residents. A questionnaire was developed (refer to Appendix 1) and mailed to 300 randomly selected hillside addresses and 100 valley floor addresses. The City received 99 surveys from hillside residents (30% response rate) and 18 surveys from valley residents (18% response rate). Due to the small sample size the conclusions noted below may not be statistically significant or a reliable representation of Kelowna resident's feelings and opinions relating to hillside development, particularly those generated from valley floor residents (only 18 surveys received). Secondly, it is difficult to ascertain whether the lower response rate from valley floor residents is an indication of "indifference". The survey does however provide an indication of where concerns may be evident. A detailed analysis of the survey results is provided in Appendix 7.

The overall level of satisfaction with hillside development is not surprising much higher with hillside residents. Only 18% of hillside residents indicated some dissatisfaction, while only 28% of valley floor residents where either dissatisfied or very dissatisfied with hillside projects.

The majority of both hillside and valley floor residents who think the layout of lots and houses is inappropriate also think it is because lot sizes are too small.

The majority of both hillside and valley floor residents who think the landscape in hillside development is inappropriate also think it is because too little natural landscape is retained.

A difference between hillside residents and valley floor residents seems to relate to views. Hillside residents, who are mostly satisfied overall and have the benefit of a view, are concerned with 'how they get around.' Valley floor residents are largely indifferent to functional aspects of the development, but seem to be indicating that they are not satisfied with views to hillside areas.

Finally, it is a challenge to consult with the public on a topic as complex and technical as hillside development. Concepts such as street design, grading, lot layout and ridgelines require a certain level of understanding to evaluate. The high level of responses seems to indicate that hillside development is important to residents, regardless of their understanding of individual aspects.

4.5 Public Open House

Once the initial set of recommendations was developed by the project team, a Public Open House was scheduled to solicit feedback from interested stakeholders and the general public. The Open House materials included a PowerPoint presentation, display panels of the key recommendations and rational for undertaking this review, comment sheets and various City maps. This event was held at Fire Hall # 1 in the late afternoon, early evening.

Just prior to the Open House a local newspaper ran a front page article on hillside development, plus a television newscast talked about this review and encouraged residents to attend the Open House. As a result of the focus and attention paid by the local media, the Open House was well attended.

Following the Open House the local chapter of the Urban Development Institute (UDI) forwarded a letter to the City which indicated "the ideas presented by the Consultant ... are for the most part applauded by the development community". The letter goes on to describe four areas which UDI believes requires greater emphasis. A noteworthy suggestion was: "there must be direction from the highest level within the City to ensure developers and City of Kelowna technical review staff take a more open and flexible attitude towards new ideas being proposed within the spirit of the guidelines". This suggestion by UDI is fundamental to achieving quality hillside development – difficult site conditions require flexibility, and an open mind during the staff review process.

5.0 Municipal Comparisons

A component of the City of Kelowna hillside audit involved a review of some other municipalities and their experience with the actual application of hillside development standards. The purpose of this was to determine whether other local governments had similar or different experiences, allowing for the potential application of lessons learned.

A number of BC municipalities have in the past few years been examining the application of hillside development practices. However, the actual experience with hillside regulations is quite limited. UMA is familiar with work that has been done in Port Moody, Coquitlam, West Vancouver, and Abbotsford, but

until recently, standards have either been quite limited or involved modest adaptation of existing servicing standards. Of greater interest is recent work that has been done by the City of Nanaimo, which has developed a substantial set of development permit area guidelines, and is now dealing with several new hillside development projects. Given the lack of information on BC experience, only the City of Nanaimo was selected as an example from BC, supplemented with some direct experience gained in consulting to the District of West Vancouver. The other example selected was the Town of Los Gatos, located in the Monterrey/San Francisco region of California.[1] Los Gatos was selected because its climate and terrain is similar to Kelowna's and they have had considerable years of experience with hillside development issues, albeit larger lot sizes.

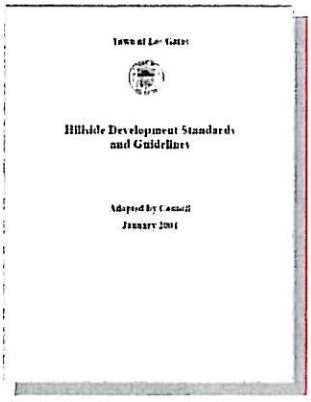
The analysis of the existing practices and success of the local government experience revolved around the following major themes:

- Staff perspective on the success of local hillside regulations
- Key ingredients necessary for success
- Application of densities
- Effectiveness of retaining trees on steep hillsides
- Application of hillside guidelines and the extent to which flexibility can be exercised
- Construction issues

Discussion focused on these themes is anecdotal based on staff interviews. As such, the comments provided in this section should not be construed as a rigorous analysis.

Success of Local Regulations

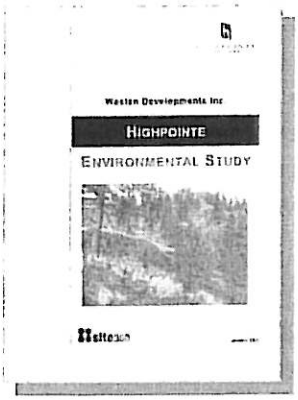
In the City of Nanaimo two projects currently are being processed under Hillside Development Guidelines (HDG). Neither has yet been finalized, although one project is now proceeding into construction (early summer 2006). Both projects that fall within the local hillside development guidelines involve submissions from experienced developers. The City has received a number of other inquiries, but as yet, none of these has proceeded to a full application process. Thus success in Nanaimo is limited largely to approval processing.



In contrast with Nanaimo, Los Gatos has had several years of experience with hillside guidelines. The Town of Los Gatos has had guidelines in place since 1978, but the guidelines were deemed sparse and basic – typical of guidelines still applicable in many BC municipalities. Updated in the late 1990's, the Los Gatos guidelines are both more complete and specific. Los Gatos staff believes

[1] Telephone contact and interviews were conducted in May and June 2006 with Dale Lindsay, Manager Current Planning, City of Nanaimo and Suzanne Davis, Planner, Town of Los Gatos. In both instances the individuals interviewed were deemed by local staff as the most appropriate to deal with the issues under examination.

that the Hillside Standards and Guidelines (HSG) have made a positive contribution to the retention of sloped areas developed for residential use. The HSG document distinguishes between standards and guideline topics so that requirements are clearly separated from those items where some discretion in implementation applies.



Key Ingredients to Success

Nanaimo's regulations are relatively recent, and experience has been limited to dealing with several current applications. However, Ocean Terrace, with a first phase under construction, provides a good example of positive effects. It includes, for example, split roadways, with grade separation between travel directions. This is deemed a sensitive response to steep terrain, allowing use of the green space between the paved lanes for storm water management.

A critical measure of success for both communities was the need for good, comprehensive 'up front' information from the applicant. For example in Nanaimo any site with slope over 30% automatically is a steep slope zone, and so HDG applies. Requirements for information are listed in the HDG, and include much more design and site information up front. For example, contour data at a 1 metre interval reflecting an actual site survey is required as opposed to generating contours from air photos. In addition, grading plans, drainage information etc. must also be submitted. The HDG includes a checklist for staff to use.

In Los Gatos, site plans with grading information and the location of retaining walls are required at application stage, and must be approved by staff. Landscape plans are also required, and tree protection is part of the approval checklist. As part of development approvals cut and fill slopes must be re-vegetated and there are maximum allowable cut and fill depths for building and driveways. In addition, cut or fill slopes may be required to be varied to avoid an 'engineered' appearance.

This significant increase in information required at time of submission also implies more time for staff to review applications. Thus staff resources need to be available for review, especially in times of rapid development.

Also important to the success of the system was community acceptance. The process of developing the HDG in Nanaimo involved a community consultation process with various stakeholders, including the public, developers, and architects. In Los Gatos, the new regulations were preceded by a review with local architects and an architectural standards committee, in order to achieve realistic architectural standards reflective of local conditions. For Los Gatos, this initial more selective and technical review occurred prior to public review and discussion.

In recognition of broad based stakeholder support, Councils in both communities were willing to support the initiative. Council adoptions of clear regulations and guidelines gave staff the necessary and crucial political backing for implementation.

Hillside Development Densities

In Nanaimo, any sites with slopes over 30% are designated within the specially created RS-7 or RS-8 zones, and as development permit areas. These zones were created specifically to mitigate the development challenges related to building in steep sloping areas. This means larger minimum lot sizes for parcels on slopes of 30%. Buildings can be either single family or multiple family dwellings. Flexibility

is provided by allowing smaller lots in flatter areas. The permitted density allowed for flatter portions of the site is 12 units per hectare versus 7 to 8 units per hectare (in RS-7 zone).

In Los Gatos, areas are zoned according to the slope of land. Steeper slopes have larger minimum lot sizes and therefore lower density allocation. Overall, permitted densities in Los Gatos are considerable lower than Nanaimo, and are more consistent with rural residential development in BC. Houses are limited to a maximum floor area of 5,400 sq. ft (502 sq. m.) and adjusted downward based on a site slope ratio. For subdivisions, applicants must demonstrate that all proposed lots have adequate building sites with acceptable driveway and utility access. Obtaining approval for maximum allowable density is based on the applicant demonstrating that all required standards and guidelines have been met within the application.

Effectiveness of Tree and Slope Retention

Nanaimo was very positive about tree and landscape/ slope retention as a result of larger minimum lot sizes for single family layouts, as well as flexible building envelope and setback regulations. The regulations also provide for the potential for negotiation enabling staff and the applicant to discuss development alternatives and site planning options with the intent of retaining trees and preserving slopes.

For Los Gatos the Hillside Development Guidelines are tied to:

- a tree protection ordinance,
- the zoning ordinance,
- architectural review requirements, and
- geotechnical requirements and density calculations.

This inter relationship is helpful in limiting the situations in which exceptions can be applied. The maximum allowable floor space, for example, is not always achievable; and staff will advise applicants to reduce the size of a proposed building, rather than remove more trees or allow more severe grading. Achieving maximum floor area is not a justification for relaxation of standards or guidelines.

Flexibility Issues

Nanaimo staff can discuss and negotiate with proponents to achieve desired objectives. For example, retention of portions of a site through park dedication does not penalize development yield as density can be transferred to other areas of the site. Several other BC communities are experimenting with a similar approach. Staff does some preliminary 3D modeling with digital data provided by the applicant in conjunction with an air photo review. This gives staff more information to discuss site-specific features or development ideas.

While engineering standards for roads and other utilities have not changed, engineering staff has agreed to discuss modified standards for each development site, (as has happened with the one hillside development now under construction in Nanaimo). HDG suggest reduced road / access areas for semi private drives, garage locations, etc.

Construction

In Los Gatos engineering and parks staff visit and review the project for compliance with permit drawings. Penalties can apply for unauthorized changes or damage to retained area or existing tees. Tree topping is prohibited, and pruning can not remove more than 20% of an existing tree canopy. Projects must have final approval given by planning, building, engineering and fire control staff.

There is insufficient experience in Nanaimo process to allow for comments regarding the construction phase.

Some rather unique/interesting statements extracted from Nanaimo and Los Gatos Hillside Guidelines are included in Appendix 6.

West Vancouver

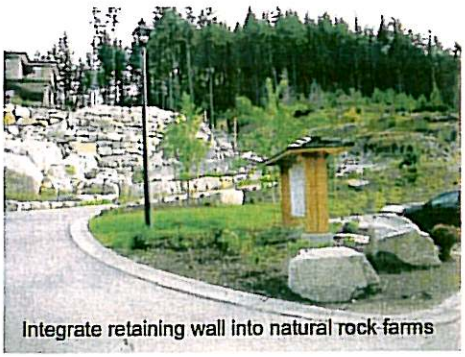
UMA was engaged by the District of West Vancouver to assist the Planning and Permits Department with processing development applications. Based on this experience there are a number of positive aspects to the way the District processes development applications which may benefit Kelowna in the review of hillside development practices.

The District of West Vancouver is comprised of a number of uniquely different neighbourhoods, ranging from older, well established neighbourhoods, such as Caulfeild, to greenfield subdivisions developed by British Pacific Properties, such as Whitby Estates. Caulfeid consists of a largely developed community, with very large lots, as a result the majority of development consists of infill projects, many of which are located on very difficult sites with steep terrain (in excess of 30% slopes). Whitby Estates is a mountainous greenfield project with similar terrain (some slopes greater than 30%). Generally the level of community satisfaction with hillside development projects varies, depending upon whether one lives on the mountainside or views it from afar.

Difficult terrain is defined as "places where more than one-fifth of the total allowable building envelope on any lot has an existing grade exceeding 35% or where driveways meeting regulations would exceed 20%. A Development Permit is required for subdivision of lots that contain difficult terrain; however building permits on individual lots are exempt. The lack of control over individual building lots creates challenges meeting grading expectations.

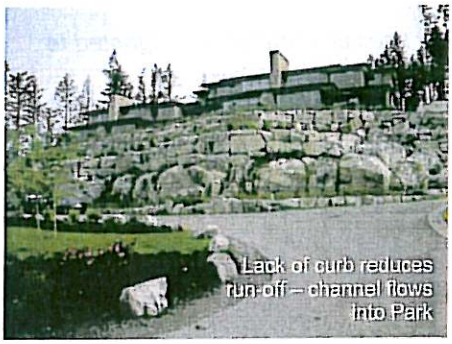
Lands above the Upper Levels Highway, British Pacific Properties, are within an Upper Lands Development Permit Area which takes into consideration the hillside character of these lands. The Development Permit guidelines centre on protection of the environment and protection from hazardous conditions, and include specific reference to topography, tree retention and watercourses.

Most of West Vancouver is contained within a Watercourse Protection Area Bylaw, which regulates how development interfaces with existing mountain creeks and streams. This bylaw is similar to many environmental protection type bylaws in requiring setbacks to watercourses and protection during construction. The District enforces the regulations and guidelines contained within the bylaw, to the point of issuing fines to contractors, developers and professional consultants who violate bylaw requirements.


Integrate retaining wall into natural rock farms

Hillside development requirements in conventional District bylaws are either non-existent or dated to the point of being ineffective. For example the Subdivision and Development Bylaw dates back to 1955 and it has not been amended since that time. As a result this bylaw is seldom referenced by staff and developer's consultants. Thus each project is reviewed on its own merits – this permits a high degree of flexibility when dealing with difficult terrain and unique situations.

The District does not utilize Hillside Development Guidelines per se, although many principles contained within Kelowna's guidelines are routinely employed by District staff when reviewing development applications. Attempts to control the extent of grading (cuts and fills) have been marginally successful through the use of published retaining wall construction guidelines and limits on the amount of rock which may be blasted for individual building permit applications.


Lack of curb reduces run-off – channel flows into Park

A primary benefit of the West Vancouver model is its flexibility and willingness to consider unique circumstances. On the other hand the District encounters problems with site and subdivision grading (significant cuts and fills), lack of terrain adaptive house designs and tree retention. With the exception of Caulfeild, where residents proudly protect their natural surroundings, natural open space is largely confined to creek corridors – slopes greater than 30% are developed where possible, and concessions are made to accommodate difficult access conditions.


Divert storm drainage through BioSwale – West Vancouver

Caulfeild has been able to retain its natural park like setting in most cases through the protectionism efforts exerted by its residents. As a result many roads in Caulfeild would be considered "below standard" in most BC communities, in terms of pavement width (some as small as 3 – 4 m), narrow rights of way, no curbs or sidewalks, limited on-street parking, very steep driveways, no exit or turnarounds and very low design speeds.


Narrow pavement width – new subdivision in West Vancouver


Drainage filtered before entering storm system


Very narrow pavement – respects natural terrain

Approximately 10 years ago the District struck a technical, resident committee to review and comment on standard local road construction employed by many BC communities. Arising from this review the District adopted a "skinny streets" policy which governs the design, appearance and interface of local residential streets. Some comments arising from this review include:

In order to create an attractive and safe environment special attention is suggested to roadway characteristics. Creating attractive residential streets requires:

- *automobile tolerant, as opposed to automobile dominant, narrow local streets*
- *variety and unique character*
- *curved streets with low design speeds*
- *pedestrian friendly streets*
- *retention of natural features and vegetation*
- *heavily landscaped boulevards and medians*
- *design which is subordinate to terrain*
- *smooth as opposed to hard surfaces and edges*
- *non-uniform, low lighting*
- *sporadic parking opportunities.*

Streetscape design should strive to create attractive residential streets within the public road rights of way. By creating more intimate, pedestrian friendly streets developers can create liveable, attractive neighbourhoods rather than the traditional one-size fits all approach to subdivision design.

Engineering road design standards have a significant impact on the look and feel of residential communities, and the extent of disturbance (grading, tree retention, protection of natural features, etc.) to the terrain Standards which tend to have the greatest influence on subdivision design and the overall character and feel of a neighbourhood include:

- pavement width
- extent of on-street parking
- design speed, which affect horizontal and vertical curve/alignment
- overall road grade
- location and number of sidewalks and curbs
- street lighting
- driveway grades.

Desirable residential streets are unique rather than uniform in appearance and character. During subdivision design particular consideration should be directed towards establishing unique, non-uniform local roads, as opposed to one-size fits all standard.

Comparison to Kelowna

In reviewing the experience of the three communities, the following aspects are not currently part of Kelowna's process or practice:

- application of a minimum lot size which increases with increasing slope
- inclusion of a staff checklist for application review
- requirement for more comprehensive information at the application submission stage
- ability for staff to negotiate with applicants to preserve natural features, and to allocate densities to fit the site and realize municipal objectives
- application of slope guidelines that are tied to zoning

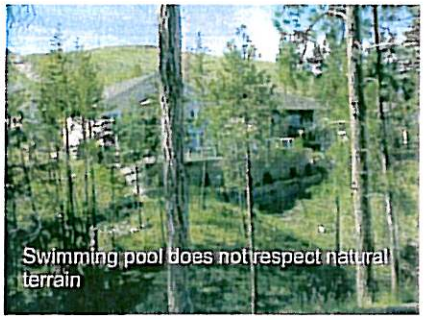
- flexible design standards, low-impact development standards pertaining to road design and drainage
- encouragement and capacity for more variability in subdivision design.

6.0 Analysis

6.1 Factors associated with Hillside Development

Based on stakeholder input, comparisons with other municipal experiences, and a review of Kelowna's hillside development guidelines and procedures, there are a number of factors associated with hillside development that need to be recognized and accepted as part of hillside development. While some guidelines or procedures could potentially be implemented to address some of these factors, they are in essence, "the facts of life for hillside development". Hillside development:

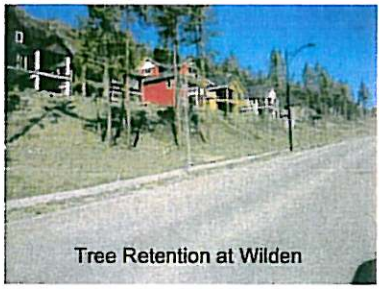
- is more difficult and costly to maintain and requires specialized equipment (e.g. smaller, more agile equipment)
- necessitates alternate designs that reduce accessibility and can add adversity such as, long dead-end streets, single access to entire communities, fewer on street parking opportunities, difficult snow clearing, reduced opportunities for the mobility impaired and elderly, restrictions on use of backyard (e.g. steep lots cannot effectively accommodate swimming pools)


Swimming pool does not respect natural terrain

- poses greater risk and exposure for all stakeholders in terms of safety, stability, liability, constructability
- requires more staff processing time due to requirements for such items as geotechnical reports, environmental information, tree retention and grading plans, visual analysis, etc.
- requires more innovative design and attention to storm runoff
- presents more noticeable changes to the landscape than flat-terrain development
- poses greater difficulty in maintaining access and providing storage space for construction materials, particularly during house construction.

6.2 Two Case Studies

Two residential subdivision projects were chosen as case studies of hillside development. These examples include Wilden and a mobile home park in College Heights. The following provides a summary of observations.

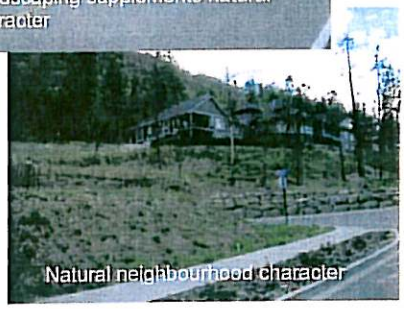

Tree Retention at Wilden

Wilden

- Respect for the quality of the hillsides through retention of the natural terrain and vegetation

- Overall lower density, with larger single family lots (average 1,250 m²),
- Views onto the project are not dominated by housing mass, and tree retention softens the impact on the hillside


Landscaping supplements natural character


Natural neighbourhood character

- Natural features and environmentally sensitive areas have largely been retained and protected
- Innovative, livable streetscape design which incorporates narrow lanes, low level street lighting, no sidewalks, and low road design speed
- Housing form respects the natural terrain within part of the site
- Color schemes effectively controlled to blend into the natural environment

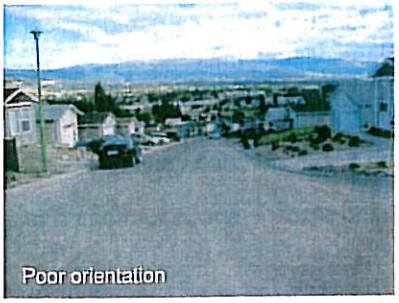

Exception – inappropriate use of "standard" cul-de-sac


Wide, expansive entrance to Wilden

- Minimized cuts/fills, resulting in fewer retaining walls and a more natural feel to the neighbourhood
- Natural, xeriscape landscaping has been incorporated into public boulevard space

Mobile Home Park, College Heights

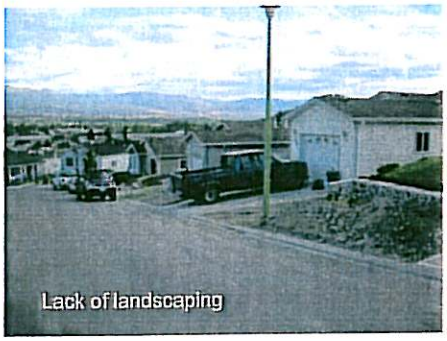
- Typical 8 m paved local roads -- 2 m wider than a typical local road in Wilden


Poor orientation

- Orientation of homes do not take advantage of the view
- Lot lay-out and street orientation does not reflect the site's attributes
- Long, straight, constant grade roads which results in an uninteresting streetscape
- Development which is contrary to policies contained in the University South Area Structure Plan, December 1996, such as:
  - Integrate development into the natural landscape and to minimize the visual impact of hillside development
  - Roadway/access patterns should follow topography, long stretches of straight road should be avoided
  - Hillside development must preserve or protect unique or special natural features of the site, such as land forms, rock outcroppings, mature trees and vegetation, drainage courses, hilltops and ridge lines


Extensive clearing to accommodate subdivision

Source: City of Kelowna


Lack of landscaping

- Onsite and street landscaping is lacking
- Visual analysis was not considered
- Light modular homes on a dark natural background do not blend into the natural landscape
- Natural open space is deficient

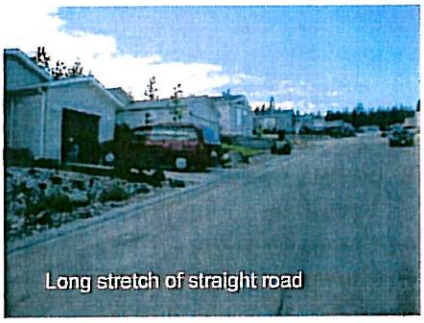

Wider street with limited parking

6.3 Outcomes

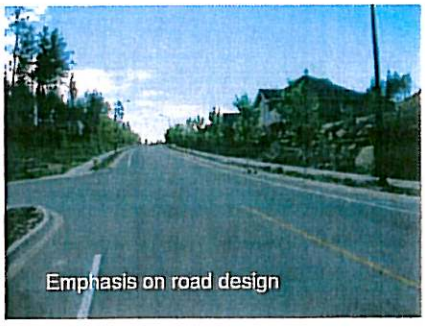
During the course of the audit the project team answered the following major questions to determine the success of hillside bylaws, policies and practices utilized by the City of Kelowna.

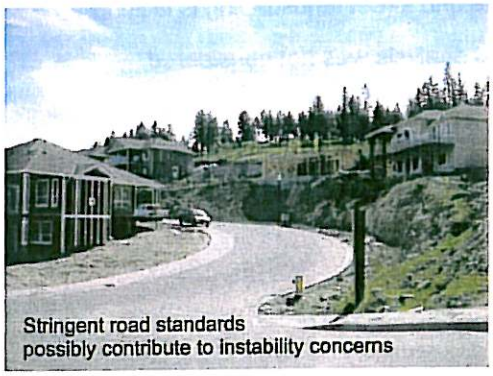

Extensive grading

1. *Were hillside development principles followed?*
   - We found a lack of consistent application of hillside guidelines and policy statements when reviewing development applications
   - We believe not all staff have "bought into" the need for addressing the uniqueness and characteristics of hillside development projects
   - The guidelines themselves contain conflicting principles which reduces the credibility of what the City is attempting to achieve


Long stretch of straight road

   - We found a general lack of enforcement when reviewing hillside development applications and project issues in the field
2. *Are hillside development conditions being imposed when reviewing applications?*
   - Significant use of Development Permit Waivers allow developers to "bypass" effective staff review of hillside development principles
   - OCP/Sector Plan policy statements are not consistently applied when reviewing development applications
   - Few development conditions imposed by the City actually reflect hillside development principles


Emphasis on road design


Stringent road standards possibly contribute to instability concerns


Lack of grading controls

3. *What types and extent of hillside development conditions are being imposed?*

- Emphasis is placed on road design, rather than protection of the environment and integration with existing terrain
- View analysis completed by consultants did not translate to design modifications to soften the impact of the urban form on rural hillsides
- Geotechnical reviews may be inadequate in some instances


Lack of grading controls


Lack of control – retaining wall design

- Few constraints or limits are imposed on retaining walls and site grading
- Three dimensional (3-D), streetscape planning analysis is not being conducted in order to provide a clearer understanding of the potential look and feel of the project at its infancy stage

4. *How do Kelowna's experiences compare with other jurisdictions?*

- Kelowna's experiences are not much different from BC Lower Mainland municipalities, however, some Lower Mainland locations place greater emphasis on the use of low-impact development opportunities (primarily due to climatic conditions), and a willingness in some instances to accept 'skinny' streets


Lack of grading controls


Excessive hard surfaces

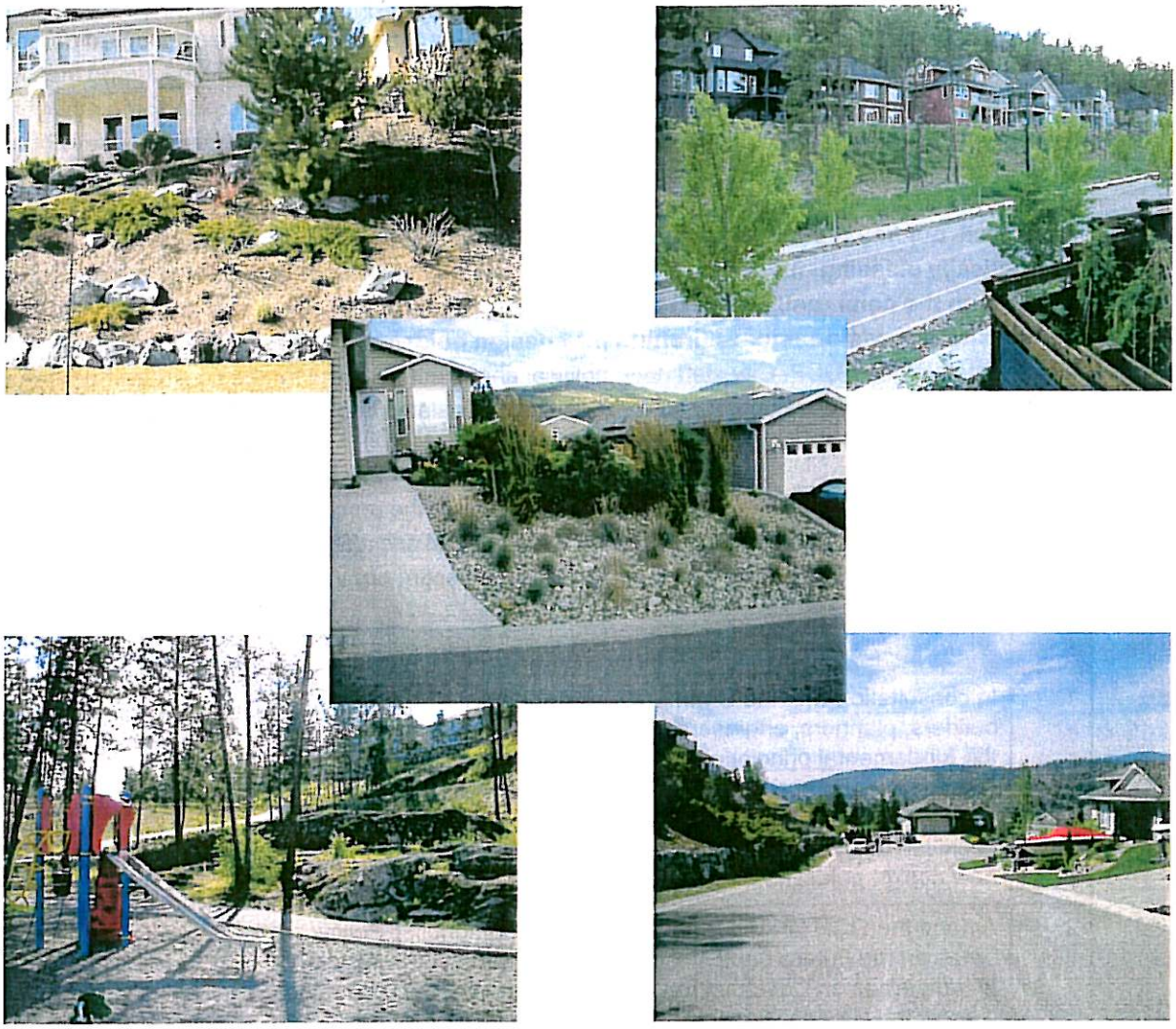
- Most municipalities experience difficulties with grading, large retaining walls, mitigating views from afar, tree and green space retention and lowering of development densities.

5. *Does the final product match anticipated outcomes?*

- Generally hillside projects do not provide the green/open space and tree retention envisioned in the community plans

- Hillside projects, by their location within the City, create significant visual impacts when viewed from afar
- Projects generally fail to retain the natural hillside characteristics within the City

Some notable exceptions:



7.0 Recommendations and Implementation

7.1 Recommendations

During the course of this review it became evident that there appears to be a lack of broad political support, as well as development industry and community support, to implement the strong measures required to achieve the City's hillside development objectives. The experiences in some other municipalities suggest that greater success has been achieved because a process was developed to build community support for managing hillside development projects differently.

As a result, **our key recommendation is to review the fundamental principles required to create aesthetically pleasing, functionally appropriate and environmentally sensitive projects, and work jointly with the community, developers, builders, planners, engineers and architects to secure consensus on a vision prior to drafting new design guidelines.** This vision should then be incorporated into the OCP. City staff need political and community will for the confidence necessary to effectively administer development guidelines, which translates into a more effective "in-house environment" for processing hillside applications.

With each recommendation listed below we have identified the primary organizational unit responsible for implementing the recommendation. As most recommendations affect virtually every City Department, proposed changes require input and support across the entire organization.

	Recommendation	Responsibility	Bylaw/Policy
1.	In consultation with the community, developers, builders, planners, engineers and architects, review the fundamental principles for aesthetically pleasing, functionally appropriate and environmentally sensitive projects, and obtain consensus on a definition of hillside area and a vision prior to drafting new design guidelines.	Policy/ Research/ Strategic Planning	
2.	Amend the OCP to: designate hillside development areas on the Future Land Use map, differentiate hillside areas on Development Permit area maps, include the Hillside Development Guidelines as Development Permit Guidelines, and identify the community vision.	Policy/ Research/ Strategic Planning	OCP and Sector Plans
3.	Amend the Development Permit Waiver (DPW) application form to include the criteria in the OCP which qualify the applicant for a waiver. Require Development Permit (DP) application for hillside areas designated as Hazardous Condition and Natural Environment in the OCP.	Development Planning	Development Application Procedures Bylaw

	Recommendation	Responsibility	Bylaw/Policy
4.	Designate significant natural features and ridgelines as Natural Environment DP areas in the OCP.	Policy/ Research/ Strategic Planning	OCP
5.	Revise Hillside Development Guidelines to: • Include the community vision. • Focus on key objectives to achieve the vision. • Differentiate between standards (shall) and guidelines (should). Consider amending the Zoning Bylaw and Subdivision, Development & Servicing Bylaw to include items considered to be standards. • Encourage flexibility and innovation. • Require all development applications through to Building Permit to adhere to guidelines (i.e. limit variances from Development Permit to Subdivision to Building Permit that don't comply with guidelines). • Create practical guidelines that can be implemented avoiding subjectivity, which leads to differences of opinion in interpretation. • Include a mechanism to resolve conflicts between competing objectives. • Develop case studies which showcase techniques that achieve hillside objectives. • Provide strong graphic orientation, demonstrating principles such as "Do This" versus "Don't Do This".	Policy/ Research/ Strategic Planning	Hillside Development Guidelines
6.	Set technical requirements / performance targets to measure Development Permit, Subdivision and Building Permit applications against eg. for geotechnical reports.	All	New
7.	Dedicate necessary staff resources, including appropriate training, to evaluate, monitor and enforce technical Development Permit requirements. Monitoring programs can be developer driven and overseen by staff resources.	Current Planning and Inspection Services & Council	Budget
8.	Create a Development Permit Bylaw which sets standards and guidelines to meet prior to considering subdivision approval.	Policy/ Research/ Strategic Planning	OCP


On-street parking bay

	Recommendation	Responsibility	Bylaw/Policy
9.	Amend Development Permit procedures to require a distinct, separate DP process before detailed subdivision review (if done at same time developer has yield expectations which are difficult to overcome). Establish a set circulation for Development Permit application review that includes more staff from all departments affected by development of the site.	Current Planning	Development Application Procedures Bylaw
10.	Develop technical requirements for retaining walls, tree retention, lot grading, etc.	Current Planning	Development Application Procedures Bylaw
11.	Create a vision/definition of what cluster housing means to the City and encourage cluster housing opportunities.	Policy/ Research/ Strategic Planning & Current Planning	
12.	Consider modifying infrastructure standards to use terrain adaptive techniques for hillside projects by amending the Subdivision, Development and Servicing Bylaw to permit: • Single-loaded travel lanes • One-way streets • Very low design speeds • Narrow and/or steep local roads with parking pull-outs • Very steep driveways • Sloping boulevards with fewer sidewalks • Xeriscape boulevard landscaping • Low-impact development drainage • Pumping for sanitary and storm services, etc.	Approving Officer & Works & Utilities	Subdivision, Development and Servicing Bylaw
13.	Revise the Zoning Bylaw to add a separate zone that would apply to all hillside areas, which addresses requirements specific to hillside issues e.g. flexible front and sideyard setbacks, building envelope orientation, density limitations (such as increasing minimum lot sizes as slope increases), massing, etc.	Policy/ Research/ Strategic Planning	Zoning Bylaw
14.	Require developers to use design and planning professionals when preparing Development Permit applications to achieve hillside objectives, including the use of 3-D modeling, view analysis, placing greater emphasis on streetscape, establishing an identity for each neighbourhood and creating a sense of belonging, while recognizing flat-terrain subdivision layouts are not well suited to difficult terrain.	Policy/ Research/ Strategic Planning & Current Planning	Development Application Procedures Bylaw

	Recommendation	Responsibility	Bylaw/Policy
15.	Rather than passing along maintenance responsibilities for difficult sites/conditions to strata corporations, recognize higher maintenance costs are inherent with hillside development. Recognize hillside equipment requires agility and smaller size to accommodate steep terrain.	Approving Officer & Works & Utilities & Current Planning	Budget
16.	Budget for the additional costs inherent to maintain hillside development, in terms of infrastructure and open space.	Works & Utilities and Finance	Budget

7.2 Implementation

Three key elements are fundamental to successful implementation:

- ✓ Staff must secure Council commitment and support for change. A broad community and technical process to build support for the initiative of better hillside development standards will aid in achieving this.
- ✓ Staff at all levels in the organization, and within all City Departments, must buy into the need for change.
- ✓ Staff must embark on a well thought-out communication strategy demonstrating the need for change with the development community/UDI and residents of Kelowna.

Steps for implementation could be considered in the order listed in the recommendations table in section 7.1, and includes:

- ➢ Implement interim process changes to ensure consistent application of hillside guidelines.
- ➢ Identify what constitutes hillside areas and define a community vision for hillside development.
- ➢ Revise the Hillside Development Guidelines to focus on key objectives.
- ➢ Amend the OCP as identified above to ensure consistent application of guidelines.
- ➢ Improve Development Permit application procedures to:
  - o Minimize use of Development Permit Waivers to circumvent achieving hillside objectives
  - o Require more information up-front
  - o Include technical and performance standards for consistent quality of submission requirements
  - o Include 3-D modeling, and design and planning analysis at subdivision
  - o Require a separate, distinct process for addressing Development Permit guidelines before subdivision preliminary layout review and approval
  - o Involve more staff expertise in Development Permit review.
- ➢ Revise the Zoning Bylaw.
- ➢ Amend the Subdivision, Development and Servicing Bylaw.

8.0 References

Other Documents

In addition to the background materials provided by City staff, the following documents were reviewed:

- City of Nanaimo – Steep Slope Development Permit Area Guidelines, September, 2002
- City of Nanaimo – Zoning Bylaw
- City of Coquitlam – Guide to Best Site Development Practices, April, 2005
- City of Kamloops – Subdivision Control Bylaw, August, 2005
- City of Seattle – Hydrologic Monitoring of Seattle Stormwater Management Projects, November, 2002
- Town of Los Gatos, CA – Hillside Development Standards and Guidelines, January, 2004
- New Zealand Handbook: Subdivision for People and the Environment, 2001
- City of Wellington, NZ – Subdivision Design Guide and Review – November, 2005
- City of Wellington, NZ – Multi Unit Developments Design Guide – July, 2000.

Appendix 1: Questionnaires, Surveys and Project Evaluation

City of Kelowna – Hillside Development Audit
Project Evaluation

Project Name:
Location:
Developer:

Rank each item below (1 – 5 with 5 representing best):

Aesthetically Pleasing:

Functionally Appropriate:

Environmentally Sensitive:

Overall Comments:

1. Respect for the Scenic quality of the hillsides that make Kelowna a unique place to live and visit					
2. View protection from hillside houses and views to the hillside					
3. Protection of unique natural features of the hillsides					
4. Retention of significant environmental habitats					
5. Development patterns that respond to the unique characteristics of the hillside setting					
6. Provision of clustering of housing to retain open space					
7. Infrastructure that addressed public safety cost-effectiveness and sustainability					
8. Provision of Livability including walking, hiking cycling and alternative commuting choices					
9. Development that is directed away from unstable soils					
10. Minimizing impact of wildfire on people/property					
11. Housing designs that minimize visual impacts and complement sloping terrain					
12. Use of complementary colours and materials					

Appendix 2: Example Policy Statement

7 ENVIRONMENT

7.1 Hillside Policies

The City of Kelowna will:

Considerations for Future Civic Action

Implementation

.1 **Hazardous Condition Review.** Ensure that all development and activities in hillside areas are reviewed for compliance with City engineering standards, safety and protection and refer applications to the Province in accordance with applicable requirements.

Considerations in Reviewing Development Applications

Special Requirements

.2 **Alternative Hillside Standards.** Consider, within the context of a Hazardous Condition Development Permit, alternative hillside development standards within Zoning Bylaw 8000 and the Subdivision, Development and Servicing Bylaw 7900. The intent is to minimize the effects of development on the natural environment of hillside areas, defined as lands in their natural state that have a slope angle of 10 % and greater for a minimum height of 6 metres while preserving areas with slopes of 30 % and greater. Effects to be minimized may include cuts and fills, tree cutting, regrading and the visual impact in general of urban development on hillsides;

.3 **Application of Alternative Hillside Development Standards.** Consider alternative hillside development standards for hillside areas proposed to be on urban services and having no through roads or larger areas planned on a comprehensive neighbourhood basis. Due to the hillside development potential for impacts on adjacent lands Hazardous Condition Development Permits will be considered for an entire title area, notwithstanding that portions of the site may contain areas of lesser slopes;

.4 **Visual Impact.** Retain the option of requiring those pursuing development of visually prominent slopes and ridgelines to submit a report providing information on the anticipated aesthetic impacts of the proposed development.

⌦ Note Chapter 5 – Growth Management Policy 5.1.6 Protect Steep Sloped Areas.

Appendix 3: Background Materials – Summary Review Hillside Development Audit

1.0 Kelowna 2020 – Official Community Plan

- Goals for the City of Kelowna pertaining to hillside development include:
  - To grow gracefully and in harmony with Kelowna's natural environment
  - To identify and protect significant natural features
- Protect steep sloped areas by discouraging development on lands of 30% or greater slope except in cases where it can be demonstrated that development will be sensitively integrated with the natural environment and will present no hazards to persons or property, environmental threats or unreasonable servicing challenges
- Consider, within the context of a Hazardous Condition Development permit, alternate hillside development standards within the Zoning and Subdivision, Development and Servicing Bylaws
- Defines hillside development as lands in their natural state that have a slope angle of 10% and greater for a minimum height of 6 metres, while preserving areas with slopes of 30% and greater. Effects to be minimized may include cuts and fills, tree cutting, regarding and the visual impact in general of urban development on hillsides
- Retain the option of requiring those pursuing development of visually prominent slopes and ridgelines to submit a report providing information on the anticipated aesthetic impacts of the proposed development
- Encourage developers to incorporate xeriscape concepts into development of landscape programs
- Consider preparing guidelines to minimize loss of vegetation within the City and to sustain an overall balance of vegetation
- Retention of natural areas by encouraging all development and infrastructure projects to conserve wetlands, wildlife habitat, trees or other indigenous vegetation. Encourage alternative development methods, such as considering increasing density, narrowing right-of-ways, or cluster housing
- Discourage complete or indiscriminate lot clearing

- Environmental Development Permit guidelines consider slopes by:
    - Retaining natural vegetation on slopes
    - Being responsive to topography
    - Emphasizing cluster housing
    - Considering views from the property
    - Limiting heights to existing tree cover
    - Maintaining visual vegetative backdrop onto the property
    - Stepping back buildings to reflect slopes
    - Minimizing impervious paving surfaces
- Hazardous Conditions Development Permit guidelines consider erosion, land slip and rock falls by:
    - On slopes greater than 30% a report on environmental and geo-technical impacts is required
    - Aligning driveways with the natural contours
    - Connecting driveways between 70 and 90 degrees
    - Minimizing impervious paving surfaces
    - Requiring a 10 metre setback from ridgelines
- Table 8-1 New Housing Distribution provides an overall mix of 53% multiple family housing. The locations for multiple family housing are typically central, flat terrain neighbourhoods, while steep terrain areas are predominantly single family – for example the Black Mountain growth area projects no multiple family units

Summary:

- OCP sets out goals and overall arching objectives for hillside development; however it fails to describe how these will be accomplished
- OCP defines hillside development, but it fails to specify where hillside guidelines may apply
- Hillside guideline reviews limited to Development Permit applications for Hazardous Conditions on slopes greater than 30%, yet the OCP limits development to slopes less than 30% - inconsistent with the definition of hillside development
- Environmental Development Permits are not required for hillside development, which is inconsistent with the OCP goals pertaining to hillside development noted above
- OCP references ridgelines; however they are not specifically defined – areas which should remain free from development or where development densities should be limited are not defined
- OCP provides limited guidance on what should be preserved/protected on hillsides and what could be considered unacceptable/acceptable development

- Distribution of housing in the OCP predominantly focuses on single family densities for steep slope areas (new neighbourhood plan areas), which is inconsistent with "emphasizing cluster housing", in order to protect environment and environmental features

2.0 Sector Plans

2.1 Glenmore/Clifton/Dilworth

- Plan objectives
  - Protect natural characteristics of the hillsides which contribute to the positive image of Kelowna
  - Maintain the quality of hillside flora and fauna habitat
- Policies include
  - Encourage cluster housing to reduce site disturbance
  - Encourage green spaces to leave more development sites undisturbed
  - Encourage flexibility to permit projects which reduce impact on the environment
  - Require visual, geotechnical and terrain impact assessments and limit development on ridge lines and exposed hillside slopes
  - Respect natural topography, wetlands, vegetation and ungulate ranges
  - Discourage development on slopes 30% and greater
  - Establish hillside storm run-off standards to reduce erosion and downstream flooding

Summary:*

- Overall the Sector Plans lack direction on how to administer or implement hillside development
- Policy statements are relatively generic, similar to OCP statements, hence limited "added value" when considering hillside projects – policy statements could provide more direction to staff, such as the following extract from the McKee Peak Planning Study relating to cluster housing:

> *"There are community benefits associated with cluster housing which can result in added green space and reduced impervious areas. Cluster housing is permitted under the following circumstances:*

1. *The clustering of housing units allows the retention of green space/open space for at least 65% of the parcel.*

2. *The green space/open space contributes to ridgeline preservation, retains environmentally sensitive areas, or offers other broader community benefits.*

3. *The open space is acceptable to the City and is protected from development (including parking and driveways) by a covenant registered in favour of the City of Abbotsford, is purchased by the City, is held as a common strata lot, or is held in trust (e.g. Abbotsford Land Trust) as permanent open space.*

4. *Development of the property must allow for public access to the open space if the open space is identified on the Land Use Concept as part of a trail system, an access location to a view point, or natural feature such as a waterfall.*

5. *To encourage clustering of single family housing units the following will apply:*

    a. *The permitted density of housing on the area remaining for development (after dedication or covenant registrations) shall be not less than that achievable without the covenant or dedication (also see item b. below). This clustering of housing units can be achieved by a reduction of individual lot sizes, or a change in building form (e.g. multiple family housing or apartments, however buildings shall be subject to height limitations in the earlier stated policies of this section).*

    b. *Cluster development is to be considered only where the parent parcel is at least 4 hectares in area.*

    c. *As a means of encouraging the adoption of cluster forms of development, the City may consider an amendment to its DCC bylaw to create a special district to allow for reduced Development Cost Charges (to a suggested maximum of 35% per housing unit), subject to achievement of the open space and other goals noted in this section.*

    d. *A minimum of 75% of the land to be retained as open space shall consist of one contiguous area."*

- Assessments noted in the Sector Plan are not consistently obtained by staff when considering development applications, for example visual assessments
- Lack of follow-through on Sector Plan policies, for example, we could not find any "hillside storm run-off standards" designed to reduce erosion and downstream flooding

* many of these statements apply to most Sector Plans

2.2 North Mission/Crawford

- Goal is to
    - Identify specific aspects of the natural environment as they pertain to the plan area
    - Clarify how they will be preserved and enhanced
- Policies pertaining to hillside development include
    - Overall gross density will not exceed R-1 zone, except along the top of the Mission Ridge escarpment shall be limited to A-4 zone potential
    - Visual impact assessment required for views above and below the escarpment
    - Cluster developments to minimize visual impact from lands beyond, retention of large natural areas and overall density of 4.5 units per hectare

Summary:

- Stated goals are rather vague and open to interpretation, general lack of detail to guide developers and assist staff with processing applications

- Cluster housing not being utilized on hillside projects, as intended – found no examples with an overall density of 4.5 units per hectare – most projects have "flat-terrain" development densities, or greater

2.3 Southeast Okanagan Mission

- Goal is unclear
- Policies pertaining to hillside development include
    - Percentage of forest cover on developable land is not to be reduced unless measures to mitigate this loss with similar vegetation are taken
    - Steep slopes should be set aside with little or no development
    - Clustering will be encouraged to protect steep slopes and other environmentally sensitive areas, although single family housing will prevail
    - Development on steep hillsides will be limited to large holdings, innovative terrain adaptive housing or preserved as open space
    - Development should respect topography and take advantage of views

Summary:

- Overall goal or objectives for the plan area are missing or buried throughout the document
- Policies pertaining to hillside development are quite restrictive, and likely not realistic, for example retaining the percentage of forest cover to pre-development conditions
- Actual development densities do not reflect the policies noted above
- We could not find any examples of innovative terrain adaptive housing

2.4 Rutland

- Goal is unclear
- Policies pertaining to hillside development include
    - Preserve the Rutland Escarpment and surrounding hillsides
    - Support hillside development policies in the OCP
    - Ensure development adjacent to the Rutland Escarpment has no impact on this feature
    - Retain important views

Summary:

- Overall goal or objectives for the plan area are missing or buried throughout the document
- View retention, either to the project or from the project, is not being consistently reviewed by staff during application review, or monitored by staff in the field, for example the solid wood fence on Kirschner Mountain obliterates views from the primary entrance to the neighbourhood

2.5 Black Mountain

- Goal is unclear
- Policies pertaining to hillside development include
  - Due to financial considerations City cannot acquire all land containing important natural features
  - Avoid development in areas of steep topography
  - Protect visual character by adopting visual guidelines for the plan area
  - Development on hillsides with a slope of 30% or greater will not be permitted, and designated as open space
  - Framework for visual assessments considers retention of natural features, road design, restricting development in highly visible locations, retention of trees, cluster housing and use of native landscape materials

Summary:

- Overall goal or objectives for the plan area are missing or buried throughout the document
- Opening statement pertaining to natural feature retention is rather harsh, and it sets the tone to permit/encourage development in those areas which should/could be saved – this statement is inconsistent with the OCP objectives – there are alternatives to outright acquisition, for example the following excerpt from the McKee Peak Planning Study:

> *"The City will strive to acquire and protect all areas identified as bluff conservation areas on the Land Use Concept map. Wherever possible the City should identify this need early in the rezoning process. Protective measures may include covenants, site acquisition, placing lands under the control of the Abbotsford Land Trust, as well as other options."*

2.6 Southeast Kelowna

- Goal is unclear
- Policies pertaining to hillside development include
  - Maintain the rural standard of roads
  - Through the Environmentally Sensitive Area Bylaw preserve and protect areas deemed as sensitive and valuable
  - Encourage the Crown to preserve all Crown lands along the southern boundary of the City to protect visual and recreational values of this area

Summary:

- Overall goal or objectives for the plan area are missing or buried throughout the document
- Limited policy direction pertaining to hillside development found in this Sector Plan

3.0 Strategic Plan – 2004 Edition

- Goal # 1 is to maintain, respect and enhance our natural environment
- Objectives pertaining to this goal include
    - Monitor and evaluate the successes and challenges of hillside development
    - Assess the feasibility of implementing standards and limits related to impermeable surfaces
    - Identify significant view corridors to protect these amenities
    - Develop a hillside recreational plan focusing on the development of trails and public stewardship of the natural hillside environment

Summary:

- Goal is consistent with the OCP, yet it is difficult to find actual examples where development projects have accomplished Goal # 1 noted above
- Monitoring of the challenges of hillside development appears to be virtually non-existent, could not find references to limiting impermeable surfaces, identification of view corridors or preparation of recreational plans which capture the benefits of hillside views, for example, High Pointe takes an existing, informal trail system along the ridgeline and converts that area into private single family ownership, thereby precluding any opportunity for public access

4.0 Hillside Development Guidelines

4.1 Overview

- Issues that directly relate to developing hillside communities include *(most of these issues relate to developing non-hillside communities in Kelowna as well)*
    - Site planning and design
    - Landscape design
    - Architectural design
    - Engineering design
    - Operations/Maintenance
    - Process/Development review
    - Market realities
    - Environment
    - Land Use/Subdivision design
    - Other concerns
- Kelowna differs from other hillside communities in relation to

  - Vegetation
  - Housing styles
  - Demographics
  - Public perception/values
- Hillside guidelines are administered through the development permit process for hazardous conditions
- Each proponent must demonstrate how each relevant guideline has been addressed *(note: 86 separate guidelines are contained within this document)*

4.2 Design Principles

- Cityscape principles include
  - Scenic quality *(i.e. views onto the hillsides)*
  - View protection *(i.e. views from the hillsides)*
  - Natural features
  - Environment
  - Development patterns *(i.e. road patterns conform to topography)*
  - Clustering
  - Infrastructure *(i.e. safety, affordability and sustainability)*
  - Liveability *(i.e. lifestyle choices)*
- Natural Hazards
  - Wildfire hazards
  - Unstable soil hazards
- Building Design
  - Terrain adaptive architecture
  - Complementary colours and materials

4.3 The Guidelines

- Subdivision Planning
  - Requirement for a topographic and feature survey
  - Identify opportunities and constraints for on-site and off-site considerations
  - Requirement for a geotechnical survey
  - Identify and protect special natural and cultural features
  - Road and structures should complement the terrain
  - Encourage cluster housing
  - Building setbacks should be varied
  - Ridgelines, knolls and summits should be considered

- Identify and protect significant vegetation
- Provide a variety of recreational open space
- Protect scenic features and provide views from the hillside

- Roads and Driveways
  - Safety cannot be compromised
  - Consider reductions/modifications to existing standards where appropriate
  - Allow maximum driveway access of 15%
  - Common driveways are encouraged

- Grading and Earthworks
  - Finished contours should appear smooth, irregular and natural in appearance
  - Large cuts/fills and removal of vegetation is not acceptable
  - Retaining walls are encouraged to reduce site disturbances provided the form, character, colours and materials complement the natural or built environments
  - Sediment and erosion control plan is required

- Municipal Services and Utilities
  - Utilities should be located within right-of-ways where slopes do not exceed 20%
  - Flexible offsets for utilities and services may be considered and common trenching is encouraged
  - Mitigate storm water run-off through source control and appropriate downstream measures

- Building Design and Structures
  - Architectural style and landscape should complement the hillsides
  - Avoid use of shiny materials
  - Predominant colour and texture should match the natural setting
  - Rooftops should avoid blocking views and align with the slope
  - Reduce massing

- Landscape Character
  - Require a landscape management plan
  - Discourage clear cut removal of trees
  - Require issuance of a tree cutting permit on steep slopes
  - Undertake restoration of exposed slopes
  - Arrange trees in natural groupings
  - Encourage use of native plant materials and encourage biodiversity
  - Avoid solid fences
  - Employ water conservation principles

Summary:

- Strong statements of intent, for example, "each proponent must demonstrate how each relevant guideline has been addressed", are not realistic or necessary – innovation and flexibility are key to successful hillside projects
- Staff do not consider the application of hillside development guidelines as an integral part of development application processing, and as a result, developers do not provide the level of detail required to evaluate whether these guidelines are addressed
- Monitoring of these guidelines is virtually non-existent
- Guidelines themselves conflict with each other, for example, "safety cannot be compromised" versus "road patterns conform to topography" – these are conflicting guideline statements, and which one takes priority
- Guidelines lack clarity, for example, "retaining walls are encouraged …"
- Guidelines emphasize engineering standards, which generally conflict with planning objectives, particularly when these standards reflect traditional flat-terrain thinking

5.0 Subdivision, Development and Servicing Bylaw No. 7900

- Sets out standards for the design of works and services pertaining to subdivision and building permit applications
- Hillside development is not defined, it relies on the Zoning Bylaw "h" designation to qualify for alternate hillside street standards
- Other factors which have environmental influences include storm water drainage/management, landscaping and street lighting, as such treated the same as non-hillside development projects
- Hillside street standards are drawn from the following principles
    - Safe, liveable and attractive streets contribute to the urban fabric
    - Streets should be designed to suit their function, including uses other than automobiles
    - Hierarchical street network should have a rich variety of types, including bicycle, pedestrian and transit routes
    - Standards should be developed to enhance local streets' contributions to urban design. Issues such as sense of enclosure, landscaping, parking, building setbacks, surface materials, street furniture, signs and street lighting are vital determinants of liveability
- Hillside street standards are summarized in Table 1

Summary:

- Focuses primarily on road standards only – no consideration of impervious surface management, reduction of downstream floodwaters, enhanced boulevard landscaping, flexibility for sanitary sewer pumping, storm water pumping – all of which are necessary to accomplish "planning objectives" for hillside development

- Principles noted for hillside street standards (noted above) are not reflected in the design standards contained within the bylaw – for example the road standards are strongly orientated towards automobile use on local roads

6.0 Zoning Bylaw No. 8000

- Hillside development projects are designated with "h" and apply to residential single family and two family units, except RU5 – Bareland Strata Housing
- Multiple family zonings starting with a RM designation do not contain provisions for hillside zonings
- Besides qualifying to use hillside street standards, hillside zoning permits
    - Lower maximum height of 6.5 m or 2 storeys, above which the building must be stepped back 1.2 m
    - Reduced front yard and flanking street side yard setbacks of 3 m, except the garage must be 6 m from the back of sidewalk or curb
    - Decks, supporting posts/columns must not exceed 4.5 m or 1 storey in height
    - Access grades greater than 15% can be accommodated at the front street, as opposed to the rear lane

Summary:

- Exclusions noted for multiple family housing are inconsistent with OCP statements regarding hillside development
- Zoning Bylaw as written contains limited flexibility, or opportunity to be innovative when considering hillside projects, and other than reducing road standards there is little incentive to use the "h" designation; as an example there is nothing in the Zoning Bylaw which requires buildings to "follow the natural slope", ie. step-back as the building moves up or down the slope
- Numerous building hillside guideline objectives are not incorporated within the Zoning Bylaw, eg landscaping, massing, rooflines, various access options for individual lots, etc.
- Limits on access grades are inconsistent with the OCP objectives to "harmonize with the natural environment" – an artificial limit of 15% causes unnecessary grading

7.0 Community Resource Handbook

- Natural Environment and Hazardous Condition Development Permit applications are exempt from Advisory Planning Commission review and are referred to Council for issuance of a Development Permit

Summary:

- Perhaps the APC has a role in reviewing how well hillside projects meet overall OCP and Hillside Guideline objectives
- Emphasis appears to be directed towards expediting development applications, as opposed to analyzing and mitigating project impacts at the outset

Appendix 4: Review of Development Permit Files

Information Requirements

- Lack of independent third party reviews, particularly with geotechnical analysis
- Limited information available to assist staff with monitoring results and assessing impacts
- Visual impact assessments are virtually non-existent or "manipulated" by the developer to show a favorable result
- Level of information necessary to support development applications and address hillside issues is ineffective
- Few development files contain information relative to hillside objectives or guidelines
- Limited direction provided to applicants on the level of information required to address hillside issues. Detail provided by applicants is generally insufficient to address hillside issues; however staff must be able to review greater detail
- Lack of guidelines/standards to assist consultants with providing "quality" design submissions and reports – particularly on geotechnical matters
- Staff have some difficulty dealing with retaining walls, primarily due to lack of specific guidelines or policy
- Council Reports contain few references to hillside guideline reviews/issues

Process Issues

- Little or no relationship between the 7 hillside objectives listed in the OCP and the process used by staff to review hillside development applications
- Issues arise at the building permit stage which should be captured much earlier in the development process
- Development Application File Tracking system is not geared towards capturing hillside issues (i.e. tracks issues relating to "flat-terrain" projects; hence it is of little value for hillside project issues) No process established to introduce hillside guideline review when processing development applications
- Checklists are not available to assist with staff review
- There is a disconnect between Development Permit reviews and Subdivision reviews
- Numerous exemptions (Development Permit Waivers) are granted, thereby by-passing a full staff review
- Hillside guidelines only applied when "h" zoning is sought, yet many projects are being developed on slopes 10% - 30%. Hillside Development Guidelines states "the existing slope of a property should not be the sole determinant for initializing hillside guideline requirements". Lack of clarity when hillside guidelines should be applied

- DP Waivers generally reviewed by the Environment Division (one person) – process unable to take a more holistic review to consider all aspects pertaining to hillside development – tendency to rush the application through the approval process. In one file we noticed a planner had brought forward a number of issues relative to hillside guidelines; however there appears to have been no follow-through, as the suggestions were not acted upon
- DP Waiver reviews not particularly geared towards hillside guidelines/objectives
- Too much emphasis is placed on the Approving Officer to implement hillside objectives – assistance can be provided by community and development planners, outside groups such as the Advisory Design Panel, independent peer reviews by other consultants, etc.
- Expectations are not effectively, consistently communicated to developer

Corporate Commitment to Hillside Development Guidelines

- Staff unwilling to challenge developer consultant reports and findings
- Staff and Council appear unwilling to "dictate" to a developer areas which should be protected or retained, such as ridgelines, rock outcrops, knolls/summits, and other natural features which sets Kelowna apart from other BC municipalities
- Lack of agreement on the meaning amongst stakeholders of fundamental principles and terms used by the City to describe hillside objectives,
- Staff has various levels of commitment towards hillside objectives, ranging from indifference to committed. Generally creative thinking, risk taking and innovation are missing key ingredients when staff consider complex development sites
- Significant staff energy directed towards mitigating maintenance costs for the City, rather than recognizing and accepting hillside projects cost more to maintain – this could be a symptom of Council's unwillingness to consider additional operating costs to accommodate hillside development
- DP applications generally relate to small development sites, whereas hillside guidelines require a neighbourhood analysis – relationships between sites may not be effectively considered

Appendix 5: Summary of Staff Project Evaluations

Criteria	The Quarry	South Crest	Westpoint	Kirschner	Quail Ridge	Wilden
Aesthetically pleasing	3+	3-	3+	1	4	4
Functionally appropriate	3-	3+	3+	3	3-	4
Environmentally sensitive	1+	3	2	1+	2	3+

Criteria	The Quarry	South Crest	Westpoint	Kirschner	Quail Ridge	Wilden
1.Respect for the Scenic quality of the hillsides that make Kelowna a unique place to live and visit	3	2	1	1	2	4
2.View protection from hillside houses and views to the hillside	3-	2+	3	1	4	4
3.Protection of unique natural features of the hillsides	3-	3+	1	1	1	4
4.Retention of significant environmental habitats	n/a	3	3	1+	1	3
5.Development patterns that respond to the unique characteristics of the hillside setting	n/a	3	2	2	2	3
6.Provision of clustering of housing to retain open space	n/a	2-	n/a	1	1	1
7.Infrastructure that addressed public safety cost-effectiveness and sustainability	2-	2	n/a	1	1	2+
8.Provision of Livability including walking, hiking cycling and alternative commuting choices	3+	3	1	2	1	4
9.Development that is directed away from unstable soils	2+	2	4	1-	1	4
10.Minimizing impact of wildfire on people/property	n/a	3	5	4	4	2
11.Housing designs that minimize visual impacts and complement sloping terrain	2	2+	1	1	1	3
12.Use of complementary colours and materials	4	2+	4	3	1	4

*ranking based on 1 (poor) to 5 (excellent)

Appendix 6: Nanaimo and Los Gatos Hillside Guidelines Extracts

Nanaimo

Excerpts and observations taken from the City of Nanaimo, Steep Slope Development Permit Area Guidelines, September 2002 document include:

> *"poor and excessive hillside development can diminish the very views and natural features that resident's value"*
>
> *"experience has shown that well designed open space development usually gains increased value as a result of proximity to permanently protected open space"*
>
> *"as lots get smaller and houses get bigger there is less opportunity to retain trees and plant new ones" coupled with the desire to protect views"*
>
> *"for the purpose of calculating the minimum lot size the area of the proposed lot must exclude any slopes 30% or greater"*

Los Gatos

Excerpts and observations taken from the Town of Los Gatos, Hillside Development Standards and Guidelines, January 2004 document include:

> *"not every site can be developed at the maximum density allowed by the Zoning Ordinance. Some sites cannot accommodate a two-storey home or accessory uses such as swimming pools"*
>
> *"Hillside Development Standards and Guidelines contain both standards and guidelines. Standards are non-discretionary and contain words such as "shall", while guidelines are discretionary and contain words such as "should"*

Table 1: Maximum Graded Cuts and Fills

Site Element	*Cut**	*Fill**
House and attached garage	*8'***	*3'*
*Accessory building**	*4'*	*3'*
*Tennis Court**	*4'*	*3'*
*Pool**	*4'****	*3'*
*Driveways**	*4'*	*3'*
*Other (decks, yards)**	*4'*	*3'*

* *Combined depths of cut plus fill for development other than the main residence shall be limited to 6 feet.*

** *Excludes cellars.*

*** *Excludes excavation for pool.*

"grading plans shall include provisions for restoration of vegetation on cuts and fills. All manufactured slopes shall be planted with native, fire-resistant, low water using plantings to control erosion"

"Maximum allowed gross floor area is determined using a floor area ration adjusted for slope as shown"

Table 1: Reduction of net site area on sloping lots

Average lot slope	*Percent of net lot area to be deducted*
10.01 – 20%	*10% plus 2% for each 1% of slope over 105*
20.01 – 305	*30% plus 3% for each 1% of slope over 20%*
Over 30%	*60%*

"Hillside street and drainage standards shall reflect a rural rather than urban character and shall allow for special designs where natural features such as rocks, slopes, and trees require special treatment"

Appendix 7: Resident Survey Review

Kelowna Hillside Development Audit
Results of Survey for Residents (II)

Introduction

The City of Kelowna adopted Hillside Development Guidelines in 2001 to supplement existing policies and regulations for development in hillside areas. The recently completed Strategic Plan directs a review of the results of hillside development in the past four years since the guidelines were introduced.

Purpose

An independent consultant was retained to review how the Hillside Development Guidelines are integrated into the process of rezoning, development permit, subdivision and building permit applications, and whether the stated design principles are leading to innovative and positive outcomes in the field. Consultation with City staff, service providers, developers, and residents is a central component of the research for the review.

The consultant proposed a residents' focus group to consult with residents in the process, which the City arranged through newspaper and website advertising. Seven citizens volunteered to participate in the focus group session, which did not achieve engaging broad interests from a broad cross-section of the community. The City proposed a survey for residents to obtain more feedback from this stakeholder group to strengthen the information for the review.

Method

Two nearly identical surveys were prepared: one for hillside residents and one for valley floor residents. The questions were designed to obtain feedback on the topic areas addressed by the Hillside Guidelines: roads, parking, street design, street lighting, layout of lots and houses (subdivision), building design, grading, landscape, ridgelines and public access. The survey asked about the appropriateness of different aspects of the built and natural environment.

Mailing lists were generated by randomly selecting 300 addresses in five hillside areas developed since 2001, and 100 addresses in five valley floor neighbourhood areas with views to new hillside development. The surveys were circulated by mail, with the option for people to complete surveys on the internet using an online survey software provider. People were mailed Wednesday, June 12 with a request for receipt of completed surveys by Friday, June 28 (approximately 2 weeks).

Results

The City received a total of 119 completed surveys. A total of 99 surveys were received from hillside residents, and 18 were submitted by valley floor residents. There were 12 surveys completed online.

Results, reported by frequency, are as follows:

<u>Roads</u>

Are roads built appropriately?
Hillside Residents

	Percent
Yes	42.4%
No	55.6%
Don't know	2.0%

Valley Floor Residents

	Percent
Yes	44.4%
No	22.2%
Don't know	33.3%

The most frequently cited issue with roads by hillside residents who did not think roads are appropriate is 'too narrow' (41.4%*).

Parking

Is parking appropriate?
Hillside Residents

	Percent
Yes	61.6%
No	37.4%
Don't know	1.0%

Valley Floor Residents

	Percent
Yes	27.8%
No	33.3%
Don't know	38.9%

Design of the Street

Is the design of the street appropriate?
Hillside Residents

	Percent
Yes	65.7%
No	32.3%
Don't know	2.0%

Valley Floor Residents

	Percent
Yes	44.4%
No	33.3%
Don't know	22.2%

Hillside residents who did not think streets are designed appropriately, most often selected 'no sidewalks' (26.3%*).

Street Lighting

Is street lighting appropriate?
Hillside Residents

	Percent
Yes	90.9%
No	7.1%
Don't know	2.0%

Valley Floor Residents

	Percent
Yes	72.2%
No	22.2%
Don't know	94.4%

Layout of Lots and Houses

Is the layout of lots and houses appropriate?
Hillside Residents

	Percent
Yes	61.6%
No	33.3%
Don't know	5.1%

Valley Floor Residents

	Percent
Yes	44.4%
No	38.9%
Don't know	16.7%

Both hillside and valley floor residents most frequently cited 'lot sizes are too small' as the reason for their dissatisfaction with the layout of lots and houses (20.2%*, and 33.3%* respectively).

Building Design

Is building design appropriate?

Hillside Residents

	Percent
Yes	74.7%
No	18.2%
Don't know	7.1%

Valley Floor Residents

	Percent
Yes	55.6%
No	22.2%
Don't know	22.2%

Grading

Is grading appropriate?

Hillside Residents

	Percent
Yes	70.7%
No	22.2%
Don't know	7.1%

Valley Floor Residents

	Percent
Yes	16.7%
No	50.0%
Don't know	33.3%

Over three-quarters of hillside residents who are dissatisfied with grading indicated multiple issues. The most frequently cited issues are: 'too much' (18.2%*), followed by slope stability (16.2%*), and stormwater drainage (15.2%*).

Valley floor residents who do not think grading is done appropriately indicated 'natural character of the landscape is not 'retained', significant natural features are not protected', and 'too much land clearing and topsoil removal' were the reasons why (each 27.8%*).

Landscape

Is the landscape appropriate?

Hillside Residents

	Percent
Yes	66.7%
No	29.3%
Don't know	4.0%

Valley Floor Residents

	Percent
Yes	27.8%
No	55.6%
Don't know	16.7%

Hillside residents who are dissatisfied with this aspect most often selected more than one issue (15.2%*), with the top issue being 'too little natural landscape is retained' (14.1%*).

Valley floor residents who are dissatisfied with this aspect often selected more than one issue (44.4%*), with a full half (50%*) agreeing that 'too little natural landscape is retained' is the top issue.

Getting Around without a Car

Is getting around your neighbourhood by means other than a car appropriate? / Is getting to hillside neighbourhoods by means other than a car appropriate?

Hillside Residents

	Percent
Yes	62.6%
No	35.4%
Don't know	2.0%

Valley Floor Residents

	Percent
Yes	22.2%
No	33.3%
Don't know	44.4%

Access to transit was the most frequently selected issue by hillside residents who are dissatisfied (22.2%*). Valley floor residents indicated bike lanes and bicycling trails were the main reason for their dissatisfaction (22.2%*).

Ridgelines

Are ridgelines preserved well enough?

Hillside Residents

	Percent
Yes	66.7%
No	15.2%
Don't know	18.2%

Valley Floor Residents

	Percent
Yes	38.9%
No	27.8%
Don't know	33.3%

Public Access to Significant Views

Is public access to significant views from hillside areas appropriate?

Hillside Residents

	Percent
Yes	59.6%
No	25.3%
Don't know	15.2%

Valley Floor Residents

	Percent
Yes	38.9%
No	33.3%
Don't know	27.8%

Public Access to Recreational Open Space

Is public access to recreational open space in hillside areas sufficient?

Hillside Residents

	Percent
Yes	59.6%
No	25.3%
Don't know	15.2%

Valley Floor Residents

	Percent
Yes	33.3%
No	44.4%
Don't know	22.2%

Overall Level of Satisfaction

What is your overall level of satisfaction with hillside development in Kelowna?

Hillside Residents

	Percent
Very satisfied	19.2%
Satisfied	52.5%
Neutral / No opinion	10.1%
Dissatisfied	17.2%
Very Dissatisfied	1.0%

Valley Floor Residents

	Percent
Very satisfied	5.6%
Satisfied	11.1%
Neutral / No opinion	55.6%
Dissatisfied	16.7%
Very Dissatisfied	11.1%

Length of Residence in Current Hillside Area / Kelowna

Hillside Residents

	Percent
Less than one year	33.3%
1-2 years	25.3%
2-3 years	15.2%
More than 3 years	24.2%

Valley Floor Residents

	Percent
Less than one year	-
1-2 years	-
2-3 years	5.6%
More than 3 years	94.4%

Neighbourhood

Hillside Residents

	Percent
Dilworth Mtn. / Denali Ridge	22.2%
Kirschner Mtn.	10.1%
Quail Ridge	13.1%
Southridge / The Quarry	26.3%
Wilden / Glenmore Highlands	26.3%

Valley Floor Residents

	Percent
Downtown North	16.7%
Glenmore	44.4%
Central Kelowna	11.1%
Rutland	11.1%
Southeast Mission	16.7%

First Home in a Hillside Area or Not?

Hillside Residents

	Percent
Yes	69.7%
No	28.3%

Conclusion

The high survey response rate indicates that hillside development is an important issue for residents. The majority of people submitted surveys by mail; however, the complexity of the URL to link to the survey online was likely a disincentive for people to participate via the internet. This will be important to correct for future outreach to residents.

Hillside Residents

This is the first home in a hillside area for 70% of hillside resident respondents, and the same percent are satisfied or very satisfied overall with hillside development. The top concerns for hillside residents with their neighbourhood are roads (56%), parking (37%), and getting around without a car (35%). Transportation-related issues are more significant for hillside residents than subdivision, siting, grading, landscape and open space.

The most frequently identified issue with roads was 'too narrow'. More than three-quarters of respondents who thought roads were too narrow live in Wilden/Glenmore Highlands or Southridge/The Quarry, which are areas where Hillside Guidelines have been applied to allow a reduction to existing standards. It could also be inferred that since this is the first home in a hillside area for the majority of respondents, they are still adapting to the differences from flatland residential areas.

Next to access to transit, the sidewalk system was identified as the reason for dissatisfaction with 'getting around your neighbourhood without a car.' Three-quarters of respondents who selected the sidewalk system as a reason for their dissatisfaction with this aspect, also identified 'no sidewalk' was inappropriate for the design of the street.

The highest number of 'Don't know' responses to whether a particular aspect of hillside development is appropriate was for building design and grading (both 7%). This may indicate that these are concepts that are poorly understood or require a certain level of expertise to be able to evaluate, which may have affected the results for these aspects. Similarly, 18% of respondents did not know whether ridgelines are preserved well enough, even with a definition of the term, which may indicate a low level of understanding.

The highest level of satisfaction with hillside development was indicated by respondents living in Dilworth Mountain / Denali Ridge, where 82% of respondents are satisfied or very satisfied. The lowest level of satisfaction with hillside development is in Kirschner Mountain, which also included the only 'very dissatisfied' response, where 50% of those surveyed are dissatisfied or highly dissatisfied.

Valley Floor Residents

Almost all valley floor residents who completed the survey (94%) have lived in Kelowna for more than three (3) years. The highest response rate was from the Glenmore neighbourhood area. The top concerns for valley floor residents with hillside development is the landscape (56%), followed by grading (50%) and the layout of lots and houses (38.9%). These aspects of hillside development are those that relate to views to hillside areas.

Half of those who feel that the landscape is not appropriate thought so because too little of the natural landscape is retained. All of these respondents (44%) selected multiple aspects for why the landscape was not appropriate in addition to too little retention of the natural landscape.

The concerns about the natural landscape are also reflected in the responses to grading. One-third of those who feel that grading is not appropriate indicated multiple issues with this aspect. The three most prevalent issues selected were that the natural character of the landscape is not retained, significant features are not protected, and too much land clearing and topsoil removal.

Overall, the proportion of respondents who are satisfied or very satisfied with hillside development is 17%. The lowest level of satisfaction is from respondents in Glenmore, where 38% of those surveyed are dissatisfied or highly dissatisfied.

Themes & Differences

The majority of both hillside and valley floor residents who think the layout of lots and houses is inappropriate also think it is because lot sizes are too small.

The majority of both hillside and valley floor residents who think the landscape in hillside development is inappropriate also think it is because too little natural landscape is retained.

The differences is aspects of development that respondents did not consider appropriate between hillside residents and valley floor residents seem to relate to views. Hillside residents, who are mostly satisfied overall and have the benefit of a view, are concerned with 'how they get around.' Valley floor residents are largely indifferent to functional aspects of the development, but seem to be indicating that they are not satisfied with views to hillside areas.

It is a challenge to consult with the public on a topic as complex and technical as hillside development. Concepts such as street design, grading, lot layout and ridgelines require a certain level of understanding to evaluate. The high level of responses seems to indicate that hillside development is important to residents, regardless of their understanding of individual aspects.

Sandi Horning

Subject: FW: Endorsement of the Hillside Development Guidelines

From: Russ Foster [mailto:RFoster@blenkdev.com]
Sent: November 10, 2009 2:34 PM
To: Ryan Smith
Subject: Endorsement of the Hillside Development Guidelines

TO: Ryan Smith, City of Kelowna

RE: **Hillside Development Guidelines – Final Draft**

Please consider this email an endorsement of the final draft of the Hillside Development Guidelines by the UDI / CHBA Hillside Review Committee.
The document represents a big step forward in good development practices in the hillsides of Kelowna through the promotion of innovation and flexibility. Thank-you for the opportunity to participate in the crafting of this document.

A note of caution however - the guidelines are performance based with terms such as "minimized" and "where possible" used frequently. For this reason determining success in achieving the guideline goals in a given development application tends to be very subjective in nature and open to interpretation by both the developer and reviewing individual on staff. We are nevertheless optimistic this will not prove to be a major issue.

We look forward to the continued involvement of the UDI & CHBA in the hillside review process, especially as it relates to changes to the bylaws which we believe are essential in providing the tools needed to achieve the goals of the guidelines.

Respectfully,

Russ Foster, UDI Board
UDI / CHBA Hillside Review Committee Chair

HILLSIDE DEVELOPMENT

City of Kelowna

Council Presentation - November 16, 2009

INTRODUCTION

2006 Hillside Audit identified changes needed to fulfill City's expectations:

- Acknowledgement 2001 Hillside Guidelines not working – lack of vision coupled with competing objectives
- Require a common vision accepted by residents, developers, builders and City departments
- Encourage flexibility, innovation and variation in design standards (delete reference to bylaws)
- Require comprehensive information to understand impacts
- Desire to retain important hillside attributes, e.g. encourage clustered forms of housing
- Recognize Hillside development costs more

QUOTES FROM 2006

"I don't think we really have a high grade on hillside development."

- *Councilor Hobson*

"The trees are gone and it's like oops … and nothing's done about it."

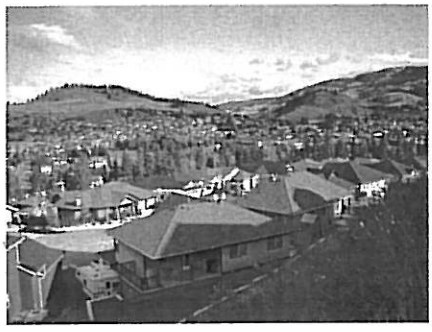
- *Councilor Given*

"It affects more than the developers – it affects the people living in the houses. It affects the people in the valley looking up at these houses."

- *Signe Bagh*

WHAT IS OUR VISION?

Created a vision in 2008 for hillside development which includes many disciplines and differing objectives



Vision

Hillside developments can be environmentally sensitive, functionally appropriate, aesthetically pleasing and economically feasible

- Challenge occurs with competing objectives!

WHAT ARE THE CITY'S EXPECTATIONS?

- Development has less visual impact – retain hillside attributes
- Development creates less impact on the environment and existing terrain, i.e. less grading and retaining
- Road and utility works minimize visual impact, while creating a pleasant streetscape for hillside residents
- Building sites are safe

Developers seek clarity on City's expectations --- challenge occurs with defining what this means

HILLSIDE DEVELOPMENT COSTS MORE!

1. Operations costs are higher for the same level of service in areas of snow removal, solid waste, emergency access, landscape maintenance, etc.
2. Developer costs increase with larger lots, greater emphasis on landscaping and drainage, building design, etc.
3. Consultant costs increase with providing a clearer understanding of development impacts, while creating innovative solutions.

KEY CHANGES

- Pre-application meetings - provides clarity
- Technical requirements for consultant reports - staff obtain better understanding
- Process changes - address "soft" issues before development expectations
- Regulatory and design changes - provides flexibility
- New Hillside Development Guidelines - key objectives (recognize not all can be achieved at same time), no single objective trumps others, shows how to rather than using "rules"

WHAT ARE THE CHANGES REQUIRED TO PROCESS APPLICATIONS?

1. Getting rid of Development Permit Waivers
2. Reducing the number of Development Permit applications
3. Dealing with Development Permit issues before Subdivision
4. Placing a greater emphasis on visual objectives, grading/retaining, streetscape, and housing design

WHAT ARE THE PROCESS CHANGES?

1. Technical guidelines have been prepared to inform consultants of City's need to understand impacts
2. Resisted mandating specific requirements so as to encourage 'new thinking.'
3. Pre-application meetings can outline what information is expected - applications do not require same level of detail or investigation.
4. Developers can use a 'coordinating professional' to manage competing objectives.

WHAT 'TOOLS' WILL WE USE?

Technical guidelines include:

- Professional consulting reports
- Environmental and ESA criteria
- Geotechnical
- Lot grading
- Retaining delete wall
- Storm water management
- Visual
- Wildland fire management

WHAT 'TOOLS' WILL WE USE?

New Hillside Development Guidelines underway

- Replaces 2001 document
- New approach being considered
- Guidelines offer suggestions and provides examples, rather than detailing standards, mandatory requirements, and conflicting statements
- Requirement to address specific objectives – coordinating professional rationalizes competing interests
- Concentrates on visual impacts, grading objectives, geotechnical/hydrological issues, environmental issues, streetscape design, and housing diversity and design

WHAT ARE THE BYLAW CHANGES?

Subdivision, Development and Servicing Bylaw

- Create opportunities for automobile tolerant local and minor collector roads
- Create less impact during construction
- Require impacts to be recognized and mitigated upfront

Zoning Bylaw

- Require all hillside properties to meet Hillside objectives/standards
- Amend definition of Hillside properties and allow for greater range of land uses
- Increase lot sizes due to steep terrain, offer views between homes
- Consider landscape screening to mitigate impacts
- Review building heights

Building Bylaw

- Incorporate retaining wall requirements
- Regulate building design

Development Application Procedures Bylaw

- Review delegation of authority
- Tighten enforcement requirements

STAKEHOLDER PARTICIPATION

- Meetings over last 2 years with development community, including representatives from UDI, CHBA, PIBC, CEBC
- Relevant City staff have participated in developing this new vision, and will continue to work on defining the City's expectations and creating a new look and feel to hillside development
- Many departments are impacted by Hillside development with competing interests. Each has a role in creating a more attractive City, a City which shows what is possible when everyone works together towards a common vision
- Shallow Utility feedback from FortisBC
- Additional public input on Hillside land-use issue and growth issues through current OCP Review

QUESTIONS ?