



LOT GRADING & STORMWATER MANAGEMENT

Report

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PARKLAND COUNTY

Contents

A. Background	2
B. Objectives.....	2
C. Outline of Issues.....	2
1. Existing Multi-Parcel Subdivisions	2
2. Areas Outside of Multi-Parcel Subdivisions (not a priority to tackle? Provincial? Older subdivision designs that don't work)	3
3. Infill Properties (whats the bigger context/impact of the drainage for the area?) LIDAR work could help with this. Require lot grading plans currently – now being reviewed by engineering. What does an owner need to know to do this? Engineering work needed, grading requirements)	3
4. Commercial/Industrial Established (similar to infill solution, rough grading program for these) Commercial/Industrial not established like isolated commercial site.....	3
5. Out of Scope.....	4
D. Solutions and Tools	4
1. Stormwater Management Analysis.....	4
2. Establish Supporting Policies and Guidelines	4
3. Develop and Implement Processes and Programs	5
4. Consistent Approach to Drainage Complaints.....	6
E. Recommended Approach & Timing	7

A. Background

Parkland County currently experiences challenges with stormwater management and drainage, particularly during times of rainfall, storm events and spring melt. The goal of this report is to explore various methods and approaches to proactively and effectively manage stormwater issues, mitigate negative impacts to County residents and reduce risk to the County.

B. Objectives

1. To gain an understanding of the existing stormwater issues within the County.
2. To understand the risks to the County for the various stormwater issues and determine which issues on which to focus.
3. To establish roles and responsibilities for affected stakeholders including, engineering services, planning and development, public works, and road maintenance and drainage.
4. To understand what we are currently doing, what is working well, what the gaps are, and where we can modify our existing processes, procedures, policies and programs to address stormwater impacts created by development and construction.
5. To establish resources, educational documentation and tools to help residents understand best practices to mitigate their private property stormwater issues, including, but not limited to, overland drainage, beaver dams, private culverts and snow shoveling.
6. To establish a uniform approach to addressing drainage inquiries/concerns from residents that is fair and consistent.

C. Outline of Issues

1. Existing Multi-Parcel Subdivisions

a. Without approved engineered Lot Grading Plans

Several multi-parcel subdivisions exist within Parkland County where engineering grading plans were not a requirement at the time of subdivision or registration. As such, no formal drainage plans were established leaving all parcels to manage pre-development flows as best they can. This scenario is difficult for the County to manage as doing any work associated with stormwater management involves development lots and inconvenience to the residents. Residents will contact the County more often in the cases due to stormwater draining onto neighbouring properties creating flooding and damage.

Some residents have chosen to take on lot grading on their own property by way of a Development Permit for stripping/grading/filling. Occasionally, the Development Authority will request an engineered lot grading plan. This may resolve the issue on the property itself but can create a drainage problem on neighbouring properties. This method does not look at the drainage of the subdivision as a whole. Further, there is no formal inspection process to ensure the final grading complies with the engineered plan.

Potential Solution: A Storm Master Plan would inform how to address this over the long term. In the short-term, require full grading plan as part of appropriate Development Permit applications for any future development; however, no solution for existing parcels.

b. With approved engineered Lot Grading Plans

Newer multi-parcel subdivisions within the County required full engineering including lot grading as well as major and minor stormwater management plans. This approach is successful in establishing an overall stormwater management approach as well as target grades for each individual lot. Concerns with this scenario arise at the Development Permit stage. The County's permitting process does not include a review and inspection of the final grading of each individual lot compared to the approved engineered lot grading plan. This can leave some properties non-compliant and create a negative drainage impact to neighbouring properties.

Potential Solution: A reasonable solution would be to implement a formal Lot Grading program to verify rough/final grades.

**2. Areas Outside of Multi-Parcel Subdivisions (not a priority to tackle? Provincial?
Older subdivision designs that don't work)**

Properties outside of multi-parcel subdivisions, such as farmsteads/homestead, agricultural lands, etc. often have long standing drainage courses that have been unchanged for decades. In many areas, this is preferred as it maintains water flows into wetlands and environmentally sensitive areas. However, in other cases, the flow is directed to residential parcels within and outside of multi-parcel subdivisions creating a negative impact.

Potential Solution: This may not be a priority for the County. Consider resident education programs to help residents help themselves.

3. Infill Properties

On occasion, redevelopment occurs on an existing residential parcel in a multi-parcel subdivision that has existed for decades. To accommodate the new structure and possibly a higher basement height, fill material is brought in to raise the property or to re-landscape. A Development Permit is required for this work, however, the property is looked at alone rather than in the context of the drainage impact of the whole subdivision.

Potential Solution: LIDAR work could help with determining impact of changes to the drainage in an infill area. Lot grading plans are now being reviewed by engineering.

4. Commercial/Industrial

Stormwater management issues do not occur as frequently in commercial and industrial areas as they are master planned with conceptual schemes and full engineering. However, on occasion, a parcel may choose to regrade or bring in fill materials. Development permits are required for this and grades must meet those established by the approved lot grading plan. The County does not have a program in place to inspect and verify the final grades to ensure compliance or to mitigate negative impacts to adjacent properties. In addition, there are commercial/industrial parcels that exist outside of planned areas.

Potential Solution: A reasonable solution would be to implement a formal Lot Grading program to verify rough/final grades.

5. Natural Area Flooding/MR/ER

On occasion, drainage issues may occur on publicly owned properties, municipal reserve parcels, environment reserve parcels, or licensed drainage courses. These issues may include blockages by beaver dams, blocking of culverts, etc. that require maintenance.

6. Out of Scope

Not sure what to include here?

What about drainage from our neighbouring municipalities? I'm not sure there is an agreement in place that stipulates flow rates and coordinates the development (release) of stormwater and the expansion of each individuals overall storm water management master plans and how they are interrelated.

D. Solutions and Tools

1. Stormwater Management Analysis

Council has approved funding to engage an external consultant to complete a stormwater master in 2021 for the County. This plan will assist the county in deifying high risk/priority areas in terms of drainage issues. The study will result in a list of recommendations, mitigation measures and will outline work that needs to be done.

Recommend external engineering consultant to conduct this work. Done by priority area over the course of several years.

Activity	Description	Resource
Stormwater Master Plan	Complete a study of all County areas to determine risk; Establish basin/area specific stormwater management plans for rural areas to inform planning, development and engineering activities; processes and policies; and guide decisions.	External Consultant
Establish Stormwater assessment process for rural development permits	Provides information on off-site impacts of proposed development on existing drainage patterns to allow informed decision about development decision	External Consultant

2. Establish Supporting Policies and Guidelines

Clear policy direction and guidelines help to ensure a consistent approach to stormwater management and to provide the foundation for processes and programs.

Activity	Description	Resource
Modify the Existing Overland Drainage Policy	Policy C-EN14 states the County will determine through policy standards, the appropriate action to be taken when dealing with drainage issues affecting County road	Engineering Services The Drainage Department has moved under Road

	allowances, and ratepayers concerns with drainage issues affecting private property. There may be an opportunity to enhance this depending on the direction given and County’s involvement in private drainage issues.	Maintenance, this Policy should be updated and managed by Roads.
Develop New Drainage Bylaw	The purpose of this bylaw would be to regulate surface drainage on public and private land. This would give the County the opportunity to establish a clear process and direction for County residents and staff on how to manage surface drainage. Provides necessary enforcement support to appropriately deal with drainage issues.	Operations Services
Enhance Engineering Standards	Establish standards and technical requirements for drainage on private property to ensure County systems are not negatively impacted. Expand on landscaping requirements to include erosion protection measures where appropriate.	Operations Services
Infill Development Guidelines	Provides standards, expectations and requirements to guide applicants and inform decisions on new development in existing subdivisions	??

3. Develop and Implement Processes and Programs

Develop and implement new processes or programs to assist the County with stormwater management. These can be incorporate in existing process that would allow more oversight related to the impact of new development on stormwater flow.

Activity	Description	Resource
Establish On Street Construction and Maintenance Permit	Full awareness and tracking of development activity that could impact roads and stormwater systems	Operations Services
Establish Site Servicing Inspection	Allows review and inspection of servicing installations between a building and the connection at the property line	Operations Services
Implement a Lot Grading Program	Ensures County review and approval of all proposed grading work with review of rough and finished grades. Provides standards, expectations and requirements to guide applicants and inform decisions on filling and grading of land.	Operations Services

Major development regulation review	Provides standards, expectations and requirements to guide applicants and inform decisions on major developments	Operations Services
Establish a Drainage Local Improvement Program	Allows drainage improvements to rural subdivisions with costs being recovered from residents through a levy	Operations Services
Establish a Landscape Drawing Review/Approval Process	Ensures appropriate landscaping to ensure erosion control measure are in place.	Operations Services

4. Consistent Approach to Drainage Complaints

Every spring and during rainfall events the County receives a number of complaints regarding flooding near or on residential properties. The current process is to ensure the complaints are filed through Enforcement Services first and then referred to the appropriate department depending on the nature of the complaint. Part of the difficulty is determining the nature of the drainage or flooding issue to find an appropriate solution.

- Engineering Services would be involved to investigate whether the drainage issues are caused by an engineering design related issue
- Road Maintenance & Drainage would investigate whether County drainage channels are working appropriately
- Planning and Development Services would investigate whether any development work is underway that may be causing a drainage issue.

If no issues are found, the County’s position is to encourage residents to consider grading their properties to ensure positive drainage.

To improve upon the County’s approach to flooding or drainage complaints, there are several options to consider:

Activity	Description	Resource
Develop a Municipal Complaint Policy	This document would provide some clarity and clear direction for Council and staff on how to manage complaints in a fair and consistent manner.	Corporate Services?
Develop Drainage Complaint Matrix	Clarify the lines of responsibility between departments to ensure most efficient resolution of issues	Operations Services
Update annual flooding educational campaign	Enhance current annual campaign to reflect updated policy direction and procedures	???
Develop and implement a lot drainage education program	Education for land owners on best practices for site drainage. Offer on-site review/inspection to provide recommendations for to improve drainage.	???

E. Recommended Approach & Timing

A phased approach is recommended in implementing the above items to ensure appropriate feedback and input is received by all stakeholders and to ensure success in delivering new programs and processes.

Phase	Activities	Timing
1	Stormwater Management Study Modify the Existing Overland Drainage Policy Develop New Drainage Bylaw Develop Drainage Complaint Matrix	2021
2	Enhance Engineering Standards Establish On Street Construction and Maintenance Permit Develop and Implement Lot Grading Program	2022
3	Implement Landscape Drawing Review/Approval Process	2023