

# Fort Vermilion Flood Recovery

Public Open House | July 21, 2020



**Mackenzie County**

*Mackenzie County is currently assessing flood recovery solutions throughout the Fort Vermilion Area.*

## What We've Done

Since the flood, the County has been directly involved in:

- » Assisting individuals and families with funding applications
- » Assisting individuals completing development applications
- » Providing emergency and temporary housing to flood victims
- » Initiating Provincial funding applications
- » Conducting preliminary assessments of recovery and future flood resiliency options
- » Engaging in ongoing discussions with Council
- » Investigating land acquisition for temporary and permanent housing development outside the floodplain

## Who We've Met

The County has hosted several engagement events since the April floods to ensure the public remains informed and has their voices heard throughout the recovery process. Events hosted to date include:

- » **June 8:** Virtual Town Hall
- » **June 25:** Virtual Town Hall
- » **July 10:** Business Owners Small-Group Meetings
- » **July 11:** Homeowner & Renter Small-Group Meetings
- » **July 14:** Non-Flooded Residents Small-Group Meetings
- » **July 21:** Public Open House

## What We've Heard

Several themes have emerged over the course of these discussions with stakeholders in impacted areas, including:

- » Residents want to return home as quickly as possible
- » Many residents no longer want to live in the floodplain
- » Residents are concerned about the County spending too much money
- » Residents are concerned about the size and type of properties people would get under a relocation intervention
- » Leaving space for the river to flood was identified by many as a priority for any recovery strategy

IMMEDIATE RECOVERY ACTIONS → LONG-TERM RESILIENCY IMPACTS



**We are here**  
Disaster Recovery + Long-Term Strategy Development



Due to unique characteristics and varied flooding experiences throughout the impacted area, the County is looking at options for three distinct sites: the Buttertown area, Fort Vermilion town site, and Beaver Ranch area.

# Potential Flood Recovery Interventions

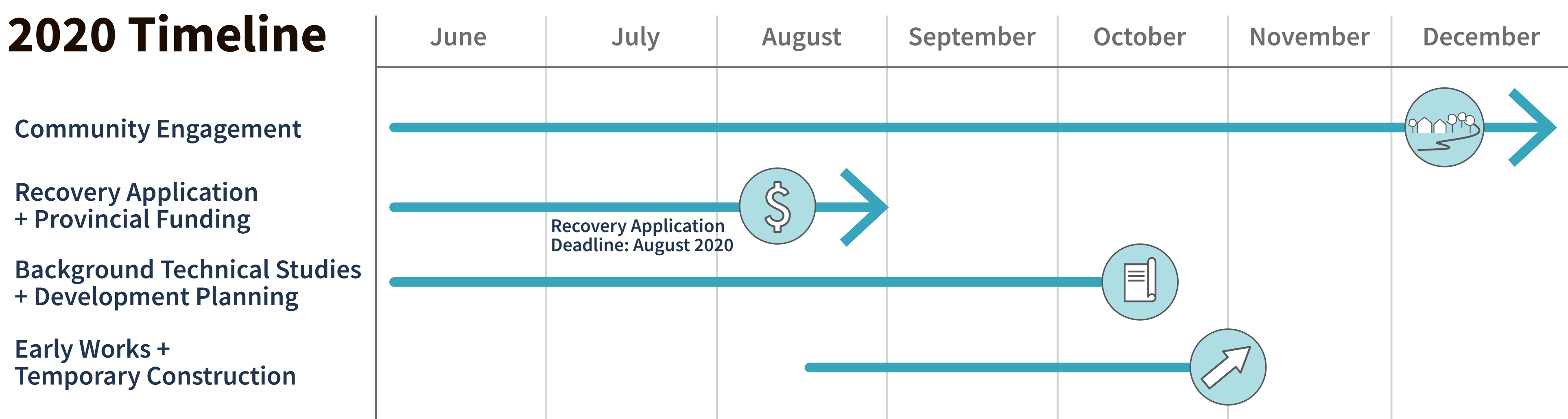
With direction from the Province, Mackenzie County is studying flood recovery options that reduce or completely prevent risk of damage from a future flood event. Potential interventions will be assessed individually and in combination to create a comprehensive flood recovery strategy.

The five potential flood recovery interventions include:

1. **Status Quo / Re-building**
2. **Naturalization**
3. **Flood Barriers**
4. **Building Reinforcement**
5. **Relocation**

|                         | Financial   | Social  | Environmental   |
|-------------------------|---|---|---|
| <b>Deciding Factors</b> | The funding amount and sources (e.g. Provincial) will determine the financial viability of each intervention. | The recovery strategy must reflect the social and cultural priorities of residents.<br><br>Ongoing public engagement will continue to influence the process, and residents will continue to be consulted even after funding is secured. | The recovery strategy must reflect viable solutions that protect from future extreme flood events.<br><br>A base flood elevation must be determined before new development can go ahead.<br><br>Site constraints and environmental sensitivities must also be identified. |
| <b>Next Steps</b>       | Continue negotiations with the Province.<br><br>Receive Disaster Recovery Program (DRP) funding.              | Prepare a summary of what the County has heard from residents to date.<br><br>Continue hosting and informing residents of upcoming engagement events.   | Technical studies currently underway to evaluate the environmental constraints for each intervention.   |

## 2020 Timeline



## INTERVENTION #1:

# Status Quo / Re-building

## What is it?

Maintaining the status quo means re-building homes, businesses and infrastructure to their **original, pre-flood state**.

**No flood mitigation** measures would be implemented.

Re-building will be explored as an approach against which all other flood recovery options are assessed.

## Considerations

- » Less time is required to return to re-built homes and businesses.
- » Residents will experience less change in their living situation.
- » Flood risk remains high in re-built areas.
- » Mackenzie County's ability to access future Provincial funding may be limited if no flood mitigation is implemented.
- » Re-building to status quo may forfeit the ability to receive future Disaster Recovery Program (DRP), insurance, and mortgage funds.
- » Cost of flood insurance for residents may increase.
- » Residents may experience greater challenges in accessing mortgages in flood-prone areas.

## Viability

- » Re-building to pre-flood condition is more viable in areas where future flooding is not a risk and areas where flood damage was minimal.
- » Re-building is not viable for most of the sites.



## INTERVENTION #2:

# Naturalization

## What is it?

Naturalization *maintains or introduces natural areas* in flood prone areas for the purpose of increasing river capacity and reducing local and downstream impacts.

Naturalization may require homes and businesses to be *relocated* out of flood prone areas.

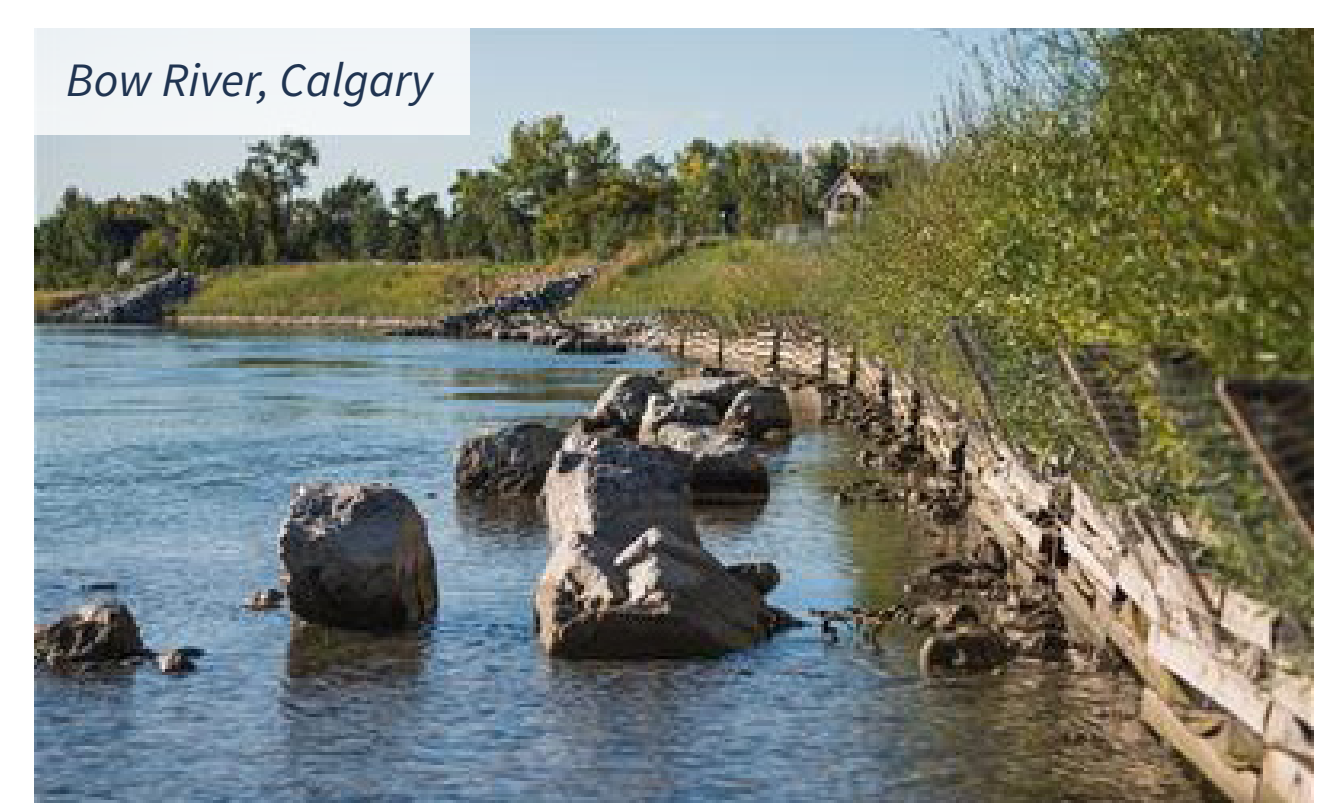
Naturalization can include opportunities for agriculture, restoration, bank stabilization and public realm improvements (e.g. park space).

## Considerations

- » Natural areas allow water to flow naturally during a flood without constricting or increasing the speed of the river.
- » Natural areas can also promote infiltration near the river and within communities, reducing flooding impacts in communities.
- » Natural areas can help absorb the physical impact of ice jams on the riverbank.
- » Increasing natural areas near the river can improve riparian habitat for fish and wildlife.
- » The creation of natural areas may require relocation of homes and other infrastructure, resulting in higher social impacts for the community.
- » Natural areas require capital investment from the municipality and ongoing maintenance.

## Viability

- » Naturalization is more viable in areas with existing agriculture and natural uses. These areas may be designated as no-development zones.
- » Naturalization is less viable in highly built-up areas where relocation is not taking place.



## INTERVENTION #3:

# Flood Barriers

## What is it?

A flood barrier is a piece of **physical infrastructure** used as a mitigative measure against flooding. Barriers do not guarantee protection from flooding.

Barriers are designed to a **specific flood elevation** based on a variety of flood protection requirements (e.g. Provincial guidelines, flood studies, existing infrastructure, etc.).

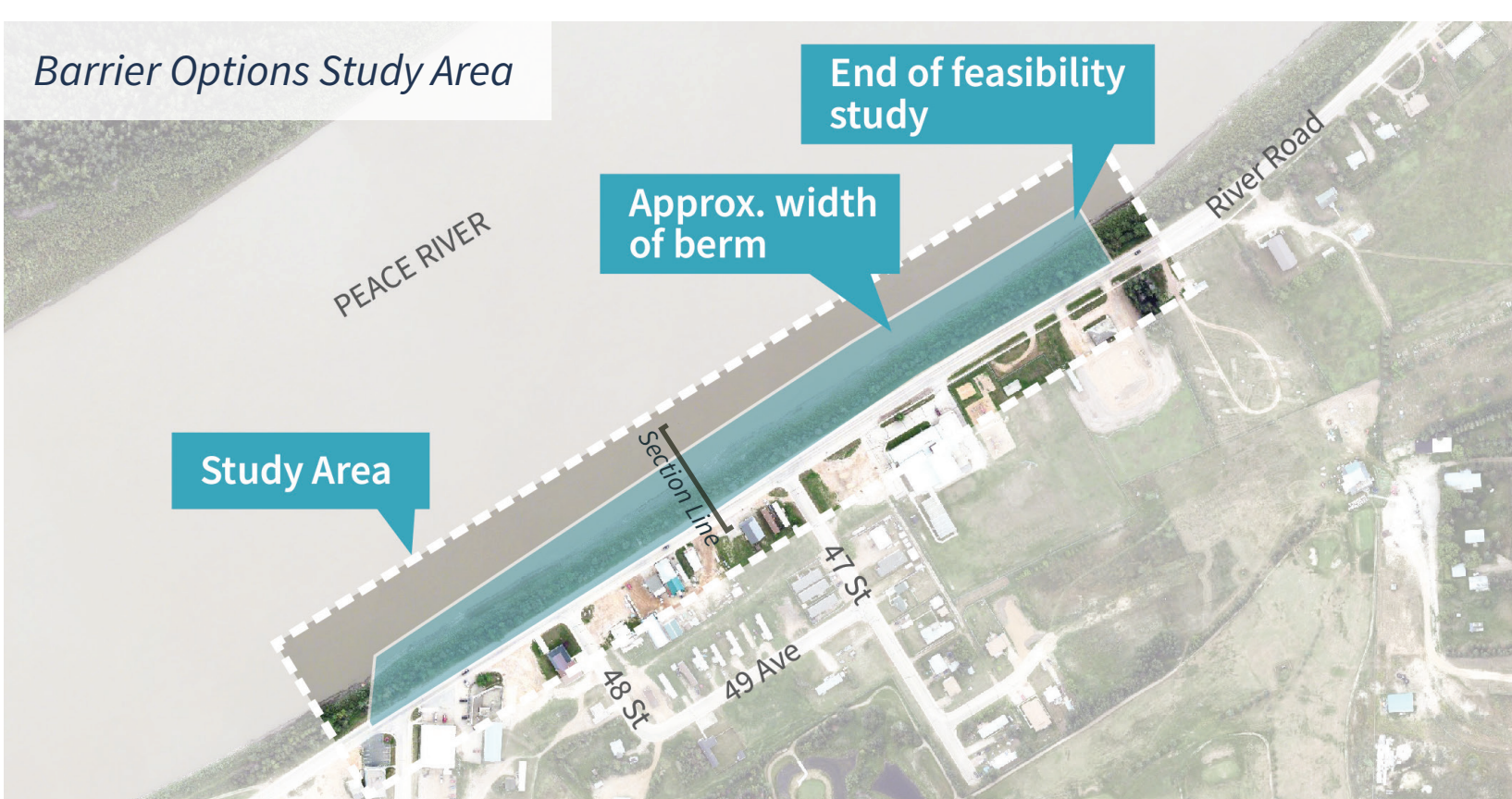
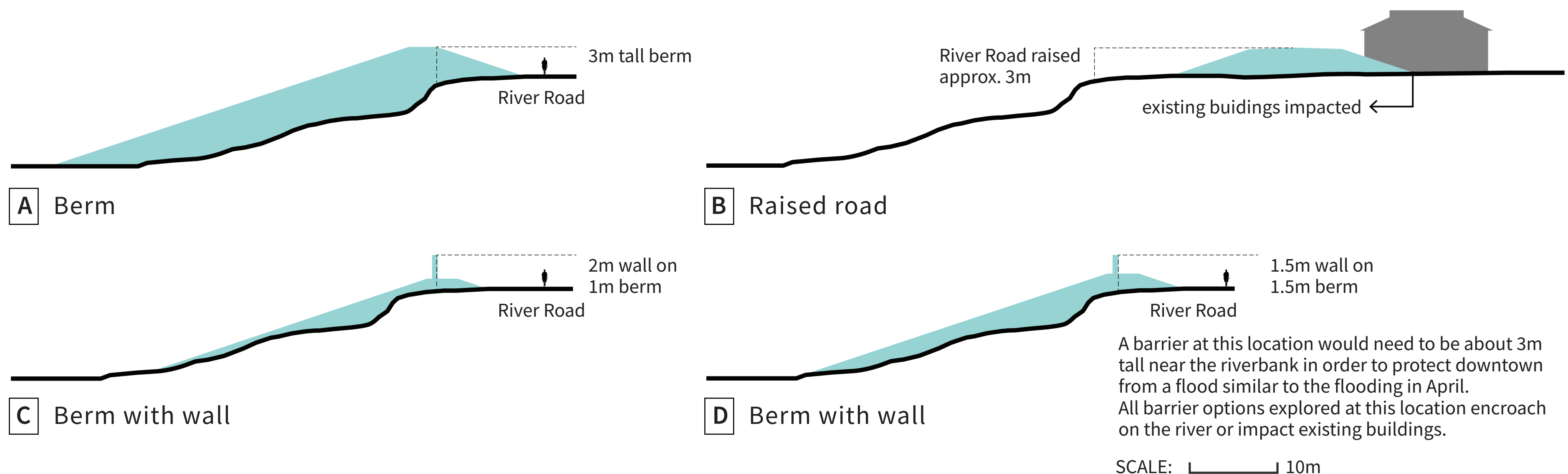
Flood barriers are **built close to the river** and can impact river flow in flood events.

## Barrier Impacts

Mackenzie County undertook a preliminary feasibility study of barrier options along River Road near 50 St.

The drawings below are intended to illustrate potential impacts of a barrier and do not represent final designs. No decision has been made by the County as to whether or not a barrier will be constructed.

Barrier Impacts Explored



## Considerations

- » Flood barriers can help protect the waterfront, maintain Fort Vermilion's downtown largely as it exists, and protect existing public infrastructure and private property from future floods.
- » Barriers may still require some acquisition of private land to provide space for construction and operations.
- » Other considerations in the design of a flood barrier:
  - › Design elevations and existing topography
  - › Groundwater flooding risk
  - › Permanent or emergency deployment
  - › Phasing and construction requirements
  - › Aesthetics and community impacts
  - › Site constraints (private property, technical feasibility, heritage and archaeological significance)
- » As a large number of studies are required, barrier implementation could take several years.
- » Barriers can have a significant impact on how the community looks, including obstructing river views.

## Viability

- » Due to their high cost to build, barriers are not viable in areas with limited population and infrastructure.

## INTERVENTION #4:

# Building Reinforcement

## What is it?

Adding *measures to reinforce homes* in flood areas to withstand future floods.

Reinforcements are usually *built to a set of standards* meant to protect the building from future floods.

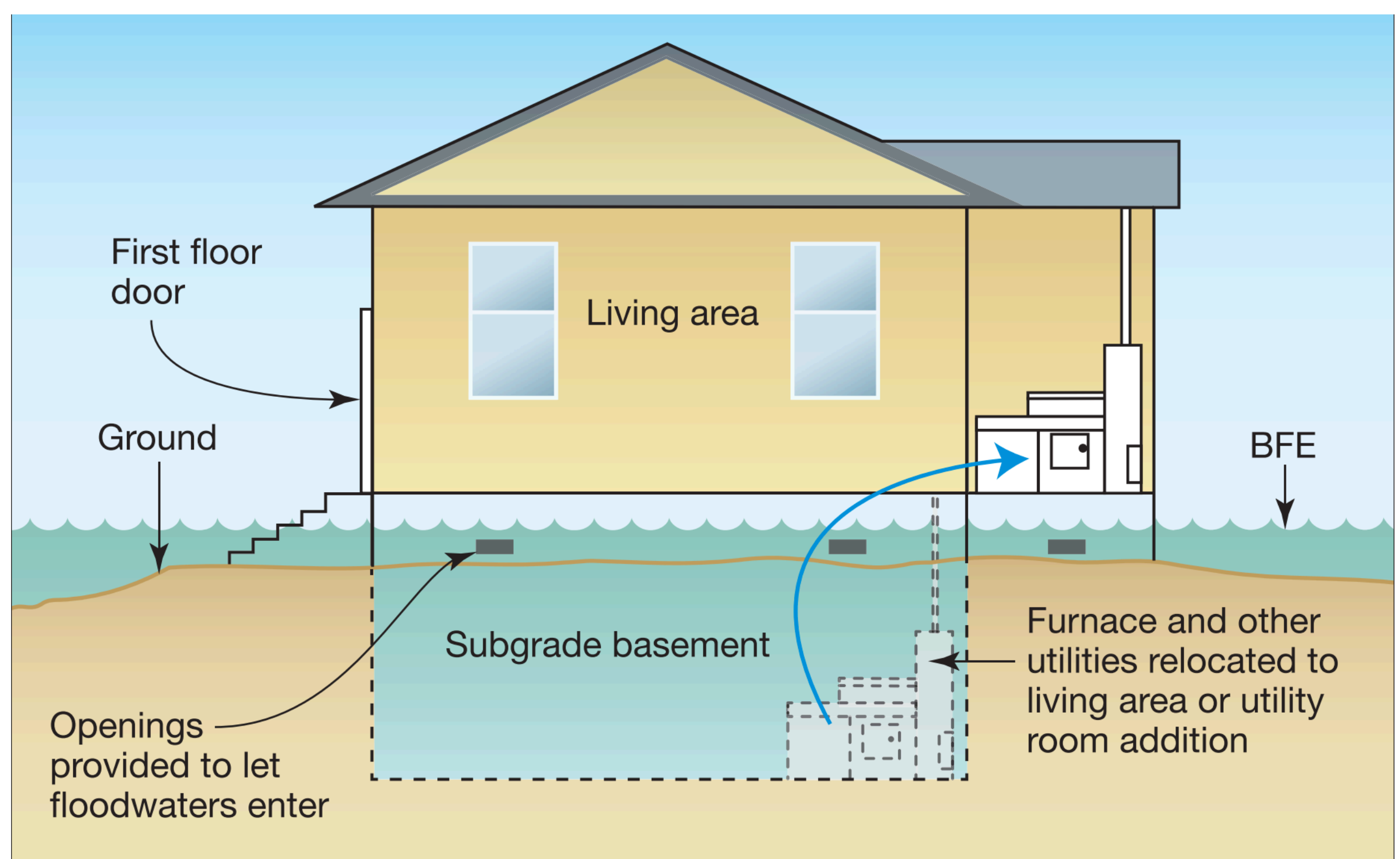
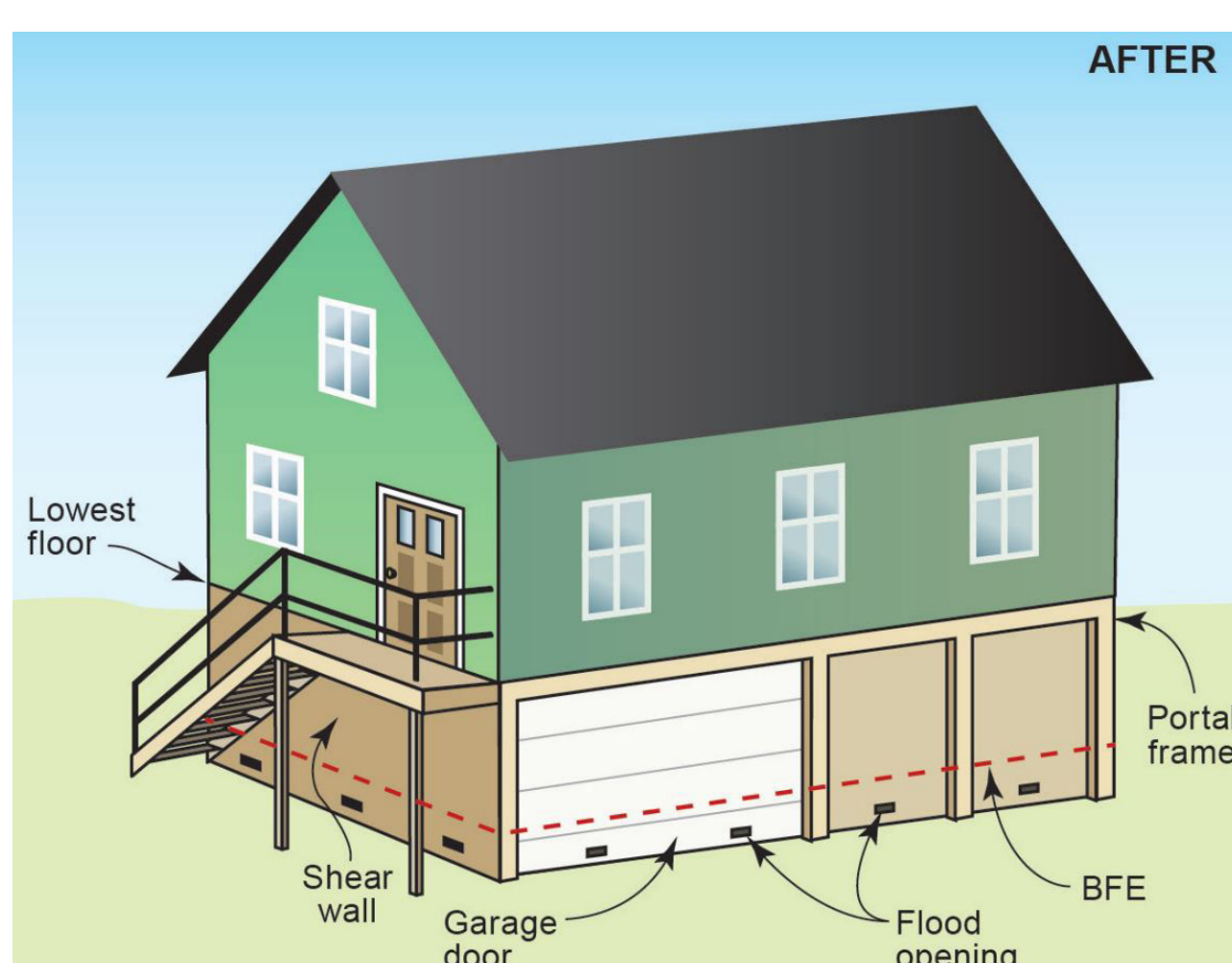
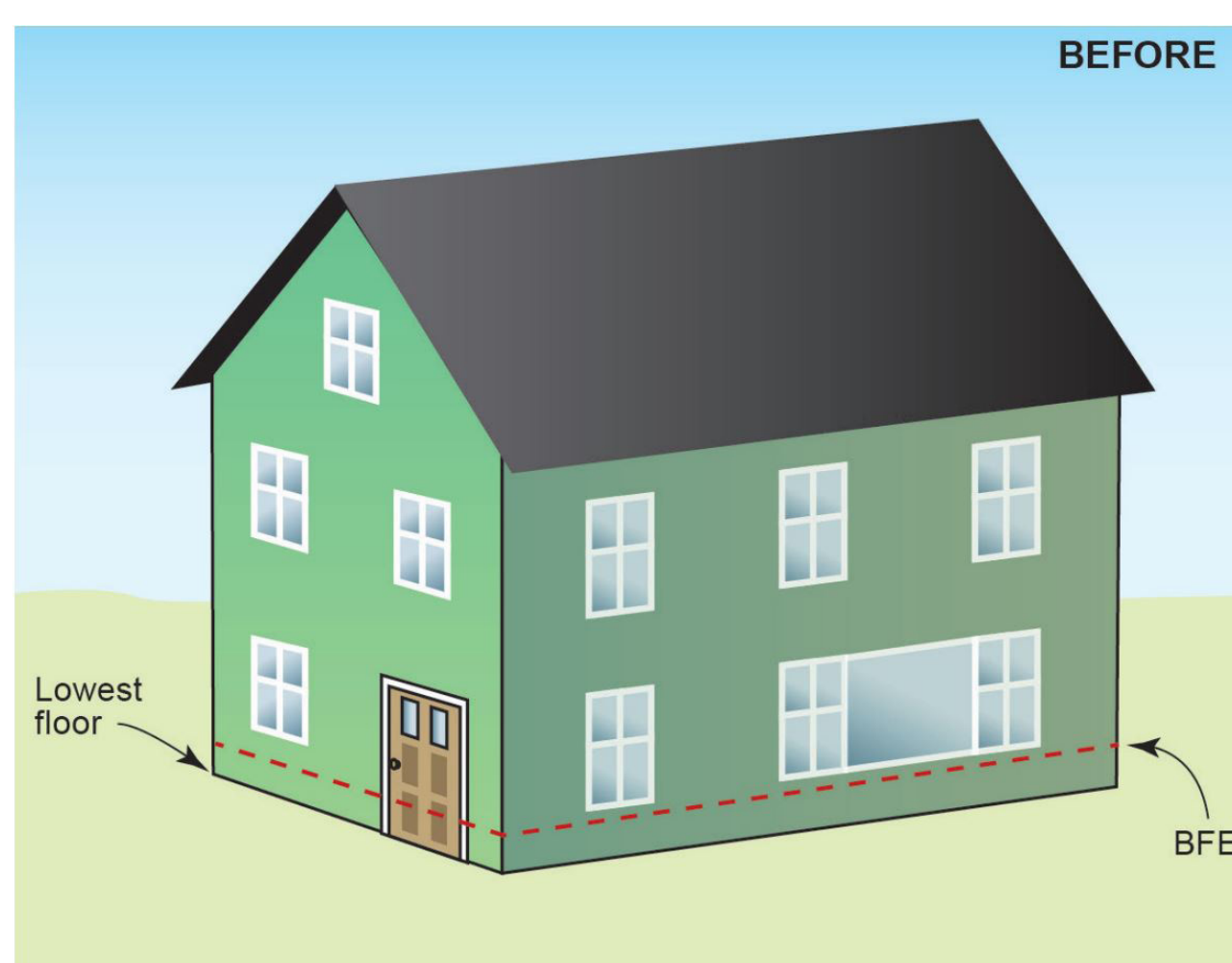
Possible reinforcements include raising buildings to a minimum height, not allowing new basements, and moving windows, doors, electrical switches and panels, and other openings higher.

## Considerations

- » Allows buildings to stay in place, preserving neighbourhoods and returning people to their homes sooner.
- » Using this intervention may forfeit the ability to receive future Disaster Recovery Program (DRP), insurance, and mortgage funds.
- » Many reinforcements can be very costly, and mandatory build-to heights could negatively impact the aesthetics and use of buildings.
- » This approach requires substantial Land Use Bylaw amendments to ensure all new development complies with the necessary reinforcements.
- » There is no guarantee that building reinforcements will protect from damage in future floods.

## Viability

- » Viability varies depending on the predicted severity and likelihood of flooding in an area.
- » Not all development is able to be reinforced to an appropriate degree of safety.



## INTERVENTION #5:

# Relocation

## What is it?

Relocation ***moves development from the floodplain*** to new neighbourhoods built at a safe elevation.

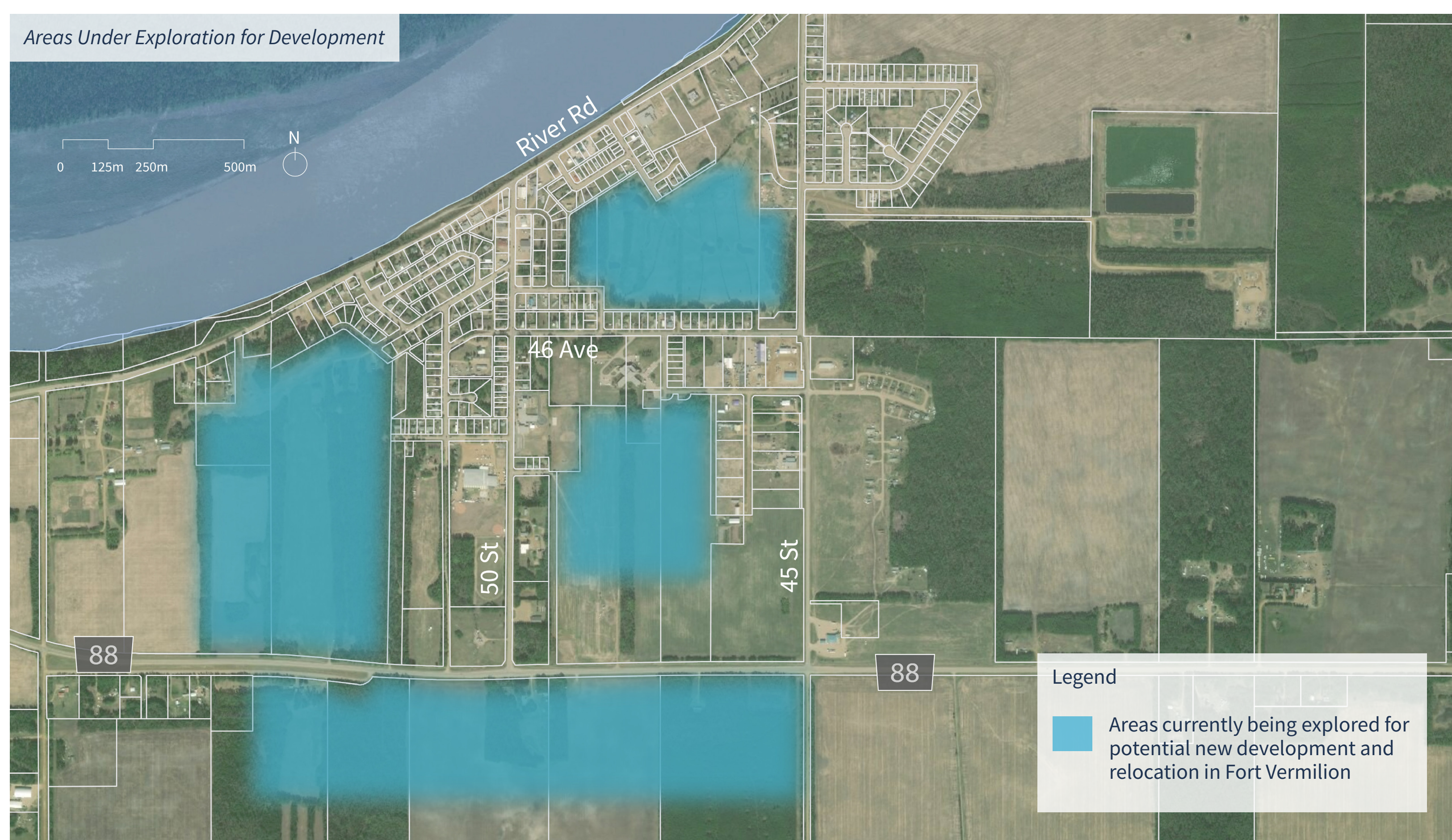
The relocation approach provides ***new housing*** within Fort Vermilion.

## Considerations

- » Provides safe, secure housing and replaces significantly damaged buildings.
- » Allows for development of green space for celebrating community heritage and resiliency while preserving future Disaster Recovery Program (DRP) rights.
- » The ability to implement this intervention will depend on external funding.
- » Land must be acquired for the new development or developments.
- » Servicing and building the new development could take months.
- » Relocation, along with naturalization, is the only intervention that permanently protects residents from future flooding.
- » If people choose to relocate outside of Fort Vermilion, this would impact existing communities and services.

## Viability

- » Relocation is a viable option in all impacted areas.
- » Relocation is also one of the most expensive interventions, requiring significant funding to properly implement.



# Next Steps: Permits

*There are currently development permit restrictions in place for Fort Vermilion residences within the 2020 ice jam flood extents.*

## **Temporary Development Permits can be obtained for:**

- » ***Full repairs and restoration*** on and above the first floor
- » ***Restricted repairs and restoration*** below the first floor

***Please contact your case manager prior to undertaking repairs on your property.***

## **Development Permit restrictions below the first floor:**

- » Insulation and vapour barrier on exterior walls
- » Insulation, sealing and sheeting dividing walls between multi-unit dwellings to meet Minimum Requirements
- » HVAC, plumbing, heating and electrical work to restore functionality to pre-flood functionality
- » Temporary, unfinished walls to define bedrooms and bathrooms
- » Temporary, unfinished floors for critical living spaces

***Please note:*** If sufficient bedrooms and bathrooms exist on or above the first floor to meet Minimum Requirements for occupancy, no temporary walls are permitted below the first floor for this purpose.

# Stay Informed at [mackenziecounty.com](https://mackenziecounty.com)

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