

# **Public Hearing**

Riverside Drive Road Closure Bylaw 05.22

April 19, 2022



# Riverside Dr Road Closure Bylaw Presentation Overview

- Project Need:
  - Drumheller's History of Flooding
  - Changes to Provincial Regulations
  - Drumheller's Resiliency and Flood Mitigation Program
- Downtown Dike
- Road Closure Need – Alternates Assessment
- Transportation Impact Assessment Study





# Drumheller's Flood History

2005 flood = 1,450 m<sup>3</sup>/s





# Drumheller's Flood History

2013 flood = 1,270 m<sup>3</sup>/s





# Provincial Flood Regulation Changes

- Design Flow for Drumheller increased from 1,640m<sup>3</sup>/s to 1,850m<sup>3</sup>/s
- Flood depths for 1,850m<sup>3</sup>/s are on average 85 cm (3 feet) deeper than levels experienced during the 2005 flood
- Provincial Flood Hazard Mapping updates underway
- Disaster Recovery Program changes
  - No funding for river flood events < 1:100 year (or 1,850m<sup>3</sup>/s for Drumheller)
  - Funding only available on a one-time basis



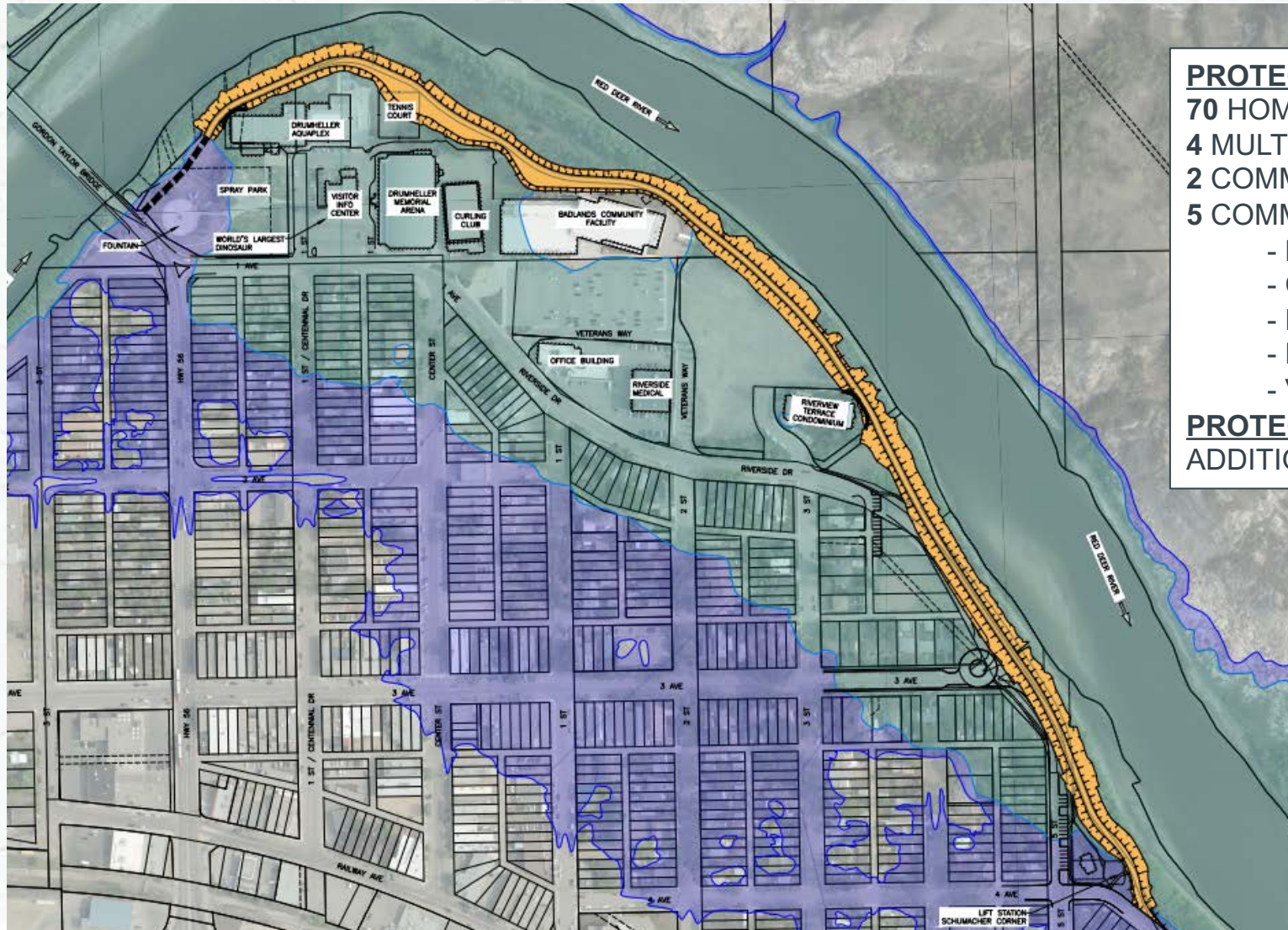
# Drumheller's Resiliency and Flood Mitigation Program

- Grant funding obtained from Provincial and Federal Governments, Town committed 10% of funds
- \$55M total to deliver on 11 berms & targeted floodway buyouts
- Over 1000 properties worth \$250 million will be directly protected by the berms when complete
- Urgent need to build as much permanent infrastructure now as possible, using available funding to mitigate future flood impacts
- Reduce amount of temporary berms – not time to build for new design flood flow rate of 1,850 m<sup>3</sup>/s





# Protection for Downtown



## PROTECTION AT 1850 CMS

70 HOMES PROTECTED

4 MULTI UNIT RESIDENTIAL BUILDINGS PROTECTED

2 COMMERCIAL BUILDINGS PROTECTED

5 COMMUNITY BUILDINGS PROTECTED

- BADLANDS COMMUNITY FACILITY
- CURLING CLUB
- DRUMHELLER MEMORIAL ARENA
- DRUMHELLER AQUAPLEX
- VISITOR INFORMATION CENTRE

## PROTECTION AT 3000 CMS

ADDITIONAL 162 PROPERTIES PROTECTED



# Downtown Dike

- 1200 m long
- Raise from existing berm 0.5 m to 2.5 m
- 36,500 m<sup>3</sup> of additional fill material required
- Space is constrained in a few areas, including Riverside Drive
- Design team considered several alternate dike alignments for constrained areas





# Riverside Drive Alternates Assessment

A detailed alternates assessment was undertaken for the Downtown Dike alignment along Riverside Drive that included the following:

- Alternate 1 - Closure of Riverside Dr. (2 blocks) and cul-de-sac on 3rd Ave
- Alternate 2 - Closure of Riverside Dr. (1 block - from 3<sup>rd</sup> St. to 3<sup>rd</sup> Ave.) maintain 3<sup>rd</sup> Ave. to 5<sup>th</sup> St. open
- Alternate 3 - Reconfiguration of intersection of Riverside Dr. and 3<sup>rd</sup> Ave., keeping both open
- Alternate 4 – Maintain Riverside Dr. and 5<sup>th</sup> St. E as one lane, one-way
- Alternate 5 – No changes to Riverside Dr., large retaining wall in Downtown Dike to maintain roadway



# Downtown Dike Alignment Alternates Summary

Alternate	Retaining Wall Req'd	Phase 2 Preliminary Construction Cost Estimate	Total Construction Cost	Challenges
Closure of Riverside Dr. & 5 <sup>th</sup> St. E (from 3 <sup>rd</sup> St. to 4 <sup>th</sup> Ave) <b>Recommended Alignment</b>	No	\$1.9 Million	\$3.3 Million	Traffic impacts
Closure of Riverside Dr (from 3 <sup>rd</sup> St. to 3 <sup>rd</sup> Ave.) maintain 3 <sup>rd</sup> Ave.	Yes	\$2.3 Million	\$3.7 Million	Large retaining wall, traffic impacts, risk of higher cost
Reconfiguration of intersection of Riverside Dr. and 3 <sup>rd</sup> Ave.	Yes	\$3.1 Million	\$4.5 Million	Large retaining wall, high cost, extensive roadwork
Maintain Riverside Dr. and 5 <sup>th</sup> St. E as one lane, one-way	Yes	\$2.2 Million	\$3.6 Million	Retaining wall, traffic impacts, risk of higher cost
No change to Riverside Dr., do not extend into Red Deer River	Yes	\$3.2 Million	\$4.6 Million	Large retaining wall, highest cost



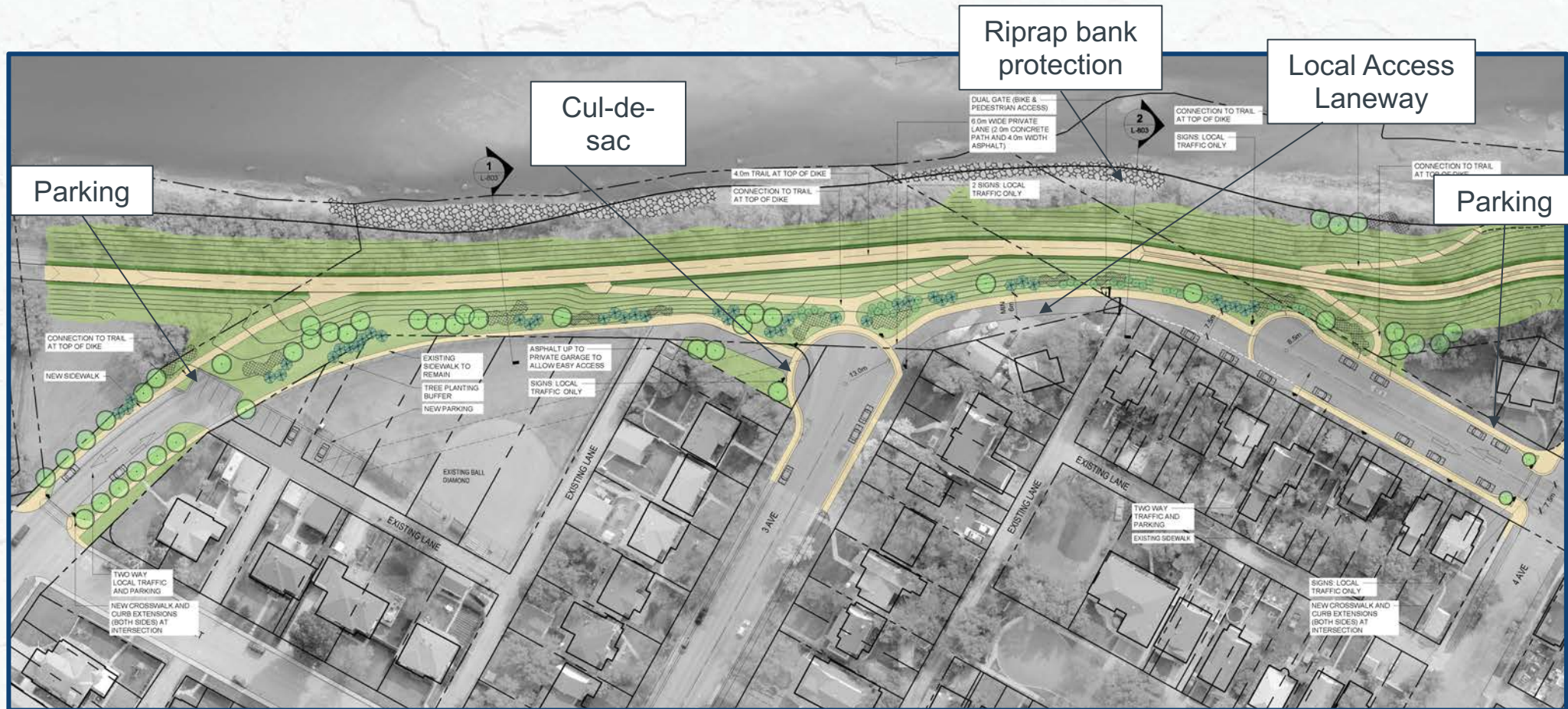


# Downtown Dike

- Original Downtown Dike Budget as per grant funding applications:
  - \$3.72 million (\$3.2M for construction, \$400K for professional services)
- Current project cost estimate (design & construction):
  - \$5.1 million
- Cost escalations due to :
  - Increase in design flow rate
  - Increased communications needs (4 community info sessions vs 1)
  - Additional options assessment
  - Utility relocation cost
  - Land access cost
  - Additional landowner consultation

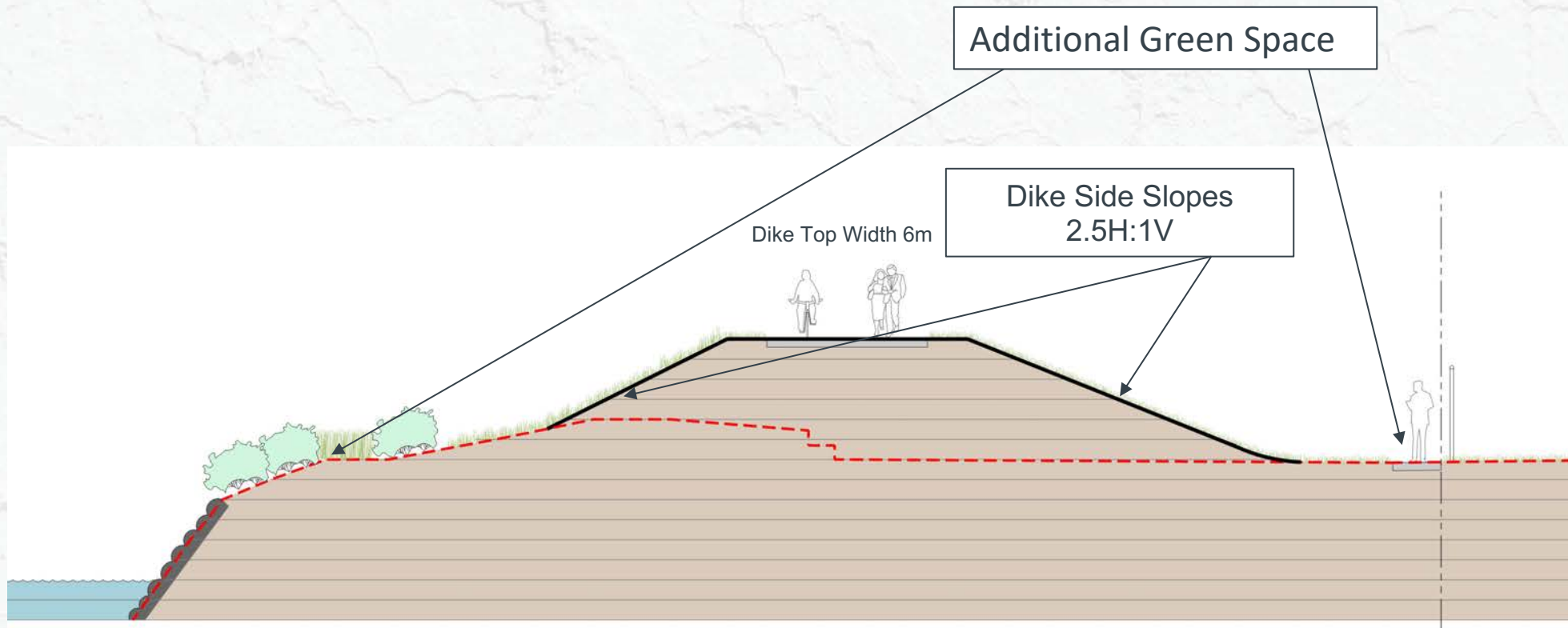


# Downtown Dike – Riverside Dr. (Recommended Design)





# Downtown Dike – Riverside Dr. (Recommended Design)



# Riverside Dr. Closure – Looking East from 3<sup>rd</sup> Ave





# Downtown Dike – Recommended Design

The selected alignment for Phase 2 of the Downtown Dike, requiring a closure of Riverside Drive is the best alternate

- Allows room for the river to flow mitigates higher upstream water levels due to flow constriction
- Minimizing clay placement into the river, which would be difficult to permit and may require expensive fish habitat compensation to be built elsewhere
- Lower long-term maintenance costs with no wall
- Safer dike cross section for emergency fill placement
- Best use of overall flood program budget







# **Downtown Dike & Riverside Drive Closure**

## **Transportation Impact Assessment**



# **Why did we undertake a Transportation Impact Assessment?**

Feedback from the community & stakeholders regarding the closure of Riverside Dr. highlighted concerns related to:

- Alternate traffic routes and increased traffic in residential areas
- Emergency response routes and times





# What did the Transportation Impact Assessment Look at?

- Alternate travel routes through downtown traffic impacts due to road closure
- In response to community concerns, assessment of emergency response routes and times was added to the study



# Transportation Impact Assessment - Findings

- After diverting traffic for the Riverside Drive closure on alternate downtown routes, there were three intersections with some delays due to the greater volumes
  - Railway Avenue and 5 Street
  - Railway Avenue and Centre Street
  - Centre Street and 3rd Avenue (less significant delays)



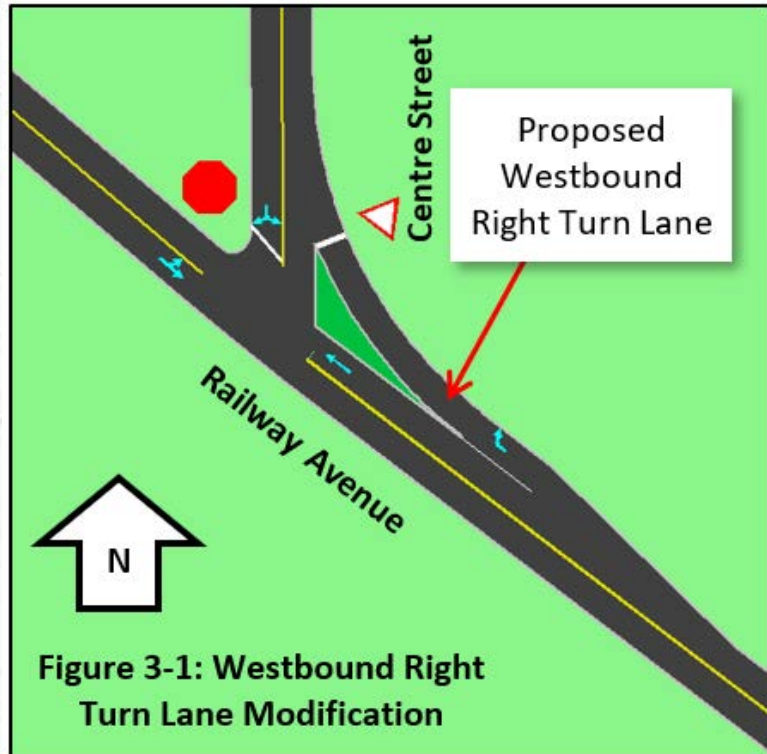


# Transportation Impact Assessment – Suggested Mitigations

- With mitigations in place, the service level for these 3 intersections was found to return to pre-closure levels, with the inclusion of:
  - Convert the 4-way stop at Centre Street and 3rd Avenue to a 2-way stop
  - Add a right turn lane on Railway Avenue at Centre Street
  - Add right and left turn lanes at Railway Avenue and 5 Street
- Town has already started work on first two traffic improvements noted above to improve traffic flow



# Transportation Impact Assessment – Suggested Mitigations





# Transportation Impact Assessment – Suggested Mitigations

- The Town plans to complete a Downtown TIA and additional traffic counts as part of the Downtown Area Revitalization Plan
- This work can be used to assess the performance of the suggested mitigations once implemented and suggest any additional mitigations that may be required, as well as:
  - Wayfinding signage updates
  - On-line mapping route updates



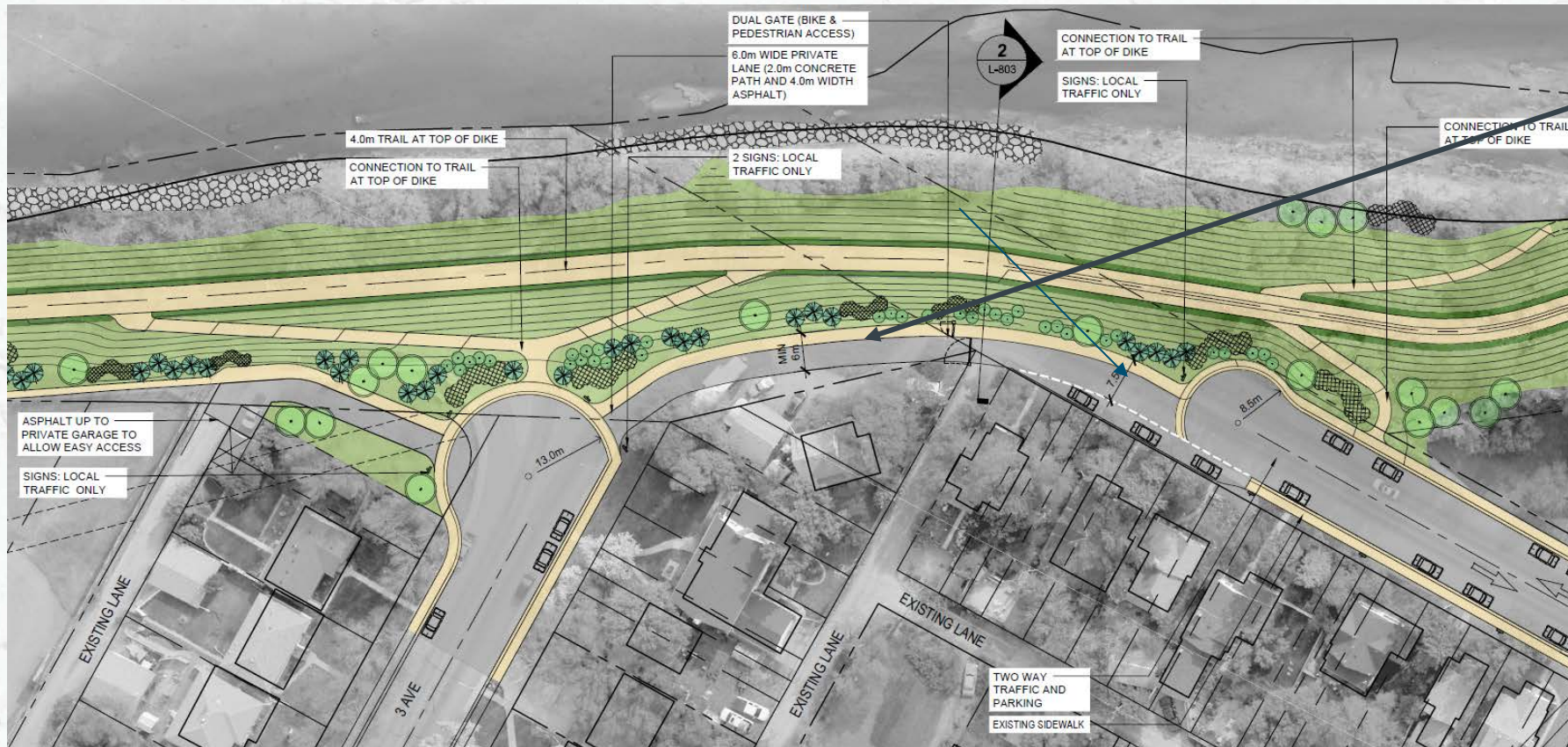
# Transportation Impact Assessment – Emergency Response Times

- Emergency Response times were assessed with the road closure and mitigations in place
- Assessment found emergency response travel times will not be negatively impacted using the preferred routes with traffic mitigations in place
- The Riverside Drive closure includes an emergency vehicle laneway from 3rd Avenue to 5th Street
- Findings have been reviewed by Town of Drumheller Emergency Services and RCMP, and neither noted concern with proposed road closure impacting response times with the improvements noted





# Local Laneway for Emergency Vehicles



Laneway for  
Emergency  
Vehicles



# **Proposed Road Closure Bylaw - Next Steps**

- Road Closure Bylaw First Reading (Mar 21, 2022)
- Notification of impacted stakeholders (Mar 21 – Apr 13, 2022)
- Public Hearing (Apr 19, 2022)
- Submission of Public Hearing Information and Proposed Road Closure Bylaw to Minister of Transportation
- Pending Transportation approval, second and third reading at Council





# Summary

- Drumheller is at significant risk of flooding
- We need to use available funding now to implement permanent flood mitigation infrastructure
- The proposed Downtown Dike alignment balances the need to protect Drumheller from flooding with environmental impacts and overall program costs
- The proposed road closure was found to impact traffic flow; however these impacts can be mitigated with traffic flow improvements
- Transportation Impact Assessment study found emergency response travel times will not be negatively impacted using the preferred routes with mitigations in place



