
ALBERTA ENVIRONMENTAL APPEALS BOARD

Report and Recommendations

Date of Report and Recommendations – June 14, 2022

IN THE MATTER OF sections 91, 92, 94, 95, and 99 of the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12, and section 115 of the *Water Act*, R.S.A. 2000, c. W-3;

-and-

IN THE MATTER OF appeals filed by Delbert and Helen Edey, James and Lillian Howie, and Rod and Nicole Macklin with respect to the decision of the Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks, to issue *Water Act* Approval No. 00419723-00-00 to the Town of High River.

Cite as: *Edey et al. v. Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks, re: Town of High River* (14 June 2022), Appeal Nos. 19-089 and 19-093-94-R (A.E.A.B.), 2022 ABEAB 25.

HEARING BEFORE:

Ms. Anjum Mullick, Panel Chair; Ms. Barbara Johnston, Board Member; and Mr. Dave McGee, Board Member.

BOARD STAFF:

Mr. Gilbert Van Nes, General Counsel and Settlement Officer; Ms. Denise Black, Board Secretary; Ms. Aurelia Gordon, Board Counsel.

SUBMISSIONS BY:

Appellants:

Mr. Delbert and Ms. Helen Edey; Mr. James and Ms. Lillian Howie; and Mr. Rod and Ms. Nicole Macklin, represented by Mr. Gavin Fitch, Q.C., McLennan Ross LLP.

Approval Holder:

Town of High River, represented by Mr. John Gruber, MLT Aikins LLP.

Director:

Mr. Andun Jevne, Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks, represented by Ms. Jodie Hierlmeier and Ms. Jade Vo, Alberta Justice and Solicitor General.

Intervenors:

Mr. Peter and Ms. Sheila Macklin, represented by Mr. Gavin Fitch, Q.C., McLennan Ross LLP.

WITNESSES:

Appellants:

Mr. Delbert Edey; Mr. James Howie; Mr. Rod Macklin; and Dr. Michael Bender, Senior Water Resources Engineer, Millennium EMS Solutions Ltd.

Approval Holder:

Mr. Joal Borggard, Principal Hydrotechnical Engineer, Cascade Water Resources; Mr. Chris Delanoy, Managing Director, Calgary, ISL Engineering and Land Services; Mr. David Sol, Associate Manager-Planning, IBI Group; Mr. Adam Spackman, Edwards Land; Mr. Tom Gilliss, Town of High River; and Mr. Reiley McKerracher, Director, Municipal Services, Town of High River.

Director: Mr. Andun Jevne, Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks; Ms. Pauline Scoffield, Approvals Coordinator, Alberta Environment and Parks; and Mr. Jim Choles, River Engineering, Alberta Environment and Parks.

Intervenors: Mr. Michael Macklin.

EXECUTIVE SUMMARY

The Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks (the Director) issued an Approval under the *Water Act* to the Town of High River (the Town), which authorizes the construction of a berm and swale approximately 2.6 kilometres long within the floodplain of the Highwood River (the SW Dike), resulting in the permanent alteration of flow, direction of flow, and water levels of the Highwood River.

Mr. Delbert and Ms. Helen Edey, Mr. James and Ms. Lillian Howie, and Mr. Rod and Ms. Nicole Macklin (the Appellants) filed appeals with the Environmental Appeals Board (the Board) of the Director's decision to issue the Approval. The Appellants disputed the scientific and technical studies on which the Approval decision was based, the appropriateness of constructing a dike in a floodplain, and the terms and conditions of the Approval. The Board granted intervenor standing to Mr. Peter and Ms. Sheila Macklin.

An oral hearing was held by video conference due to the COVID-19 Pandemic. The Board received and reviewed written submissions, assessed oral evidence and arguments presented at the hearing, and reviewed Alberta Environment and Park's record on the following issues set by the Board:

1. The accuracy and reliability of the technical and scientific studies that informed the Director's decision to issue the Approval. This includes but is not limited to any modelling that was undertaken.
2. The appropriateness of constructing a dike in a floodway or floodplain as authorized by the Approval under appeal before the Board.
3. Are the terms and conditions of the Approval appropriate having regard to the potential environmental impacts of the approved activity? This includes but is not limited to the potential environmental impacts of the Approval on each of the Appellants (i.e. property, business, safety).

The Board determined the technical and scientific studies used to inform the Director's decision to issue the Approval were accurate and reliable. Despite an inherent lack of real-world precision, a model can still be reliable as a representative and predictive tool. Therefore, despite minor discrepancies between the 2013 flood and the Town's model, the model was still an accurate and reliable approximation of the effects of the SW Dike.

The Board did not find any statutory or policy limitations to prevent the construction of the berm and swale within the floodplain of the Highwood River. Given the design constraints presented by the Town in its application to the Director, it was appropriate for the Director to authorize the construction of the berm and swale within the floodplain.

The Board determined the terms and conditions of the Approval were appropriate in principle. However, the Board found the Director erred when determining which lands were appurtenant to the Approval and in determining which landowners were required to consent to the works. The purpose of the berm and swale is to redirect overland flow during a flood event from within the Town to land located in Foothills County (the County). The Board found that by building the berm and swale and redirecting the overland flow of floodwaters, the Town intentionally transferred the overland flow of floodwaters from the Town to the Appellants and Intervenors, materially impacting their properties.

The Director limited appurtenance to the location of the berm and swale. The lands in the County which will receive the redirected overland flow are essential to the design and proper function of the berm and swale and should be appurtenant to the Approval. The Board found the Director erred by not requiring the Town to obtain the consent of the Appellants and Intervenors to the use of their lands created by the redirection of the overland flow of floodwaters.

Further, the Board determined that the Director should have made those lands downstream of the berm and swale that will receive the redirected overland flow appurtenant to the Approval and required the written consent of these landowners, as the berm and swale cannot operate as intended without those lands receiving the overland flow.

The Board recommended the Approval be varied to include those lands receiving the redirected overland flow from the berms and swale, including the Appellants and Intervenors' lands, as appurtenant to the Approval. The Board also recommended that the Approval be varied to require the Town to obtain the written consent of the owners of lands appurtenant to the Approval as interpreted in this decision. The Board recommended that all other terms and conditions of the Approval be confirmed as issued.

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I. INTRODUCTION

[1] This is the Environmental Appeals Board's (the "Board") report and recommendations to the Minister of Environment and Parks (the "Minister") concerning appeals filed in relation to the decision of the Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks (the "Director") to issue Approval No. 00419723-00-00 (the "Approval") under the *Water Act*, R.S.A. 2000, c. W-3 (the "*Water Act*") to the Town of High River (the "Town"). The Board has jurisdiction to hear this appeal pursuant to section 115(1)(a)(i) of the *Water Act*.¹ The appeals were filed by Mr. Delbert and Ms. Helen Edey, Mr. James and Ms. Lillian Howie, and Mr. Rod and Ms. Nicole Macklin (the "Appellants"). The Board also allowed Mr. Peter and Ms. Sheila Macklin to intervene in the appeals (the "Intervenors").

[2] The Approval authorizes the construction and placement of a berm approximately 2.6 kilometres long and a swale at sections 35-018-29-W4M and S½-01-19-29-W4M within the Highwood River's floodplain resulting in the permanent alteration of the flow, the direction of flow, and the water levels of the Highwood River (the "SW Dike"). The Approval also changes the location of overland water flow for drainage purposes.² Though not explicitly stated in the Approval, the purpose of the SW Dike is flood mitigation.³

[3] The Board held an oral hearing by video conference due to the COVID-19 Pandemic on January 12 and January 13, 2021, and heard submissions and evidence on the following issues:

1. The accuracy and reliability of the technical and scientific studies that informed the Director's decision to issue the Approval. This includes but is not limited to any modelling that was undertaken.

¹ Section 115(1) of the *Water Act* provides:

"A notice of appeal under this Act may be submitted to the Environmental Appeals Board by the following persons in the following circumstances:

(a) if the Director issues or amends an approval, a notice of appeal may be submitted

(i) by the approval holder or by any person who previously submitted a statement of concern in accordance with section 109 who is directly affected by the Director's decision, if notice of the application or proposed changes was previously provided under section 108...."

² *Water Act* Approval No. 00419723-00-00, January 28, 2020, at the Purpose and Condition 3.0(a).

³ Town's Letter to the Board, February 12, 2020, at page 2.

2. The appropriateness of constructing a dike in a floodway or floodplain as authorized by the Approval under appeal before the Board.
3. Are the terms and conditions of the Approval appropriate having regard to the potential environmental impacts of the approved activity? This includes but is not limited to the potential environmental impacts of the Approval on each of the Appellants (i.e. property, business, safety).

[4] Based on the evidence and arguments presented at the hearing, the Board concluded the technical and scientific studies that informed the Director's decision were accurate and reliable.

[5] The Board determined it was appropriate for the Approval to authorize the construction of the SW Dike in the Highwood River's floodplain. There were design constraints and a lack of other feasible design options available to the Town.

[6] The Board concluded the terms and conditions of the Approval are appropriate in principle. However, in the Board's view, the Director erred in not finding the Appellants' and Intervenors' lands appurtenant to the Approval. The Board found the Appellants' and Intervenors' lands were necessary to the design and proper function of the SW Dike, as the overland flow must flow over the Appellants' and Intervenors' lands to reach the Little Bow River.

[7] The Board further found that by building the SW Dike and redirecting the overland flow of floodwaters, the Town intentionally transferred the overland flow of floodwaters from the Town to the Appellants' and Intervenors' lands and materially impacted their properties. The Board found the Director erred by not requiring the Town to obtain the consent of the Appellants and Intervenors to the material impact to their lands created by the redirection of the overland flow of floodwaters.

[8] The Board recommended the Approval be amended to include the Appellants' and Intervenors' lands, making them appurtenant to the Approval.

[9] The Board also recommended the Director review the statements of concern and determine if there are any additional lands materially impacted by the overland flow redirected by the SW Dike, and if so, recommended those lands also be made appurtenant to the Approval.

[10] The Board further recommended the Director apply section 37(4) of the *Water Act*⁴ and Alberta Environment and Parks' ("AEP") policy and require the Town to obtain the written consent of the owners of the lands appurtenant to the Approval which it does not own or have administrative control over.

[11] The Board recommended the Town be given a timeline of six months to acquire the consent of the Appellants and the Intervenors, failing which the Board recommended the Director be given the discretion to extend the time for the Town to acquire the necessary written consent, if appropriate.

[12] The Board also recommended the Town be required to submit the as-built plans for the SW Dike and any other information that is requested by AEP to assist with the Province's flood hazard mapping.

II. KEY TERMS

[13] The Board notes there are several terms used by the Appellants, Intervenors, Director, and Town (the "Parties") throughout the hearing. For the purposes of this report, the Board has clarified these terms as set out below.

[14] In June 2013, southern and central Alberta received a heavy rainfall which triggered devastating flooding throughout areas along the Bow, Elbow, Highwood, Red Deer, Little Bow and South Saskatchewan Rivers and their tributaries. This flood is referred to as the "2013 Flood."

[15] The Town's consultant, WorleyParsons,⁵ used high watermarks, survey data, and other measurements that were taken after the 2013 Flood to create a model of the landscape as it would have appeared just after the 2013 Flood (e.g. it does not include any post-2013 flood mitigation structures), which they referred to as the 2013 Flood Landscape Scenario. This model is referred to in this Report as the "2013 Flood Model."

⁴ Section 37(4) of the *Water Act* states: "If an applicant for an approval does not own the land in fee simple or the undertaking to which the approval is to be appurtenant, if required by the Director, the applicant must submit the written consent of the owner of the land or of the undertaking as part of the application for the approval."

⁵ In some of the documentation, WorleyParsons is referred to as "Advisian," a subsidiary of the WorleyParsons Group. For clarity, WorleyParsons is used throughout this Report.

[16] WorleyParsons generated another hydraulic model which simulated the 2013 Flood, and included all Town dikes (temporary and permanent) installed up to 2019, and does not include the SW Dike. This model was developed to estimate the potential effects of the flood mitigation measures at the time of the Approval application and is referred to as “Scenario 37A”.

[17] WorleyParsons generated another hydraulic model based on the 2013 Flood Model, which was Scenario 37A with the addition of the SW Dike, along with minor landscape modifications to protect the Town. This model is referred to as “Scenario 53A.”

[18] Flow rate is discussed in terms of cubic metres per second “m³/s.”

[19] The diking projects around the Town have created a diversion effect between the Highwood River and the Little Bow River during extreme flood events, referred to as the “flow split.” The flow split is located just south of the Town.

[20] The maximum rate of discharge during the period of runoff during a storm associated with a flood is referred to in this Report as the “peak flow.”

[21] A “1:100 Flood” is a flood which has a one percent chance of occurring every year or, put another way, once every hundred years.

[22] The “floodplain” is the area of low-lying land around a river which stretches from the banks of the river’s channel and is subject to flooding during periods of high water.

[23] The “floodway” generally includes the river channel and adjoining riverbanks.

[24] The “flood fringe” is the portion of the floodplain that is not included in the floodway.

III. BACKGROUND AND FACTS

[25] After the 2013 Flood, the Town undertook a flood mitigation program and installed a series of dikes around the Town of High River.⁶

[26] On August 17, 2018, the Town submitted *Water Act* Application 00419723 to AEP for authorization to carry out activities under the *Water Act*, namely the construction and

⁶ Attached as Appendix “A” – Town of High River Flood Mitigation Program is Figure 1, Town of High River Flood Mitigation Program, WorleyParsons, April 17, 2018, attached to the Regulatory Permit Application No. 00419723 (Revision 3), July 23, 2018, WorleyParsons Canada (“WorleyParsons Report”), at Director’s Record, Tab 5, page 98.

placement of the SW Dike at Section 35-18-29-W4M and S½-01-19-29-W4M within Highwood River's floodplain (the "Application").

[27] The SW Dike was based on a reverse "S-Curve" design with a narrow swale.⁷ The Town chose this design over two other options, one being a "hockey stick" design and the other an "S-Curve" design with a wider swale. The Town had previously submitted an application based on the "S-Curve" design with a wider swale, but that earlier application was superseded by the Application filed in 2018.

[28] The rationale in support of the design for the SW Dike was prepared by WorleyParsons. WorleyParsons developed and used the Highwood River Flood Model RMA-2 to model three different scenarios: the 2013 Flood Model, Scenario 37A, and Scenario 53A.

[29] The Town assessed the impacts of the SW Dike by comparing the cumulative effects of adding the proposed mitigation in Scenario 53A to that of Scenario 37A. The assessment looked at two different peak flows, 750 m³/s (1:100 Flood) and 1820 m³/s (2013 Flood), with various model parameters, including depth, velocity, and elevation.⁸

[30] The Application was referred to AEP internal experts for review by the AEP Approvals Coordinator (the "Approvals Coordinator"). AEP River Engineering ("River Engineering") provided comments to the Approvals Coordinator regarding the proposed SW Dike's obstruction of a provincial floodway and impacts on water characteristics on January 31 and April 16, 2019. These comments were sent to the Town on May 3, 2019. The Town responded to these comments in a letter dated June 7, 2019, and met with AEP on July 3, 2019, to discuss the Application and River Engineering's concerns.⁹

[31] Public notice of the application was provided in July 2019. AEP received 15 statements of concern in response to the public notice and forwarded them to the Town. On August 21, 2019, the Town emailed the Approvals Coordinator outlining the impacts of the proposed SW Dike on the potential statement of concern filers. The Town met with AEP in

⁷ 2016 ISL Engineering Final Report, *Southwest Dike Choose-Design Report*, (the "ISL Report"), at pages 17 to 19, Director's Record, Tab 6, pages 181 to 83. See also the Little Bow Enhanced Natural Floodway (LB-ENF), WorleyParsons Report, at pages 2 to 8, and Director's Record at Tab 5, pages 70 to 78.

⁸ See Figures 5 through 24 of the WorleyParsons Report, Director's Record, Tab 5, pages 102 to 121.

⁹ Director's Record, at Tab 23.

September 2019 to discuss the Town's modelling and the impacts of the proposed SW Dike on each statement of concern filer.

[32] The Director accepted eight statements of concern filers, including those filed by Mr. Delbert Edey and Ms. Helen Edey (the "Edeys"), Mr. James Howie and Ms. Lillian Howie (the "Howies"), and Mr. Roderick Macklin and Ms. Nicole Macklin (the "Macklins"), collectively referred to as the "Appellants."¹⁰ Between December 2019 and January 2020, WorleyParsons worked with AEP to address AEP's concerns regarding the Application and the concerns of the statement of concern filers.

[33] The Director issued the Approval to the Town on January 28, 2020.

[34] On February 7, 2020, the Board received a Notice of Appeal from the Edeys, appealing the issuance of the Approval and requesting a stay of the Approval.

[35] On February 7, 2020, the Board acknowledged receipt of the Edeys' Notice of Appeal and notified the Town and the Director of the appeal and stay application. The Board requested the Director provide a copy of all documents and all electronic media he reviewed and were available to him when making his decision, including policy documents (the "Director's Record").

[36] On February 10, 2020, Mr. Peter Macklin and Ms. Sheila Macklin ("the Intervenor"), and the Howies filed Notices of Appeal and requested a stay of the Approval.

[37] The Board acknowledged receipt of the Howies' Notice of Appeal on February 12, 2020, and notified the Town and Director of their appeal and stay application.

[38] On February 13, 2020, the Board acknowledged receipt of the Intervenor's Notice of Appeal and notified the Town and the Director of their appeal and stay application.

[39] On February 14, 2020, the Director filed a motion with the Board requesting the Board decide whether the Intervenor's Notice of Appeal was properly before the Board in accordance with section 95(5)(a)(iii) of the *Environmental Protection and Enhancement Act*,¹¹

¹⁰ The Director also accepted the statement of concern of Mr. Gerrit and Ms. Jantje Top, who had also file an appeal (EAB 19-091) with the Board, but later withdrew their appeal prior to the hearing.

¹¹ Section 95(5)(a)(iii) of EPEA states:

"(5) The Board

(a) may dismiss a notice of appeal if...

R.S.A. 2000, c. E-12 (“EPEA”), on the basis of the Intervenors having failed to file a statement of concern with the Director as required by section 115(1)(a)(i) of the *Water Act*.¹²

[40] On February 18, 2020, the Macklins filed a Notice of Appeal of the Approval and requested a stay of the Approval.

[41] On February 20, 2020, the Board acknowledged receipt of Macklins’ appeal and notified the Town and the Director of their appeal and stay request. The Board also acknowledged the Director’s motion and set a process for receiving submissions on the Director’s motions from the Appellants, the Town, the Intervenors, and the Director.

[42] Concurrently, on February 20, 2020, the Appellants provided their submissions to the Board in support of a stay. The Board acknowledged the Appellants’ stay submissions and set a process for receiving submissions regarding the stay application from the Appellants, the Town, and Director (collectively, the “Parties”).

[43] Between February 20 and March 27, 2020, the Board received submissions from the Parties and the Intervenors in two concurrent processes. The Board received submissions from the Intervenors, the Town, and the Director on whether the Intervenors’ appeal was properly before the Board. The Board also received submissions from the Parties on whether the Appellants were directly affected by the Director's decision to issue the Approval and whether a stay should be granted.

[44] On April 1, 2020, the Board informed the Parties and the Intervenors that the Board had reviewed the written submissions and had determined the Intervenors’ appeal was not properly before the Board. The Intervenors had failed to file a statement of concern with the Director, which was a prerequisite to filing their Notice of Appeal with the Board pursuant to

(iii) for any other reason the Board considers that the notice of appeal is not properly before it....”

¹² Section 115(1)(a)(i) of the *Water Act* states:

“A notice of appeal under this Act may be submitted to the Environmental Appeals Board by the following persons in the following circumstances:

(a) if the Director issues or amends an approval, a notice of appeal may be submitted

(i) by the approval holder or by any person who previously submitted a statement of concern in accordance with section 109 who is directly affected by the Director’s decision, if notice of the application or proposed changes was previously provided under section 108.....”

section 115(1)(a)(i) of the *Water Act*. The Board further advised the Parties the Appellants were found to be directly affected by the SW Dike, but the Board declined to grant a stay.¹³

[45] The Director provided the Director's Record to the Board on April 9, 2020. The Board subsequently provided the Director's Record to the Parties. A mediation meeting was scheduled for May 6, 2020.

[46] On May 5, 2020, the Board confirmed with the Parties that as there was no agreement to proceed to mediation, the mediation meeting would be cancelled. The Board proposed one issue for the hearing¹⁴ and asked the Parties to provide comments.

[47] On May 11, 2020, the Board received comments from the Parties regarding the proposed issue for the hearing. The Director and Appellants provided additional comments on the proposed issue for the hearing on May 21, 2020, and the Town provided additional comments on May 22, 2020.

[48] On September 3, 2020, the Board notified the parties that, based on the Parties' availability, the hearing would be held between October 6 and 7, 2020.

[49] On September 8 and 9, 2020, the Town and the Director wrote to the Board requesting the hearing be rescheduled to a later date. On September 10, 2020, the Appellants stated a postponement of the hearing was acceptable to the Appellants.

[50] The Board published the Notice of Hearing in the Okotoks Western Wheel on September 9, 2020, the High River Times on September 11, 2020, and the Nanton News on September 16, 2020. The Board also provided a copy of the Notice of Hearing to the Town of High River and Rockyview County to place on their public bulletin boards or websites. The Notice of Hearing was also placed on the Board's website, and a News Release was distributed to the media throughout the Province by the Government of Alberta's Public Affairs Bureau. The Notice of Hearing notified the public of the hearing and requested that any person other than

¹³ *Edey et al. v. Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks, re: Town of High River* (16 November 2021), Appeal Nos. 19-089-091 and 093-094-ID2 (A.E.A.B.), 2021 ABEAB 33.

¹⁴ The Board suggested the following issue:

“Are the terms and conditions in the Approval adequate having regard to the potential environmental impacts of the Approval? This includes but is not limited to:

- The impact of the Approval to each of the Appellants' lands having regard to their flood protection right.”

the Parties, wanting to make representations before the Board, contact the Board by September 18, 2020.

[51] The Board received applications to intervene from the Intervenors, Ms. Shirley Pickering, on behalf of the Upper Little Bow Water Users Association, and Mr. Doug and Ms. Anne Bourque. The Board received comments from the Parties on their potential participation. The Board determined only the Intervenors would be permitted to intervene and issued its reasons for the decision on October 26, 2021.¹⁵

[52] On September 14, 2020, the Board wrote to the Parties providing details of the publication of the Notice of Hearing. The Board advised the Parties the hearing would be rescheduled, and the date for intervenors to apply would be extended to October 19, 2020.

[53] On November 2, 2020, the Board notified the Parties that, based on their respective availabilities, the hearing was scheduled for January 12 and 13, 2021. The Board also advised the Parties on November 9, 2020, that it had determined the issues for the hearing.

[54] The written submissions for the hearing, including expert reports, were received from the parties between November 13 and December 23, 2020.

[55] The hearing was held by video conference due to the COVID-19 Pandemic on January 12 and 13, 2021. The issues heard by the Board were:

1. The accuracy and reliability of the technical and scientific studies that informed the Director's decision to issue the Approval. This includes but is not limited to any modelling that was undertaken.
2. The appropriateness of constructing a dike in a floodway or floodplain as authorized by the Approval under appeal before the Board.
3. Are the terms and conditions of the Approval appropriate having regard to the potential environmental impact of the approved activity? This includes but is not limited to the potential environmental impact of the Approval on each of the Appellants (i.e. property, business, safety).

[56] The Board received further written submissions from the Parties in response to questions from the Board between February 1 and May 24, 2021.¹⁶

¹⁵ *Edey et al. v. Director, South Saskatchewan Region, Regulatory Assurance Division*, Alberta Environment and Parks (26 October 2021), Appeal Nos. 19-089, 093-094-ID1 (A.E.A.B.), 2021 ABEAB 25.

¹⁶ The Board asked the Parties:

“[T]he Board would like to receive comments from the parties with respect to (1) the applicability

[57] The Board closed the hearing on May 31, 2021.

IV. Evidence and Arguments

A. Intervenors

[58] The Intervenors presented the following evidence and arguments.

[59] The Intervenors own two properties west of the Little Bow River, just south of the Town.¹⁷ The Intervenors live on the North Property, which is accessed from 88 Street. There is a shop/garage located on the North Property, in addition to their home.

[60] According to the Intervenors, the 2013 Flood impacted their properties. Water overtopped the Canada Pacific Railway (“CPR”) embankment and 88 Street and flooded their properties from the west/northwest. A significant length of the access road which they share with the Macklins was inundated to a height of approximately 4-5 inches (10-13 cm), cutting off access to both the Intervenors and Macklins’ residences.

[61] The Intervenors argued the 2013 Flood Model was inaccurate and stated, “... the waters restricted by the CPR embankment first flowed south along the west side until stopped by a hill where they piled up and flowed over the embankment in greater volume and before anywhere else.”¹⁸

[62] The Intervenors argued the data used to determine the 1:100 Flood’s peak flow was outdated and should be considered obsolete, as it only includes data from floods that occurred up to 1992 and does not include more recent floods. The Intervenors argued that the outdated data has resulted in too low of a peak flow, of 750 m³/s.

of the Guideline, and (2) the effect on the project if the Guideline is applied.

The Board notes there does not appear to be a defined point in time when stormwater becomes floodwater, nor does there appear to be a rationale for treating stormwater and floodwater differently. Based on the Board’s initial review of the *Stormwater Management Guideline for the Province of Alberta*, it appears to be a well-developed policy that identifies key factors to be considered with respect to the development of a stormwater or floodwater management system. These factors include an adequate outlet.”

The Board also requested that the Town provide more detailed information regarding Figure 19.

¹⁷ All of the Legal Subdivisions 11 and 12 and the South Halves of Legal Subdivisions 13 and 14 in the NW 25-18-29-W4M, containing 48.6 hectares (120 acres) more or less, excepting thereout Plan 0213185 Subdivision, 6.57 hectares (16.23 acres) (“North Property”).

The North Halves of Legal Subdivisions 5 and 6 in the SW 25-18-29-W4M containing 8.08 hectares (20 acres) more or less (“South Property”).

¹⁸ Intervenors’ Written Hearing Submissions, December 9, 2020, Appendix “D,” at page 3.

[63] According to the Intervenors, flood mapping has never shown their properties in a floodway or floodplain. They expressed concern that the new flood mapping yet to be released by the Government of Alberta will show that their properties are in a floodway or floodplain and noted the Town's modelling shows their properties will be subject to incremental flooding because of the SW Dike.

[64] The Intervenors also expressed concern that the flood mapping will substantially devalue their properties, sterilize their development potential, and make them difficult to sell.

[65] According to the Intervenors, they attended meetings with the Town and its appraiser regarding the SW Dike but did not feel their concerns were heard. The Intervenors stated the Town offered a flood easement over the portion of the properties where the modelling showed there would be incremental flooding with the SW Dike in place.

[66] The Intervenors argued the Approval should be expanded to require the following terms and conditions:

- a. protection of the Little Bow River;
- b. provision to route lesser floods to cause less acreage involvement and less debris being picked up by the waters, and fewer small animal deaths; and
- c. the Town should be responsible for remedying any environmental damage caused by any diverted floodwaters and for cleaning up the debris associated with the diverted floodwaters.

[67] The Intervenors also raised concerns regarding whether measures were in place to repair damage to their property after the next flood, and if their access road washed out, who would be responsible for repairing and rebuilding their access road.

[68] The Intervenors adopted the concerns and arguments of the Appellants regarding the modelling, in addition to their own.¹⁹

[69] Mr. Michael Macklin presented on behalf of the Intervenors at the hearing. He stated the construction of the SW Dike had caused the Intervenors a considerable amount of stress. He further noted the construction of the dikes in the Town had been a seven-year process

¹⁹ The Intervenors and the Appellants retained the same counsel legal counsel. The Intervenors adopted the concerns and arguments of the Appellants, and where there were individual concerns specific to an individual appellant or the Intervenors, these concerns or arguments are noted.

with no discussion regarding what would be happening to their lands or if they would be allowed to remain in the long term.

[70] According to Mr. M. Macklin, the drawings developed regarding the effects of the 2013 Flood "...were not totally accurate." He stated the 2013 Flood may have affected 20% of the Intervenors' land at that time, and the Intervenors were now not sure whether all their lands would be affected and flooded with the SW Dike in place. He explained, stating the 2013 Flood had damaged the crop but not the houses or buildings.

[71] Mr. M. Macklin stated the cleanup of the damage from the 2013 Flood was easy because the water was only on the land for a day. He noted there was quite a large amount of junk on the land, and Foothills County (the "County") had helped them with some of the removal. He expressed concern that there could be an untold amount of damage with the increased amount in the flow of water.

[72] According to Mr. M. Macklin, there was erosion and damage to the banks of the Highwood River during the 2013 Flood. He expressed concern that the increase in flow could damage and erode the banks further, causing a permanent change in the flow of the river.

[73] Mr. M. Macklin stated he agreed there should be mitigation for future flood events, but he objected to the Town diverting water onto the Intervenors' lands.

[74] Mr. M. Macklin noted Mr. Adam Spackman, the Town's appraiser, could not answer their questions about the flood easement offered by the Town or explain a covenant to the Intervenors. He noted no other compensation was offered to the Intervenors.

[75] Mr. M. Macklin noted there was an old swale the Highwood River used to flow through during floods that, if used, would have avoided all of the Appellants' and Intervenors' lands. He supported the idea of using the old swale as a solution, as one could still farm over it.

[76] Mr. M. Macklin further suggested that CPR be asked to remove the embankment. According to Mr. M. Macklin, no one had contacted CPR, and removal of the embankment could still be carried out.

B. Appellants

[77] The Appellants presented the following evidence and arguments, advancing four main arguments in their appeals:

- a. the technical data and scientific studies relied on by the Director in making his decision were inaccurate and unreliable;
- b. the decision to allow the SW Dike to be built in the Highwood River's floodplain was a violation of AEP policy and, therefore, inappropriate;
- c. the Director failed or was unable to properly consider the impacts of the SW Dike on the Appellants; and
- d. the terms and conditions of the Approval are inappropriate because the Approval transfers flood risk from the Town to the Appellants.

[77] The Appellants did not ask for the terms and conditions to be altered but rather asked that terms and conditions be added to the Approval ordering the Town:

- a. to backfill and eliminate the swale, which acts as a channel for floodwaters to flow towards downstream property owners in the County, such as the Appellants and the Intervenors;
- b. the Town to work with the County to implement the engineered breach proposal (or some version of it) contained in the Appellants' expert report prepared by Millennium EMS Solutions Ltd. ("Millennium"); and
- c. the Town to engage in good faith negotiations with the Appellants and Intervenors with respect to flood mitigation and/or compensation for the Town transferring flood impacts from its residents to downstream property owners and residents.²⁰

[78] The Edeys stated they own two properties located on the Little Bow River just south of the Town of High River in the County.²¹ The Edeys explained their home is on the East Property along with a 6000 square foot shop/garage, which is two-thirds cold storage and has the remaining one-third developed with heat and washroom facilities. The shop/garage has a 24-inch concrete foundation. The East Property is accessed from 104 Street.

[78] According to Mr. Edey, the 2013 Flood resulted in the Edeys' home flooding to a height of 41 inches (1.04 metres), while the water inside of their home reached the height of 34 inches (0.86 metres). The Edeys explained due to the "... flooding which occurred over the septic system and associated field, [their] septic Backflow Preventer was destroyed, resulting in

²⁰ Appellants' Initial Written Hearing Submissions, December 9, 2020, at 27.

²¹ Plan 1014136, Block 1, Lot 4, containing 4.05 hectares (10.0 acres), in SE 25-18-29-W4M ("East Property");
Plan 1014136, Block 1, Lot 1, containing 3.33 hectares (8.23 acres), in SE 25-18-29 W4M ("West Property").

the home being inundated with septic sewage.”²² Their residence was declared uninhabitable by the Health Authority due to contamination. The Edeys rebuilt their home in 2013/2014.

[79] The Edeys stated their shop/garage was also flooded to a height of 59 inches (1.52 metres) on the wall separating the cold and warm storage sections of the building; the floodwater created high water marks up to 1.52 metres high on the separation walls between the cold and warm storage facilities. Under the high velocity, the water eroded a large void 3 metres wide by 0.5 metres deep under the heated storage cement floor and outside wall foundation. Minimal flooding entered the heated storage.

[80] Mr. Edey stated that in 2013, the floodwaters entered their East Property from the Little Bow River from the north. There was minimal flooding to the West Property, which he estimated to be around half an acre. According to Mr. Edey, the 2013 Flood Model is incorrect in showing 2.5 acres of the West Property flooded. In his opinion, the 2013 Flood Model under-represents the aerial extent of the flooding to their properties in 2013 by approximately 30 metres.

[81] Mr. Edey stated that any benefit their East Property might acquire from the SW Dike is cancelled out by the adverse impacts the SW Dike causes to their West Property. According to him, their home on their East Property could still be flooded with the SW Dike in place.

[82] The Edeys stated their West Property has improvements, including a building that contains controls for an underground modern sub-drip irrigation system. This system irrigates 7 acres of the West Property. The drip tank is buried 10 inches deep, the drip tape is 36 inches apart, and covers the entire length of the West Property.

[83] Mr. Edey stated they have a flood easement with the Government of Alberta on the East Property, which restricts the flow to 8.5 m³/s, and expressed concern that the SW Dike flow will exceed this by hundreds of feet.

[84] The Appellants stated the flood easement agreement with the Government of Alberta is for the increase in flow in the Little Bow River to support the Twin Valley Reservoir.

²² Appellant’s Initial Written Hearing Submissions, December 9, 2020, Appendix “C” - Edey’s Statement of Impact, at page 1.

This easement has established boundaries for the maximum flow of 8.5 m³/s (300 CFS) of water in the Little Bow River.

[85] According to the Appellants, the proposed increase in flow to the Little Bow River due to the Approval is significant, as it is larger than the maximum flow the Little Bow River is permitted to carry through a diversion (8.5 m³/s). The Appellants stated the Town refused to discuss a controlled discharge option.

[86] Mr. Edey expressed further concern that those downstream of the SW Dike outside of the Town are not being offered the same level of protection as the Town's residents. He noted that the Town advised him that it has no mandate to protect the County's residents to the same level as its residents. He further noted the Town advised him that their East Property is located outside of the zone for compensation.

[87] According to Mr. Edey, attempts were made to speak to the Town and the County about alternatives to the SW Dike. However, both the Town and the County refused to discuss options.

[88] Mr. Edey stated the Town offered a flood easement over the West Parcel of their property based on the 2013 Flood Model, which, in their view, was inaccurate, less the projected impacts to the West Property. According to Mr. Edey, he asked the Town to appraise his East Property, and although the Town said it would, it never did.

[89] According to Mr. Edey, one of the difficulties with the modelling was the need to estimate the high watermarks, and only a few high watermarks were considered "very good." He also expressed concern that the modelling could not reflect the failure of the bridges and pre-flood or post water levels associated with them or crossings.

[90] The Edeys stated they had a surveyor take measurements of the elevations of their property, and their home is only 30-40 centimetres higher than the Town's modelled flood extents.

[91] Mr. Edey stated that they had requested the Town's social, environmental and economic studies for the SW Dike. According to Mr. Edey, these studies were not provided until those studies were received as a part of the Director's Record.

[92] Mr. Edey objected to the Director basing his decision on their properties being bare land, stating that “bare land” implies low value. He noted their properties have improvements, including a building and sub-surface drip irrigation system. Mr. Edey also commented that their properties have development potential given their proximity to a community, large city centre, and current zoning.

[93] According to Mr. Edey, the Town’s consultant advised them that the Town had the power of expropriation. He later found out their properties were outside the Town’s boundaries, and the Town could not expropriate their lands. He argued it eliminated the ability for an independent party to decide fair and reasonable compensation.

[94] The Edeys argued the appraiser for the Town did not take into account proper zoning and the highest best use for their properties, nor did the Appraiser consider the buildings or the value of the water licence on their property.

[95] The Edeys stated they expected the following to be impacted:

- a. building on the West Property that contains controls for the sub-surface irrigation system;
- b. a water well capable of delivering as much as 600 gallons per minute of spring quality water and accompanying water licence;
- c. steel building on the East Property containing pump and controls for irrigating out of the river to a travelling gun irrigation system;
- d. a shallow well for irrigating the field between their home and the river;
- e. their residence on the East Property.²³

[96] According to the Edeys, Golder Associates Inc. (“Golder”) and AECOM have proposed newly updated peak flows for floodwater protection, with Golder proposing 1560 m³/s and AECOM proposing 1390 m³/s.²⁴ The Edeys stated that numerous insurance agencies are also advocating for changes. The Edeys argued that both peak flows suggested are nearly double the current estimate.

[97] Mr. Edey stated he expected over half of the West Property to be under water and for his property to no longer be saleable. He further stated the development potential was lost.

²³ Appellants’ Written Hearing Submissions, December 9, 2020, Appendix “C” - Edeys’ Impact Statement, at page 3.

²⁴ Appellants’ Written Hearing Submissions, December 9, 2020, Appendix “C” - Edeys’ Impact Statement, at page 5.

[98] When asked about the 2013 Flood, Mr. Edey explained that when the Hoeh Dike broke in the Town, it went through the Town as a wall of water. He stated the overland flow went through the Little Bow River and that it took approximately 2-3 hours before the water levels in the Little Bow River reached the overland flow as described in the models. He explained he was able to leave in his truck; however, his son-in-law became trapped.

[99] The Macklins stated their residence is directly north of the Intervenors' home, and the two properties share an access road from 88 Street. Mr. Rod Macklin stated they initially met with the Town to express concern about the floodwaters being pushed into their property. He further stated he feels safe when he drives into the Town for work, but he does not feel safe when he drives home and is on the other side of the SW Dike.

[100] According to Mr. R. Macklin, he stated he is concerned about the potential for a large amount of water to be pushed onto his and the Intervenors' properties and the risk of their access road washing out. He noted the age of the Appellants and Intervenors involved in the appeals and expressed concern for their safety. He concluded by stating it was his understanding that even more of their access road would be flooded due to the SW Dike.

[101] Mr. R. Macklin stated they were originally going to give their daughter a parcel and locate a business on their property, but the SW Dike had forced them into an area back further from 88 Street, and flood-proof buildings were now required.

[102] The Howies stated they reside in the Town. They own property outside of the Town, which is used for agricultural purposes. Mr. James Howie gave evidence at the hearing that during the 2013 Flood, approximately half of their property flooded in the north and northeast. According to Mr. Howie, the water came overland from the west, from the Montrose subdivision of the Town, and deposited gravel on their property.

[103] Mr. Howie stated the northeast side of their property is less developable because it is lower, swampy, and sub-irrigated. However, the southwest portion had development potential. According to Mr. Howie, the Howies owned and lived on the property just south of their property for approximately twenty years. Mr. Howie stated during that time, it had never flooded. However, the southern portion of their property and access road will now be subject to flooding due to the SW Dike.

[104] When asked, Mr. Howie stated the 2013 Flood Model showed a lot more land flooding than had actually flooded. He stated his original idea had been to subdivide his land, which is 11 acres, for a housing development. He stated that now he cannot sell his property as a consequence of the SW Dike. He further stated he will have to help pay for the SW Dike and will not be compensated for it having put him into a worse position.

[105] The Appellants noted the Approval Holder was protecting its residents to the peak flow measured during the 2013 Flood plus 1 metre.

[106] The Appellants explained they were troubled by the statements in multiple documents prepared by WorleyParsons, which stated several factors limited the model accuracy. These factors include lack of data surrounding peak magnitude, duration, and overall volume; roughness, model approximations of real-world processes; input data quality and availability; resources; and high watermark accuracy used for calibration and validation of the model. According to the Appellants, they are concerned about their safety and investments. They feel their concerns are founded when considering the lack of precision in the modelling, the impacts on the Appellants' properties if the modelling is wrong, and the chosen approach taken by both the Town and the Government of Alberta.

[107] The Appellants noted other issues with the modelling, including using outdated studies and failing to address the debris blocking the bridge at 104 Street.

[108] According to the Appellants, WorleyParsons stated debris blockage has no impact on backwater effects at the 104 Street Bridge. The Appellants further commented that WorleyParsons advised the Town to remove the former railway bridge to eliminate backwater effects.

[109] The Appellants further argued the Town minimized the inherent uncertainty involved in modelling. According to the Appellants, in reports provided by the Town, the margin error was stated as +/- 0.3 metres. The Appellants noted in other documents prepared for the County, WorleyParsons acknowledged a greater level of uncertainty, which ranged up to +/- 1 metre.

[110] The Appellants noted Millennium had opined that the uncertainty in the modelling could be as much as +/- 1 metre. The Appellants argued it strained credulity that the

Town would respond to Millennium's opinion by stating the 2013 Flood Model was accurate to a range of 10-15 centimetres on the Edey properties.

[111] The Appellants commented the Director relied on WorleyParsons' modelling to be accurate and reliable. However, the Appellants argued that there was considerable uncertainty around the 2013 Flood Model, resulting in WorleyParsons stating that the error margin could be between +/- 0.5 metres for most areas to +/- 1.0 metre, with a freeboard of 1 metre. The Appellants further argued there is no evidence the Director considered the inherent uncertainty in WorleyParsons' modelling or that the model could be off by as much as 1.0 metre.

[112] According to the Appellants, the Town's modelling does not present a reasonable worst-case scenario. The Appellants suggested the modelling included an assumption that the model could be incorrect by as much as 1 metre. The Appellants argued if the Town's modelling were off by a metre, it could be devastating to the Appellants. The Edeys' home, in particular, would flood.

[113] According to the Appellants, the Director relied on absolute minimums when ensuring the safety of livelihoods and protection of homes and businesses. The meaning of "significant" could vary, and the difference of a few feet could mean the Howies' home and septic system are flooded. The Appellants argued the error margins were too narrow to trust in the accuracy or reliability of the technical studies that informed the Director's decision.

[114] The Appellants stressed the effects of the 2013 Flood should not be compared to the potential effects arising from the construction of the SW Dike.

[115] The Appellants noted the Director received advice during his review of the Application that it was imprudent to construct the SW Dike in the floodplain and contrary to AEP policy. According to the Appellants, some of this advice came from WorleyParsons.

[116] The Appellants argued River Engineering expressed the same concerns as their expert. The Appellants stated neither the Town nor River Engineering advised them of the results of their July 2019 meeting.

[117] The Appellants stated their properties have never been included in any flood maps. However, the Town's modelling clearly shows their properties will be subject to incremental flooding due to the SW Dike. The Appellants expressed concern that the new flood

mapping yet to be released by the Province will show their properties in a floodway or floodplain.

[118] The Appellants questioned whether the baseline impacts for their properties could be accurately established if the flood hazard mapping is completed after the SW Dike's construction.

[119] The Appellants stated they are concerned that if their properties are shown to be in a floodway or floodplain, it will reduce their future development potential. Showing their properties to be in a floodway or floodplain will also significantly devalue their properties and possibly render them unsaleable.

[120] According to the Appellants, after the 2013 Flood, the Appellants learned the Town was building the SW Dike. They attended meetings with the Town and the Town's appraiser. The Appellants do not feel their concerns were heard. The Appellants stated the County did not participate and directed the Appellants to raise their concerns with the Town as it was the Town's project.

[121] According to the Appellants, the Town has only offered a flood easement over the portion of the Appellants' properties, which will incur incremental flooding due to the SW Dike. The Appellants noted this was the Town's only offer of compensation, even though the modelling predicts the Macklins and the Intervenors access road will be flooded and their homes cut off from 88 Street.

[122] According to the Appellants, regarding the Howies, the Town has taken the position there is no impact to be mitigated or compensated, as less of their property will flood after the SW Dike is constructed. The Appellants noted the smaller portion that now floods is in the southwest corner, fronts 88 Street, and had development potential, whereas the northeast corner that used to flood did not have development potential.

[123] According to the Appellants, the properties west of 104 Street are protected to the level of the peak flow of the 2013 Flood and will not have the additional metre of freeboard protection provided to the rest of the Town.

[124] The Appellants disputed the Town's claim they were adequately consulted and engaged throughout the application process. They argued the Director's Record demonstrates

the opposite, stating, “[c]onsultation and engagement is more than sending emails and attending meetings. To be meaningful, a proponent must actually listen to the concerns being expressed and try to address them.”²⁵

[125] The Appellants expressed concern the Director did not provide a copy of the Approval before issuing it. The Appellants further expressed concern that they did not have an opportunity to recommend terms and conditions for the Approval.

[126] The Appellants expressed a belief the Town and County have flood hazard mapping for the Little Bow River, even though it is not publicly available. They argued the Director should not have granted the Approval before the public release of the flood hazard maps. The Appellants argued they and the Intervenors could not adequately determine the impacts on their lands in the absence of this information.

[127] The Appellants noted WorleyParsons emailed the Approvals Coordinator on August 21, 2019, outlining the impacts on the potential statement of concern filers. The Appellants argued some of the responses provided by the Town in that email were not accurate, and the Director only heard the Town’s view regarding how the Appellants were impacted before issuing the Approval. The Director didn’t offer the Appellants an opportunity to express their views directly to him.

[128] According to the Appellants, each Appellant submitted a comprehensive impact statement to AEP. The Appellants noted that “...Water Act Approvals: Facts at Your Fingertips states: ‘Alberta Environment requires resolution of statements of concern received on the proposed project.’ We again never received any direct resolution or response to our concerns.”²⁶ The Appellants argued the Town should have been required to fulfill its commitment to address the concerns of affected landowners per AEP’s fact sheet.

[129] The Appellants noted the Approval was not appealed by the primary owner of the property on which the SW Dike was built because the SW Dike was designed to secure that

²⁵ Appellants’ Written Rebuttal Hearing Submissions, December 23, 2020, at paragraph 11.

²⁶ Appellants’ Written Rebuttal Hearing Submissions, December 23, 2020, Appendix “A”, at page 8, citing: *Water Act Approvals: Facts at Your Fingertips*, Government of Alberta, January 1, 2010.

owner's consent. The agreement dated April 16, 2018, between the Town and the owner expressly prohibited the owner from appealing the Approval at section 1.3(a).²⁷

[130] According to the Appellants, the developments in the south and southwest portions of the Town were knowingly constructed in a flood zone. After the 2013 Flood, the Town continued to develop homes in flood zones.

[131] The Appellants argued the Director approved an activity that constitutes an intentional transfer of risk from the current and future residents of the Town's southwest portion to the Appellants and other downstream residents that live along the Little Bow River, outside of the Town's jurisdiction. The Appellants further argued the Approval does not contain terms and conditions to protect those other persons.

[132] The Appellants argued the SW Dike increases their risk, and their safety should not be compromised to ensure the Town's safety. The Appellants questioned what other mechanisms are in place to mitigate potential impacts on downstream property owners.

[133] The Appellants argued the Director was aware the SW Dike could result in downstream flooding worse than predicted by the WorleyParsons modelling. The Appellants further argued the Director was aware when issuing the Approval that the SW Dike would have adverse effects on the properties in the County downstream of the SW Dike, including the Appellants' and Intervenors' properties. The Appellants argued there are no terms or conditions in the Approval to protect the Appellants or the Intervenors or their property.

[134] The Appellants noted the Approval only considers general construction requirements.

[135] The Appellants argued the Approval is internally inconsistent with Clause 3.2 of the Approval, which states: "3.2 The Approval Holder shall not undertake the Activity in any manner or use any material that causes or may cause an adverse effect on the aquatic environment, human health, property or public safety."²⁸ The Appellants argued that in authorizing the construction of the SW Dike, the Approval guarantees an adverse effect on human health and public safety.

²⁷ Agreement for Purchase and Sale dated April 16, 2018, Director's Record, at Tab 69, page 219.

²⁸ Approval, at Condition 3.2.

[136] The Director states the SW Dike's impacts on the Appellants were considered "... not to be not significant because during a 2013 flood magnitude event (1,820 m³/s) an increase of 10 m³/s is less than one percent." The Appellants argued a flow increase of 10 m³/s is equivalent to the flow of a river the size of the Elbow River and is greater than the maximum diversion of 8.5 m³/s permitted by AEP from the Highwood River into the Little Bow River. The Appellants argued the flow increase only appears insignificant when compared to the 2013 Flood.²⁹

[137] The Appellants noted the Director stated "...it was recognized that the Appellants would experience increased flooding and the decision to issue the Approval was 'not made lightly.' The Director concludes: '[n]oting that AEP does not redesign a project or an activity for an applicant, the Director decided to issue the Approval.'" The Appellants stated they did not expect AEP to redesign the SW Dike. The Appellants argued that AEP should have required the Town to design the SW Dike to protect downstream properties better if it wanted to receive the Approval.³⁰

[138] The Appellants argued the Director considered the impacts to the Appellants insignificant based on the flow. The Appellants argued the determination of the impacts to the Appellants should be based on broader considerations, and the Director should have examined the impacts the increased flow could have on downstream property owners.

[139] The Appellants noted the Director had argued the Approval had to be issued to protect the safety of the southwest part of the Town. The Appellants argued the Director should not sacrifice the safety and integrity of properties downstream of the SW Dike to protect the developments in the Town. The Appellants further argued the Director should have included terms and conditions in the Approval that protected both the developments in the Town and the properties downstream of the SW Dike before allowing the SW Dike to proceed.

[140] The Appellants argued they were in a worse position because of the SW Dike. The Appellants argued any benefits of flood mitigation they may have previously experienced from the Town's dikes built after 2013 were undermined by the addition of the SW Dike, and they no longer had the same level of protection.

²⁹ Appellants' Written Rebuttal Hearing Submissions, December 23, 2020, at paragraph 14.

³⁰ Appellants' Written Rebuttal Hearing Submissions, December 23, 2020, at paragraph 17.

[141] The Appellants noted the Director stated the Approval does not contain conditions to address potential impacts to the Appellants if there is a flood with a peak flow of 1820 m³/s. The Appellants further noted the Director had stated any impacts to the Appellants will flow from the project design. The Appellants argued that the SW Dike's design does not address the impacts on the Appellants. The Appellants further argued the Town and the Director had an obligation to mitigate and reduce impacts to downstream residents where possible, but the Director chose not to do so.

[142] At the hearing, the Appellant's expert witness, Dr. Michael Bender, stated the 2013 Flood Model was very good and effectively used the available data. He stated the model was an impressive accomplishment. He noted there were many uncertainties associated with hydraulic models involving split flow and significant overland flow. Dr. Bender stated that in the best possible situation with a well-defined single path, a hydraulic model does well to represent water within 0.3 metres of accuracy. Dr. Bender noted most hydraulic models with significant overland flow could not claim accuracy within 0.5 metres, as WorleyParsons contended for the 2013 Flood Model.

[143] Dr. Bender noted there are many uncertainties associated with future floods, and they will not occur precisely like the 2013 Flood. He further stated that in Edeys' case, there were differences between the 2013 Flood Model and the 2013 Flood. These differences included the 2013 Flood Model not depicting flooding of the shop. Dr. Bender explained future floods would also occur differently from the 2013 Flood, as their conditions will vary from the known 2013 Flood conditions.

[144] Dr. Bender explained two key uncertainties he wished to highlight. One was the timing of the flood, and the other was the effect of the roughness (vegetation) of overland flow paths.

[145] Dr. Bender stated the flood season, as managed by the City of Calgary, is from May 15 to July 15. He explained that early in the spring, there is very little vegetation to slow down overland flow or prevent erosion. He stated that at the end of the season, there is more vegetation to slow down the flow, raise the water level, and reduce erosion. The effect of the roughness could easily double from the start of the flood season until the end. Dr. Bender

explained that, consequently, roughness significantly impacts flow depth and model accuracy. Based on these factors, Dr. Bender recommended a margin of error of +/- 1 metre.

[146] According to Dr. Bender, the comparisons presented using the 2013 Flood Model suggest a tremendous benefit to the downstream properties. Dr. Bender suggested it would be more appropriate to make the comparison with all of the current dikes in place with the addition of the SW Dike and the 1:100 Flood.

[147] The Appellants argued the Town failed to answer the criticism that the swale increases the diversion of floodwaters.

[148] The Appellants argued it was not reasonable or fair to expect the Appellants to be able in the short time available, having regard to cost, to provide a full-blown engineering analysis in support of the Millennium opinion regarding the swale.

[149] The Appellants argued the swale is intended to move water from in front of the SW Dike and convey it more quickly and at greater depths towards downstream properties, including those of the Appellants and Intervenors.

[150] The Appellants noted both the Town and Director argued they did not provide an engineering analysis for the proposed breach of the CPR embankment. Noting it took the Town seven years and millions of dollars to arrive at its design for the SW Dike, the Appellants argued it was not reasonable to expect the Appellants to provide detailed engineering analyses in support of the engineered breach proposal.

[151] Dr. Bender explained while further studies were required, the concept for the engineered breach was sound. He further explained an engineered breach would create a path for the floodwaters and lessen the uncertainty of downstream impacts rather than let them find their way to the Little Bow River. He noted there was a lack of hydraulic connection to the Little Bow River.

[152] With respect to the proposed engineered breach, Dr. Bender acknowledged the CPR embankment was outside of the Town's boundaries. He stated he looked for solutions and not at administrative boundaries. Dr. Bender further noted a sudden failure in the embankment with an un-engineered breach is a concern as there is no control over where the floodwaters flow.

[153] Dr. Bender stated he had not noted the height of the CPR embankment, but as the embankment holds and disrupts the flow of water, he considers it a dam.

[154] When asked if flood debris could impact flow, Dr. Bender replied flood debris could significantly impact overland flow along shallow areas. Dr. Bender noted debris would catch in shallow areas and create a blockage but would flow along in deeper areas. He explained models typically do not account for debris blockage as it is impossible to account for, and this uncertainty is accommodated for by in the margin of error range.

[155] Dr. Bender further explained the recommendations and margin of error account for the fact that the future conditions, such as vegetation and the timing of a flood, are unknown.

[156] According to the Edeys, the County intended to provide the same level of protection as the Town through buyouts. However, initial buyouts under the Federal/Provincial Flood Disaster Recovery Program could only be offered to impacted residences within AEP's 1:100 Flood mapped floodway in the High River area, which did not include properties located south-east (downstream) of the CPR embankment, including the Edey properties.

[157] The Appellants' stated the SW Dike will adversely impact their properties by increasing flooding, and the Approval fails to provide any terms and conditions designed to mitigate those adverse impacts. In the absence of mitigation, the Appellants stated they believe they are entitled to compensation. The Appellants further stated they understand and acknowledge the Board does not have the jurisdiction to order the payment of compensation.

C. Town of High River

[158] The Town presented the following evidence and arguments, advancing five main arguments at the hearing:

- a. the scientific and technical data is accurate and reliable;
- b. the location of the SW Dike is appropriate;
- c. the Appellants were adequately consulted;
- d. the Director had the authority to issue the Approval and properly exercised that authority; and
- e. the terms and conditions of the Approval are appropriate.

[159] The Town relied on *Kostawich, Re*, and argued the Appellants bore the onus of demonstrating that the Approval should be rescinded or varied on the grounds as alleged by the Appellants.³¹

[160] The Town noted the Edeys' written argument stated their East Property was flooded significantly in the 2013 Flood while their West Property received minimal flooding. The Town stated this was consistent with the modelling for the 2013 Flood, which indicates 5.7 acres of the East Property flooded, while only 2.5 acres of the West Property flooded.

[161] The Town further noted the Edeys' statement of concern stated that following the construction of the SW Dike, 50% of their East Property would flood, and their West Property could be completely underwater.³² The Town stated the 2013 Flood Model indicates the inundation to the Edeys' East Property will decrease to approximately 2.9 acres, while the inundation of the West Property was expected to be 4.9 acres.

[162] The Town acknowledged that small local landscape features or low gradient ground could impact the localized accuracy of the model. The Town stated the 2013 Flood Model "...likely has a margin of error of less than -10 to -15 cm on the Edey property based on high water mark comparisons collected in the area surrounding the property and based on comparison with photographs provided in the June 30, 2020, [Millennium Report]".³³ The Town further noted the SW Dike modelling was completed using both a peak flow of 750 m³/s and 1820 m³/s.

[163] The Town noted the Macklins and Intervenors stated their properties and their shared access road flooded in 2013. The floodwaters entered their properties from the northeast and west of the overtopped CPR embankment. The Town further noted the Macklins stated approximately 20% of their property flooded in 2013. The Town argued the Macklins' and Intervenors' information was largely consistent with the 2013 Flood Model, which showed that 2.2 of the 16.2 acres are expected to flood, or roughly 13.5% of their properties.

³¹ Town's Written Hearing Response Submissions, December 16, 2020, at paragraph 6, citing: *Kostawich, Re*, [2011] A.W.L.D. 3030 at paragraph 83.

³² Appellants' Initial Written Hearing Submissions, December 9, 2020, Edeys' Impact Statement, at page 3 and Director's Record, Tab 143.

³³ Town's Written Hearing Response Submissions, December 16, 2020, at paragraph 12, citing WorleyParsons Report, November 25, 2020, at page 4, ("November 25 WorleyParsons Report").

[164] The Town noted the Howies' stated approximately half of their property flooded in the 2013 Flood. The Town argued this was consistent with the 2013 Flood Model, which indicated that 69.7 of their 160.9 acres were inundated.

[165] The Town argued the 2013 Flood Model was intended to provide a reasonable approximation of the flow conditions and not to represent the exact conditions of the 2013 Flood. The Town stated the model's accuracy depends on input data, resources, high water mark accuracy used, and other related variables. Some flooded areas predicted from the model may be more accurate than others. The Town added, "[i]n general, the majority of the modelled area, calibration results of the 2013 Flood Scenario show the model to be within +/- 0.3-metre range for the simulation in the area that includes the Appellants' properties... A model accuracy of +/- 0.3 metres is often accepted as providing suitable hydraulic representations of flood conditions for design, planning and effects assessment."³⁴

[166] The Town argued the Appellants have not raised a credible challenge to the modelling completed for the SW Dike.

[167] The Town acknowledged the location of the SW Dike and its obstruction of the floodplain was an issue that had gained the attention of the Director. The final design of the SW Dike was not the first option the Town had explored³⁵ but was the only option the Town felt was feasible. The Town stated there were constraints on the design and location of the SW Dike, including the previous dikes constructed as a part of the Town's Flood Mitigation Program.

[168] The Town explained the Town, WorleyParsons, the Director, and River Engineering had undertaken a fulsome review of the issue. It had provided its rationale for the location of the SW Dike in its letter dated June 7, 2019, and had met with River Engineering on July 3, 2019, to discuss the issue of the location of the SW Dike.

³⁴ Town's Written Hearing Response Submissions, December 16, 2020, at paragraph 35.

³⁵ The Town had considered an "S" curve design with a wider swale as well as a "Hockey Stick" design See: 2016 ISL Engineering Final Report, *Southwest Dike Choose-Design Report*, (the "ISL Report") in the Director's Record, Tab 68 (ISL Report at pages 17 to 19). See also the Little Bow Enhanced Natural Floodway (LB-ENF) Regulatory Permit Application (Revision 3) dated July 23, 2018 prepared by WorleyParsons Canada (WorleyParsons Report) in the Director's Record, Tab 5, at pages 2 to 8.

[169] The Town argued the Approval's issuance was consistent with section 38 of the *Water Act*.³⁶ The Town stated the Application was subject to a rigorous review by the Director, who then concluded it was appropriate to issue the Approval.

[170] The Town stated there is no regulatory prohibition against constructing a dike in a floodplain. The Town further argued the Director has significant discretion pursuant to section 38 of the *Water Act*³⁷ and that discretion could not be fettered in the manner proposed by the Appellants. The Town stated the Director was aware of the issue, sought further information from subject matter experts within AEP and the Town, and considered that information before making a decision. The Town argued the issuance of the Approval after these steps was the proper exercise of the Director's discretion.

[171] The Town argued the Director's Record demonstrated the Town consulted and engaged the Appellants throughout the application process.

[172] The Town stated it had informed the Edeys and the Howies that their properties would see a net decrease in flooding due to the construction of the SW Dike. The Town further stated it had advised the Macklins that should another flood event with a peak flow of the 2013 Flood occur, although their property would see an increase in flooding, their home and other buildings would not be impacted.

[173] The Town noted that despite their arguments to the contrary, the Appellants were individually engaged through the general information provided via public notices, letters, and

³⁶ See note 33 above.

³⁷ Section 38 of the *Water Act* states in part:

“(2) In making a decision under this section, the Director

(a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing an approval, as specified in an applicable approved water management plan,

(b) may consider any existing, potential or cumulative

(i) effects on the aquatic environment,

(ii) hydraulic, hydrological and hydrogeological effects, and

(iii) effects on household users, licensees and traditional agriculture users,

that result or may result from the activity, and

(c) may consider

(i) effects on public safety, and

(ii) any other matters applicable to the approval that, in the opinion of the Director, are relevant.

(3) The Director may issue an approval subject to any terms and conditions that the Director considers appropriate.”

public information sessions during the application process. The Town noted that information was provided to the Appellants at public meetings, at multiple engagement meetings with the Town, or to the Appellants directly from 2014 through 2020.

[174] The Town stated it provided project updates to individual landowners who were expected to experience increased inundation on February 9 and October 24, 2017. The Town further stated it had conducted in-person meetings and direct phone calls with various landowners to provide project information and discuss appraisals and inundation of their properties.

[175] The Town argued, “[t]he Appellants complaints about engagement stem from the engagement not resulting in their preferred outcome.”³⁸ The Town further argued filing a statement of concern or participating in a public engagement process did not give the Appellants a right of veto.

[176] The Town stated it has always been and continues to be, prepared to engage in discussions with the Appellants regarding financial compensation issues arising from the SW Dike.

[177] The Town stated the SW Dike is the final phase of a series of dikes constructed to safeguard citizens and infrastructure in the Town in a future flood. The Town further stated the SW Dike was subject to a thorough review by the Director and various departments both within and outside AEP during the application process. After this review process, the Director determined it was in the public interest to issue the Approval.

[178] The Town argued the Appellants have not alleged any term or condition of the Approval should be amended or removed and noted instead, the Appellants asked for three variations to the terms and conditions of the Approval. The Town argued the Appellants had failed to establish a legal, factual, or technical basis for those variations.

[179] The Town argued modelling was conducted for the SW Dike (Scenario 53A) under the peak flow of 750 m³/s and 1820 m³/s. The Town stated that in a flood with a peak flow of 750 m³/s there are no impacts to the Appellants’ properties. The Town further stated that

³⁸ Town’s Written Hearing Submissions, December 16, 2020, at paragraph 33.

impacts to the Appellants' properties only occur in a flood with the same magnitude as the 2013 Flood as represented by the 1820 m³/s peak flow.

[180] The Town stated that during a flood with a peak flow of 1820 m³/s, the Macklins and the Edeys' West Property would experience a marginal increase in inundation. However, the inundation was not expected to affect any of the buildings on their properties. The Howies property and the Edeys' East Property will experience a decrease in inundation following the construction of the SW Dike, compared to the 2013 Flood and from the existing flood mitigation conditions post-2013 Flood and prior to the construction of the SW Dike.

[181] The Town noted that the Edeys' statement of concern stated that following the construction of the SW Dike, 40-50% of the East Property would flood, while their West Property would be completely under water. According to the Town, the 2013 Flood Model showed 2.9 of the 10 acres of the East Property would flood, and approximately 2 acres of the West Property would flood. The Town stated that the 2013 Flood showed the total amount of flooding on the Edey properties is expected to increase to approximately 4.9 acres.

[182] According to the Town, the SW Dike modelling demonstrates a decrease in inundation on the Edeys' East Property due to the SW Dike. The Edeys' West Property will experience an increase in inundation due to the SW Dike.

[183] The Town argued that the Edeys referenced comments made by AEP in the July 2018 WorleyParsons Report without actually referencing the Town's corresponding explanations in response to those comments. The Town noted:

“The proposed dike will increase the discharge and resulting water levels downstream of High River and around the dyke under design conditions. This may be a concern for the affected landowners and residents' which was responded to by the Approval Holder directly below the referenced comment where it was explained the changes in flow during extreme flood events to the Little Bow River was the result of the existing dikes constructed post[-]2013 and that the [SW Dike] would have a minimal impact of the quantity of water entering the Little Bow River. The Edeys' impact statement also references [AEP's] comment 2 which states 'The proposed design results in increased water levels west, south and southwest of the dyke of up to 1 metre or more under the design conditions compared to the current conditions, until the flow reaches the Little Bow River Channel.' The response provided explained that the alternative proposed to the [SW Dike] scenario also resulted in a significant water level increase and the [SW

Dike] scenario was selected following consultation with the Primary Impacted Landowner who opposed the alternative option.”³⁹

[184] The Town argued that the area with greater than 1-metre depth of flooding is located on the primary affected landowner’s property, where the SW Dike is built. The Town further argued that the primary impacted landowner did not appeal the Approval.

[185] The Town acknowledged that the modelling showed an increase in flooding from 2.2 acres to 5.5 acres on the Macklins’ property and noted there will be no impact on any infrastructure or buildings on the property.

[186] The Town disputed the Intervenors’ claim that every drop of diverted floodwaters will pass through their land. The Town argued that modelling for the SW Dike demonstrated that not all of the flow associated with the SW Dike would pass through the Intervenors’ property.

[187] The Town stated that modelling showed that following the construction of the SW Dike, inundation on the Howies’ land will decrease from 69.7 acres during the 2013 Flood to 11.7 acres. The Town explained that this decrease in flooding is anticipated to occur in both the 2013 Flood Model scenario and the 37A Scenario. However, following the construction of the SW Dike, the flooding occurs on the southwest section of the property and not the northwest section of the property, neither of which are improved land.

[188] The Town noted that the Millennium Report proposed the elimination of the swale but was unaccompanied by an engineering analysis or calculation.

[189] The Town argued that the purpose and effects of the swale were addressed in the WorleyParsons Report, where at the top of page 4, the following was stated:

“As explained in the [WorleyParsons] (2018) Application support document, Highwood River flow during extreme flood events splits upstream of the Town. Part of this flow is directed north along the main channel of the Highwood River. The other part of the flow is diverted southeast toward the Little Bow River. The [SW Dike] (including the swale on its western side) was designed and located to have negligible impact on this flow split when compared to existing conditions at the time of Application (i.e. Scenario 37A) as stated in the Application support

³⁹ Town’s Written Hearing Response Submissions, December 16, 2020, at 14, citing the July 2018 WorleyParsons Report, at Director’s Record, Tab 5.

document ([WorleyParsons] 2018). The amount of flow directed north and south at the flow split during extreme flood events (e.g. during the 2013 flood) is determined by major hydraulic controls upgradient (west) of the [SW Dike] such as: diking along the Highwood River upstream of the Town; diking along Baker Creek upstream from 72nd St. East; and paved public roads that control flow (e.g. 72 St. East, 12 Ave. Southwest, etc.) in this upstream area. Hence, as per the design intent, the [SW Dike] (including swale) does not significantly influence flow magnitude directed downstream to the Little Bow River when compared to existing conditions (Scenario 37A) presented in the Application.”⁴⁰

[190] The Town further argued that the proposal to remove the swale was responded to by WorleyParsons, who had stated that based on the modelling results and design intent, the SW Dike swale does not impact peak flow magnitude diverted from the Highwood River to the Little Bow River. WorleyParsons further stated the flow directed to the Little Bow River during an extreme flood event is controlled by features upstream of the SW Dike and swale and that these results are supported by the modelling:

“These results indicated that the peak flow directed to the Little Bow River under these two scenarios, one with the swale and one without the swale, is nearly identical (i.e. 320 m³/s versus 325 m³/s). The [SW Dike] swale was incorporated into the design to decrease the local ponding effect on the west side of the dike, which in turn decreases the required height of the dike and reduces localized ponding. Local increases of depth and velocity at the swale (and next to the dike) were addressed during the design process for the [SW Dike].”⁴¹

[191] The Town argued the Millennium Rebuttal does not offer any engineering analysis to contradict the November 25 WorleyParsons Report.

[192] The Town argued the Millennium Report lacked an engineering analysis related to the inclusion of an engineered breach in the CPR embankment. The Town argued the November 25 WorleyParsons Report discusses the engineered breach in detail and concludes there is no engineering or technical justification for this measure.

[193] The Town stated it does not own or control the land proposed for the location of the engineered breach. The Town also argued it is highly probable that the railway embankment

⁴⁰ Town’s Written Hearing Response Submissions, December 16, 2020, at 22: citing WorleyParsons Report, November 25, 2020, at page 4 (“November 25 WorleyParsons Report”).

⁴¹ Town’s Written Hearing Response Submissions, December 16, 2020, at 25: citing November 25 WorleyParsons Report, at page 5.

would erode in several locations before the peak, limiting the risk of an increase in the peak flow and making the engineered breach unnecessary.

[194] The Town argued that the Millennium Report incorrectly stated without support or explanation that WorleyParsons agrees an engineered breach through the CPR embankment would provide greater certainty with respect to downstream impacts.

[195] The Town noted that one of the Appellants' primary concerns with the SW Dike appears to be related to their dissatisfaction with the discussions regarding financial compensation. The Town argued compensation is beyond the purview of the Board.

[196] The Town argued this issue was dealt with by the Board in *Hebner v. Director, Central Regional Services, Alberta Environment*,⁴² at paragraphs 28 and 45:

“28 Although the Board is not willing to classify this appeal as frivolous or vexatious, it does have concerns regarding the real motive behind the appeal. The arguments provided by the Appellants refer to the Approval Holder's unwillingness to purchase their property or treat them as though they reside in the development zone. The Board's jurisdiction is limited pursuant to the acts and regulations that govern it. The Board's role is to review decisions made by a director under EPEA or the *Water Act*, R.S.A. 2000, c. W-3. It does not have the jurisdiction to review a policy decision implemented by a company regarding the purchase or offer to purchase of lands...

45 The Board is uncertain as to whether the Approval Holder and the Appellants discussed the policy since the AEUB hearing, but it is hoped both sides have made some effort to come to an understanding of the others' issues and concerns. The Board cannot force the Parties to meet regarding these issues, but it would be beneficial to all concerned to settle the matter.”⁴³

[197] The Town argued that the Board does not have jurisdiction to award compensation to parties alleging to have suffered financial harm as a consequence of issued

⁴² *Hebner v. Director, Central Region, Regional Services, Alberta Environment re: EPCOR Generation Inc. and Epcor Power Development Corporation Ltd.* (24 January 2005), Appeal No. 03-117-D (A.E.A.B.) (“*Hebner v. Director, Central Regional Services*”).

⁴³ Town's Written Hearing Response Submissions, December 15, 2020, at paragraph 29, citing *Hebner v. Director, Central Region, Regional Services, Alberta Environment re: EPCOR Generation Inc. and Epcor Power Development Corporation Ltd.* (24 January 2005), Appeal No. 03-117-D (A.E.A.B.), at paragraphs 28 and 45.

approvals. The Town further argued that it follows that the Board does not have the jurisdiction to order negotiations with a view to resolving compensation issues.

D. Director

[198] The Director presented the following evidence and arguments, advancing four main arguments:

- a. the scientific and technical studies were accurate and reliable;
- b. it was appropriate for the Approval to authorize construction of the SW Dike in the Highwood River's floodplain;
- d. the terms and conditions of the Approval are appropriate; and
- c. the design of the SW Dike could not be altered through the appeal process.

[199] Ms. Pauline Scoffield, an Approvals Coordinator with AEP, provided a summary of the application process and her role within that process. She stated the Application process and its review involved:

- a. an application;
- b. referral to subject matter experts within AEP;
- c. public notice of the application;
- d. recommendation for decision;
- e. draft of the approval; and
- f. a decision by the Director to issue or refuse to issue the approval.

[200] Ms. Scoffield advised it was AEP's understanding that the SW Dike was the final dike in a series of dikes which formed the Town's flood mitigation program.

[201] Ms. Scoffield explained the Application included: the application form,⁴⁴ engineered plans,⁴⁵ the modelling by WorleyParsons,⁴⁶ and the landowner's consent.

[202] Ms. Scoffield further explained although it was not necessarily required by section 37 of the *Water Act*,⁴⁷ landowner consent to impact land not owned by the applicant is

⁴⁴ Director's Record, Tab 3.

⁴⁵ Director's Record, Tab 4.

⁴⁶ Director's Record, Tab 5.

often requested. She stated that in this particular case, the consent was provided in the form of an agreement for purchase and sale, which demonstrated the Town owned the land impacted by the construction of the SW Dike.⁴⁸ In this case, consent was obtained from the landowner on whose land the SW Dike was to be built.

[203] Ms. Scoffield stated that the purpose of the referral process is to obtain comments and information from internal subject matter experts to assist the Director in making an informed decision. She explained the current application was reviewed by an AEP Hydrogeologist, AEP Wildlife Biologist, River Engineering, and AEP Technical Services.

[204] Ms. Scoffield stated the AEP Hydrogeologist advised there were no concerns with impacts to groundwater.⁴⁹ She explained the AEP Wildlife Biologist advised there was a low risk of long-term impacts on wildlife habitat and a low risk of disturbance and destruction to wildlife habitat.⁵⁰

[205] Ms. Scoffield explained the Director required public notice of the application, which is seven days for an approval. She noted that in this case, the Town was required to place notice twice.⁵¹

[206] Ms. Scoffield further explained the *Water Act* allows for public input in response to a notice of application and provides members of the public an opportunity to communicate with the Director by filing a statement of concern.⁵² She stated that in this case, AEP received fifteen statements of concern. The Director considered eight filers to be directly affected. She noted all the statements of concern were considered in the final decision to issue the Approval, even though not all of the filers were considered directly affected.

⁴⁷ Section 37(4) of the *Water Act* provides: “(4) If an applicant for an approval does not own the land in fee simple or the undertaking to which the approval is to be appurtenant, if required by the Director, the applicant must submit the written consent of the owner of the land or of the undertaking as part of the application for the approval.”

⁴⁸ Director’s Record, at Tab 69.

⁴⁹ Director’s Record, at Tab 69.

⁵⁰ Director’s Record, at Tab 63.

⁵¹ Director’s Record, at Tab 85.

⁵² Section 109 of the *Water Act* states: “If notice is provided [per Section 108(1)(a)] (a) under section 108(1), any person who is directly affected by the application or proposed amendment, and ... may submit to the Director a written statement of concern setting out that person’s concerns with respect to the application or proposed amendment.

Section 108(1)(a) of the *Water Act* states: “An applicant (a) for an approval, ... shall provide notice of the application in accordance with the regulations.”

[207] According to Ms. Scoffield, the *Water Act* is silent on responding to a statement of concern. She explained the statements of concern were shared with the Town in this case. She further explained the concerns raised were either dealt with directly with the statement of concern filer or indirectly by the applicant providing information that addressed the concerns and comments of the statement of concern filer to AEP.⁵³

[208] Ms. Scoffield explained that when she is making a recommendation for a decision, her role is to ensure the application process and the relevant portions of the *Water Act* are followed and satisfied. The recommendation is based largely on the information contained in the application and gathered during the application process, including all technical information and comments from subject matter experts.

[209] Ms. Scoffield further explained she also prepared the draft approval. According to Ms. Scoffield, in order to choose the most appropriate terms and conditions applicable when preparing the draft approval, she considered the recommendations from subject matter experts and the types of activities proposed.

[210] Ms. Scoffield commented there was no reason to deviate from AEP's template and stated the conditions of the Approval were specific to the construction of a dike. These include conditions to mitigate or reduce impacts when the activities are to be carried out, the date the activities must cease, and the effective and expiry dates of the Approval.

[211] Mr. Jim Choles, River Hydraulics Engineer with River Engineering, explained he had provided a technical review of the reports and plans in the Application for consequences and potential problems. He noted that AEP assumes a signed and stamped report is accurate unless there is some reason not to do so. He stated the Town's models were considered reasonably accurate and reliable.

[212] Mr. Choles further explained River Engineering does not redesign a project but rather comments on a project as presented. These comments are intended to help AEP Approvals make decisions by pointing out information they should be aware of and will also

⁵³ Director's Record, at Tab 139. Note this Tab contains the Director's decision document on which statements of concern to accept and contains summaries of the Town's comments regarding each statement of concern.

comment on potential impacts to flood hazard maps. He indicated they operate in an advisory capacity only.

[213] Mr. Choles stated the April 16, 2019 comments,⁵⁴ superseded all other comments provided by River Engineering. He noted the SW Dike would block the identified floodway identified in the 1992 High River Flood Risk Mapping Study.⁵⁵

[214] According to Mr. Choles, the main concern was the SW Dike changing the flood's path by blocking the main flow path just south of 12th Avenue, which would run parallel to 12 Avenue in the east, forcing it south and concentrating the water there. He explained this led to concerns regarding unintended consequences. These concerns included: erosion in the channels, which may result in additional overflow; a change in flow characteristics, including flow split,⁵⁶ change in water levels,⁵⁷ and river flow velocities.⁵⁸

[215] According to Mr. Choles, River Engineering participated in a meeting between AEP Approvals and the Town to discuss River Engineering's comments on July 3, 2019.

[216] Mr. Choles explained a flood hazard map is based on a single flood event, the 1:100 Flood. He further explained this does not mean a flood of this magnitude will happen once every 100 years, but rather, it is a flood with a one percent chance of occurring every year. He further explained that the 1:100 Flood is used because it is deemed an acceptable level of risk, though larger and smaller floods are possible.

[217] According to Mr. Choles, a flood could be caused by an open water flood event or an ice jam event depending on the flood history and severity of past flooding.

[218] Mr. Choles elaborated by stating the flood hazard map program was based on the premise that the best way to reduce flood damage is to identify flood-prone areas and then regulate development to minimize flood damage.

⁵⁴ Director's Record, at Tab 23.

⁵⁵ Director's Record, Tab 5, Figure 3. Attached as Appendix "E"- Flood Fringe and Floodway in the Vicinity of the SW Dike, is a study of the floodway and flood fringe of the 2013 Flood which shows the flood's path and the "two fingers" which would normally flow towards the east, but are now being redirected to the south by the SW Dike.

⁵⁶ Director's Record, at Tab 5, Figure 4.

⁵⁷ Director's Record, at Tab 5, Figure 11.

⁵⁸ Director's Record's at Tab 5, Figure 12.

[219] According to Mr. Choles, the magnitude of the event is determined by a hydrological assessment. He stated the 1992 study had described a 1:100 Flood as an open water flow of 750 m³/s. He further stated several large floods had occurred since the study, in 1995, 2005, and 2013, and some smaller ones in 2008 and 2011. He commented a 1:100 Flood was expected to now be larger than 750 m³/s.

[220] Mr. Choles explained the area that gets wet or inundated from a design flood is known as the flood hazard area. The flood hazard area is divided into two zones, the floodway and the flood fringe.⁵⁹

[221] According to Mr. Choles, inundation maps show wet areas during a flood without divisions into zones. He explained these maps are helpful for emergency management. The flood forecasting group uses the maps for flood warnings which local governments can then use to plan their emergency management, making decisions such as bridge closures or evacuations.

[222] Mr. Choles explained in both cases that the purpose of inundation maps and flood hazard maps is to provide technical information to a community. According to Mr. Choles, they are an advisory tool only, and as such, there are no provincial laws or policies to regulate development in flood-prone areas.

[223] Mr. Choles also explained it was the intent to have local governments recognize flood hazard maps, use them to regulate their development, and incorporate the flood hazard maps into their development bylaws.

[224] Mr. Choles further explained the floodway typically includes the river channel and the adjacent riverbanks as appropriate. He stated the main criteria to determine the floodway are depth and velocity, along with some other minor criteria. He noted the purpose of the floodway is to have a path reserved for the river flow. He explained the deepest and fastest flowing water is unsafe and can cause damage.

[225] According to Mr. Choles, obstructing the flow of a floodway is against the AEP guidelines because of the potential for damage, public safety concerns, and unintended

⁵⁹ Attached as Appendix "F" – General Flood Hazard Area Diagram, is a diagram depicting the floodway and flood fringe, generally. See also Appendix "E" – Flood Fringe and Floodway in the Vicinity of the SW Dike for a study of the floodway and flood fringe of the 2013 Flood.

consequences. He explained the guidelines allow for development in the flood fringe, provided the development is floodproofed.

[226] Mr. Choles explained in terms of the 1992 floodway,⁶⁰ the downstream boundary of the study is shown, and they know the water will continue to the east to the Little Bow River. He explained the floodway was shown in red, the flood fringe in orange, and the overland flow, which was still part of the flood fringe, was shown in blue.

[227] Mr. Choles further explained the SW Dike cuts off two of the fingers of the four fingers of the floodway to the east of the Highwood River and forces the flow, which is significant, into other channels.

[228] According to Mr. Choles, concentrating the flow of floodwaters into a smaller area causes concerns about potential erosion in the southern channels as they will convey more water. He explained this could lead to more overflow in the long term, destruction of floodways, changes in flow levels, flow split, and changes in velocity. He noted that AEP met with the Town to discuss these concerns.

[229] At the hearing, Mr. Andun Jevne, the Director, stated the *Water Act* sets out the process for AEP to receive an application, provide public notice, and make a decision on whether to issue an approval.

[230] The Director also provided a brief overview of the application and his review of the Application:

- a. the Town submitted an application and supporting documents on August 17, 2018, for an approval under the *Water Act* authorizing the construction of the SW Dike and associated activities;
- b. the application and supporting documents, including the WorleyParsons Report, the plans for the SW Dike dated July 18, 2018, prepared by WorleyParsons, a Vegetation Assessment, Response to Matters and Factors, and Landowner Engagements were reviewed;
- c. comments and recommendations from AEP specialists were provided and considered, including those from River Engineering, a hydrogeologist and a wildlife biologist;

⁶⁰ Director's Record, Tab 5, Figure 3. See Appendix "E" – Floodway and Flood Fringe in the Vicinity of the Southwest Dike. (Note that in greyscale the floodway appears in dark grey, the flood fringe in light grey, and overland flow, which was still part of the flood fringe, was shown in medium grey.)

- d. consideration of the applicable matters and factors of the *Approved Water Management Plan for the South Saskatchewan River Basin* (Alberta) (“SSRB Plan”), specifically the existing potential and cumulative effects on the aquatic environment and existing and cumulative hydraulic, hydrological, and hydrogeological effects; and
- e. consideration of other applicable policies and guidance documents, including the Water Management Plan for the Watersheds of the Upper Highwood and Little Bow Rivers.

[231] The Director argued he issued the Approval to the Town because the proposed activities met the requirements of section 38(2) of the *Water Act*.

[232] The Director stated he recognized the Appellants would experience downstream impacts if another flood occurred with a peak flow of the 2013 Flood (1820 m³/s), and he had reviewed modelling from the Town which showed those impacts. The Director stated that the question before him was whether those impacts were significant.

[233] The Director stated the SW Dike would cause a 10 m³/s increase in the downstream flow on the Highwood River during an 1820 m³/s magnitude flood. The Director explained this effect was considered small as it represented an increase of less than one percent, would be difficult to measure downstream, and in terms of flow, was not considered significant.

[234] The Director stated he reviewed the file in its entirety and met with Approvals, River Engineering, the Town, and WorleyParsons several times to ensure he understood the modelling and the impacts generated for each statement of concern filer.

[235] According to the Director, per the Application, when the Highwood River reaches an instream flow of 700 m³/s, a portion of the flow overtops the banks of the Highwood River and travels towards the Little Bow River.

[236] The Director explained this was the flow split from the Highwood River to the Little Bow River. He further explained there would be an increase in the flow to the Highwood River because of the SW Dike. However, there would be no increase in the flow of the Little Bow River.

[237] The Director explained the change in the instream flow of the Highwood River was approximately one percent and was not considered significant from a public safety standpoint.

[238] The Director stated he considered where the increased flow would go and the impacts of the flow and relied on the Town's modelling. The Town's modelling indicated the Town, most of the statement of concern filers, and many of those downstream would likely receive greater protection to their residences and infrastructure, as a result of the SW Dike's construction, than with just the existing dikes.

[239] The Director explained residents in the Town are at greater risk of impact during smaller magnitude events. He further explained smaller magnitude events are more frequent and are expected to happen. The Director restated the purpose of the SW Dike was to protect critical infrastructure to the south and southwest of the Town.

[240] The Director stated that during a flood with a peak flow of 1820 m³/s, there is an increase in the areas protected and changes in areas of inundation.⁶¹

[241] The Director explained that when considering whether the impacts on the bare land met the significant threshold, he considered the probability and duration of events in the magnitude of the 2013 Flood in the future.

[242] According to the Director, the 2013 Flood was the largest flood event on record, well above a 1:100 Flood. He explained the modelling used was between a 100 and 200 return period and that such a flood had less than a one percent chance of occurring in any given year.

[243] The Director further explained the duration of high-water events was also considered, with an understanding that any new areas of flooding resulting from the SW Dike are expected to be bare land.

[244] The Director stated that when considering the impacts on bare land, he considers the probability and duration of floods and the potential significance of those events. According to the Director, the duration of time at different flow levels were as follows:

- a. 1820 m³/s – 0.5 hours;
- b. 1750 m³/s – 3.5 hours;

⁶¹ Director's Record, Tab 5, Figure 13.

- c. 1000 m³/s – 13.5 hours; and
- d. 750 m³/s – 17 hours.

[245] According to the Director, potential land-use changes and development restrictions that the County could impose are outside of the *Water Act*, his considerations, and the scope of the appeals.

[246] The Director discussed the AEP meeting with WorleyParsons on July 3, 2019, in greater detail. He explained they met to discuss the modelling and the impacts of the SW Dike on each statement of concern filer. He stated WorleyParsons created a fact sheet of responses for each statement of concern filer. According to him, the fact sheets contained information related to the type of property, whether the property was bare land, and compared the number of acres wet during the 2013 Flood to the number of acres predicted to be wet during an event of similar magnitude with the SW Dike in place. He explained other figures demonstrated the comparison between the current mitigation and the addition of the SW Dike.

[247] The Director stated he accepted eight statement of concern filers in November 2019 as being directly affected by the Town's application, including the Edeys, the Howies, and Rodd and Nicole Macklin.

[248] The Director further stated WorleyParsons provided additional information to AEP to address a concern raised by Alberta Transportation about the potential impacts of the SW Dike on Highway 2 and to address the concerns of the statement of concern filers between December 2019 and January 2020.

[249] The Director argued the decision should not be interfered with, as the decision to issue the Approval was within the range of possible, acceptable outcomes and supported by law and fact.

[250] The Director stated he would not have issued the Approval if the technical information indicating impacts arising from the application were found to be inaccurate or unreliable. He stated he relied on professional and technical experts to provide accurate and reliable information as with other technical reports.

[251] The Director further explained he had issued the Approval knowing there were mechanisms outside of the Approval to mitigate potential impacts to downstream landowners

should another significant flood occur. He argued considerations regarding compensation were outside the scope of this appeal.

[252] The Director stated he considered all the available information, including the WorleyParsons Report, and properly applied all applicable policies before issuing the Approval. The Director said the Approval contains terms and conditions to manage the activities required to construct the SW Dike.

[253] According to the Director, WorleyParsons modelled the impacts of the SW Dike using the Highwood River Flood Model RMA-2, and those models were signed and stamped by a professional engineer.

[254] The Director stated he referred the modelling to River Engineering and Technical Services for review. He noted that River Engineering found the modelling to be reasonably accurate and reliable.

[255] The Director stated that WorleyParsons had answered any questions AEP had regarding the modelling and its impacts on downstream landowners.

[256] The Director further stated the November 25 WorleyParsons Report addressed any concerns about the accuracy of the Town's modelling raised by Millennium's Report. According to the Director, the November 25 WorleyParsons Report confirmed the modelling was within +/- 0.3-metre range of accuracy in general, over a large majority of the modelled area. He stated that AEP understood this to mean the model may depart +/- 0.3 metres in some modelled areas, particularly at a localized level. He noted, however, that this did not mean the model was flawed. The Director stated that based on the information provided by WorleyParsons, the technical and scientific studies were accepted as reasonably accurate and reliable.

[257] According to the Director, River Engineering and the Town had several exchanges. They met to discuss River Engineering's comments about the location of the SW Dike in the floodway of the Highwood River.

[258] The Director argued the Appellants had misconstrued the statements of River Engineering as statements of AEP departmental policy. He stated there is no departmental policy prohibiting the construction of a dike in a floodway or floodplain. The Director noted it is

not an approach AEP River Engineering would generally recommend, but it is not prohibited. The Director noted he considered River Engineering's remarks as a part of his decision and further noted there was no legislative prohibition against constructing the SW Dike in the floodplain.

[259] According to the Director, the SW Dike had to be located in the floodplain because of design constraints, including previous dike construction. He stated that as part of the hydraulic effects under the matters and factors in the SSRB Plan, he considered the effects caused by the SW Dike's location in the floodplain.

[260] The Director noted the Appellants and Intervenors had raised concerns about updated flood hazard maps for the Highwood River. The Director argued there is a difference between flood inundation maps and flood hazard maps. The Director stated that AEP could not speak to unpublished mapping.

[261] The Director further noted the Appellants and Intervenors' concerns regarding the flood hazard mapping related to compensation. The Director argued issues regarding compensation for impacts to property and loss of development opportunities are outside the scope of the *Water Act*. He noted he had explicitly stated this in response to any statement of concern filers who had raised those issues.

[262] According to the Director, the Town's explanations of the impacts on the Appellants and fact sheets prepared by the Town in response to each of the Appellants' concerns formed part of the memorandum to the Director and the event tracking sheet, which the Director reviewed prior to making his decision.

[263] The Director noted that in making a decision, he must consider the matters and factors in the applicable approved water management plan. He further noted the Application was subject to the SSRB Plan. The Director commented the relevant matters and factors are set out in Table 2 of the SSRB Plan,⁶² and the thresholds in deciding whether to issue an Approval were:

- a. no significant existing, potential and cumulative adverse effects on the aquatic environment;

⁶² *Approved Water Management Plan for the South Saskatchewan River Basin*, Alberta Environment and Parks, August 2006. See Table 2, at page 15, for the complete list of matters and factors.

- b. no significant existing, potential and cumulative adverse hydraulic, hydrological and hydrogeological effects that may result from the activity.

[264] The Director stated that in addition to the matters and factors, the Director may also consider effects on public safety and any other matters applicable to the approval that the Director considers relevant. The Director stated he also considered the *Water Management Plan for the Watersheds of the Upper Highwood and Upper Little Bow Rivers*.⁶³

[265] The Director stated the WorleyParsons email to the Approvals Coordinator explained that due to dikes built after the 2013 Flood (Scenario 37A), at a peak flow of 750 m³/s, there is an additional 10 m³/s of instream flow in the Highwood River at the 498th bridge and Highway 2. He further stated there is no significant change in the flows downstream of the Town on the Little Bow River. According to the Director, no significant change in instream flow is anticipated as a consequence of the SW Dike's construction.

[266] The Director stated the Town responded to AEP's concerns and indicated it had considered many designs and the feasibility of potential options prior to the Application. He stated the Town had indicated previous development had occurred, which needed to be considered as a part of the design choice. The Director further explained the Town had also indicated a current development, the Montrose subdivision, was in place. According to the Director, the Town had advised AEP that it did not believe it had a feasible design option to protect the existing residential developments without avoiding obstruction of the floodway.

[267] According to the Director, once the Town submitted the SW Dike's design and explained the constraints, he then considered his ability to approve a dike in a floodway or a floodplain and noted there is no legislative prohibition. The Director restated that AEP does not redesign a project or an activity for an applicant.

[268] The Director stated concerns regarding the future development potential of land are outside of the scope of his jurisdiction.

[269] The Director stated the landowners downstream of the SW Dike, including the Appellants and Intervenors, would experience increased flooding to bare land during significant

⁶³ *Water Management Plan for the Watersheds of the Upper Highwood and Upper Little Bow Rivers*, Alberta Environment and Parks, June 2008.

events with a peak flow similar to the 2013 Flood. The Director said he considered the impacts of issuing the Approval against the risks of not issuing the Approval and leaving the southwest portion of the Town and some downstream properties with possible flooding to infrastructure and homes.

[270] The Director explained he issued the Approval because the Application met the requirements of section 38(2) of the *Water Act*⁶⁴ and specifically the SSRB Plan threshold requirement of having no significant adverse effect on the aquatic environment and no significant hydraulic effects. The Director further explained that the SW Dike has minimal effect on flood storage.

[271] The Director stated the purpose of the Approval is to construct the SW Dike in accordance with the design plans contained in Table 3-1 of the Approval. He noted the Approval has a short life span. He further noted Clause 3.2 of the Approval states: “[t]he Approval Holder shall not undertake the Activity in any manner or use any material that causes or may cause an adverse effect on the aquatic environment, human health, property or public safety.”⁶⁵

[272] The Director explained Clause 3.2 operates while the SW Dike is under construction. He stated it does not address all possible downstream impacts if a significant future flood occurs. He further explained possible impacts flow from the project design. Consequently, there are no conditions in the Approval to specifically address the potential impacts to the Appellants and Intervenors if there is another flood with a peak flow of 1820 m³/s.

⁶⁴ Section 38(2) provides:
“(2) In making a decision under this section, the Director
(a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing an approval, as specified in an applicable approved water management plan,
(b) may consider any existing, potential or cumulative
(i) effects on the aquatic environment,
(ii) hydraulic, hydrological and hydrogeological effects, and
(iii) effects on household users, licensees and traditional agriculture users,
that result or may result from the activity, and
(c) may consider
(i) effects on public safety, and
(ii) any other matters applicable to the approval that, in the opinion of the Director, are relevant.”

⁶⁵ Approval, at Condition 3.2.

[273] The Director explained he did not make the decision lightly. According to the Director, many of the statement of concern filers and the downstream landowners would likely receive greater protection for their residences and infrastructure due to the SW Dike.

[274] The Director stated the impacts to downstream users with new areas of flooding to bare land do not meet the threshold of significant adverse hydraulic effect, and without the dike in place, other residences and infrastructure were at risk of flooding during lower magnitude and higher frequency events.

[275] The Director further stated building the SW Dike was considered to be in the public interest.

[276] The Director referred the Board to his considerations in granting the Approval and, in particular, the consideration of public safety if the SW Dike were not authorized.

[277] The Director noted the Appellants and Intervenors requested the Board vary the Approval by requiring a breach in the CPR embankment and filling in of the swale.

[278] Regarding the removal of the swale, the Director stated he accepted the conclusions in the WorleyParsons' Report, which indicated the swale does not significantly influence the flow magnitude directed towards the Little Bow River during extreme flooding when compared to Scenario 37A.

[279] Regarding an engineered breach on the CPR embankment, the Director stated there is insufficient technical information to support how such a breach should be engineered or its impacts on other landowners to support amending the Approval through the appeal process. The Director commented the breach could possibly be authorized through a separate approval if it was supported by further modelling, went through public notice, and met the criteria of section 38(2) of the *Water Act*.⁶⁶ He noted CPR's consent would also be required for an approval application that would impact its lands.

⁶⁶ Section 38(2) of the *Water Act* states:

“(2) In making a decision under this section, the Director

(a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing an approval, as specified in an applicable approved water management plan,

(b) may consider any existing, potential or cumulative

(i) effects on the aquatic environment,

[280] The Director further argued there are not enough technical details to assess the efficacy and potential impacts of the Appellants' proposed changes to the SW Dike's design. The Director stated any design changes would require additional technical support in order to understand how the proposed changes would impact flow patterns and downstream landowners. He explained this would require further modelling, public notice, and consideration of the criteria under section 38(2) of the *Water Act*.

[281] The Director restated that negotiations between the Town, the Appellants, and the Intervenor with respect to compensation are outside the scope of the *Water Act* and the appeals.

[282] The Director stated the modelling showed the SW Dike had a minimal effect on the peak flows of the Highwood and Little Bow Rivers during a flood. He further stated the Town's modelling showed a reduction in overall flooding to properties as a result of the SW Dike.

[283] According to the Director, the new areas of flooding are bare land. Consequently, in his view, the terms and conditions of the Approval are appropriate.

[284] When asked if the SW Dike acted as a stormwater management project, the Director responded he considered the SW Dike a redirection of overland flows.

[285] The Director stated he had not considered an adequate outlet for the SW Dike. He referred back to the flow split and explained many discussions had occurred around the impacts of the redirected flow and how the redirected water would reach the Little Bow River with the SW Dike in place. The Director stated a change was not expected in the volume, magnitude, or flow of the Little Bow River. Consequently, he did not consider an adequate outlet for the flow.

[286] According to the Director, an approval is required for where infrastructure is placed. The Director explained every approval requires an appurtenance statement, and the

-
- (ii) hydraulic, hydrological and hydrogeological effects, and
 - (iii) effects on household users, licensees and traditional agriculture users,
- that result or may result from the activity, and
- (c) may consider
- (i) effects on public safety, and
 - (ii) any other matters applicable to the approval that, in the opinion of the Director, are relevant.”

approval is tied to the land on which the activity is appurtenant. He further explained consent is typically required for lands appurtenant to an approval, but not for lands that may be impacted by an activity.

[287] The Director also explained two concepts are involved, appurtenance and landowner consent. He stated appurtenance is required, and an approval is appurtenant to land or the activity. He further stated consent “may be required” for an approval. The Director stated when an approval is appurtenant to the land, the consent of the landowner is typically required.

[288] When asked if the Town had proposed a project which placed a pipe at the end of the swale to redirect the flow to a downstream location or outlet, if the pipe would have required landowner consent or have been appurtenant to the project, the Director answered confirmation of landowner consent is asked for where the project is being built, and he would have considered, if a pipe were proposed, where the pipe was to be constructed and whether landowner consent would be required.

[289] When asked how he considered section 37(4) of the *Water Act*⁶⁷ and whether the Appellants’ lands were appurtenant and their consent was required, the Director stated he did not consider the lands appurtenant but rather “impacted.” He acknowledged the Appellants’ lands were necessary to the function of the SW Dike but did not consider the impact significant on the whole.

[290] The Director stated he had not considered whether the Appellants’ lands should have been included as a part of the SW Dike to ensure the SW Dike was viable twenty to fifty years in the future.

[291] The Director stated while SW Dike was designed to protect against a flood with a peak flow of 1820m³/s plus a metre of freeboard, he had only considered the effects of a 1:100 Flood. He stated he would have accepted a design that protected to the magnitude of a 1:100 Flood, as this is the minimum standard. He further noted the SW Dike was not designed to protect downstream landowners.

⁶⁷ Section 37(4) of the *Water Act* states: “If an applicant for an approval does not own the land in fee simple or the undertaking to which the approval is to be appurtenant, if required by the Director, the applicant must submit the written consent of the owner of the land or of the undertaking as part of the application for the approval.”

[292] The Director acknowledged flood hazard identification could impact the Appellants, and he considered it. He stated he had also considered the impacts of having the SW Dike in place versus not having the SW Dike in place.

V. Analysis

[293] Under section 99(1) of EPEA, the Board must provide the Minister with its recommendations regarding the issues in these appeals.⁶⁸

[294] The Board considered the oral evidence, arguments, and written submissions provided by the Parties, the Director's Record, and relevant legislation in making its recommendations to the Minister.

[295] The Board appreciates the participation of the Intervenors at the hearing. The Intervenors provided the Board with additional information regarding the 2013 Flood and the downstream impacts of the SW Dike on the Intervenors' lands.

1. Accuracy and Reliability of the Scientific and Technical Studies

[296] Regarding the first issue in the appeals, as noted above, the Appellants challenged the data and variables upon which the 2013 Flood Model was based. The Appellants argued the 2013 Flood Model developed by WorleyParsons did not accurately represent the 2013 Flood or its impacts to the Appellants' properties, in particular, the Edeys' properties. The Appellants' argued there were too many uncertainties in the modelling for the Director to have relied on them in making his decision to issue the Approval. The Intervenors supported the Appellants' arguments, and both argued WorleyParsons minimized the inherent uncertainties in, and limitations of the models.

[297] The Board heard the Appellants' and the Intervenors' properties had residences, workshops/garages, irrigation infrastructure, and access roads located on them. The Board also heard much of the Appellants' and Intervenors' lands are actively used in agricultural production.

⁶⁸ Section 99(1) of EPEA states: "In the case of a notice of appeal referred to in section 91(1)(a) to (m) of this Act or in section 115(1)(a) to (i), (k), (m) to (p) and (r) of the *Water Act*, the Board shall within 30 days after the completion of the hearing of the appeal submit a report to the Minister, including its recommendations and the representations or a summary of the representations that were made to it."

[298] The Board heard evidence that the 2013 Flood impacted each of the Appellants' and Intervenors' properties. The Board heard evidence that approximately half the Howies' property was flooded in the northwest and east, and that the floodwaters came from the west. The Board heard the Macklins' and Intervenors' properties were flooded by water from the east and northeast of the properties, which overtopped the CPR embankment and 88 Street. Evidence was presented that a significant length of the access road they shared was inundated to a height of approximately four to five inches.

[299] As noted above, the Appellants raised the Edeys' East Property as an example of the 2013 Flood Model's biggest flaw, stating the model inaccurately indicated the overland flow would stop three feet from the Edeys' home. The Board heard evidence that during the 2013 Flood, the Edeys' residence on their East Property was flooded to a height of approximately 1.04 metres as measured on the exterior of their residence. The inside of their residence was flooded to a height of 0.86 metres, and their shop/garage was flooded to the height of 1.52 metres. The Board heard additional evidence that floodwaters came from the Little Bow River from the north.

[300] The Town argued the 2013 Flood Model is not intended to provide an exact representation of the 2013 Flood Model, and the very nature of modelling is to provide an approximation of overland flow conditions. The Board heard evidence from the Town's expert, who stated the accuracy of the model is dependent on the data input into the model and some modelled areas may be more accurate than others. The Board heard further evidence that the majority of the calibration results for the 2013 Flood Model show the model is accurate within a range of +/- 0.3 metres, and this included the Appellants' properties.

[301] The Board heard evidence from the Town's expert that after the 2013 Flood, high-water marks were collected. The 2013 Flood Model was developed based on these survey points, high-water marks and these model high-water levels indicated the model was within +/- 0.3 metres of accuracy. The Board further heard verification of the model indicated there was a very low probability of the model having a range of +/- 1 metres on the Appellants' and Intervenors' properties as alleged by the Appellants.

[302] The Board heard further evidence from the Town's expert explaining the model accuracy for the Edeys' Properties was likely within the 0.10-0.15 metre range. In support of

this, he compared the predicted June 2013 Flood Levels and Extents for the Edeys' East Property with the LiDAR survey data collected after the 2013 Flood Event. He noted the area of flooding that was claimed to be inaccurate by approximately 0.5 metres was close to the Edeys' shop/garage and had a predicted flood level of 1028.31 metres. Evidence was provided to the Board that the LiDAR indicated the same location was measured at 1028.41 metres, and two other measurements were within 0.13 metres. The Board heard further evidence that if there were discrepancies between the model and the 2013 Flood, it was likely because of small local landscape features such as berms and swales which are not readily visible in the LiDAR. It was explained small features on the local landscape may influence local flow conditions, and could create visual anomalies such as the one seen on the Edeys' East Property.

[303] The Board heard further evidence from the Town's expert regarding the high watermark data and data analysis on locations around the Edey properties, which indicated the model accuracy was within an expected range of +/- 0.3 metres. It was explained to the Board that a model accuracy of +/- 0.3 metres is often accepted as providing suitable hydraulic representations of flood conditions for design, planning and effects assessment.

ii. Outdated 1:100 year peak magnitude flow

[304] The Intervenors had raised concerns that the peak flow for a 1:100 Flood was outdated and should not have been used for the modelling. The Board heard the 1:100 Flood is based on floods leading up to 1992 and has a set peak flow of 750 m³/s. The Intervenors had raised the fact that there have been several floods⁶⁹ since 1992, and these floods should be averaged into the 1:100 Flood's peak flow magnitude. The Intervenors further noted Golder, AECOM, and insurance companies have requested the peak flow magnitude be updated, with Golder and AECOM specifically seeking increases to 1560 m³/s and 1390 m³/s respectively.

[305] The Board found this information interesting. The Board noted the expert for the Director acknowledged the peak flow for the 1:100 Flood would likely change in the future, there is no evidence before the Board to suggest the 1:100 Flood's peak flow could not be used for modelling. Evidence was presented to the Board that the 1:100 Flood was the design standard, and the Director would have accepted a design based on the 1:100 Flood.

⁶⁹ Floods occurred in 1995, 2005, 2008, 2011, and 2013.

[306] The Director explained at the hearing he considered the 2013 Flood Model and the 1820 m³/s thresholds but had relied on the 750 m³/s modelling when he made his decision. As a general observation, the Board notes the Director was also provided modelling data based on the largest magnitude flood on record in the region, and its peak flow was greater than either amount the Intervenors attributed to Golder or AECOM.

[307] The Town's expert, Mr. Borggard, explained how the 2013 Flood Model was developed using survey points, high watermarks, and LiDAR. The Town's expert also effectively explained why there may be minor discrepancies between the model and flooding that occurred on the Appellants' properties.

[308] Mr. Choles stated the models and reports provided by the Town in support of the Application were signed and stamped by a professional engineer. He further explained River Engineering and the Director will rely on signed and stamped reports, unless there is some reason not to do so. He stated he had no concerns with the technical studies. The Appellants' expert, Dr. Bender, did not appear to have concerns with the accuracy of the models, noting that the margin of error accounts for the uncertainties raised by the Appellants. He suggested a slightly larger margin of error, but appeared to be more concerned with the use of the 2013 Flood data. In his view, such a high peak flow overstated the benefits to properties downstream of the SW Dike.

[309] The Board notes models are intended to be representations and not absolute truth. As models represent the conditions and outcomes of the data input into them, they are inherently limited despite their usefulness. Consequently, a model will never be an exact replication of the real world. Knowing these limitations, accuracy and reliability in this context really means useful approximation.

[310] The Board further notes the 2013 Flood Model is intended to approximate the 2013 Flood. The SW Dike was designed to protect against a flood with a peak flow equal in magnitude to the 2013 Flood plus a metre freeboard, which is why the Town included models relevant to the design's level of peak flow protection.

[311] Lastly, the Board notes the modelling has received some measure of review from both River Engineering and Millennium, and neither have expressed serious concerns with the modelling.

[312] The Board is satisfied with WorleyParsons explanations of the models. Moreover, the Board is of the view that the models prepared by WorleyParsons were comprehensive. As a result, the Board finds the modelling is accurate and reliable. The Board further finds the technical studies based on the modelling are also accurate and reliable.

2. Was it appropriate for the Approval to authorize construction in a floodplain?

[313] With regard to the second issue in the appeals, the Appellants argued the Director received advice during his review of the Application that constructing the SW Dike in the floodplain was contrary to AEP policy and not prudent.

[314] The Board heard a floodplain includes any land which can be inundated and includes the floodway and the flood fringe. The Board heard the floodway is the path reserved for the river flow because this is where the deepest and fastest part of the flow is located, and is the part of the flow which has the most potential to cause damage. The Board heard the flood fringe is located within the floodplain and is land that tends to become inundated. Construction is permitted within the flood fringe, provided the infrastructure is floodproof. The evidence indicated there were inundation maps available, but flood hazard mapping was not yet completed for the region.

[315] The Board heard River Engineering provided comments on the Application on April 16, 2019, and captured their concerns with the proposed location of the SW Dike in the Highwood River's floodplain, and the unintended consequences that may arise.

[316] River Engineering was concerned that during a flood, the location of the SW Dike would cut off two fingers which flow to the east, resulting in a concentration in the overland flow. This concentration in the overland flow could lead to: erosion in the channels which may result in additional overflow; a change in overland flow characteristics including flow split; a change in water levels; and a change in river flow velocities.

[317] The Board heard the flow split would increase the amount of instream flow in the Highwood River and a change in water levels could cause areas that had not previously been prone to flooding to flood. Dr. Bender, explained an increase in velocities could result in erosion, create a new channel and ultimately, risk the avulsion of the Highwood River to the Little Bow River.

[318] The Board heard the Director thoroughly reviewed the concerns raised by River Engineering with the Town and met with the Town and WorleyParsons on July 3, 2019. During the July 3, 2019 meeting, it was observed that historically 12 Avenue and the CPR embankment have cut off the same flood fingers, and the effect of the SW Dike is to cut off those flood fingers earlier.⁷⁰

[319] The Board heard there was no legislation prohibiting the SW Dike's construction in the floodplain. While there was a general guideline against constructing in the floodplain, no formal AEP policy was in place. Evidence was presented that there was existing development in the Town which the Town did not feel it could properly protect without the SW Dike in place. The evidence demonstrated there was a system of dikes in place which also influenced the design of the SW Dike. In both cases, they limited the design options available to the Town.

[320] The Board heard the matters and factors of the SSRB Plan were taken into consideration by the Director when authorizing the SW Dike's location in the floodplain. The Director stated he weighed the risks associated with authorizing the construction of the SW Dike in the floodplain against leaving critical infrastructure and residences in the Town unprotected.

[321] Based on the evidence, the Board concludes the Director sought and considered input from the appropriate subject matter experts within AEP and the Town to clarify the impacts arising from locating the SW Dike in the floodplain.

[322] The Board accepts previous flood mitigation works and development within the Town placed design constraints on where the Town could construct the SW Dike. The Board understands best practices are to avoid constructing in the floodplain. The Board finds the Director considered the potential adverse outcomes associated with the SW Dike's construction in the floodplain, particularly the initial redirection of overland flow to the south.

[323] As there is no prohibition against constructing the SW Dike in the floodplain, and there were limitations on the design options available to the Town, the Board finds it was appropriate for the Approval to authorize construction of the SW Dike in the floodplain.

3. Are the terms and conditions of the Approval appropriate?

⁷⁰ Director's Record, at Tab 40, AEP Meeting Notes – Town of High River File – SW Dike Project – Memorandum dated July 3, 2019, AEP.

[324] At the hearing the Appellants acknowledged the need to protect the infrastructure in the Town. The Appellants objections stem from how the Town chose to design the protection. Instead of taking issue with specific terms and conditions in the Approval, the Appellants argued the Approval failed to adequately mitigate the risk of adverse effects posed by the SW Dike.

[325] The Appellants suggested this failure to mitigate risks was internally inconsistent with condition 3.2 of the Approval, and asked the Board to include three additional conditions to the Approval requiring:

- a. the Town to work with CPR to create an engineered breach in the CPR embankment;
- b. the Town to fill in the swale; and
- c. the Town to enter into good faith negotiations with the Appellants and the Intervenor regarding compensation for the properties affected by the redirected floodwaters from the SW Dike.

[326] Condition 3.2 of the Approval requires the Town to "... not undertake the Activity in any manner that or use any material that causes or may cause an adverse effect on the aquatic environment, human health, property, or public safety."⁷¹ The Appellants claimed contrary to condition 3.2, the Approval guaranteed there would be an adverse effect on their property and threatened their safety, without any mitigation.

[327] At the hearing, the Board was presented evidence that the Approval is a relatively short-lived document that exists during the construction phase of the project. The purpose of the Approval is to manage the construction of, and any adverse effects that may arise during the construction of, the SW Dike. Consequently, any adverse effects caused by the SW Dike itself are expected to be managed through the project design. The Board acknowledges the distinction between the Approval managing the effects of the work associated with the activity, and the project design managing the effects of the activity.

i. Engineered Breach

[328] As was previously mentioned, the Appellants asked the Board to include a condition requiring the Town to work with CPR to include an engineered breach at the CPR embankment. The Board understands the length of the embankment is approximately 500-600 metres and it cuts across the overland flow. At the hearing, Dr. Bender provided his opinion that

⁷¹ Approval, at Condition 3.2.

the CPR embankment acts as a dam because it holds and disrupts the flow of water. The Board heard in his view a sudden breach of the CPR embankment is concerning as there is no control over the overland flow. Evidence suggested an engineered breach would provide a path for the overland flow and would lessen the uncertainty surrounding the downstream impacts. During questioning, Dr. Bender acknowledged the Town's arguments that it did not own or have administrative control over the lands in question. He stated in response he was not focused on administrative boundaries but solutions.

[329] The Town and the Director argued the Appellants failed to provide engineering analyses in support of the proposed engineered breach. The Town also argued an engineered breach was unnecessary and presented evidence that once the overland flow reached 700 m³/s, the CPR embankment would be overtopped or possibly eroded in multiple locations.

[330] The Director presented additional evidence to the Board that any application for an amendment for an engineered breach would be subject to the *Water Act*. Practically speaking, this means the proposed engineered breach would require detailed engineered analyses, landowner consent, be subject to public notice, and appeal. The Director was against amending the Approval to include an engineered breach, but did not preclude a separate application.

[331] The Board notes the Town neither owns nor has administrative control over the lands in question. The Board appreciates the Appellants did not have the resources to provide detailed engineering analyses or modelling in support of the proposed engineered breach. However, without such technical data, no determination can be made regarding whether or not the engineered breach meets the requirements of section 38(2) of the *Water Act*⁷² and does not

⁷² Section 38(2) of the *Water Act* states:

“(2) In making a decision under this section, the Director

(a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing an approval, as specified in an applicable approved water management plan,

(b) may consider any existing, potential or cumulative

(i) effects on the aquatic environment,

(ii) hydraulic, hydrological and hydrogeological effects, and

(iii) effects on household users, licensees and traditional agriculture users,

that result or may result from the activity, and

(c) may consider

cause an adverse effect on the aquatic environment, human health, property or public safety. Without these studies, there is no way of determining whether one breach is appropriate or several, the size, or other factors, or if such a breach may worsen the position of those downstream of the SW Dike. For these reasons, the Board finds it would not be appropriate to add a condition to the Approval that requires the Town to engineer a breach at the CPR embankment. In making this finding the Board does not preclude a future application for an engineered breach if it is supported by the appropriate technical studies and *Water Act* application.

ii. Filling in the swale

[332] The second condition the Appellants asked the Board to include was a condition requiring the Town to fill in the swale. The experts for the Parties appeared to agree the swale acts as a channel to remove water from in front of the SW Dike and direct water downstream. It appeared however, that the experts could not agree on the long-term implications of channeling the overland flow downstream.

[333] The experts for the Appellants and the Director gave opinions that by concentrating the overland flow and acting as a channel, the swale could cause erosion and eventually lead to a risk of redirecting the Highwood River into the Little Bow River. Dr. Bender elaborated and provided his opinion that, swales are designed to move water quickly and efficiently, in this case away from the area in front of the dike. He explained the depth and velocity of overland flow in the swale were variable, depending on the time of the season and the amount of vegetation. He noted earlier in the season floods are most likely to occur, there is less vegetation, and the overland flow will have greater velocity and less depth. The Board also noted his comments that debris could potentially become lodged in shallow areas and in the vegetation as well.

[334] The Town did not disagree with Dr. Bender's evidence regarding the general purpose for a swale or the impact vegetation could have on overland flow. However, the Town said the swale was important to the design and function of the SW Dike, and should not be filled in. Mr. Borggard presented evidence demonstrating any increase to the velocity or flow caused

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- (i) effects on public safety, and
 - (ii) any other matters applicable to the approval that, in the opinion of the Director, are relevant.”

by the SW Dike was temporary and limited to the area directly in front of the SW Dike. He noted the effect was localized and by the time the overland flow approached the area near the Appellants' properties, the depth and velocity were expected to be nearly the same as they were before the construction of the SW Dike.

[335] Evidence was presented to the Board that the efficient removal of water from in front of the SW Dike was necessary in order to prevent ponding. Mr. Borggard said the swale did not increase the overland flow towards the Appellants, and because of the flow split, the extra 10 m³/s of instream flow was directed downstream on the Highwood River. Consequently, the amount of overland flow to the Little Bow River remains unchanged.

[336] Mr. Choles did not disagree with Dr. Bender's opinion that the swale represented a risk of redirecting the Highwood River into the Little Bow River, as this was one of the original comments provided to the Director and Town by River Engineering. However, the Board understands this issue was given consideration as part of the overall larger issue of the design and location constraints faced by the SW Dike project. Evidence was presented that River Engineering met with the Town to discuss its concerns in July 2019, and the Director was made aware of this concern as a part of his considerations. The Director provided evidence he had accepted the WorleyParsons Report, and the swale did not significantly impact the overland flow directed towards the Appellants' properties during an extreme flood event.

[337] The evidence before the Board indicates the effects of the swale are expected to be localized to the SW Dike project site. The Board understands in part, Dr. Bender's concern stemmed from a concern that overland flow was increased towards the Little Bow River, however, the evidence presented demonstrated the increase in flow is expected to be instream, in the Highwood River. The Appellants have not provided detailed engineering analyses to support their arguments that the swale should be filled in, or to allow for a determination of the effects of filling in the swale. Based on the foregoing, the Board finds it cannot amend the Approval to include a condition requiring the Town to fill in the swale.

iii. Condition to enter into good faith negotiations

[338] The third condition the Appellants asked the Board to include in the Approval was a requirement for the Town to enter good faith negotiations with the Appellants regarding

flood mitigation, compensation or both, for the Town transferring its flood risk to the Appellants.

[339] The Appellants did not feel they were adequately consulted and engaged as a part of the Town's consultation process. The Appellants gave evidence that while there were meetings and emails, they did not feel their concerns were addressed. The Board heard the Appellants were frustrated the Director only sought information from the Town regarding the Town's efforts to address their concerns.

[340] The Board heard arguments that the Director should have required the Town to comply with AEP policy and address the concerns of statement of concern filers prior to issuing the Approval. As mentioned previously, evidence was presented that the SW Dike was designed with the consent of the primary affected landowner (the land where the berm and swale are built), and a term of the agreement between the Town and the primary affected landowner prohibited the primary affected landowner from appealing the Approval.

[341] The Board heard the Appellants were offered flood easements and compensation for the impacts arising from the SW Dike to their properties. The Board understands the amount of compensation was only for the difference between the 2013 Flood and the change in overland flow arising from the SW Dike. The flood easements did not compensate for pre-existing flood risk, but for changes to the incremental flood risk. In some cases, only a flood easement was offered, without compensation.

[342] Evidence was presented indicating the Appellants sought assistance from the County regarding the SW Dike, and the County advised them that as it was a Town project, all concerns should be directed to the Town.

[343] The Appellants provided evidence that several of their concerns and questions were not answered by either the Town or the County, throughout the application for the Approval. The Appellants stated representatives from the Town were unable to answer the Appellants' questions about the flood easements, impacts to their properties, or their other concerns during meetings. The Board notes that the Intervenors expressed similar concerns.

[344] The Board heard from the Appellants that the Town should have been required to comply with AEP policy and address their concerns prior to the Approval being issued. The Appellants were concerned the Director did not provide them with an opportunity to raise their

concerns, but instead relied upon the information provided by the Town when deciding who was directly affected and regarding concerns when deciding to issue the Approval.

[345] The Board heard from the Town it had engaged the Appellants and Intervenors individually through letters, and generally through public notices and meetings. The information was provided to the Appellants at public meetings, multiple engagement sessions with the Town, or to the Appellants directly from approximately 2014 through 2017. The evidence showed the Town provided project updates to property owners who were expected to experience an increase in inundation on February 9 and October 24, 2017. The Town also conducted in-person meetings and direct telephone calls with various property owners, to provide information about: the project, appraisals, and potential inundation to their properties.

[346] The Board heard that during the Town's meetings with the Appellants and the Intervenors, the Appellants and Intervenors were provided with information sheets outlining the anticipated effects of the SW Dike on their properties during a flood event with a peak flow of 1820 m³/s. Unfortunately, these meetings appear to have not been overly successful because many of the Appellants and Intervenors questions were left unanswered at the time of the hearing. The Appellants and Intervenors were also provided with flood easements during those meetings, discussed in further detail below.

[347] The Board heard arguments from the Town that filing a statement of concern or participating in the public engagement process did not give the Appellants a right to veto the project. The Town added "...[t]he Appellants complaints about the engagement process stem from the engagement not resulting in their desired outcome."⁷³

[348] The Board heard from the Town that one of the Appellants' primary concerns with the SW Dike appears to be related to the Appellants' dissatisfaction with the discussion regarding financial compensation. The Town relied on *Hebner* and argued the Board had already determined it could not award financial compensation to parties alleging to have been harmed as a result of issued approvals. The Town argued similarly, the Board could not order the Town and the Appellants to negotiate compensation. These arguments were supported by the Director, who also argued considerations regarding compensation were outside the scope of the *Water Act*.

⁷³ Town's Written Hearing Response Submissions, December 16, 2020, at paragraph 33.

[349] Ms. Scoffield provided evidence on behalf of the Director that the statement of concern process is designed to provide individuals who believe that they may be directly affected by a project an opportunity to communicate their concerns to the Director. Ms. Scoffield stated that the Director received fifteen statements of concern and that he considered eight of the filers to be directly affected. The Board heard all the statements of concern were considered in the final decision to issue the Approval.

[350] Ms. Scoffield stated the *Water Act* is silent on responding to statements of concern. The Board heard in this case, the statements of concern were shared with the Town. Ms. Scoffield stated the concerns were either dealt with directly with the statement of concern filer or indirectly by way of the Town providing information addressing the concerns and comments of each statement of concern filer. The Board heard the Town prepared information sheets which outlined how each statement of concern filer was potentially impacted by the SW Dike, and this information was discussed at meeting between the Town and the Director in the summer of 2019.

[351] At the hearing, the Board was presented with a copy of the flood easement agreements the Town provided to the Appellants and the Intervenors. The Board understands the flood easements were intended to compensate persons whose properties were affected by the SW Dike for the incremental difference in inundation to their properties. The Board heard that the Director was provided a copy of the flood easement agreements, however the Director does not appear to have required the agreements to be executed prior to making his decision to issue the Approval.

[352] As was previously mentioned, the Appellants acknowledged that matters of financial compensation awards are outside the jurisdiction of the Board. In the Board's view, a condition requiring the Town to negotiate compensation with the Appellants was equally outside the Board's jurisdiction.

iv. Approval terms and conditions

[353] The Director's authority to issue the Approval is balanced against the responsibility of ensuring the Director thoroughly reviews an application and supporting

documentation against the criteria in section 38(2) of the *Water Act*.⁷⁴ The Director and AEP staff stated it is not their role to redesign a proposed project for applicants.

[354] As mentioned above, the Appellants did not take issue with a specific term or condition of the Approval. Instead, the Board heard from them that by building the SW Dike and concentrating the overland flow to the south, the Town had transferred its flood risk to the Appellants and others downstream in the County. The Appellants object to the lack of terms or conditions in the Approval to protect the Appellants or others downstream of the SW Dike, or to mitigate the adverse effects caused by the SW Dike.

[355] Also mentioned above, the Board heard from the Appellants the impacts of the overland flow directed towards their properties by the SW Dike could not be predicted to the degree of certainty as claimed by the Town. There is infrastructure on the Appellants' and Intervenor's lands, and consequently, little room for error in the calculations. Mr. Borggard provided evidence that WorleyParsons was confident in its error margins to +/- 0.3 metres, and in the case of the Edeys' properties, within 0.15 metres in some locations. Although the Board finds the modelling accurate and reliable, the Board notes again that models are intended to be representations, not absolute truth, and are inherently limited despite their usefulness. In this context, the model is a useful approximation of the overland flow directed towards the Appellants' properties by the SW Dike. However, the Board is concerned that if the modelling results are inaccurate by a metre or two, some of the Appellants homes could be inundated during a large magnitude flood event. Whether the peak flow lasts for one hour or five, once a home is flooded, there is damage.

⁷⁴ Section 38(2) of the *Water Act* states:
“(2) In making a decision under this section, the Director
(a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing an approval, as specified in an applicable approved water management plan,
(b) may consider any existing, potential or cumulative
(i) effects on the aquatic environment,
(ii) hydraulic, hydrological and hydrogeological effects, and
(iii) effects on household users, licensees and traditional agriculture users,
that result or may result from the activity, and
(c) may consider
(i) effects on public safety, and
(ii) any other matters applicable to the approval that, in the opinion of the Director, are relevant.”

[356] The Director presented evidence that when making his decision he appreciated the Appellants and Intervenors would experience impacts from the SW Dike. He advised the Board he weighed the benefits of the SW Dike and the protection it would provide to the homes and critical infrastructure in the SW portion of the Town against the impacts to the Appellants. In his view, those impacts were not significant, as they would be impacts to bare land. The Director stated he issued the Approval knowing there were other mechanisms outside of the Approval to address the Appellants' concerns.

[357] The Board heard evidence WorleyParsons prepared a report regarding compensation for properties impacted by the changes in the overland flow and inundation levels caused by the SW Dike, for each statement of concern filer. The Director was provided the report.

[358] It has been noted several times in this Report the SW Dike was constructed to protect against a peak flow of 1820 m³/s plus a metre freeboard. The Board understands the SW Dike was constructed to protect against 1820 m³/s plus a metre freeboard as this was the magnitude of 2013 Flood and represents the worst-case scenario to date. The Board heard evidence the Director considered the modelling for the higher peak flow but based his decision on the modelling for a 750 m³/s magnitude event, as this is the accepted design standard and smaller magnitude events are more likely to occur. It is these smaller events that are more likely to affect the Appellants and those downstream of the SW Dike. The Board heard however, that as constructed, the SW Dike protects against a 1:100 Flood to 1:200 Flood.

[359] The Board notes the materials that accompanied the flood easement agreement appeared to compare the impacts of the 2013 Flood with the projected impacts to the Appellants properties arising from all the Town's flood mitigation program, including the SW Dike. The Board was unable to locate detailed information in the package which outlined the impacts to the Appellants' properties arising from a 1:100 Flood. The Board finds this concerning as the Director stated that floods at lower magnitudes were more likely to occur and cause impacts to the Appellants. As a general observation, the Board believes it may be helpful if the Town were to provide this information to the Appellants and the Intervenors.

[360] The Board heard that the Appellants and Intervenors had questions about the flood easement agreements provided by the Town and the associated information outlining the

impacts of the SW Dike, but the Town's consultants were not able to address their questions. The Town suggested the Appellants were dissatisfied with the outcome of the consultation and engagement, but the consultation and engagement efforts were adequate. The Director similarly stated the concerns of the Appellants were addressed, either by the Town addressing them with statement of concern filers or by providing information to the Director.

[361] The Board heard from the Appellants how stressful the construction of the SW Dike and appeal process has been for them. The Appellants raised several questions over the course of the hearing, and as noted above, stated the Town's consultants did not answer their questions. It appears to the Board that part of this stress appears to stem at least in part from the uncertainty arising from the SW Dike's construction, impacts arising from it, and questions left unanswered. Considering this, the Board has concerns regarding the adequacy of the Town's engagement with the Appellants.

[362] The Board notes that the Appellants' and Intervenors' properties have access roads, homes, garages and workshops, and irrigation equipment located on them. At a minimum, much of the Appellants' and Intervenors' lands are being actively used in agricultural production, from which some of their livelihoods are being earned. The Board heard the Director considered the impacts to the Appellants and Intervenors to be insignificant because the impacts were to bare land. Rather than being bare land, the properties were being lived on and actively used by the Appellants.

[363] Whether the properties may have been impacted by the 2013 Flood or whether the properties would have been impacted to a lesser degree by the interim mitigation measures undertaken by the Town, it is apparent from the evidence before the Board that the SW Dike has permanently redirected overland flow from the Highwood River during a flood event and the path the overland flow travels towards the Little Bow River as a result of the SW Dike, including over the Appellants' and Intervenors' properties.

[364] The Board notes the Director could have required further investigation or a report into the downstream impacts of the SW Dike, recognizing the problems created by the Town's flood mitigation efforts. The Board heard evidence other options were presented to AEP by the

Town, and there was at least one report⁷⁵ supplied in the Application which did not preclude additional mitigation efforts.

[365] The Board heard evidence from Dr. Bender the primary flaw in the design of the SW Dike is the redirection of a significant amount of overland flow towards the Appellants and others' properties downstream in an uncontrolled manner, without a proper hydraulic connection to the Little Bow River. The Board heard further evidence from Dr. Bender it was difficult to predict with exact certainty how the overland flow would behave and various factors such as roughness could impact its depth and velocity.

v. Applicability of the Stormwater Management Guidelines

[366] During the course of the Board's deliberations, the Board noted none of the Parties addressed the question of the applicability of the *Stormwater Management Guidelines*⁷⁶ to the SW Dike in their closing arguments. This question was raised by the panel during the hearing. In light of this question not being addressed during the hearing, and the amount of overland flow being directed towards the Appellants and others downstream, subsequent to the oral hearing and prior to the close of the hearing, the Board asked the Parties to consider the application of the Guidelines to the SW Dike and whether or not an adequate outlet was required.

[367] The Appellants presented arguments to the Board that the Guidelines apply to the SW Dike. They argued the SW Dike is a project intended to protect the largely undeveloped area on the south edge of the Town from overland flooding, yet its design fails to incorporate overland flood routes beyond the south end of the dike to handle excess flows, and is therefore, not consistent with the requirements of the Guidelines.

[368] The Appellants further presented arguments to the Board that the Guidelines address design criteria for stormwater management plans including water quantity, noting that if there is a potential for a flood hazard directly downstream from a proposed site, water quantity controls must be implemented. The Board heard from the Appellants' expert, who raised the fundamental flaw with the SW Dike is that it relies on uncontrolled overland drainage between

⁷⁵ 2016 ISL Engineering Final Report, *Southwest Dike Choose-Design Report*, (the "ISL Report"), at pages 17-19, Director's Record, Tab 6, pages 181-83. See also the Little Bow Enhanced Natural Floodway (LB-ENF), WorleyParsons Report, at pages 2-8, and Tab 5, pages 70-78.

⁷⁶ *Stormwater Management Guidelines*, Alberta Environment and Parks, January 1999 (the "Guidelines").

the end of the SW Dike and the Little Bow River. The Appellants stated the reliance on uncontrolled overland flow is not consistent with the Guidelines' requirements for water quantity control when there is a potential flood hazard directly downstream from the SW Dike.

[369] The Appellants further argued the SW Dike meets the definition of a major drainage system as it is essentially a drainage route to transport overland flow during major storm events. The Appellants relied on *Kohlman*⁷⁷ and *Belland*⁷⁸ and argued they were expressly applicable. The Appellants further described that in situations involving projects by urban municipalities to convey stormwater across adjacent urban lands the core issue in each case was the impact of the project on downstream rural property owners. The Appellants argued there was no reason to distinguish these cases from the case before the Board in terms of the applicability of the Guidelines.

[370] The Appellants further noted the Director in those cases acknowledged a requirement to ensure downstream property owners were protected from flooding and to ensure the impacts of flooding were properly mitigated. The Appellants stated the Director owed the same obligation to downstream property owners in this case, yet failed to require the Town to protect downstream owners from the flooding caused by the SW Dike. The Appellants argued the Board should vary the Approval to ensure there were overland flow routes designed beyond the south end of the dike to control the quantity of water impacting downstream properties.

[371] The Town stated the Guidelines were not the applicable regulatory regime for permitting the SW Dike. The Approval Holder argued the SW Dike is a flood mitigation activity regulated by the *Water Act* whereas the Guidelines apply to stormwater drainage systems subject to EPEA and its supporting regulations. The Town stressed the Guidelines are described in terms of outlined objectives for stormwater management and available methodologies, and concepts and designs for the planning, design, and operation of stormwater management systems.

[372] The Town argued the definition of storm drainage contained in the *Waste Water and Storm Drainage Regulation*, Alta. Reg. 119/1993, indicates storm drainage under EPEA is

⁷⁷ *Kohlman v. Director, Central Region, Environmental Management, Alberta Environment*, re: Town of Ponoka (3 June 2011), Appeal No. 09-022-R (A.E.A.B.) ("*Kohlman*").

⁷⁸ *Belland v. Director, Regional Compliance, Red Deer-North Saskatchewan Region, Alberta Environment and Parks* (21 June 2019), Appeal No. 18-014-R (A.E.A.B.), 2019 ABEAB 18 ("*Belland*").

intended to apply to the management of precipitation, whereas the *Water Act* is intended to regulate water flows including those that occur during a flood.

[373] The Town elaborated, stating EPEA governs the management of stormwater through storm drainage systems, which are systems of collecting, storing, conveying, and disposing of precipitation which falls on a development, such as a city or town, through the use of sewers, pumping stations, and similar infrastructure. This was contrasted with the *Water Act*, which regulates various activities including activities such as the construction of the SW Dike. The SW Dike was constructed to protect against a waterbody overflowing its banks. Therefore argued the Town, the Guidelines are not engaged in respect of the regulatory permitting for the SW Dike.

[374] The Town stated stormwater runoff from localized rain events at the SW Dike site is many magnitudes lower than the annual floods in the Highwood River Basin, and therefore, the design measures taken to address flow passage for the extreme flood events under the Approval also constitute best management practices for stormwater management and far exceed what would be required under the Guidelines for those purposes. According to the Town, changes in downstream flows from normal stormwater events are also negligible given the agricultural land use, which is permeable.

[375] According to the Town, the SW Dike design does not include any new storm drainage systems or stormwater outlets that require approval. The Town noted the SW Dike site drainage has well defined routing and adequate outlets in all directions including existing watercourses, culverts, and stormwater management ponds. In sum, the Town argued the SW Dike design was made for the passage of an extreme flood event and therefore, already addresses and exceeds all best management practices that would be required for the Guidelines. There are no practical or physical changes to the design of the SW Dike arising from consideration of the Guidelines.

[376] The Director similarly argued the Guidelines do not apply to the regulatory permitting of the SW Dike as the dike does not have the indicia of a storm drainage project under EPEA, and is an activity regulated under the *Water Act*. According to the Director, applying the Guidelines to the SW Dike would be a significant regulatory departure from the approval of other dikes and flood mitigation works in the province. The Director did not

describe to the Board how this was a significant departure when asked. The Director gave evidence he did not consider the SW Dike to be a stormwater management project, but rather a redirection of floodwaters to protect the Town. Consequently, he did not consider the Guidelines as a part of his review of the Application. The Director stated his position remained the same after considering the Guidelines.

[377] The Director acknowledged stormwater and floodwater are not defined, but noted they are treated differently by AEP. The Director stated a storm drainage system is defined by EPEA and an EPEA authorization is required for one. The Director added flood mitigation projects are contemplated by the *Water Act*. The SW Dike's application was under the *Water Act*, for the construction of a berm and swale in the Highwood River's floodplain, resulting in the permanent alteration of the flow, direction of flow, and water levels. The Director restated his evidence from the hearing that the SW Dike is intended to redirect floodwaters from the Highwood River and this redirection of overland flow is why a *Water Act* approval is required.

[378] The Director explained, storm drainage systems differ from flood mitigation projects as storm drainage systems are intended to manage increases in volumes of water generated by development i.e. changes to grades, impervious areas, point source release versus nonpoint. Conversely, flood mitigation infrastructure is intended to minimize impacts from watercourses overflowing and inundating a floodplain. He noted design considerations and examples provided within the Guidelines are specific to storm drainage systems. They are not intended to provide guidance on the design considerations of river flood mitigation structures.

[379] According to the Director, there are other AEP storm drainage policies in addition to the Guidelines, from which the concept of adequate outlets was developed. An adequate outlet is a design consideration of a storm drainage system and not of a flood protection project. The Director explained a storm drainage system which is considered to have an adequate outlet, will discharge treated effluent from a storm drainage treatment facility at a rate which prevents the impact of post development flows from being detected. An adequate outlet will perform within its design capacity during the peak 1:100 24 hour storm event and will not create an adverse effect on the environment.

[380] The Director also stressed the Guidelines are a guidance document intended to assist municipalities, local authorities, consulting engineers, and developers in the planning and

design of storm drainage systems. He stated there is no legislative requirement the Guidelines be applied by the Director in his review of the Application.

[381] He further argued applying the Guidelines would change the design intent of the project. He noted the Guidelines identify the importance of understanding floodplain inundation for the purposes of developing watershed drainage plans. Floodplain inundation is a factor to be considered when determining the placement of urban development and corresponding storm drainage systems in a large area or watershed, and not for site-specific projects related to flood protection.

[382] The Board appreciates the Parties additional responses regarding the Guidelines. As a general observation, the Board believes it would be helpful for AEP to issue a guidance document reconciling the *Water Act: Stormwater Management* fact sheet,⁷⁹ the Guidelines, and the *Wastewater and Storm Drainage Regulation*⁸⁰ with each other.

[383] The Board acknowledges there is no clear definition of floodwaters. The Board notes there appear to be two separate regulatory regimes for stormwater management systems and flood mitigation works, and the Guidelines do not appear to apply to the SW Dike project. However, while the Guidelines may not necessarily apply, some of the principles in them may be of assistance. Specifically, the Board notes the Guidelines require the provision of an adequate outlet, which if located on private land, requires the landowner's consent. Under the Guidelines a project proponent cannot simply send a significant amount of water towards its downstream neighbours unchecked.

[384] The Board understood from the evidence presented that the SW Dike project was a flood mitigation project and not a stormwater management project. Consequently, in the Director's view, the Appellants and Intervenors are impacted by the SW Dike, but their land is not appurtenant to the SW Dike. When asked if he would have considered if the Appellants' and Intervenors' lands were appurtenant to the Approval if the Town applied for a pipe to be buried under their lands to carry the floodwaters to the Little Bow River, the Director stated he would have considered if their lands were appurtenant and if their consent as landowners were required.

⁷⁹ *Water Act: Stormwater Management*, Alberta Environment and Parks, June 2018.

⁸⁰ *Wastewater and Storm Drainage Regulation*, Alta. Reg. 119/1993.

[385] The Board is troubled by the Director not requiring the Appellants' consent in the scenario where the overland flow is redirected over their lands unchecked, but would theoretically have required their consent for a pipe that would have allowed the overland flow to be redirected in a far less impactful manner. While only a hypothetical, the Board considers this example illustrative of the importance of section 37(4) of the *Water Act*,⁸¹ appurtenance, and the reason the Board is of the view the Director was too narrow in his interpretation of appurtenance.

[386] The Board notes that the *Water Act* requires all authorizations to have an appurtenance statement.⁸² An authorization is inseparable from and runs with the undertaking or land to which it is appurtenant.⁸³ The *Water Act* further provides that if the licence holder does not own the land or undertaking to which the licence is appurtenant, the licence holder must acquire the consent of the owner of the land or undertaking. In the case of an approval holder, the approval holder may be required to acquire the consent of the owner of the land or undertaking.⁸⁴ The Board further notes that AEP policy as set forth in the *Guidelines Regarding Appurtenance*⁸⁵ specifically provides that, for an application to be considered complete, including applications for *Water Act* approvals, authorization holders that do not own the land or undertaking to which the authorization is appurtenant must obtain the consent of the owner. The Director also confirmed the need for consent when he stated the consent of the landowner is typically required when an approval is appurtenant to the land.

[387] The Board further notes that the predecessor to the *Water Act*, the *Water Resources Act*, R.S.A. 1980, c. W-5 ("*Water Resources Act*") contained similar language and stated "... every permit, interim licence and licence issued pursuant to this Act shall specify on it

⁸¹ Section 37(4) of the *Water Act* provides: "If an applicant for an approval does not own the land in fee simple or the undertaking to which the approval is to be appurtenant, if required by the Director, the applicant must submit the written consent of the owner of the land or of the undertaking as part of the application for the approval."

⁸² See section 45 (approvals), section 58 (licences), section 72 (preliminary certificates), and section 75 (registrations).

⁸³ See section 45(2) (approvals), section 58(2) (licences), section 72(2) (preliminary certificates), and section 75(2) (registrations).

⁸⁴ See section 37(4) (approvals), section 50(4) (licences), and section 81(4) and (5) (transfer applications before the application is considered complete).

⁸⁵ *Guidelines Regarding Appurtenance*, Alberta Environment and Parks, April 23, 2014, ("*Guidelines Regarding Appurtenance*").

the land or the undertaking to which the licence to divert is appurtenant.”⁸⁶ The *Water Resources Act* also provided the permit, interim licence and licence were appurtenant to the land or the undertaking, inseparable from the land or the undertaking, and ran with the land or the undertaking. The *Water Resources Act* also provided all property and easements acquired pursuant to a permit, interim licence, or licence were appurtenant to the land or undertaking, were inseparable, and ran with the land or undertaking.

[388] Of particular interest to the Board was section 34(1) of the *Water Resources Act*, which required landowner consent to flooding caused by works, including dikes,⁸⁷ located on other land, prior to a licence being issued.⁸⁸ Under this regime, after consent was acquired, the Controller of Water Resources would issue a certificate setting out the facts regarding the consent, provide it to the Minister, after which a licence was issued.

[389] After the licence was issued, the Controller of Water Resources would issue a certificate to the Registrar of Land Titles which stated the licence had been issued, information regarding the licence, legal description of the lands on which the works are located, and legal

⁸⁶ Section 23 of *Water Resources Act* provides:

“23(1) Every permit, interim licence and licence issued pursuant to this Act shall specify on it the land or the undertaking to which the licence to divert water is to be appurtenant.

(2) Every permit, interim licence and licence and all property and easements acquired pursuant thereto and all works constructed thereunder are appurtenant to the land or the undertaking specified in the licence and are inseparable therefrom and pass therewith on any demise, devise, alienation, transfer or other disposition of the land or undertaking whether by operation of law or otherwise, unless the Lieutenant Governor in Council orders to the contrary in any case specified in the order.”

⁸⁷ Section 1(x) provides in part:

“works” means

(i) any structure, device or contrivance, ...

and without restricting the generality of the foregoing, includes any dykes, dams, weirs, flood-gates, breakwaters, drains, ditches, basins, reservoirs, canals, tunnels, bridges, culverts, cribs, embankments, headworks, flumes, aqueducts, pipes, pumps, measuring weirs, any contrivance for carrying or conducting water, and other works that are authorized to be constructed under this Act.”

⁸⁸ Section 34 of the *Water Resources Act* provides in part:

“34(1) When

(a) it appears from the application filed or the engineer's or other officer's inspection that land other than that on which the works are located is or will be flooded,

(b) the registered owner of the land that is or will be flooded, and any purchaser of it who has filed a caveat, have by writing consented to the construction of the works and the flooding of the land, and ...

the Controller of Water Resources may issue a certificate setting out the facts and forward it to the Minister.”

description of the portion of the lands affected by the works. On receipt of the certificate from the Controller of Water Resources, the Registrar of Land Titles was required to register an easement in favour of the land on which the works were located for the purposes and to the extent shown in the application or plans. This easement ran with the land for the lifetime of the licence,⁸⁹ and the easement was appurtenant to the licence. The process of establishing the appurtenance of impacted lands was described in the above-noted sections.

[390] In the Board's view, this was sound policy and consistent with the common law pertaining to the torts of nuisance and trespass to property.⁹⁰ The Board notes the mischief the *Water Resources Act* appears to be trying to prevent was an inadvertent authorization of a nuisance or trespass to the land of a neighbour or person downstream by the applicant. Though

⁸⁹ Section 34(2) of the *Water Resources Act* provides in part:

“(2) On receipt of the certificate the Minister may issue a licence, and when the licence is issued the Controller of Water Resources shall forthwith issue and forward to the Registrar of Land Titles a certificate

- (a) stating that the licence has been issued,
- (b) stating the date of the licence and the name and address of the licensee,
- (c) containing a description of the land on which the works are located, and
- (d) containing a description of the portion of the land that will be affected by the works.

(3) In a certificate issued under subsection (2) the land shall be described by reference to the legal description of the land affected or by reference to a plan or plans registered in the land titles office.

(4) A certificate issued under subsection (2) shall be signed by the Controller of Water Resources in the presence of a witness who shall attest it, but no other formality is required as a condition of the acceptance of the certificate for registration.

(5) On receipt of the attested certificate of the Controller of Water Resources, the Registrar of Land Titles shall without fee register the certificate against the land therein described, and thereupon an easement is created whereby the owner of the servient tenement grants to the owner of the dominant tenement the right to use his land for the purposes and to the extent shown in the application or plans.

(6) The right runs with the land and is binding on the owner of the servient tenement, his heirs, executors, administrators and assigns.”

⁹⁰ In *Rylands v. Fletcher*, [1866] L.R. 1 EX 256, the Court established the tort of nuisance, the legal roots of trespass to property, and entrenched the principles of strict liability and one's right to enjoy their property free of interference. In this particular case, Rylands had employed contractors to construct a reservoir on his land and those contractors failed to properly seal a debris filled mineshaft. Shortly after the reservoir was filled, it burst and caused flooding in a neighbouring mine. One of the determining factors in the case was Rylands having brought a large amount of accumulated water onto his land for his own purpose and despite care taken, the water having caused harm to Fletcher.

See also *Kerlenmar Holdings Ltd. v. Matsqui (District)*, [1991] 5 W.W.R. 481, [1991] B.C.W.L.D. 1683 (BCCA). The defendant municipality along with another municipality was held liable in nuisance for the decreased agricultural capacity of the plaintiff's land which was caused by the increased urban growth of the defendant, who drained its storm water drainage system into a creek that crossed the plaintiff's land. The Court held the nuisance was a continuing one, and a new cause of action arose each time damage occurred.

the language has changed in the *Water Act* and simplified, these concepts appear to be carried forward.

[391] As noted several times in this Report, section 37(4) of the *Water Act* together with AEP policy requires consent of the landowner if the work or activity is to take place on land that is appurtenant to the approval and is not owned by the applicant.⁹¹ Section 1(1)(b) provides in part that the definition of activity means: the placing, constructing, operating, maintaining, removing and disturbing works; carrying out any undertaking; and altering the flow, direction of flow or level of water or changing the location of water for the purposes of removing an ice jam, drainage, flood control.⁹² An undertaking is further defined in the *Water Act* as a project established or carried on pursuant to the *Water Act* by a person related to an activity, diversion of water, or operation of works.⁹³ The definition of works includes a structure, device, contrivance and the land associated with it, and any mitigative measures associated with it.⁹⁴

⁹¹ Section 37(4) of the *Water Act* provides: "If an applicant for an approval does not own the land in fee simple or the undertaking to which the approval is to be appurtenant, if required by the Director, the applicant must submit the written consent of the owner of the land or of the undertaking as part of the application for the approval."

⁹² Section 1(1) of the *Water Act* provides in part:

“(b) ‘activity’ means

(i) placing, constructing, operating, maintaining, removing or disturbing works, maintaining, removing or disturbing ground, vegetation or other material, or carrying out any undertaking, including but not limited to groundwater exploration, in or on any land, water or water body, that

(A) alters, may alter or may become capable of altering the flow or level of water, whether temporarily or permanently, including but not limited to water in a water body, by any means, including drainage,

(B) changes, may change or may become capable of changing the location of water or the direction of flow of water, including water in a water body, by drainage or otherwise,

(C) causes, may cause or may become capable of causing the siltation of water or the erosion of any bed or shore of a water body, or

(D) causes, may cause or may become capable of causing an effect on the aquatic environment;

(ii) altering the flow, direction of flow or level of water or changing the location of water for the purposes of removing an ice jam, drainage, flood control, erosion control or channel realignment or for a similar purpose;

(iii) drilling or reclaiming a water well or borehole;

(iv) anything defined as an activity in the regulations for the purposes of this Act

but does not include an activity described in subclause (i) or (ii) that is conducted by a licensee in a works that is owned by the licensee, unless specified in the regulations;”

⁹³ Section 1(1) (ddd) of the *Water Act* provides:

“(ddd) ‘undertaking’ means a project that is established, proposed to be established, required to be established or carried on pursuant to this Act by any person and that is related to

[392] The current legislation recognizes persons who are directly affected.⁹⁵ It is the effects of proposed activities that a proponent must try to mitigate. As noted previously, at the hearing, the Board was presented with a copy of the flood easement agreements the Town provided to the Appellants and Intervenors. The Board understood that these flood easements were intended to compensate persons whose properties were affected by the SW Dike for the incremental differences in inundation to their properties. The Board heard the Director was provided copies of the flood easement agreements, however he does not appear to have required them to be signed prior to making his decision to issue the Approval.

[393] The Board further heard from the Director he considered the Appellants and Intervenors directly affected because the proposed activity impacted their properties. The Board further heard he considered the impacts to be to bare land, and consequently did not consider those impacts to be significant when compared against the risks faced by the Town if the Approval were not issued. The Director stated financial compensation and development potential were outside of his considerations under the *Water Act*.

[394] In the Board's view, the Director was overly narrow in his interpretation of appurtenance, his minimization of the impacts to the Appellants' and Intervenors' properties, and whether landowner consent was required. It is apparent from review of the historical and neighboring legislation that appurtenance and consent are about more than solidifying the applicant's rights of access around or the use of the locations required for the works and undertakings. In this context, consent must also mean consent to materially impact property owned by others. Such consent would be consistent with the common law on nuisance and trespass, and avoids an inadvertent authorization of either tort.

-
- (i) an activity, diversion of water or operation of a works, and
 - (ii) anything that is defined as an undertaking in the regulations for the purposes of this Act;"

⁹⁴ Section 1(1)(mmm) of the *Water Act* provides:

"(mmm) 'works' means any structure, device or contrivance made by persons, or part of it, including a dam and canal, and

- (i) land associated with it, and
- (ii) mitigative measures associated with it,

and includes anything that is defined as a works in the regulations for the purposes of this Act."

⁹⁵ See section 109(1)(a) of the *Water Act* and sections 44(6) and 73(1) of EPEA for examples of the use of directly affected.

[395] Moreover, AEP polices recognize the need to obtain consent to materially impact property. For example, the *Dewatering/Pumping Approval Application Requirements*, state an application for dewatering must in addition to providing the dewatering site or source of flooding (legal land description), provide the landowner's consent of the land receiving the water.⁹⁶ The *Guidelines Regarding Appurtenance* state for an approval issued for the purposes of a stockwatering dam or fish ponds, if flooding of lands occurs on lands not owned by the land owner at the point of diversion, the project may be appurtenant to the undertakings (points of use). The *Guidelines Regarding Appurtenance* further provide in such scenarios, and in scenarios where reservoirs are constructed, the points of use are lands affected by the storage/flooded area.⁹⁷ By operation of the legislation and AEP policy, once the lands are appurtenant to the approval, if not owned by the applicant, consent of the landowner must be acquired.

[396] The Board heard the Director determined the Appellants were impacted by the activity, but those impacts were not significant because they were to bare land. The Board further heard from the Town and the Director that the Town was limited in the design choices available to the Town, and the choice was to impact bare land or for critical infrastructure in the Town to remain unprotected.

[397] The Board notes prepared three different project designs: the reverse "S" curve, the "Hockey Stick," and the "S" curve. The Town had more than one design option available to choose from, which likely would have impacted the Appellants' lands to a lesser degree.⁹⁸ The Board further notes the Town chose a design which intentionally cuts off two fingers of the overland flow travelling towards the East and redirected their flow to the South.

[398] The Town was able to design the SW Dike with a fair bit of precision and made an informed choice in selecting the SW Dike's design. As noted above, the Town's expert presented evidence the 2013 Flood Model had an error margin of +/- 0.3 metres, and on the Edey properties, the error margin far less, 0.10-0.15 metres.

⁹⁶ *Dewatering/Pumping Approval Application Requirements*, Alberta Environment and Parks, April 3, 2018, at pages 1 and 2.

⁹⁷ *Guidelines Regarding Appurtenance*, at page 6.

⁹⁸ Attached as Appendix "G" is Draft Figure 28A – Predicted Flood Levels at the Peak of the 'June 2013 – 1,820cms' Flood for the Post-Mitigation Conditions, *Southwest Dike Choose-Design Report*, ISL Engineering and Land Services, February 2016, Director's Record, Tab 65, at page 53.

[399] In this case, the Town has taken control of the overland flow of floodwaters from High River as it travels towards the Little Bow River, and changed its direction. In the Board's view the Appellants' and Intervenors' properties are integral to the design and function of the SW Dike, as the overland flow is being directed downstream and towards their properties. The overland flow must pass over their lands to reach the Little Bow River. Ideally, the Director should have considered if there was a material change in the overland flow of floodwaters over the Appellants' and Intervenors' properties, and how this change in overland flow may impact the Appellants' and Intervenors' properties. The Board distinguishes this from the Director's considerations of whether the impacts of the activity are hydraulically significant. The Board considers this an important nuance, as consideration of the impacts of the activity on the Appellants and Intervenors goes beyond an environmental consideration of the watershed in which they reside. The Appellants and Intervenors each have individual concerns in their statements of concerns, are each uniquely impacted, and what may not be significant when viewed against the watershed, may be significant when considered on an individual basis.

[400] As brief examples, Mr. R. Macklin stated that he would now have to flood proof buildings, reconsider gifting his daughter a parcel, and relocate a planned business. He further expressed concerns regarding his access road that he shares with the Intervenors, which will receive more overland flow, may be eroded or damaged. Mr. Howie stated that water had been removed from a non-developable area to a highly developable area. Mr. Edey stated that water had been moved from his East Property to his West Property, and that the West Property had irrigation infrastructure, was actively farmed and a workshop/garage located on it. All the Appellants expressed concerns regarding the loss in value, development potential, and the salability of their properties. The Board notes that almost all the Appellants' and Intervenors' properties were being actively used in agricultural production, some had irrigation infrastructure, and other infrastructure located on them.

[401] The potential impacts to the Appellants and Intervenors are greater than those faced by bare land. The Appellants and Intervenors noted these concerns in their statements of concern, submissions, and during the hearing.

[402] A change in the overland flow of floodwaters can entail a withdrawal of overland flow from a property, or the redirection of overland flow over a property. The degree

to which the change in overland flow materially impacts a property should form part of the consideration. In the case of the Appellants and Intervenors, it happens to be a withdrawal of overland flow from one portion of their property and a redirection of overland flow to another portion of their property.

[403] Applying the concept of change in overland flow to the Appellants and the Intervenors, each of the Appellants and the Intervenors will experience a marked change in the overland flow over their properties. The result of this change in overland flow is lost development potential, risk of damage to infrastructure, risks to some of the Appellants' and Intervenors' livelihoods, and safety concerns. On an individual basis, the change in overland flow appears to have greater impacts to each Appellant and the Intervenors, than when considered as a part of the larger watershed. The redirection of overland flow will result in a material impact to the Appellants' and Intervenors' properties. In the Board's view, the Director should have considered this material impact to the Appellants and Intervenors' properties in the context of appurtenance and section 37(4), once he determined the Appellants and Intervenors would be impacted by the redirected overland flow.

[404] Moreover, in the Board's view, the Director should have required the Town to obtain the Appellants and Intervenors' consent for removing the overland flow from their lands and their consent for redirecting the overland flow to a different location on their lands, pursuant to section 37(4) of the *Water Act*.⁹⁹ In addition, it is also the Board's view that in these circumstances, given the individual impact of the SW Dike on the Appellants and the Intervenors, there is no substantive reason that would cause the Director to deviate from AEP policy to require such consent.

[405] As the Appellants and Intervenors' properties are integral to the design and proper function of the SW Dike, the Board finds the Appellants' and Intervenors' properties should be appurtenant to the Approval. In making this finding, the Board notes the Director's comments this is a departure from the norm. The Board also notes the Director did not elaborate on why it was a departure to include the Appellants' or Intervenors' properties or the consequences arising from including their properties. In the Board's view it is prudent to

⁹⁹ Section 37(4) of the *Water Act* states: "If an applicant for an approval does not own the land in fee simple or the undertaking to which the approval is to be appurtenant, if required by the Director, the applicant must submit the written consent of the owner of the land or of the undertaking as part of the application for the approval."

preserve the design and function of the SW Dike, and include all the lands necessary to its proper function.

[406] Moreover, as the Approval essentially authorizes a change in the overland flow of floodwaters that may flow over the Appellants and Intervenors' properties and a subsequent material impact to the Appellants' and Intervenors' properties, the Board finds the Town should have been required to obtain the written consent of the Appellants and Intervenors to the withdrawal and redirection of overland flow pursuant to section 37(4) of the *Water Act*. The Board again notes that it would be a departure from AEP policy for the Director not to require consent for all lands to which the Approval is appurtenant.

[407] The Board notes the Director stated matters of financial compensation are outside of the considerations of the *Water Act*. However, in determining the Appellants and Intervenors impacts were insignificant and to bare land, and by not requiring their consent as landowners, the Director in effect made a determination that the Appellants and Intervenors were not entitled to compensation for the material impacts to their properties. The Board is not deciding financial compensation by requiring their consent to the impacts to their properties, and notes there is more than one way or means by which impacts can be mitigated and consent established.

[408] As one final issue the Board notes that the flood hazard mapping has yet to be published for High River. The Board heard evidence that the SW Dike was likely going to impact the flood hazard mapping. The Board recommends that the Town be required to submit the as-built plans for the SW Dike as well as any other information requested by AEP to assist with the flood hazard mapping.

V. CONCLUSION

[409] The issues before the Board were:

1. The accuracy and reliability of the technical and scientific studies that informed the Director's decision to issue the Approval. This includes but is not limited to any modelling that was undertaken.
2. The appropriateness of constructing a dike in a floodway or floodplain as authorized by the Approval under appeal before the Board.
3. Are the terms and conditions of the Approval appropriate having regard to the potential environmental impact of the approved activity? This

includes but is not limited to the potential impact of the Approval on each of the Appellants (i.e. property, business, safety).

[410] The onus is on the Appellants to provide sufficient, reliable, and relevant evidence for the Board to recommend to the Minister to confirm, reverse, or vary the Approval. The Board finds that in principle, the terms and conditions of the Approval are appropriate. However, the Board also finds that the evidence supports a recommendation that the Approval be varied.

[411] The Board is recommending the Approval be varied by making the Appellants' and Intervenors' lands, and Mr. Gerrit and Ms. Jantje Top's¹⁰⁰ land, appurtenant to the Approval.

[412] The Board is recommending the Director reassess the accepted statements of concern to determine which lands should be appurtenant to the Approval and that the Director prescribe those lands in writing to the Approval Holder.

[413] The Board is further recommending that in accordance with section 37(4) of the *Water Act* and AEP policy, the Town provide the written consent of the owners of lands appurtenant to the Approval that it does not own within six months of the date of the Minister's decision.

[414] The Board is recommending the Town be given six months to acquire the consents of the landowners of the lands appurtenant to the Approval that it does not own, and the Director be given the discretion to extend the time to acquire the consents if necessary.

[415] The Board is further recommending the Town provide its as-built plans for the SW Dike and any other information required by AEP to assist with AEP's flood hazard mapping.

[416] As a general observation, the Board believes it would be helpful for AEP to issue a guidance document that reconciles the *Water Act: Stormwater Management* fact sheet,¹⁰¹ the Guideline, and the *Wastewater and Storm Drainage Regulation*¹⁰² with each other.

¹⁰⁰ Mr. Gerrit and Ms. Jantje Top had filed an appeal of the Approval (19-090), but withdrew their appeal shortly before the hearing. Based on the information before the Board, the Board considers it appropriate to make their land appurtenant to the Approval.

¹⁰¹ *Water Act: Stormwater Management*, Alberta Environment and Parks, June 2018.

¹⁰² *Wastewater and Storm Drainage Regulation*, Alta. Reg. 119/1993.

VI. RECOMMENDATIONS

[417] The Board recommends the Minister vary the Approval as follows:

1. Amend condition 3.0 by adding the following after (a):
 - “(b) All of the Legal Subdivisions 11 and 12 and the South Halves of Legal Subdivisions 13 and 14 in the NW 25-18-29-W4M, containing 48.6 hectares (120 acres) more or less, excepting thereout Plan 0213185 Subdivision, 6.57 hectares (16.23 acres);
Plan 0219185, Block 4, Lot 1, in NW 25-18-29-W4M, containing approximately 16.24 acres;
The North Halves of Legal Subdivisions 5 and 6 in the SW 25-18-29-W4M containing 8.09 hectares (20 acres) more or less;
Plan 1014136, Block 1, Lot 4, containing 4.05 hectares (10.0 acres), in the SE 25-18-29-W4M;
Plan 1014136, Block 1, Lot 1, containing 3.33 hectares (8.23 acres), in the SE 25-18-29 W4M;
Plan 0213188, Block 1, Lot 1, containing 65.2 hectares (161.11 acres) more or less, in the NW 25 and SW 36-18-29-W4M; and
NE25-18-29W4; and
 - (c) any other lands as the Director prescribes in writing pursuant to the Minister’s Order in the appeal of this Approval.”
2. By adding the following condition after condition 3.1:

“3.1.1 The Approval Holder shall within six months of the date of the Minister’s Order in the appeal of this Approval, acquire and submit the written consent of the owners of the lands listed in Condition 3.0(b) and (c) for the use their lands arising from the Activity.”
3. By adding the following condition after condition 5.1:

“5.2 The Approval Holder shall submit

 - (a) the as-built plans for the undertaking; and
 - (b) any other information requested in writing by the Director.”

[418] The Board is recommending that within 60 days of the Minister’s decision, the Director review the statements of concern accepted in relation to *Water Act* Application No. 001-00419723, determine which of the lands associated with those statements of concern, if any, should be appurtenant to the Approval, and provide written notice to the Approval Holder to include those lands as being appurtenant.

[419] The Board is further recommending that, in accordance with section 37(4) of the *Water Act* and AEP policy, the Town be required to provide the written consent of the

landowners for lands that are appurtenant to the Approval. The Board is recommending the Town be given six months to obtain these consents and that the Director be given the discretion to extend the time to acquire the consents if necessary.

[420] The Board is further recommending the Town provide its as-built plans for the SW Dike and any other information required by AEP to assist with AEP's flood hazard mapping.

[421] With respect to sections 100(2) and 100(3) of EPEA, the Board recommends that copies of this Report and Recommendations, and the decision of the Minister, be sent to the following:

1. Mr. Gavin Fitch, Q.C., McLennan Ross LLP on behalf of Mr. Delbert and Ms. Helen Edey, Mr. James and Ms. Lillian Howie, Mr. Rod and Ms. Nicole Macklin, and Mr. Peter and Ms. Sheila Macklin;
2. Mr. John Gruber, MLT Aikins LLP, on behalf of the Town of High River;
3. Ms. Jodie Hierlmeier and Ms. Jade Vo, Alberta Justice and Solicitor General, on behalf of the Director, South Saskatchewan Region, Alberta Environment and Parks; and
4. Mr. Gerrit and Ms. Jantje Top.

[422] The Board notes the Approval Holder, Appellants and Intervenors reserved their right to ask for costs. A process for the costs application will be established after the Minister makes his decision in these appeals.

Dated on June 14, 2022, at Edmonton, Alberta.

- original signed -

Anjum Mullick
Panel Chair

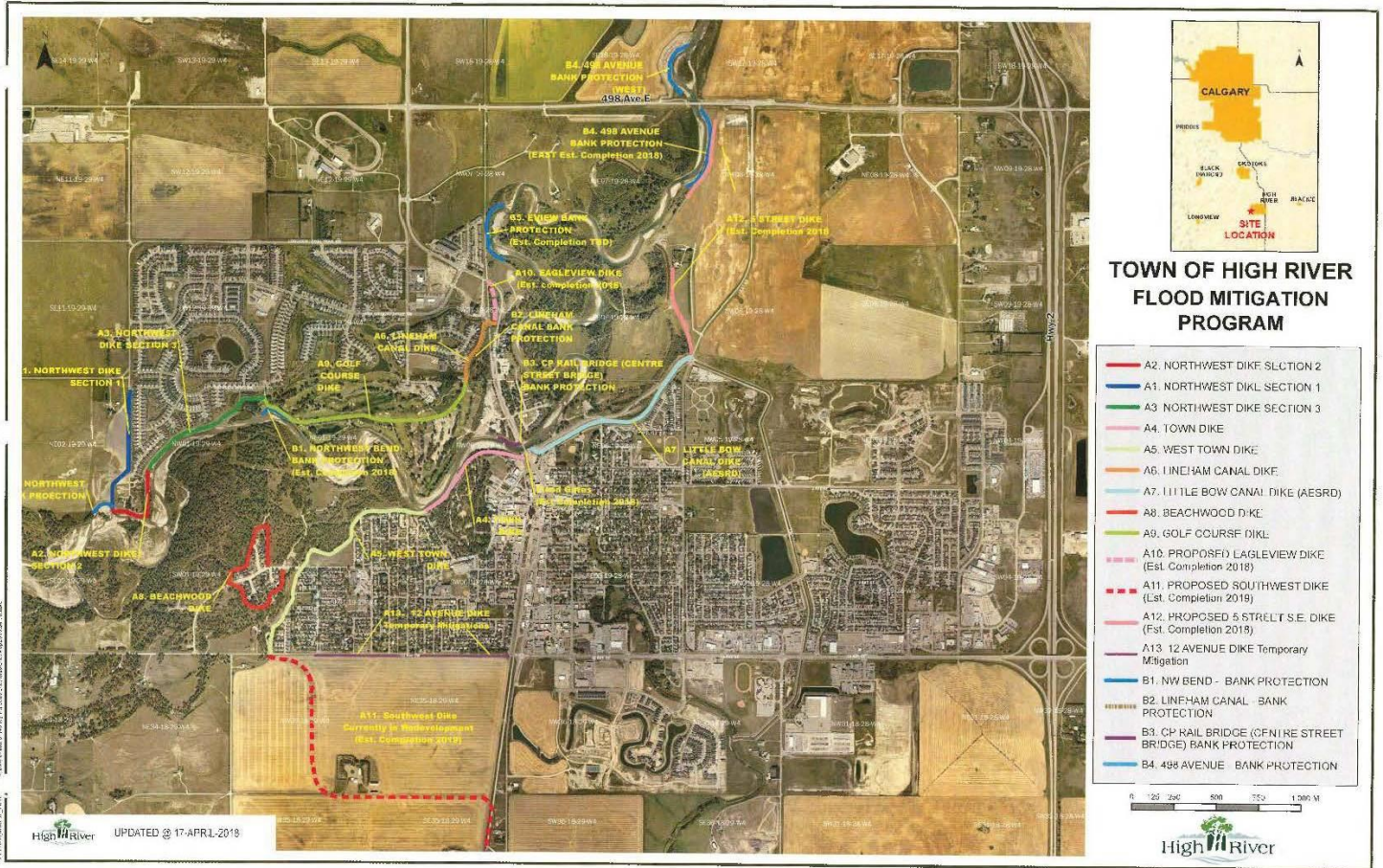
- original signed -

Barbara Johnston
Board Member

- original signed -

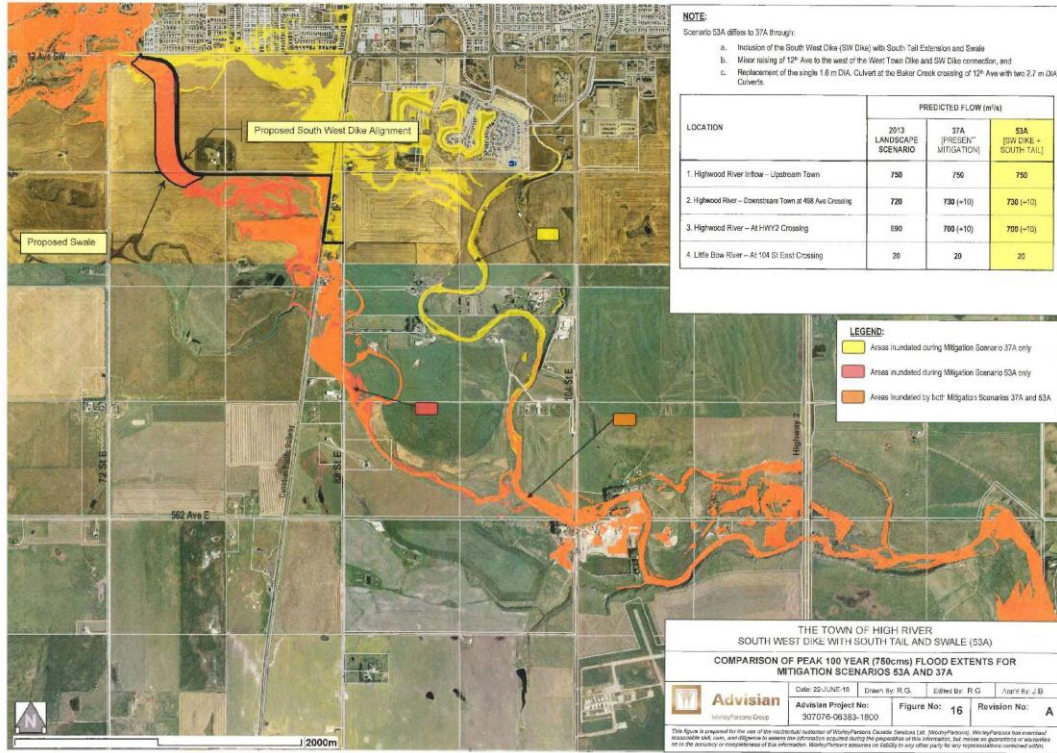
Dave McGee
Board Member

Appendix "A" - Town of High River Flood Mitigation Program

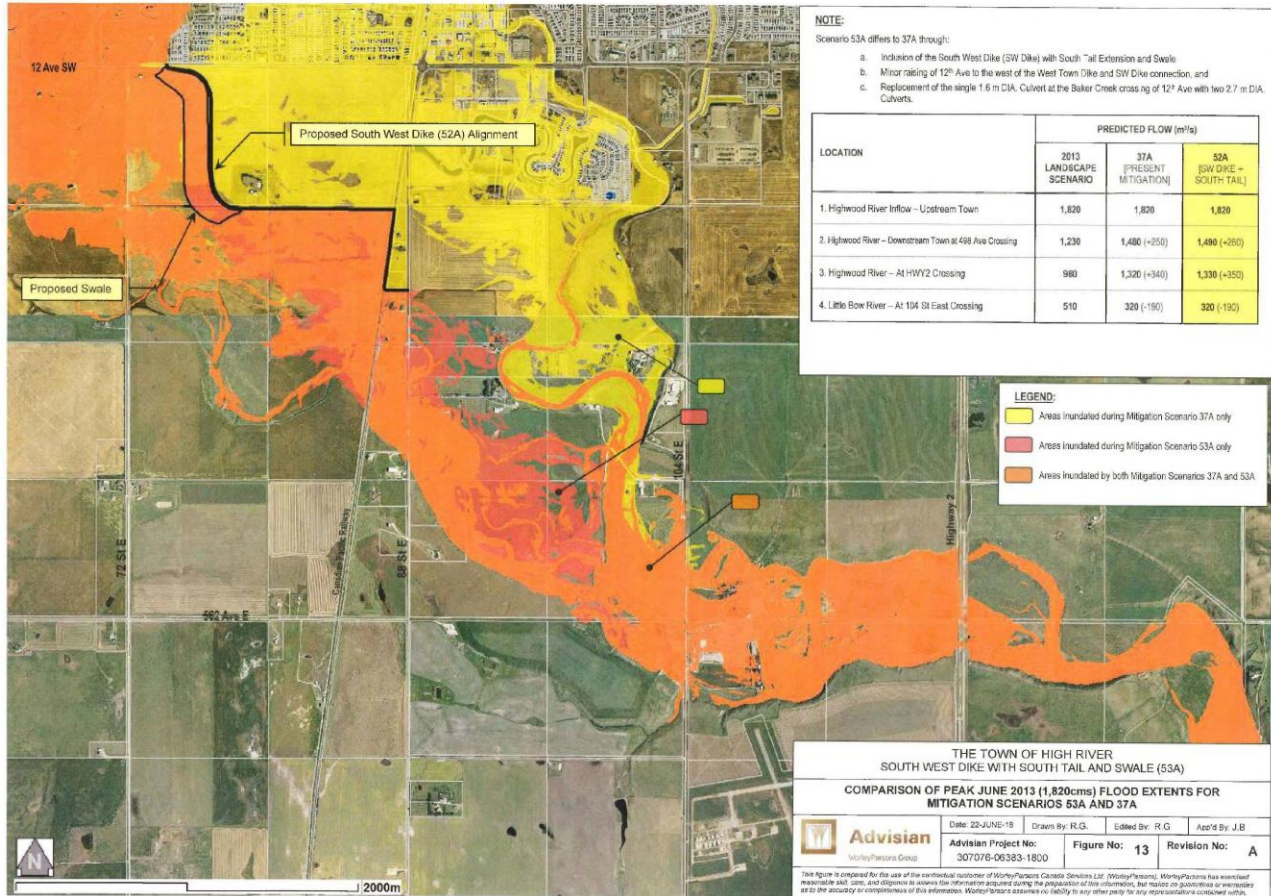


Appendix "B" – Predicted Changes in Peak 1:100 Flood Flow Velocities (53A vs 37A)

* Note this figure also demonstrates the areas that will be dry before and after the addition of the SW Dike

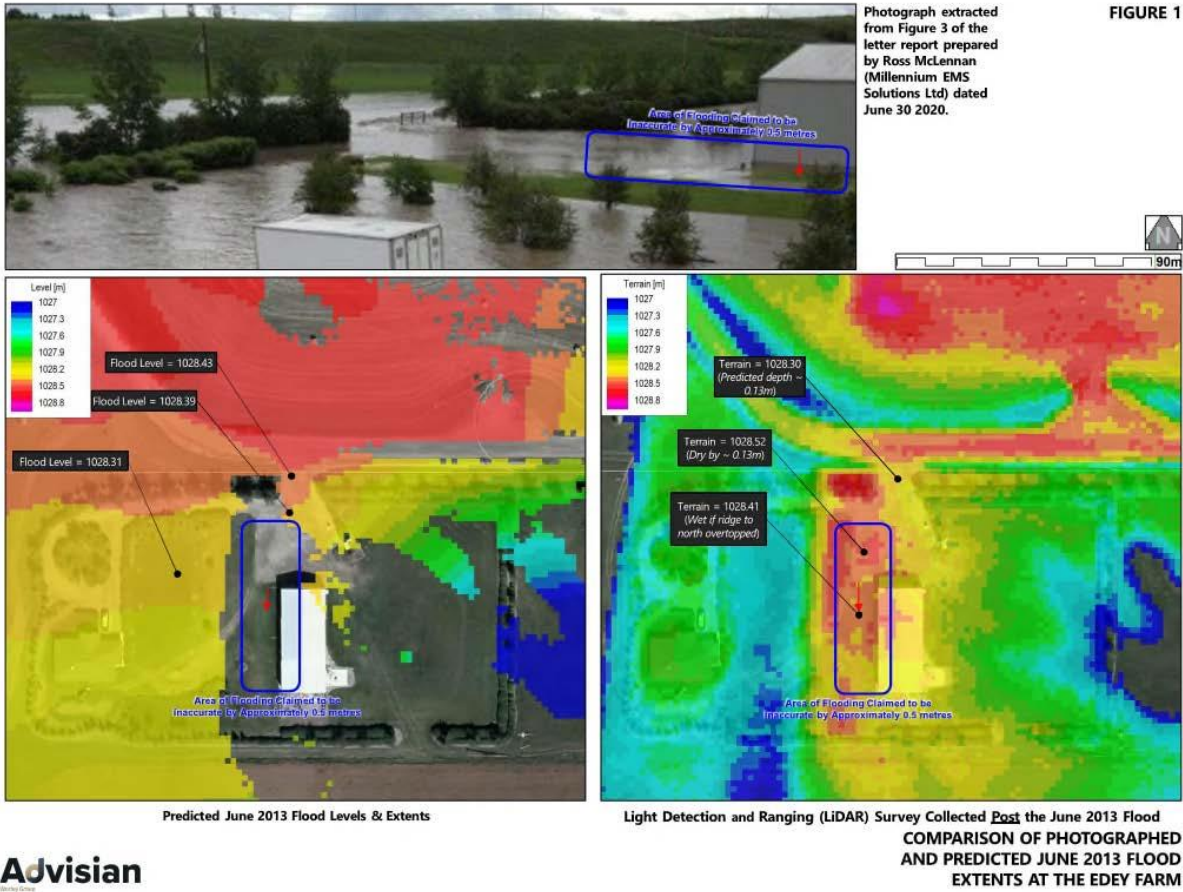


Appendix “C” – Predicted Changes in Flood Flow Velocities (53A vs 37A) for a Flow Magnitude of 1820m³/s

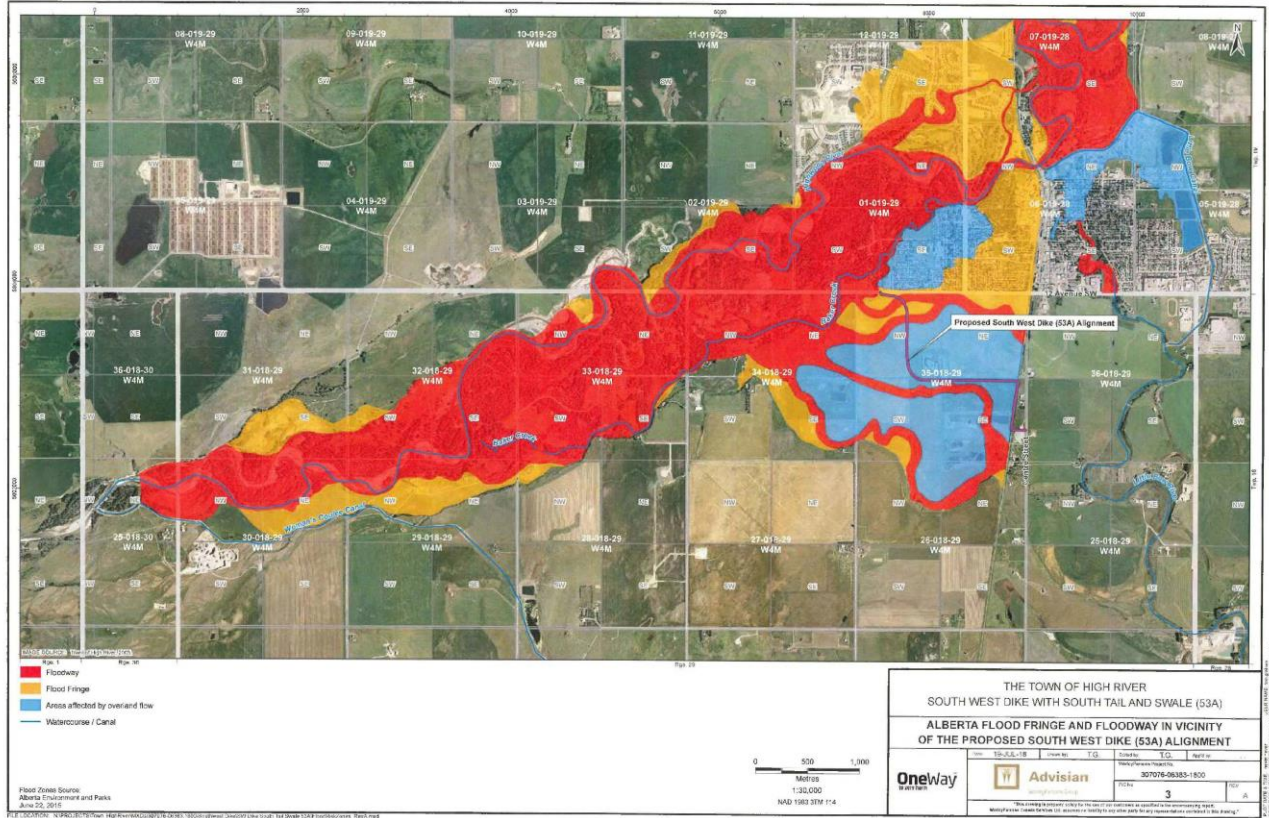


* Note this figure also demonstrates the areas that will be dry before and after the addition of the SW Dike

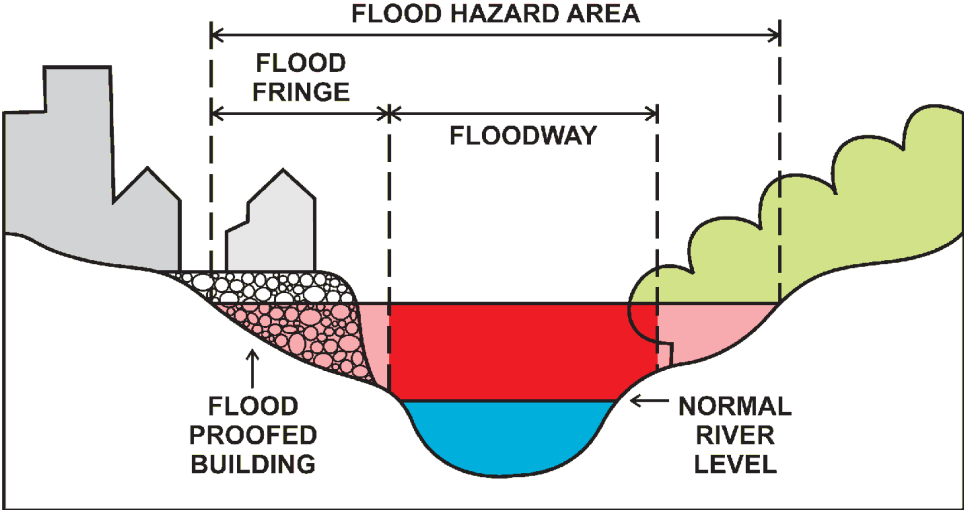
Appendix "D" – Model Accuracy on the Edeys Properties



Appendix "E" – Flood Fringe and Floodway in the Vicinity of the SW Dike

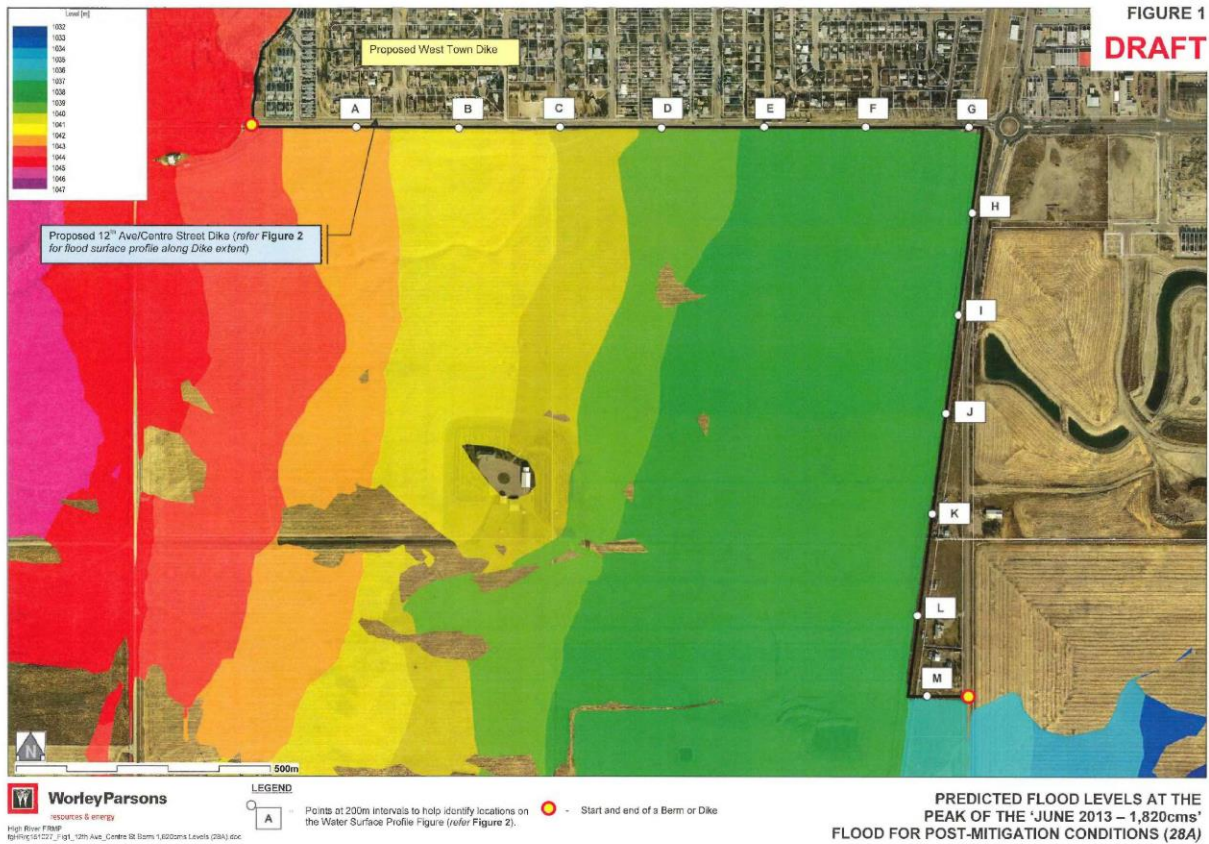


Appendix “F” – General Flood Hazard Area Diagram



Source <https://www.medicinehat.ca/government/departments/planning-development-services/our-community/flood-resilience-and-recovery>

Appendix “G” – Draft Figure 28(A) Predicted Flood Levels at the Peak of the ‘June 2013 – 1,820cms’ Flood for Post Mitigation Conditions, “Hockey Stick” Design





ALBERTA

ENVIRONMENT AND PARKS

Office of the Minister
MLA, Calgary-Glenmore Constituency Office

Ministerial Order
52/2022

Environmental Protection and Enhancement Act
R.S.A. 2000, c. E-12

Water Act
R.S.A. 2000, c. W-3

Order Respecting Environmental Appeals Board
Appeal Nos. 19-089 and 19-093-094

I, Whitney Issik, Minister of Environment and Parks, pursuant to section 100 of the *Environmental Protection and Enhancement Act*, make the order in the attached Appendix, being an Order Respecting Environmental Appeals Board Appeal Nos. 19-089 and 19-093-094.

Dated at the City of Edmonton, in the Province of Alberta, this 11th day of August, 2022.

Whitney Issik
Minister

APPENDIX

Order Respecting Environmental Appeals Board Appeal Nos. 19-089 and 19-093-094

With respect to the decision of the Director, South Saskatchewan Region, Regulatory Assurance Division, Alberta Environment and Parks (the "Director") to issue *Water Act* Approval No. 00419723-00-00 (the "Approval") to the Town of High River (the "Approval Holder"), I, Whitney Issik, Minister of Environment and Parks, order that the decision of the Director to issue the Approval is varied as follows:

1. Condition 3.0 is amended by adding the following after clause (a):
 - “(b) All of the Legal Subdivisions 11 and 12 and the South Halves of Legal Subdivisions 13 and 14 in the NW 25-18-29-W4M, containing 48.6 hectares (120 acres) more or less, excepting thereout Plan 0213185 Subdivision, 6.57 hectares (16.23 acres);
Plan 0213185, Block 4, Lot 1, in the NW 25-18-29-W4M, containing approximately 16.23 acres;
The North Halves of Legal Subdivisions 5 and 6 in the SW 25-18-29-W4M containing 8.09 hectares (20 acres) more or less;
Plan 1014136, Block 1, Lot 4, containing 4.05 hectares (10.0 acres), in the SE 25-18-29-W4M;
Plan 1014136, Block 1, Lot 1, containing 3.33 hectares (8.23 acres), in the SE 25-18-29-W4M;
Plan 0213188, Block 1, Lot 1, containing 65.2 hectares (161.11 acres) more or less, in the NW 25 and SW 36-18-29-W4M; and
NE 25-18-29-W4M; and
 - (c) any other lands as the Director prescribes in writing pursuant to the Minister’s Order in the appeal of this Approval.”
2. The following is added after condition 3.1:

“3.1.1 The Approval Holder shall within six months of the date of the Minister’s Order in the appeal of this Approval, acquire and submit the written consent of the owners of the lands listed in Condition 3.0(b) and (c) for the use of their lands arising from the Activity.”
3. The following is added after condition 5.1:

“5.2 The Approval Holder shall submit

 - (a) the as-built plans for the undertaking; and
 - (b) any other information requested in writing by the Director.”

4. At the request of the Approval Holder, the Director may extend the time-period contained in Condition 3.1.1 of the Approval, providing the Approval Holder demonstrates progress towards acquiring the consents, and the Director deems an extension of the time-period appropriate.
5. The Director shall within 60 days of the date of this Ministerial Order, review the filed statements of concern that were accepted as directly affected in *Water Act* Application No. 001-00419723 and determine if any additional lands should be made appurtenant to the Approval pursuant to condition 3.0(c) of the Approval.
6. The Director shall within 60 days of the date of this Ministerial Order, prescribe in writing any lands the Director deems appurtenant to the Approval in condition 3.0(c) after reviewing the statements of concern referred to in clause 5 of this Order.