

# BIPOLE III TRANSMISSION PROJECT

## Assessment Approach

(including Sustainability & Cumulative Effects)

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# Outline of Presentation

- I. Overview - Environmental Assessment
- II. Overview - Assessment Approach for Bipole III Transmission Project (Chapters 4 and 10)
- III. Existing Environment (Chapters 4 & 6)
- IV. Chapter 8 (Effects Assessment)
- V. Chapter 9 (Cumulative Effects Assessment)
- VI. Assessment Approach - Practice Comparisons

# Overview

## ENVIRONMENTAL ASSESSMENT

# Objectives of Environmental Assessment for a Project

- Tool to assist planning & design of project
  - Identify pathways for effects of project on environment
  - Identify & address issues & concerns
  - Identify & optimize project beneficial effects
  - Identify mitigation, monitoring & follow up requirements
- Tool to provide effects assessment predictions for review and decision-making by regulators

# Assessment Challenges

- Describing the project
- Range of environments affected
- Predictions of relevant futures
- Screening to define key issues/effects
- Dealing with uncertainties
- Communicating Results

# Environmental Assessment Elements

## Focus for Project Assessment

- **Pathways for project effects on valued environmental components (VECs)**
- **Feasibility of mitigating adverse effects & enhancing positive effects**
- **Assess whether a project's incremental residual influence on the sustainability of any VEC exceeds a threshold of acceptability**

## Analysis of Project Effects for each VEC

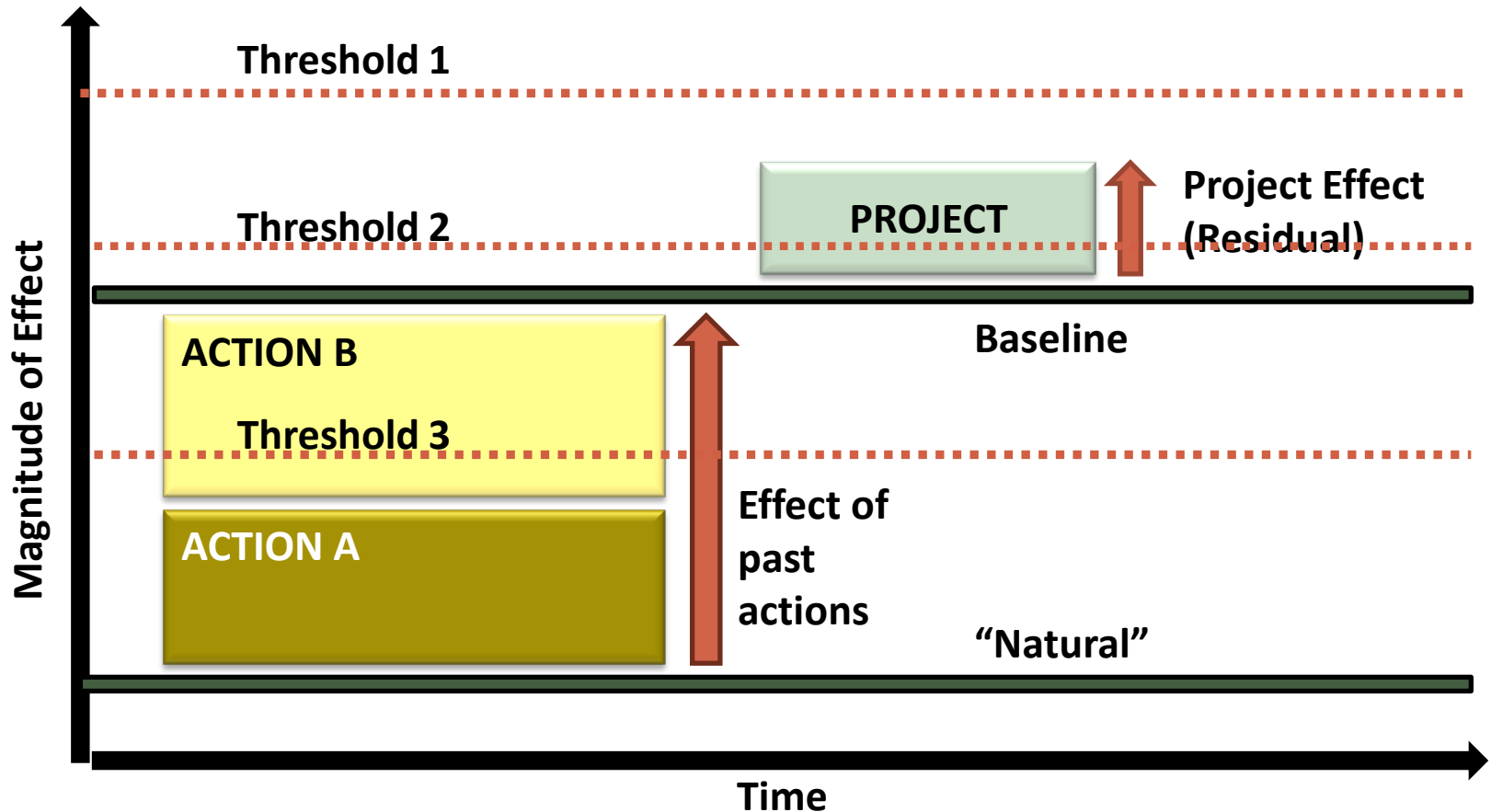
- **Baseline environment (future without proposed project, including other past & future projects/activities and external influences)**
- **Project effects (future with proposed project versus baseline future)**

## Regulatory Significance Screening of Residual Effects - Context and Intensity

## Monitoring & Follow up

# Cumulative Effects Assessment of a Project on a VEC

Screen for VECs that are vulnerable or at a threshold re: Project's effects





# Nature of Project Being Assessed

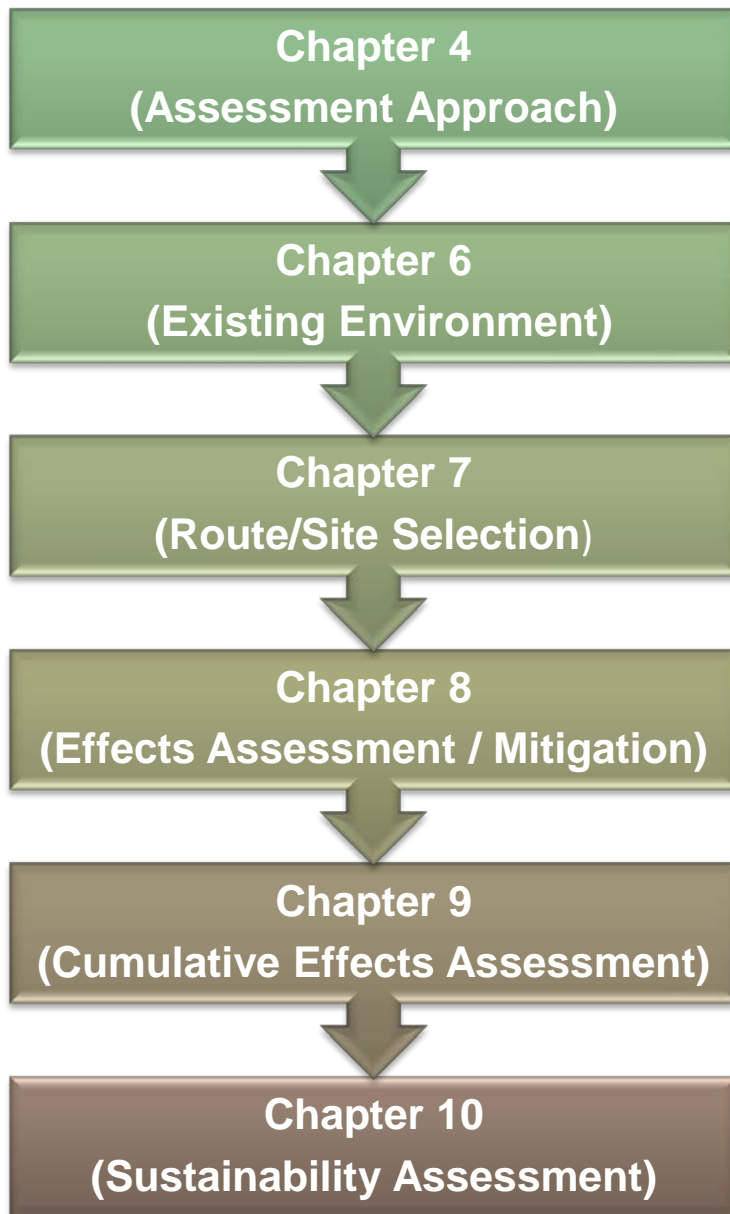
- Transmission Line not a Point Source Project & also differs from other Linear Projects
  - Large spatial extent re options & ultimate project
  - Different environmental impacts compared to other linear projects such as pipelines
  - Screening process for route selection to avoid adverse effects where feasible
  - Screening process for assessment to focus on areas where there are concerns re: potential for measureable cumulative effects

# Key Factors Affecting Transmission Project Environmental Impacts

- Route / site selection process offers considerable opportunity to avoid adverse effects
- For final route, some potential ability to adjust towers
- Tower footprints affect small part of right-of-way
- Span water bodies in compliance with established conditions (e.g., setbacks for towers, selective clearing in riparian areas, adequate clearance for ongoing navigation)
- Automatically turn off upon failure
- Extensive Manitoba Hydro experience with transmission line development and operation

# Overview

## ASSESSMENT APPROACH FOR BIPOLE III TRANSMISSION PROJECT (CHAPTERS 4 & 10)



# Primary tasks

- Scoping and Assessment Approach
- Study Area delineation & Characterization
- Data gathering (biophysical & socio-economic)
- Selection of Valued Environmental Components (VECs)
- Route & Site Selection
  
- Identification & assessment of effects (including cumulative effects of past & existing projects and screening future projects)
- Development of mitigation measures
- Significance evaluation
- Sustainability Reviews

# Overview of Assessment Approach

## (Chapter 4 - Based on Scoping Document)

- **Site Selection & Environmental Assessment Process**
  - Objectives & Process Overview
  - Scoping of Project Description & Project Phases
  - Study Area Delineation & Characterization
  - Consultation
  - Route Selection
  - Selection of Valued Environmental Components
  - Data Gathering
  - Identification & Assessment of Environmental Effects
  - Identification of Mitigation Measures
  - Residual Effects Significance Evaluation
- **Cumulative Effects Assessment**
- **Environmental Protection Program**

# SSEA Process Overview

➤ **SSEA Approach & objectives:** provide for impact avoidance and management opportunities.

➤ Balances technical, environmental & socio-economic perspectives with input from consultation.

➤ SSEA approach is consistent with sustainable development principles .

Site Selection & Environmental Assessment (SSEA) process is a “phased approach” with increasing levels of study area refinement, leading to balanced & prudent selection of a preferred route & component sites.

- ✓ Early integration of potential environmental and socio-economic issues.
- ✓ Identify & evaluate alternative routes and preferred sites based on community/ public input, local knowledge and ATK, socio-economic, biophysical, technical and cost considerations.
- ✓ Select preferred routes & sites - where feasible minimize potential adverse effects & enhance/optimize opportunities.
- ✓ Further mitigate/enhance during construction
- ✓ Provide sufficient information about existing environment to determine and mitigate environmental effects that cannot be avoided.

# Cumulative Effects Assessment (CEA) – Approach

## Approach consistent with:

- Canadian Environmental Assessment Practice for similar projects.
- Evolving Manitoba experience

## Guidance Documents relied on in Preparing EIS:

- “Cumulative Effects” and “Significance” concepts not defined or required in Manitoba legislation
- However, Bipole III Transmission Project Environmental assessment Scoping Document (Manitoba Hydro June 2010) directs CEA requirement based on CEAA guidance
- The *Canadian Environmental Assessment Act* (CEAA) (1992).
  - CEAA requires CEA include any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out and their significance.
- Review of other guidance documents for cumulative Effects Assessment
  - Cumulative Effects Assessment Practitioners’ Guide [Hegmann et al]
  - Operational Policy Addressing Cumulative Effects under the *Canadian Environmental Assessment Act*

# Cumulative Effects Assessment – Approach (2)

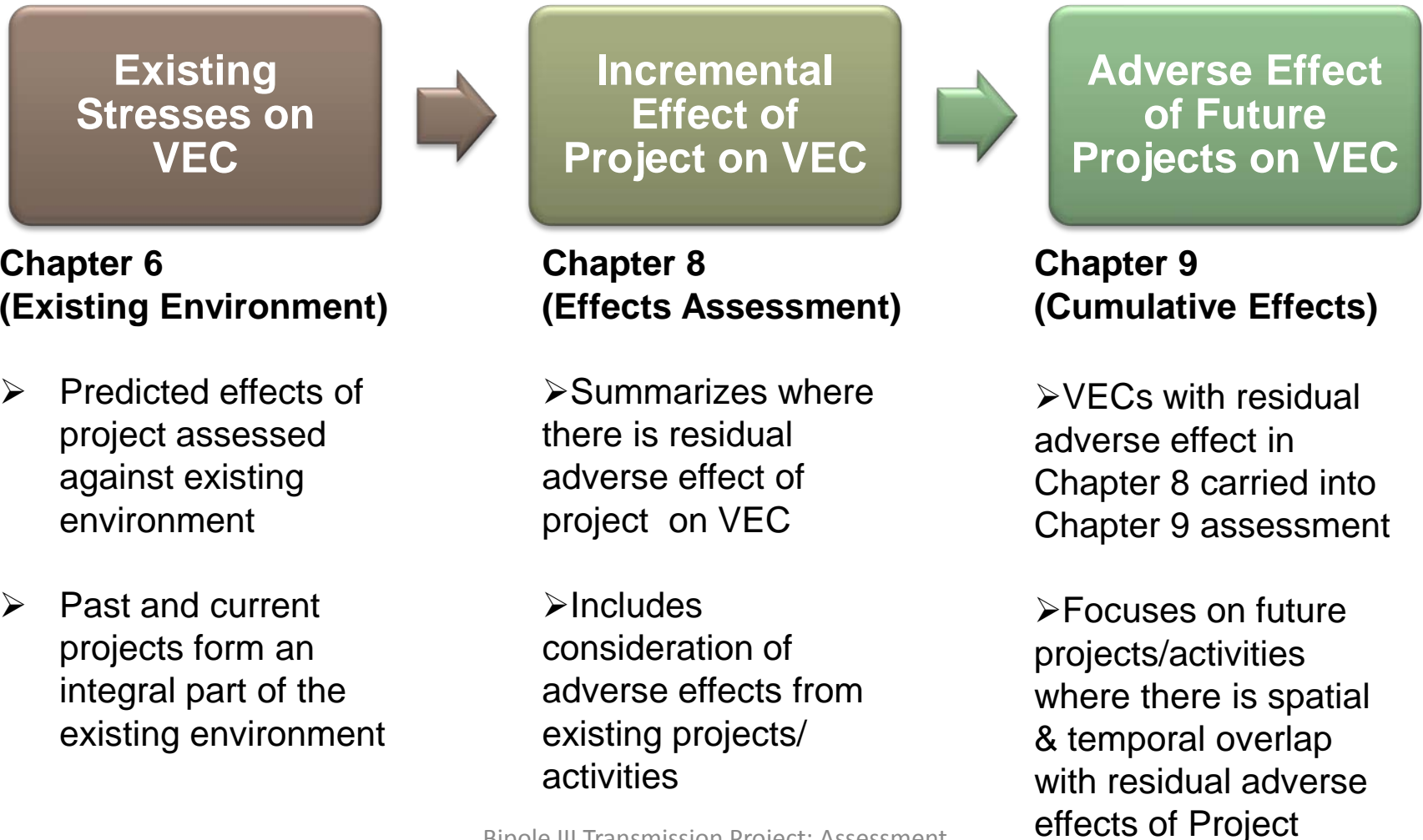
## Cumulative Effects Assessment Steps

1. Determine if the project will have an adverse effect on a VEC
2. If such an effect can be demonstrated, determine if the incremental effect acts cumulatively with the effects of other actions, either past, existing or future
3. Determine if effects of the project, in combination with the other effects, may cause a significant change now or in the future in the characteristics of the VEC after the application of mitigation for that project

- CEA is not an assessment of the past or future projects.
- CEA examines potential overlaps of effects from past and future projects with the proposed Project.
- CEA tests for likely potential effects of the proposed project that could, in combination with the effects of other projects, be significant and/or unacceptable
- CEA tests whether the proposed Project is incrementally responsible for the adverse effect, i.e., to what degree is the Project contributing to the total effect.



# Consideration of Cumulative Effects occurs throughout Assessment Process



# Bipole III Project Components

## Riel Converter Station – South

- Includes ground electrode, connecting lines
- Point source component on developed site

## Bipole III Transmission Line

- Largest project component
- 1,384 km with 66 m right of way
- Due to nature of project component opportunity to avoid significant adverse effects through routing process

## Keewatinoow Converter Station – North

- Includes ground electrode, 230 kV ac Collector Lines
- Point source component in an essentially undeveloped area compared to Riel Converter Station
- Potential for cumulative effects related to construction activities considering future Manitoba Hydro projects in area

# Phases of the Bipole III Project

## **Two Key Phases of Activities**

### 1. Construction Phase

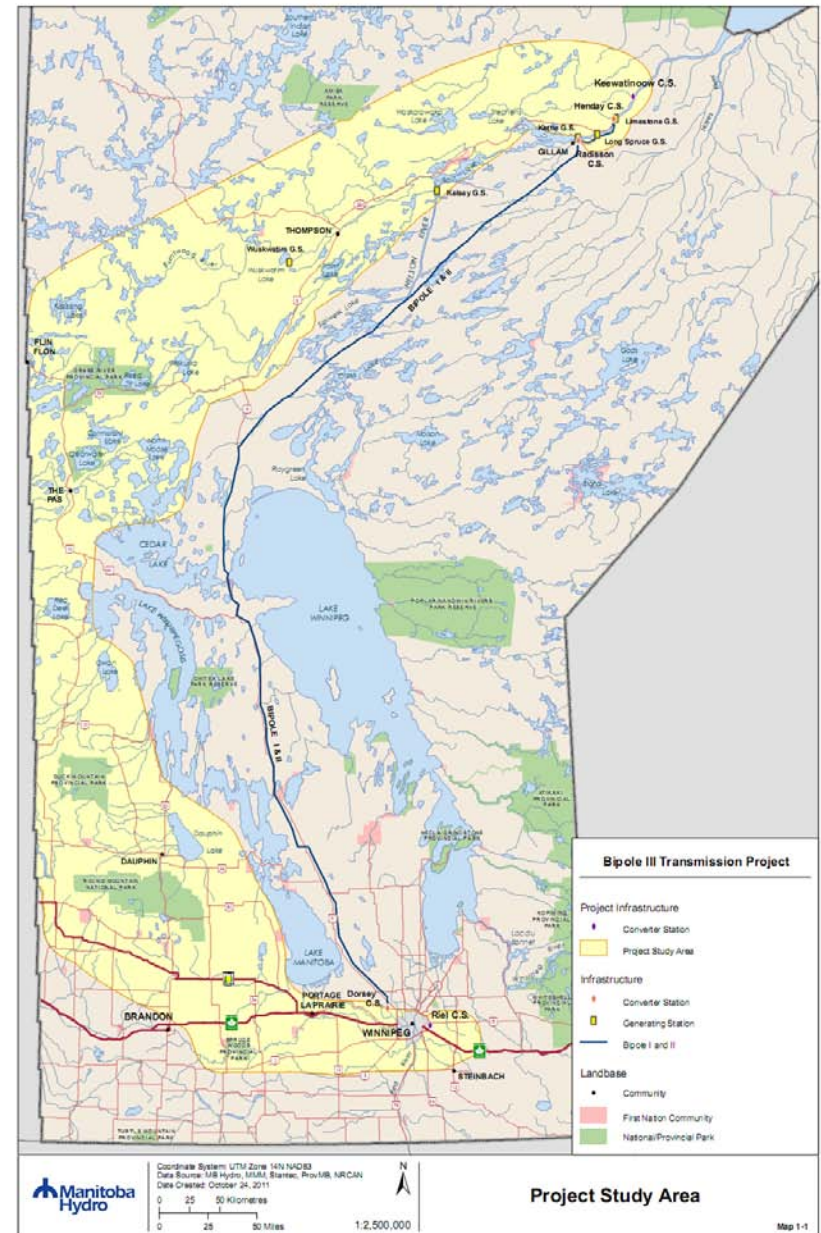
- 5 years overall – Relevant for Converter Stations
- Short durations for HVdc line work in any specific line segment area

### 2. Operation Phase

- Minimum 45 years assumed

# Project Study Area

- Regional study area - large enough to identify alternate routes & locations & allow range of planning choices.
  - 1/5 Land Area of Manitoba
  - 67% Crown Land
  - 27% Forested Land
- Extensive area allows for consideration of cumulative effects
- Study area refinement leads to focus on local study area and project site/ footprint baseline & effects



# Local Study Area & Project Footprint

## ➤ **Local Study Area**

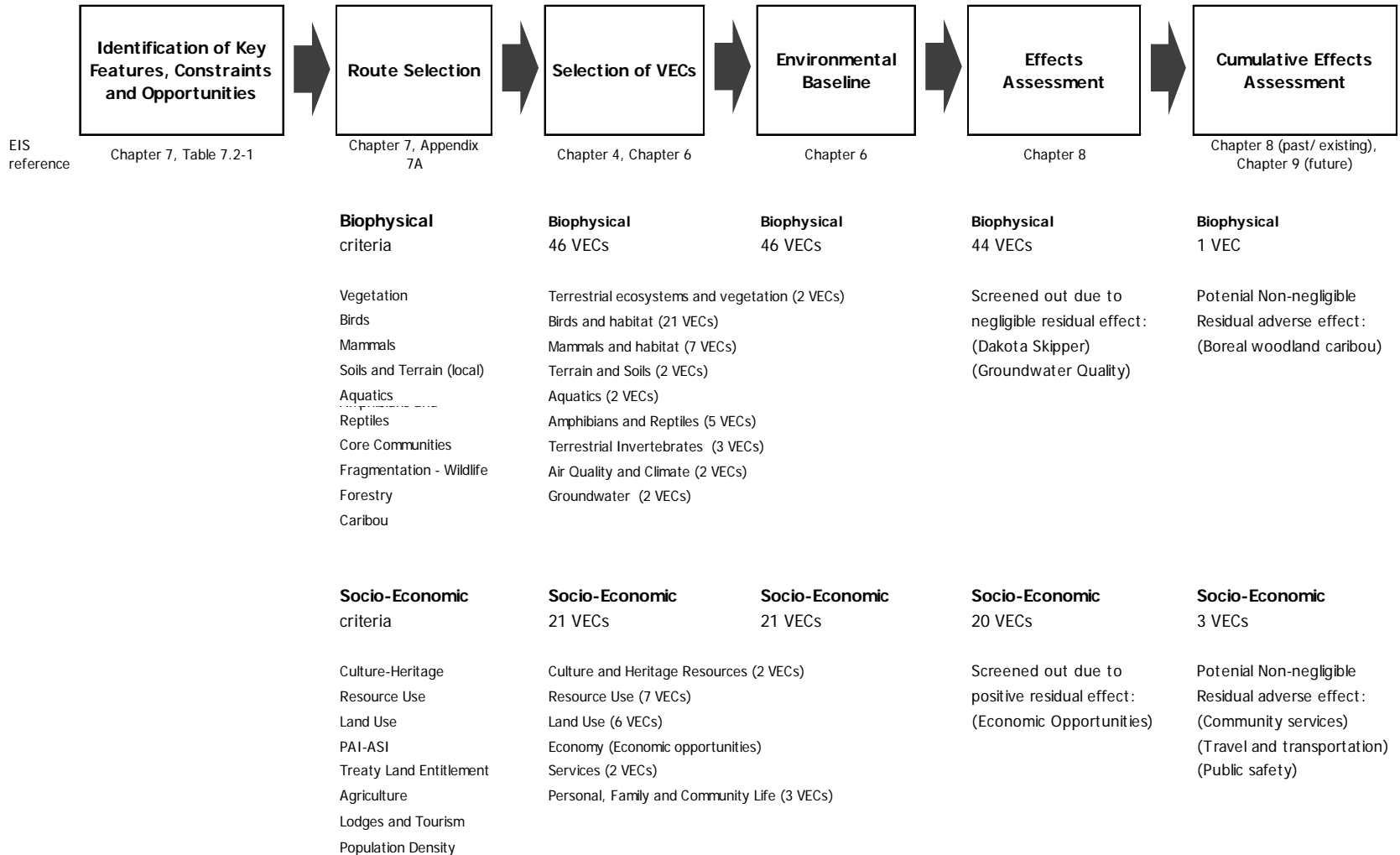
- 4.8 km (3 mile) wide band centred on:
  - Alternative routes for the Project HVdc transmission line
  - The area immediately surrounding the Project components (ac collector transmission line rights of way, converter stations & ground electrodes and electrode lines).

## ➤ **Project Footprint**

- 66 m right of way for transmission line
  - 1,384 km of transmission line
- Physical space occupied by converter stations & ground electrodes & associated Project components
  - Riel Station is on developed site

# Overview of SSEA Screening Process

Source: CEC/MH-VI-347(a)



# Characteristics of Project

## ***Project Footprint***

- HVdc line footprint covers less than 100 km<sup>2</sup>
  - Riel Station on site already under development
  - Northern converter station covers less than 5 km<sup>2</sup>
- 

## ***Site & route selection process avoids many potential effects***

- 8 of 11 known ranges of boreal woodland caribou avoided in northern & western Manitoba
- Less than 50 hectares of arable land removed from cultivation
  - Through, where feasible, selection of routes that follow existing ROW, routing through pastures and less productive land & avoiding routing diagonally across cropland

## ***Most residual adverse effects are small in magnitude & not considered “significant” from a regulatory perspective***

- Avoids Provincial parks, designated protected areas & Aboriginal lands defined in EIS as Reserves and any currently identified TLE selection.
- 

## ***4 VECs were noted to be of particular concern***

- **1 Biophysical VEC** (Boreal Woodland Caribou - listed as threatened species in Manitoba) – affected by construction & operation of HVdc line in up to 3 ranges)
- **3 socio-economic VECs** (Gillam area effects from construction of Keewatinoow Converter Station & Related Facilities - Public Safety [potential for worker interactions with members of local community in Gillam area]; transportation [stress in Gillam area]; community services [stress in Gillam area])

# Sustainability (Chapter 10)

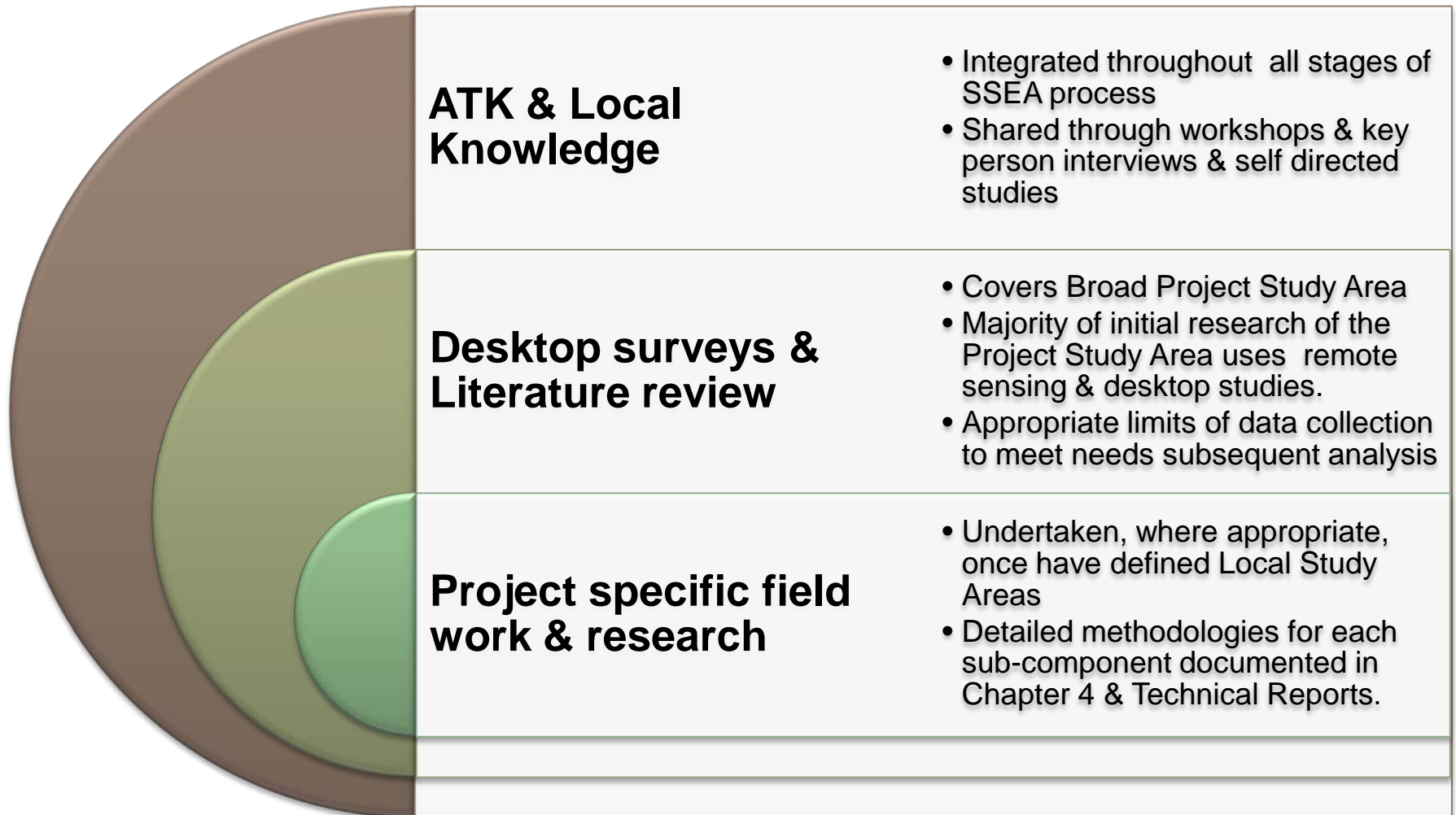
- “Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”
  - Important consideration in both Manitoba Hydro and Manitoba sustainability assessment reviews (EIS, Chapter 10).
- Purpose is to avoid catastrophic impacts to the environment, human health, and Manitoba economy from extreme events.
  - Protect current & future generations
- Project has been designed to achieve its purpose without significant adverse effects.
  - Environmental Assessment focus to protect & sustain valued environmental components
- Project is a good example of sustainable development.



# Existing Environment

## Chapter 4 & Chapter 6

# Data Gathering: Primary Sources of Information (Chapter 4)



# Overview of Existing Environment (Chapter 6)

## **For each biophysical sub- component**

- Summary of existing environment at Project Study Area level
  - Baseline information on VECs
  - Existing environment at Project components
- 

## **For each socio- economic sub- component**

- Overview of baseline information for each socio-economic subcomponent at Project Study Area level
- Baseline information on VECs

# Existing Environment

The assessment reviews two broad environmental components & related subcomponents:

## Biophysical Sub-components

- Terrain and Soils
- Air Quality and Climate
- Groundwater
- Aquatics
- Terrestrial Ecosystems & Vegetation
- Mammals & Habitat
- Birds & Habitat
- Amphibians & Reptiles
- Terrestrial Invertebrates

## Socio-economic Sub-components

- Land Use
- Resource Use
- Economy
- Services
- Personal, Family & Community Life
- Culture & Heritage

# Selection of VECs

Valued Components identified during SSEA process by:

- Technical experts
- Public/ communities
- ATK studies/ Local Knowledge



## SSEA Routing Process

- Broad Project Study Area
- Avoidance of sensitive areas where possible
- Moves in iterative manner to selection of final route & sites

## Selection of Preferred Route

- Identification of valued components that can still be affected by Project
- Focus data gathering on local study areas/ project footprint (using field studies where applicable)

# 46 Biophysical VECs selected

## **Terrain & Soils (2 VEC)**

- Soil Productivity
- Terrain Stability

## **Air Quality & Climate (2 VECs)**

- Air Quality
- Climate

## **Groundwater (2 VECs)**

- Aquifer Productivity
- Groundwater quality

## **Aquatics (2 VECs)**

- Surface water
- Fish Habitat

## **Terrestrial Ecosystems & Vegetation (2 VECs)**

- Plant species & communities of conservation concern
- Grasslands/ prairie areas

## **Mammals & Habitat (7 VECs)**

- **Ungulates:** coastal and barren ground caribou, boreal caribou, moose, elk)
- **Furbearers:** American marten, beaver, wolverine

## **Birds & Habitat (21 VECs)**

- **Waterfowl & waterbirds:** mallard, sandhill crane, yellow rail
- **Colonial waterbirds:** great blue heron, least bittern
- **Birds of prey:** bald eagle, ferruginous hawk, borrowing owl, short-eared owl
- **Upland game birds:** sharp-tailed grouse, ruffed grouse
- **Woodpeckers:** pileated woodpecker, red-headed woodpecker
- **Songbirds & other birds:** olive-sided flycatcher, loggerhead shrike, Sprague's pipit, golden winged warbler, Canada warbler, rusty blackbird, whip-poor-will, common nighthawk

## **Amphibians & Reptiles (5 VECs)**

- **Amphibians:** plains spadefoot toad, wood frog & northern leopard frog
- **Reptiles:** red-sided garter snake, northern prairie skink

## **Terrestrial Invertebrates (3 VECs)**

- Dakota Skipper
- Ottoe Skipper
- Uncas Skipper

# 21 Socio-Economic VECs selected

## **Land Use (6 VECs)**

- Land Tenure & Residential Development
- Private forestlands
- Aboriginal Lands
- Designated Protected Areas & Protected Areas Initiatives
- Infrastructure
- Agricultural Land Use/ Productivity

## **Economy (1 VEC)**

- Economic Opportunities

## **Culture & Heritage Resources (2 VECs)**

- Culture
- Heritage Resources

## **Resource Use (7 VECs)**

- Commercial Forestry
- Commercial Fishing
- Mining/ Aggregates
- Trapping
- Wild Rice Harvesting
- Recreation & Tourism
- Domestic Resource Use

## **Services (2 VECs)**

- Community Services
- Travel & Transportation

## **Personal, Family & Community Life (3 VECs)**

- Public Safety
- Human Health
- Aesthetics

# Effects Assessment

## Chapter 8

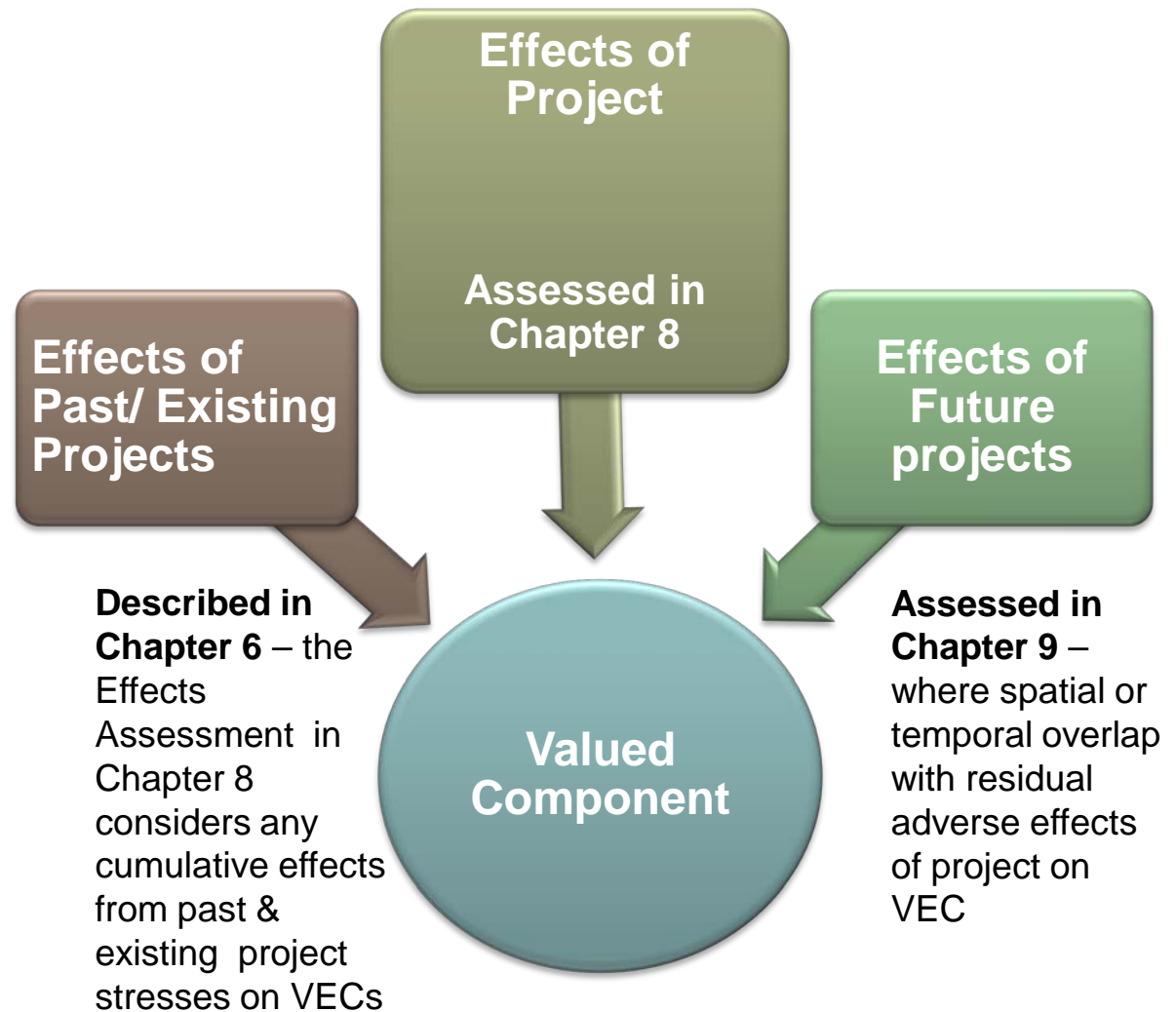


# Identification & Assessment of Effects

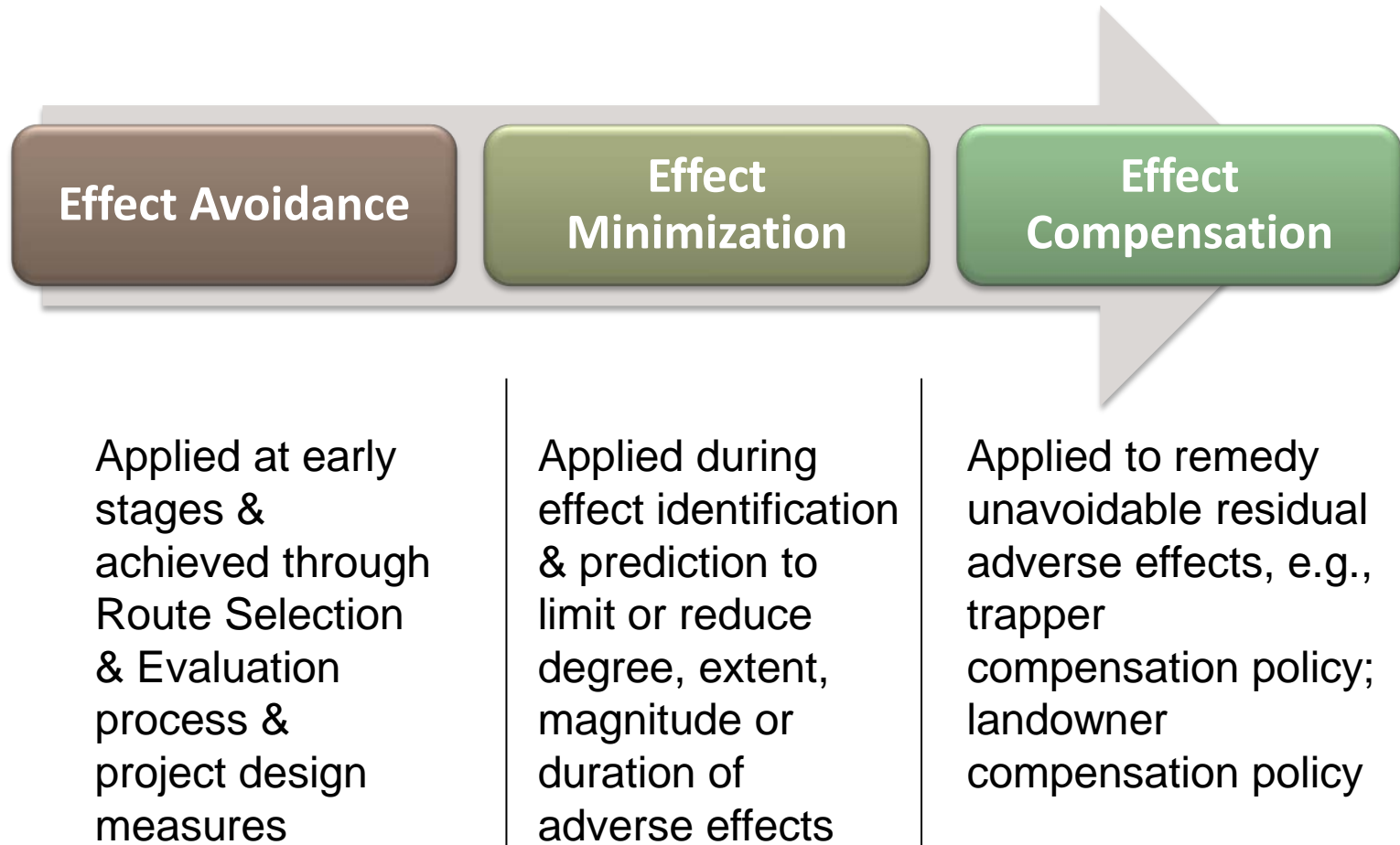
- Assessment considers pathways of effect of each project component on each VEC
  - VECs based on review of potential pathways considering issues of concern
  - Once have VECs and pathways then consider direction, magnitude, extent, duration of effect on VEC
  - Identify mitigation measures
  - Determination of Significance [residual adverse effects after mitigation]
  - Monitoring & follow up when uncertainty

# Assessment is VEC Focused

- Considers VEC threshold (where available), or land use objectives.
- Considers incremental effects of Project considering past and existing influences on VEC.
- Characterizes VEC in terms of sustainability & sensitivity in light of past & existing projects.



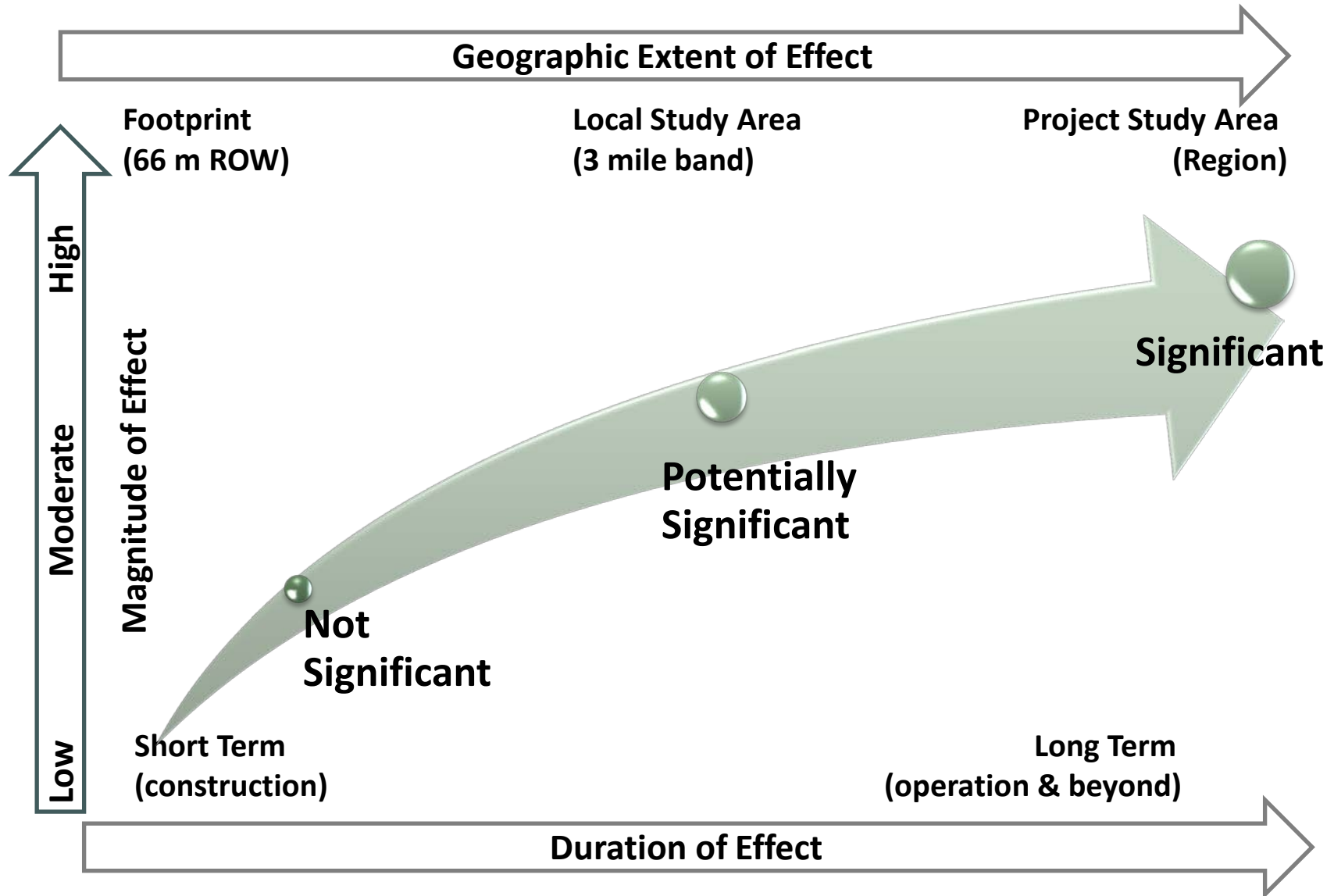
# Mitigation Measures - SSEA Process



# Residual Effects Significance Evaluation

- **Residual effects are determined after mitigation**
  
- ***Direction or Nature of Effect***
  - Positive (beneficial), Negligible (no measurable change) or Negative (adverse)
  - Focus of significance assessment is on positive or negative effects; negligible effects not considered.
    - VECs with negligible residual adverse effects are not considered further in significance evaluation or in CEA
  - CEA considers only adverse effects – positive or negligible effects not considered further.
  
- **Potential adverse effects that are likely are initially ranked based on three criteria:**
  - Duration
  - Magnitude
  - Geographic Extent

# Determine Direction & Nature of Effect



# Residual Effects Significance Evaluation

## ➤ **Magnitude**

- **Small** – No definable or measurable effect, below est'd threshold of acceptable change
- **Moderate** – Effects can be determined with well designed monitoring program, below est'd threshold of acceptable change
- **Large** – easily observable, outside normal range of variation, exceeds est'd threshold of acceptable change

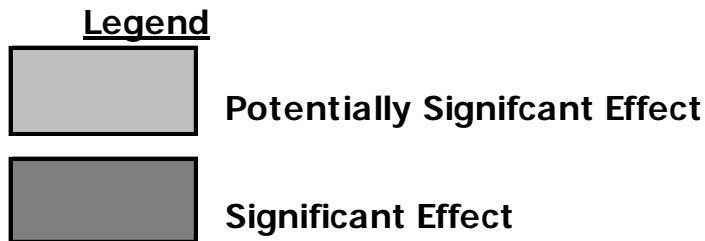
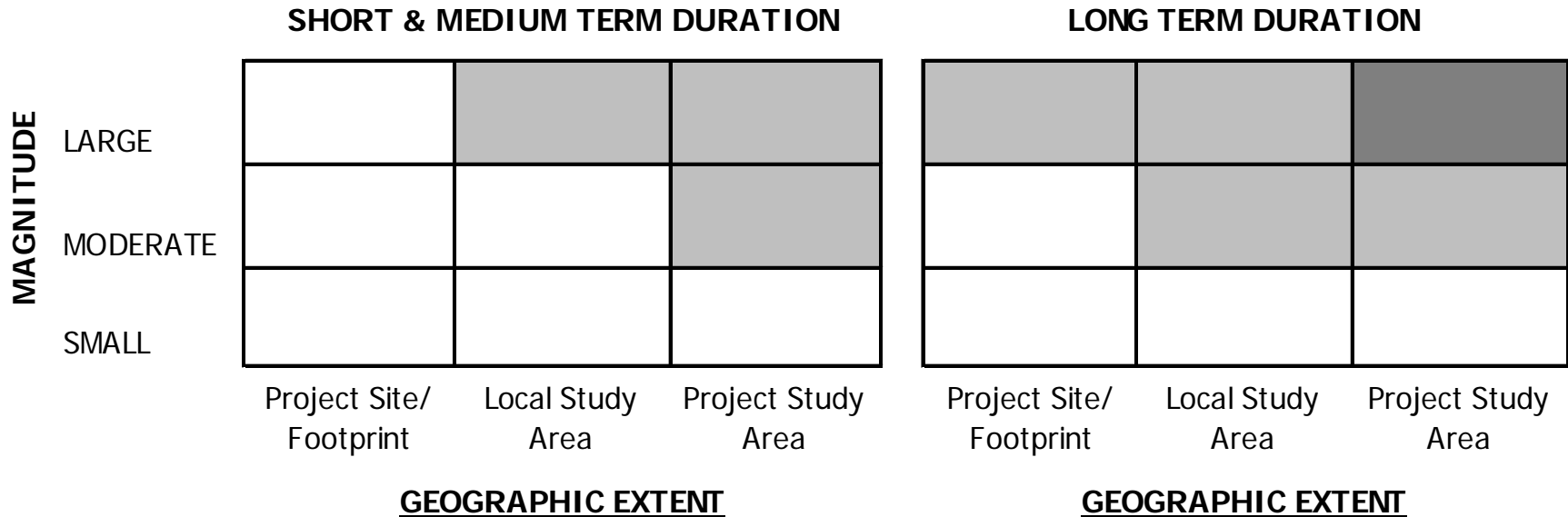
## ➤ **Sensitivities are considered in determining magnitude of effect:**

- **Ecological Importance**
  - for biophysical VEC, the context, sensitivity to disturbance or capacity to adapt to change.
- **Societal Importance**
  - for socio-economic VEC, the context, sensitivity to disturbance or capacity to adapt to change.

# Residual Effects Significance Evaluation

- **Geographic Extent** – spatial boundary within which effect expected to occur
  - **Footprint (66 m ROW)** – low extent & confined to ROW or component sites
  - **Local Study Area (4.8 km band)** – Moderate extent & extend into local surrounding areas
  - **Project Study Area (1/5 area of Manitoba)** – High extent & extend into wider regional area where indirect or cumulative effects may occur
  
- **Duration** – length of time predicted residual effect would last
  - **Short Term** – low duration effects limited to site prep or construction [0-5 years]
  - **Medium Term** – medium duration effects extend through operational phase [50 years]
  - **Long Term** – high duration effects extend greater than 50 years

# Potentially Significant & Significant Effects of Project on VECs





# Residual Effects Significance Evaluation

- **Determination re: Regulatory Significance**
- **Significant Effects – High Residual Effect**
  - Effects are long term duration, large magnitude and extend beyond Local Study Area into Project Study Area
  - ***No VECs have residual adverse effects that are significant***
- **Not Potentially Significant**
  - Negligible effects not considered further
    - No definable effects at any level and indistinguishable from baseline conditions (2 VECs [*Dakota Skipper* & *Groundwater Quality*])
  - Small Magnitude effects not considered further
    - Over 70% of Biophysical VECs & over 60% of Socio-economic VECs have small magnitude residual adverse effects
  - Otherwise not potentially significant
    - Project Site/Footprint effect & not both large magnitude & long term duration
    - Short or medium term duration effect and not large magnitude or extend beyond local study area

## Magnitude of Effects

**Small** ➤ **33 of 44 biophysical & 13 of 21 Socio-economic VECs** with non-negligible effects have small magnitude residual adverse effect - **not potentially significant**

**Moderate** ➤ **9 biophysical VECs & 8 Socio-economic VECs** have moderate magnitude residual adverse effects for at least some Project components.

[\*] 3 VEC's with potentially significant adverse effects related to Keewatinoow Converter station & Associated Facilities.

### Biophysical VECs

1. Soil productivity
2. Terrain Stability
3. American marten
4. Northern leopard frog
5. Plains spadefoot
6. Red-sided garter snake
7. Northern prairie skink
8. Ottoe Skipper
9. Uncas Skipper

### Socio-economic VECs

1. Private forestlands
2. Designated Protected Areas & PAI
3. Domestic Resource Use
4. Economic Opportunities (positive effect)
5. Community Services [\*]
6. Travel & Transportation[\*]
7. Public Safety [\*]
8. Aesthetics

**Large** ➤ Only **2 Biophysical VEC** have a large magnitude residual adverse effect – **Surface Water Quality & Fish Habitat** related to Keewatinoow Converter Station, where the effect is Project Site/ footprint in extent and medium term duration and therefore not potentially significant.

# Potentially Significant Residual Effects

For **Potentially Significant** residual adverse effects consider additional criteria:

- **Frequency** - how often predicted residual effect would occur
  - Infrequent
  - Sporadic/ intermittent
  - Regular/ continuous
- **Reversibility** - potential for recovery from an adverse effect
  - Reversible
  - Irreversible
- **Ecological or Societal Importance**

This second step is undertaken for **Community Services, Travel & Transportation & Public Safety VECs** [all have effects that are moderate magnitude & extend into the Project Study Area, and are short term duration during construction of Keewatinoow Converter Station & associated facilities]

# Uncertainty

- For boreal woodland caribou – uncertainty noted with req't for monitoring & adaptive management specifically regarding potential residual effects on Caribou in the Wabowden range;
- Monitoring required in all three ranges with the potential for adaptive management if required.

# Cumulative Effects Assessment

## Chapter 9

# Scoping the Cumulative Effects Assessment

➤ The spatial boundary for the CEA is the broad, regional Project Study Area.

➤ CEA only includes VECs with an adverse effect of the Project that overlaps both temporally & spatially with effects of other projects /activities.

➤ Effects of past projects & activities form an integral part of the existing environment (Chapter 6) against which effects of the Project are assessed in Chapter 8.

Past/ Existing Projects & Activities that overlap with the residual adverse effects of Project

- ✓ Wuskwatim Transmission Project (230 kV transmission lines, Thompson- Birchtree Station)
- ✓ Upgrades and/or rehabilitation of existing northern hydroelectric projects (Kettle GS)
- ✓ Riel Sectionalization Project - The Riel Reliability Improvement Initiative
- ✓ Multiple existing (utility) corridors, provincial highways & roads, winter road development
- ✓ Forestry operations & road development (Tolko & Louisiana Pacific)
- ✓ Mineral licence area exploration

# Scoping Cumulative Effects Assessment

## **Future Projects &**

**Activities** – approved & being constructed, planned to be constructed/ carried out or in a planning/ approvals process

- ✓ Keewatinoow wastewater management
- ✓ Keeyask GS (including northern camp, southern camp & infrastructure)
- ✓ Keeyask Transmission (including ROW, interconnection facilities, line & towers)
- ✓ Urban residential development – plans for residential development in Town of Gillam

## **Prospective Future Projects**

**& Activities** – not sufficiently specified, approved or in a planning/ approvals process preparatory to being constructed/ carried out

- ✓ Conawapa GS (includes northern camp, southern camp, infrastructure & transmission)
- ✓ Forestry operations, including road development (Louisiana Pacific & Tolko)
- ✓ Mineral Licence Area exploration, mineral lease, mining claims and quarry lease developments
- ✓ Current & future agricultural activities

# Chapter 9 - Screening Process

➤ Process flows from SSEA process.

➤ Screening is appropriate to this transmission project, i.e., linear development examined over large Project Study Area & assessment seeks to avoid significant adverse effects at outset through routing & site selection.

## CEA - Screening Steps

1. Considers VECs with residual adverse effects from Project
2. Screen out VECs with site-specific residual adverse effects if there are no past, existing or future projects that are developed on or adjacent to the ROW for the project.
3. Consider magnitude of residual adverse effect - small magnitude effects over limited area are unlikely to react cumulatively with effects of other projects.
4. Consider duration of residual adverse effect - effects of limited duration (only during construction) are unlikely to interact cumulatively with effects of other future projects.
5. Focus on key VECs where there is potential for non-negligible cumulative adverse effects



# Summary: Screening Biophysical VECs

## ➤ Site Specific Residual Effects

- Residual adverse effect of project limited to immediate right of way or footprint

## ➤ Local Study Area Residual Effects (within 4.8 km band)

- Residual adverse effects primarily relate to presence of HVdc line, ac collectors or site access roads
  - Alteration/disturbance & associated loss or fragmentation of suitable habitat from clearing/ maintenance of ROW & tower installation
  - Increased access or predation
  - Effects extend over construction & operation periods

## ➤ Project Study Area Residual Effects

- Focus on Boreal woodland caribou as VEC with potential population level effects due to pre-existing sensitivities (listed as Threatened under provincial & federal legislation)

# Cumulative Effects Screening

➤ For **7 VECs** Residual adverse effects of Project on VEC are confined to Project Site/ Footprint

➤ For cumulative effect to occur further development would need to occur on or adjacent to ROW

➤ Cumulative adverse effects are expected not to occur or be negligible for these VECs

## Biophysical VECs with Effects within Project Site/ Footprint

### Soils & Terrain (2)

- Soil productivity
- Terrain stability

### Groundwater (1)

- Aquifer productivity

### Terrestrial Ecosystems & Vegetation (2)

- Plant species & communities of conservation concern
- Native grasslands/ prairie areas

### Mammals & Habitat (1)

- Beaver

### Amphibians & Reptiles (1)

- Wood frog

# Cumulative Effects Screening

- **35** biophysical VECs have effects that extend to, but not beyond, local study area that are not expected to act cumulatively with effects of other projects
- **28** of these VECs have small magnitude effects.
- **6** biophysical VECs (\*) have moderate magnitude effects related to construction & short term duration of effect
- **1 VEC** (**American marten**) is moderate magnitude & medium term in duration.
- **No non-negligible cumulative adverse effects identified.**

## Biophysical VEC's with some Residual Adverse Effects that extend from Project Site/Footprint to Local Study Area but not beyond Local Study Area

### Air Quality & Climate (1)

- Air Quality

### Aquatic Environment (2)

- Surface water quality & Fish Habitat

### Mammals & Habitat (5)

- Ungulates: Coastal & Barren Ground Caribou, moose, elk
- Furbearers: **American marten**, Wolverine

### Birds & Habitat (21) - Groups listed

- Waterfowl & waterbirds; Colonial Waterbirds; Birds of Prey; Upland gamebirds; woodpeckers; Songbirds & other birds

### Amphibians & Reptiles (4)

- Amphibians: Plains spadefoot (\*); northern leopard frog (\*)
- Reptiles: Red-sided garter snake (\*); Northern prairie skink(\*)

### Terrestrial Invertebrates (2)

- *Ottoa Skipper* (\*)
- *Uncas Skipper* (\*)

# Cumulative Effects Screening

➤ **2 VECs** have residual adverse effects in the Project Study Region.

## ***Climate***

➤ There are no non-negligible cumulative effects expected in relation to Climate

## ***Boreal woodland caribou***

➤ Cumulative effects of past/existing projects on Boreal woodland caribou are considered in Chapter 8 (effects assessment)

➤ Future projects considered include: Keyask Generation & transmission, Conawapa GS, future forestry operations; future mineral licence are exploration, mineral lease, mining claims and quarry lease developments

## Biophysical VECs with Project Study Area residual effects

### Air Quality & Climate

- Climate

### Mammals & Habitat

- Boreal woodland caribou

## Summary: Cumulative Effects on Socio-economic VECs

- **Site Specific & Local Study Area Residual Adverse Effects (within footprint or 4.8 km band)**
  - Residual adverse effects limited to small area and only prospect for cumulative adverse effect would be where there is further development on or adjacent to ROW.
  
- **Project Study Area Residual Adverse Effects**
  - Potentially non-negligible cumulative socio-economic effects in relation to effects of construction of northern portion of HVdc line & Keewatinoow Converter Station on Services, Personal, Family & Community Life and Cultural & Heritage resources.

# Cumulative Effects Screening

- There are 20 Socio-economic VECs carried into CEA.
- **5 VECs** have residual adverse effects confined to the project site/ footprint .
- Cumulative effects only expected to occur where there is further development on or adjacent to the ROW or in the Local Study Area.
- Due to site specific residual adverse effects, these VECs are not considered to have cumulative adverse effects beyond those assessed in Chapter 8.

## Socio-economic VECs with residual adverse effects within only Project Site/ Footprint

### Land Use (3)

- Private Forestlands
- Infrastructure
- Agricultural land use/ productivity

### Resource Use (1)

- Mining/ aggregates

### Culture & Heritage (1)

- Heritage Resources

# Cumulative Effects Screening

➤ **11 VECs** have residual adverse effects within the Project Site/Footprint that extend only into the Local Study Area.

➤ **8 of the 11 VECs** have residual adverse effects that are small in magnitude.

➤ **3 VECs (\*)** have residual adverse effects that are moderate in magnitude.

➤ **1 of these VECs** [*Designated Protected Areas & PAI*] has short term effects during construction not expected to overlap temporally with future projects.

➤ **No non-negligible cumulative adverse effects identified.**

**Socio-economic VECs with some residual adverse effects within project site/footprint that extend to local study area but not beyond local study area**

## Land Use (3)

- Land tenure & residential development
- Aboriginal Lands – Reserve Lands & TLE
- **Designated Protected Areas & PAI** (\* short term)

## Resource Use (6)

- Commercial forestry
- Commercial Fishing
- Trapping
- Recreation & tourism
- Wild Rice Harvesting
- **Domestic resource use** (\* short to medium term)

## Personal, Family & Community life (2)

- Human Health
- **Aesthetics** (\* medium term)

# Cumulative Effects Screening

➤ **4 VECs** have residual adverse effects that extend over Project Study Area

–There are no potentially non-negligible cumulative adverse effects related to **Culture** due to small magnitude effect of short to medium term duration.

➤ **3 VECs** have potentially non-negligible cumulative adverse effects with moderate magnitude effects that are infrequent and reversible.

–Potential non-negligible cumulative adverse effects relate to construction of Keewatinoow converter station & associated facilities.

–For **Community Services** & **Travel & Transportation** VECs, short term with potential overlaps with Kettle Generating Station, Keeyask GS/ transmission, Conawapa GS.

–For **Public Safety**, short to medium term with potential overlaps with the above noted projects & Keewatinoow wastewater management.

**Socio-economic VECs with residual adverse effects that extend over Project Study Area**

## Services (2)

- Community Services
- Travel & Transportation

## Personal, Family & Community Life (1)

- Public Safety

## Culture & Heritage (1)

- Culture



# Assessment Approach

## Practice Comparisons

# Other Manitoba Project Assessments – Significance & Cumulative Effects

- Discussion has evolved with recent Manitoba EISs
  - Wuskwatim GS/TL, Manitoba Floodway, Keeyask GS
- Principles consistent with BPIII assessment:
  - Similar two step significance assessment approach
  - Cumulative effects assessment integral throughout EIA
- Notable differences (beyond formats/wording):
  - Separate CEA chapter with explicit screening assessment
  - Duration criteria: BPIII medium term extends throughout operation (up to 50 years) –other EISs define this as long term
    - Potentially significant assessment could occur re: American marten (HVdc) and Aesthetics (Keewatinoow) VECs
  - Geographic extent: BPIII medium extent defined by Local Study Area – other EISs can allow larger area for medium extent
    - Potentially significant assessment could be reduced for Keewatinoow effects on Community Services, Travel & Transportation, and Public Safety VECs

# Non-Manitoba Project Assessments

- Bipole III EA approach broadly compatible with best practices in other Canadian jurisdictions
- Non-Manitoba project assessments may be difficult to compare with BP III assessment:
  - Differences in nature of each project, e.g., point source projects, different types of linear projects
  - Differences in provincial regulatory scoping requirements, formats and/or wording
- Specific VEC assessment practice comparisons are best addressed by the BP III professional expert for that VEC