

Cumulative Effects in the Industrial Heartland

A Regional Approach to Managing the Ecosystem

October 18, 2007

The Industrial Heartland Cumulative Effects Project

- One of three projects under Alberta Environment's **Cumulative Effects Management framework** – a comprehensive way of managing regional ecosystems
- Integrates the cumulative impacts of the capital region's urban and industrial growth on air, water, land and biodiversity
- Provides an environmental framework as part of the Capital Region Integrated Growth Management Plan (CRIGMP)

The IH Project

- Will align a number of current governmental policies at a regional level:
 - ✓ Climate Change Plan
 - ✓ Water for Life
 - ✓ Land-Use Framework
 - ✓ Biodiversity Strategy
 - ✓ Clean Air Strategy
 - ✓ Alberta's Economic Development Strategy
 - ✓ Alberta's Comprehensive Energy Strategy

The Scope of the IH Project

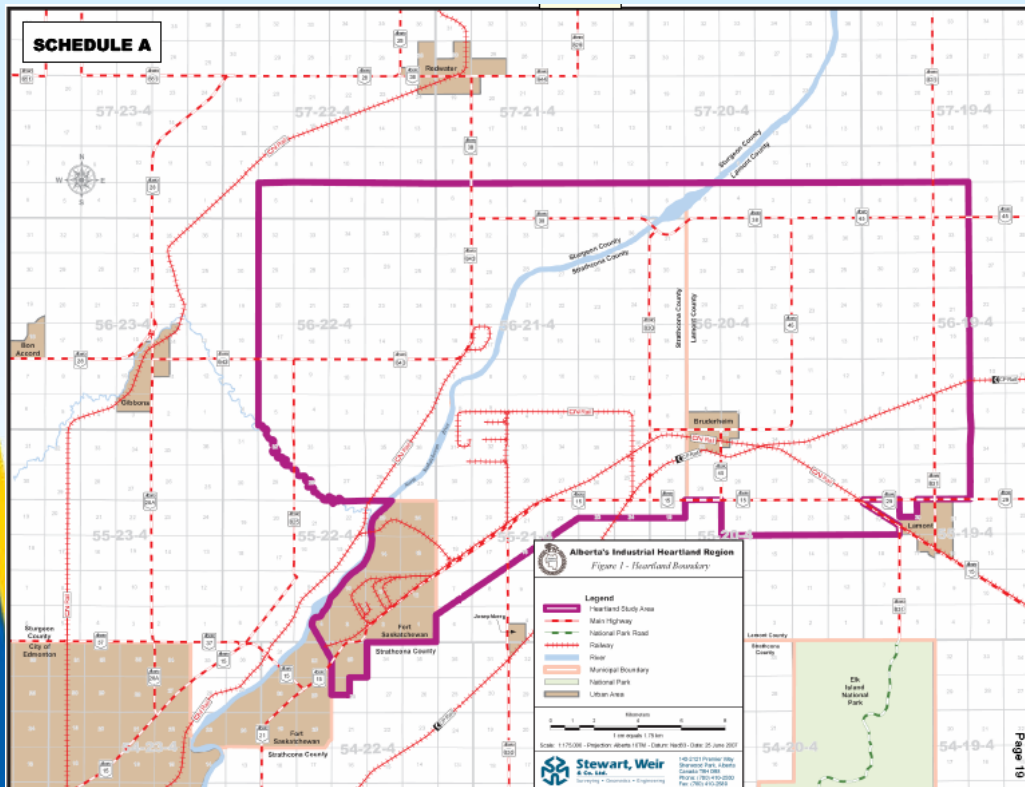
- The first phase:
 - ✓ Examines baseline data of environmental conditions in the region
 - ✓ Presents the capacity and sustainability of the regional airshed, watershed and land and biodiversity
 - ✓ Examines future pressures on the region's environment
 - ✓ Sets targets and/ or outcomes for the regional ecosystem
 - ✓ Identifies management actions to sustain environmental quality

Opportunity and Challenge

- Opportunity:
 - ✓ Optimize growth within a context of sustainable quality of life and environment
 - ✓ Enable critical driver of the Alberta economy for the next 20 plus years
- Challenge:
 - ✓ The scale of the opportunity exceeds the capacity of current management system
 - ✓ An integrated regional view is needed, with effective collaboration among stakeholders and timely action

IH Project

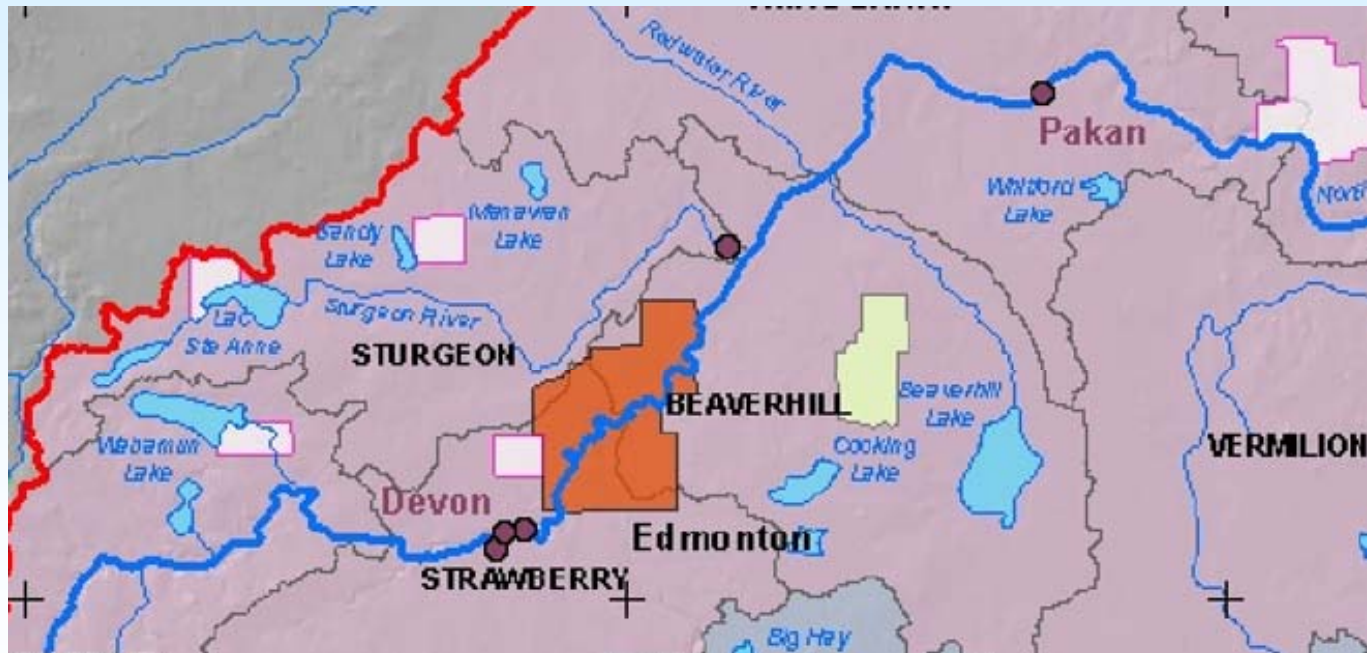
Industrial Heartland Area ~470 sq. km



- Four affected municipalities; majority of area zoned for medium to heavy industry
- Strong existing industrial base – oil and gas, processing, petrochemical facilities in area
- Significant proposed industrial development – additional 8 or more upgraders
- Proposed new upgraders will process 1.5 million bpd or more
- Population growth within the affected municipalities and in the Capital Region expected due to industrial growth demands

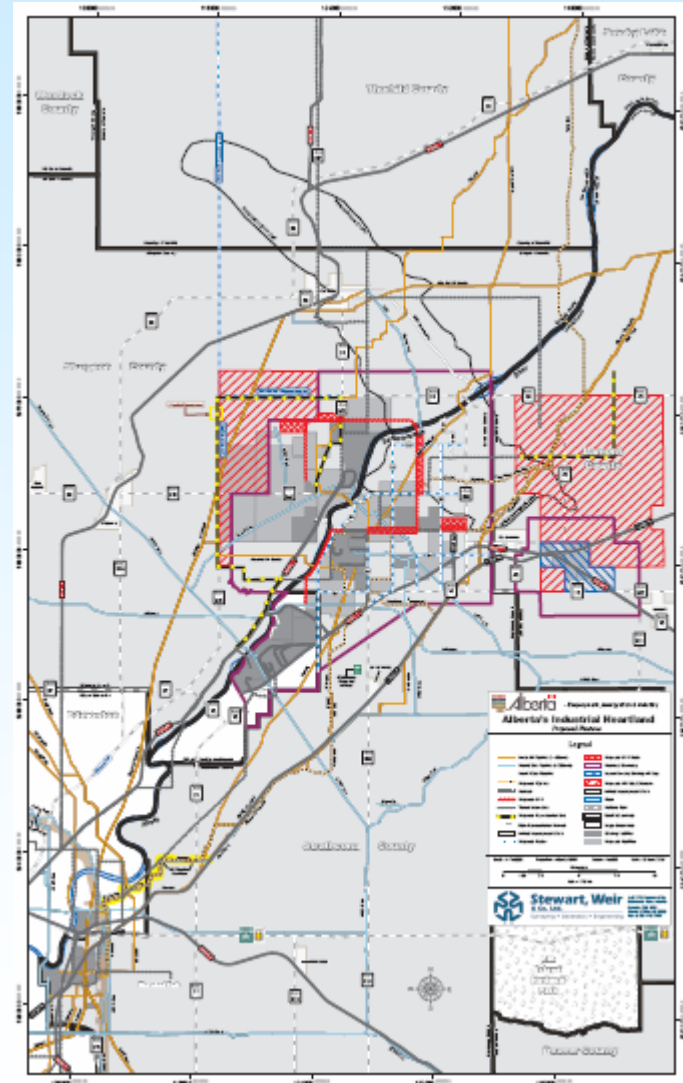
IH Project: River Reach

from Devon (upstream of Edmonton) to Pakan (downstream of the Industrial Heartland)



Issues: The IH Airshed

- The Industrial Heartland airshed is part of the Edmonton Census Metropolitan Area (CMA)
- Industrial emissions account for about 60% of NO_x emissions and close to 95% of SO_2 emissions
- The Industrial Heartland airshed includes sources located in east Edmonton and the industrialized areas of the counties of Strathcona, Lamont, Sturgeon and the City of Fort Saskatchewan



Air Challenge - What is the Capacity of the Airsheds to Accept Emissions?

- If existing and future facilities are allowed to emit at current licensed limits, air quality in the IH and surrounding areas is expected to deteriorate significantly.
- The region will experience increased acid deposition and ground-level ozone unless more stringent regional emission limits for nitrogen oxides (NO_x) and sulphur dioxide (SO₂) are put in place.
- Monitoring of particulate matter and ozone in the IH indicates ground-level ozone levels are approaching the Canada Wide Standards Exceedence Trigger for Action.

Air Solution

Emissions are currently managed facility-by-facility.

- *Strategy* - Manage cumulative emissions from both industrial and urban sources for the IH airsheds.
- *First Step* - Regional air emission limits for facilities that individually emit more than 100 tonnes/per year of either NO_x or SO₂:
 - ✓ Beginning January 1 2009, regional emissions limits are
 - 25,000 tonnes/year of NO_x
 - 28,000 tonnes/year of SO₂
 - ✓ Intensive work with stakeholders on details of management and regional allocation system to implement limits
- *Next Steps* - Develop air quality management plan stakeholders, including urban sources affecting Edmonton CMA.

Regional Airshed - Summary

- Current and proposed IH developments would cause air quality risks and increased acid deposition without regional targets and plans of action.
- The IH Project will mitigate through the use of air emissions limits and a regional management system.
- Limits are set, and will be confirmed with industry and stakeholders upon public release.
- Emissions allocation process will be developed in conjunction with industry and stakeholders.

Water Challenge - What is the Capacity of the North Saskatchewan River (NSR)?

- The NSR is a relatively small river with a long mixing zone downstream of Edmonton. It is impacted by municipal, industrial and land use practices.
 - ✓ Water quality has been negatively impacted at different locations. Upstream at Devon the NSR is rated as good. About 150 km downstream at Pakan, it is rated as fair (AENV SOE reporting).
- Management of water allocation is required during exceptionally dry periods.
- Future industrial activity and increasing population will stress the NSR further unless a regional management framework is implemented quickly.
- Beverly Channel aquifer has been locally impacted by land-based activity.

Water Solution

Water is currently managed facility-by-facility.

- *Strategy* - Establish NSR Water Management Framework (WMF) with objectives for Devon to Pakan reach.
- *First Step* – Phase 1 Water Management Framework outlines water quantity (instream flow needs) and water quality (>100 parameters) targets.
- *Next Steps* -
 - ✓ Regional Water Committee to develop integrated regional framework that addresses water management challenges as input to Capital Region Growth Integrated Management Plan – complete Dec 1.
 - ✓ Regional Working Group to refine WMF (phase 2) – in conjunction with NSW.
 - ✓ Expand current government/industry 5-year groundwater study to include upgradient monitoring.

Water - Summary

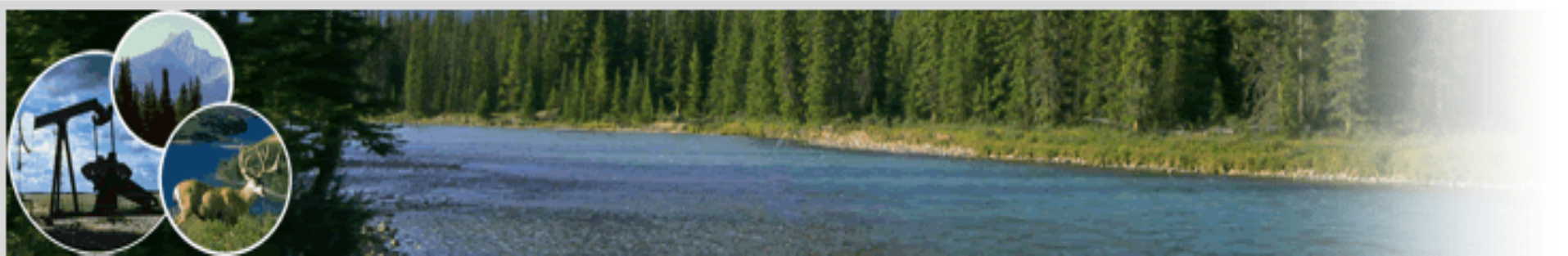
- The NSR will be stressed and ecosystem capacity exceeded without a regional plan for cumulative impacts.
- Development of a WMF has been started that focuses on:
 - ✓ Water Quantity – targets set
 - ✓ Water Quality – targets set
 - ✓ Wastewater treatment – Water Committee
 - ✓ Process Water (Reuse) – Water Committee
 - ✓ NSR Water Management Plan – through NSWA
- Region-wide monitoring and sustainability reporting
 - ✓ Working group to be formed

Land

- Industrial Heartland zoned for industrial activity (more than 470 sq km) covers portions of four municipalities.
- Example of issues:
 - ✓ Wetlands: Alberta has lost 64% of its slough/march wetlands in the settled area which has implications for watershed health and water tables
 - ✓ Soil Acidification: Sensitive Soils occur in the area and acid input is predicted to increase which has ecological effects on the land eg. vegetation growth
 - ✓ Groundwater: The Beverly Channel aquifer is connected to the North Saskatchewan River (NSR) and shows impacts from historical land-based industrial activity suggesting a need to map the shallow aquifers.
 - ✓ Sulphur Management: Increasing volumes of sulfur require disposal
 - ✓ Land Reclamation and Conservation: increasing amount of land in a disturbed state is creating more brown than green.
- Focussed and targeted approach in place - will explore opportunity to broaden and make more robust in future.

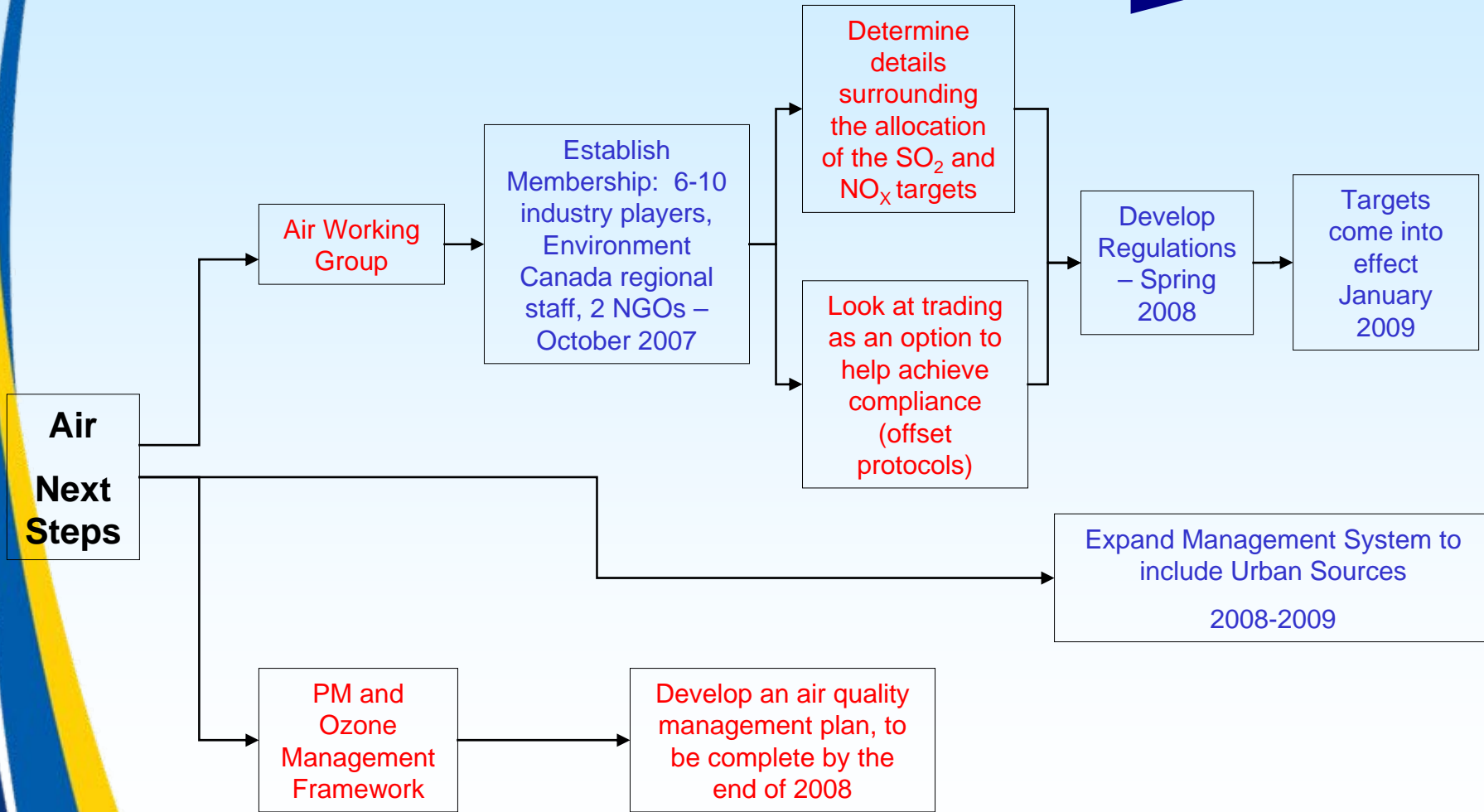
Next Steps

- Public information sessions to enable public understanding of IH project – November.
- Integrated technical briefing for industry stakeholders to increase awareness about targets and next steps – Ongoing
- Air working group to establish details of implementation of emission limits – late October.
- Water Committee – ongoing, reports December 1
- Water working group to refine water management framework and commence region-wide monitoring and sustainability reporting - November.
- Sulfur management working group to be formed as next wave of regulatory decisions unfolds – late 2007



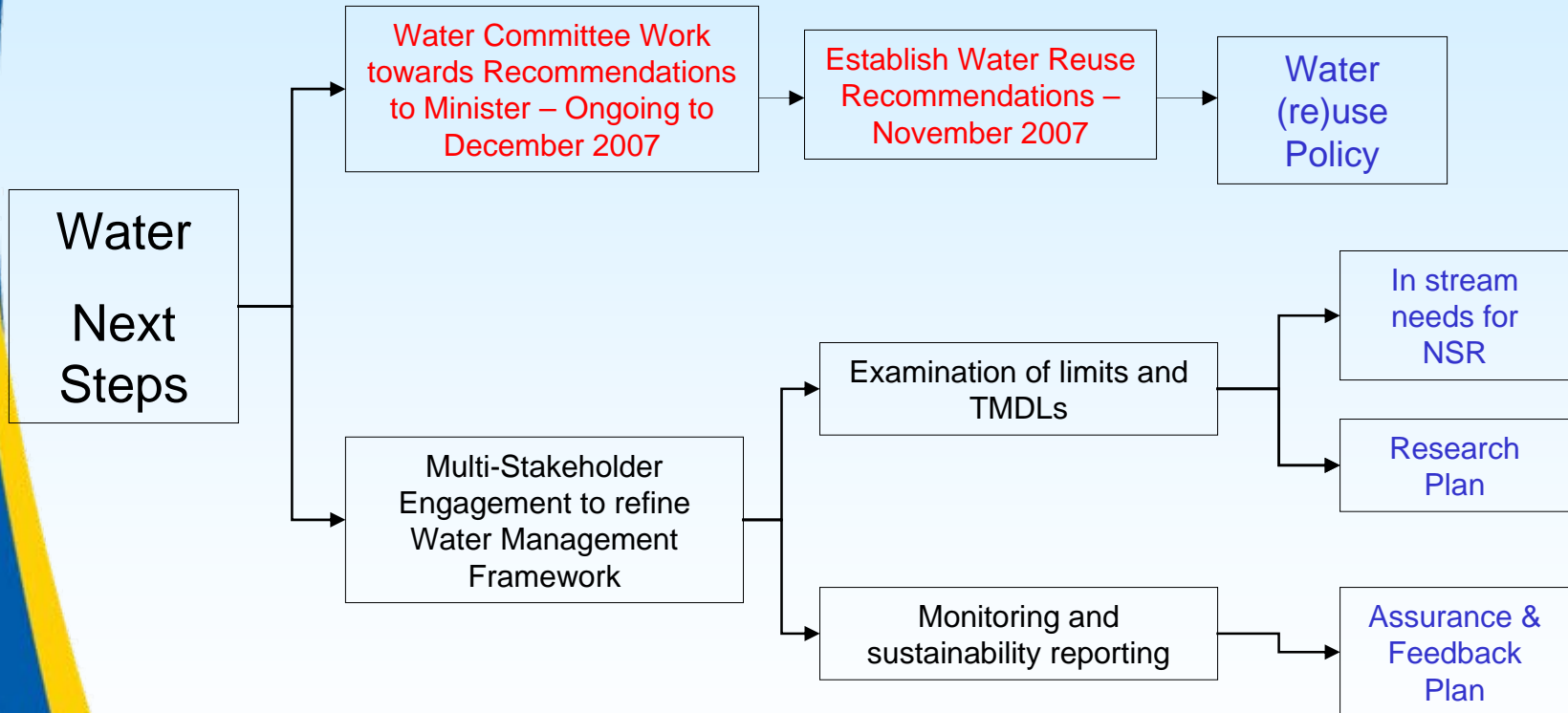
Thank You!
Questions can be directed to:
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Engagement/Implementation process to Cumulative Effects Management Framework



WATER

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Engagement/Implementation process to Cumulative Effects Management Framework

