

# The Evolution of Biodiversity Conservation in Alberta's Capital City

Catherine Shier, Principal Ecological Planner, City of Edmonton  
September 16, 2020



# History of Conservation Planning in the City of Edmonton

- **1904:** Birth of a City

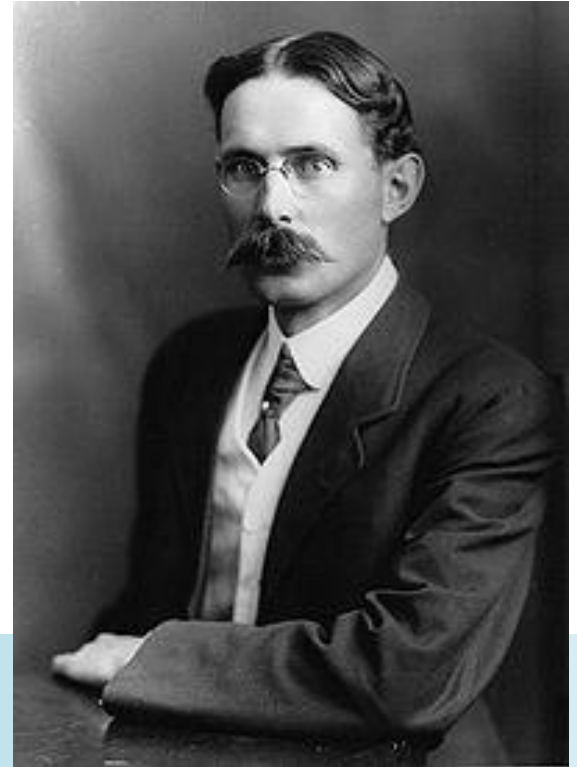


# History of Conservation Planning in the City of Edmonton

- **1907:** Consideration for the creation of a River Valley Park

*“... I am of the opinion that the future generations would look upon it almost as a crime if these ravines are allowed to become denuded of their woods ... for there are no other lands such as these located within easy walking distance for the city...”*

~ Frederick G. Todd, 1907



# History of Conservation Planning in the City of Edmonton

- **1907:** Consideration for the creation of a River Valley Park
- **1910:** An alternate vision for our Ravine system is presented...
  - Potter's Sewer Report (1910)



*“...In passing, it might be well to state that these ravines can be utilized immediately as dumping places for stable manure and street refuse.”*

# History of Conservation Planning in the City of Edmonton

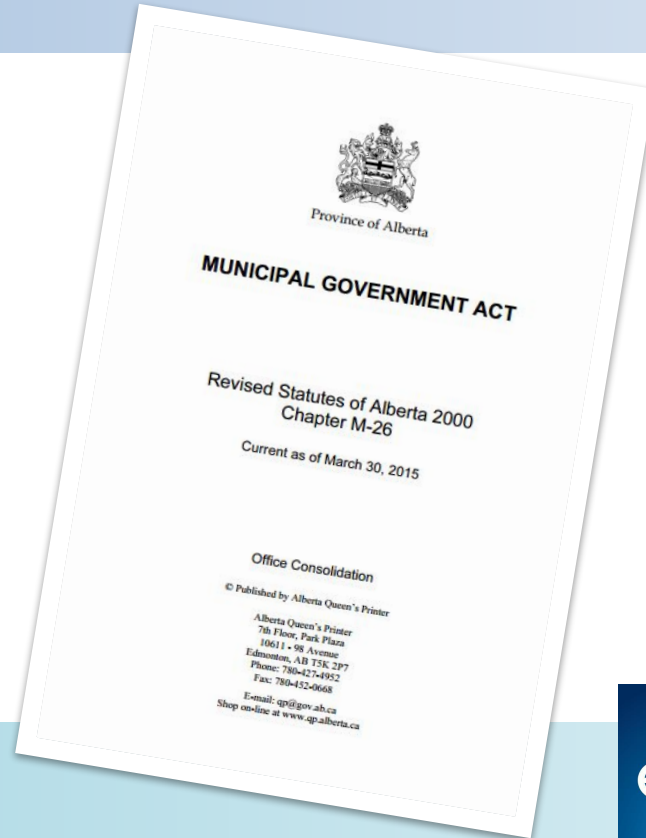
- **1913:** Creation of River Valley Park

Victoria Day celebrations at Victoria Park, 1913  
155 acres purchased in 1912 for \$130,000



# History of Conservation Planning in the City of Edmonton

- **1967: Municipal Government Act (MGA)**
  - Legislative framework in which all municipalities across the Province of Alberta operate
  - Major consolidation of municipal legislation in 1994
  - Tools:
    - Environmental Reserve (ER)
    - Municipal Reserve (MR)
    - Conservation Easements



# Environmental Reserve

**664(1)** *Subject to section 663, a subdivision authority may require the owner of a parcel of land that is the subject of a proposed subdivision to provide part of that parcel of land as environmental reserve if it consists of*

(a) *a swamp, gully, ravine, coulee or natural drainage course,*

(b) *land that is subject to flooding or is... unstable, or*

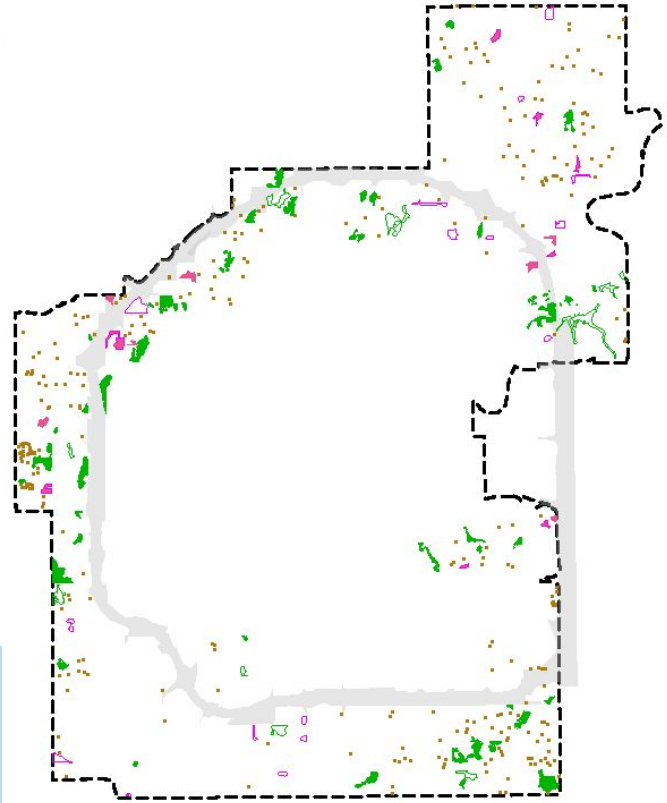
(c) *a strip of land, not less than 6 metres in width, abutting the bed and shore of any lake, river, stream or other body of water for the purpose of*

*(i) preventing pollution, or*

*(ii) providing public access to and beside the bed and shore.*

# History of Conservation Planning in the City of Edmonton

- **1968:** MGA
- **1960's:** Ravine conservation
- **1980's & 90's:** Tableland Natural Area (NA) conservation
- **1995:** Policy C-467 (Conservation of ESA and SNAs)
  - Environmentally Sensitive Areas (ESA)
  - Significant Natural Areas (NSA)
  - Natural Areas (NA)





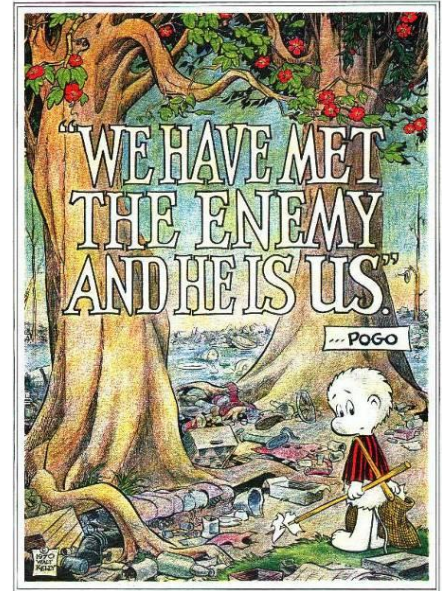
# 1999 A wake up call: Little Mountain Lost

## **Rising cost dooms proposal to retain valuable park space**

- Edmonton Journal, Nov. 3, 1999

## **Funeral planned for Little Mountain**

- Edmonton Journal, Dec. 8, 1999

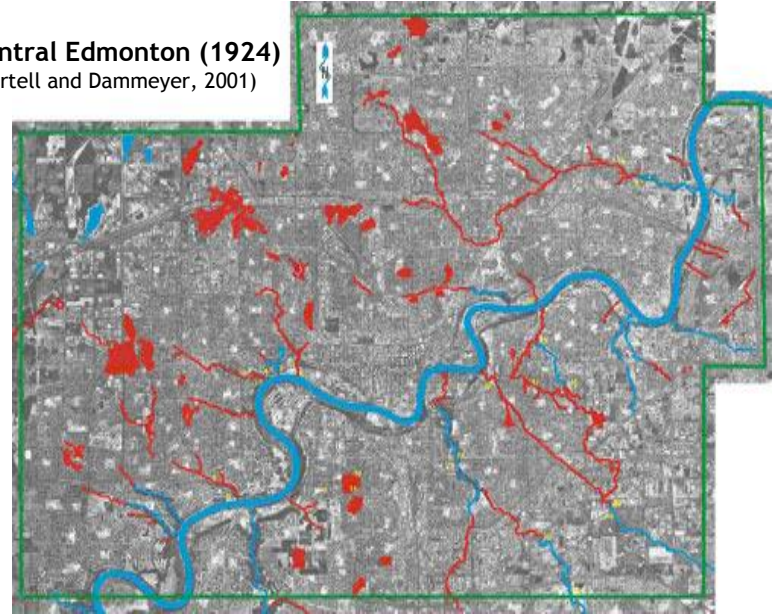


# 2001 Understanding the extent of Biodiversity loss in 100 years

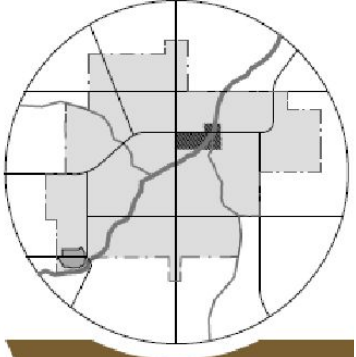
Habitat loss and fragmentation is the single largest threat to biodiversity conservation in an urban area

Estimated 90% loss of wetlands and drainage courses

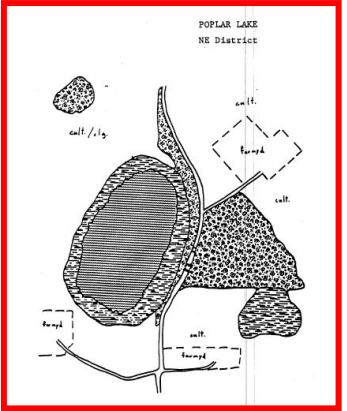
Central Edmonton (1924)  
(Martell and Dammeyer, 2001)



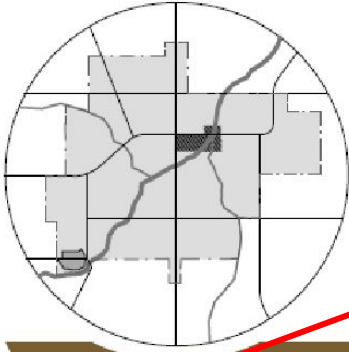
# City of Edmonton Planning Process



Strategic Plans, Policies  
+ Guidelines

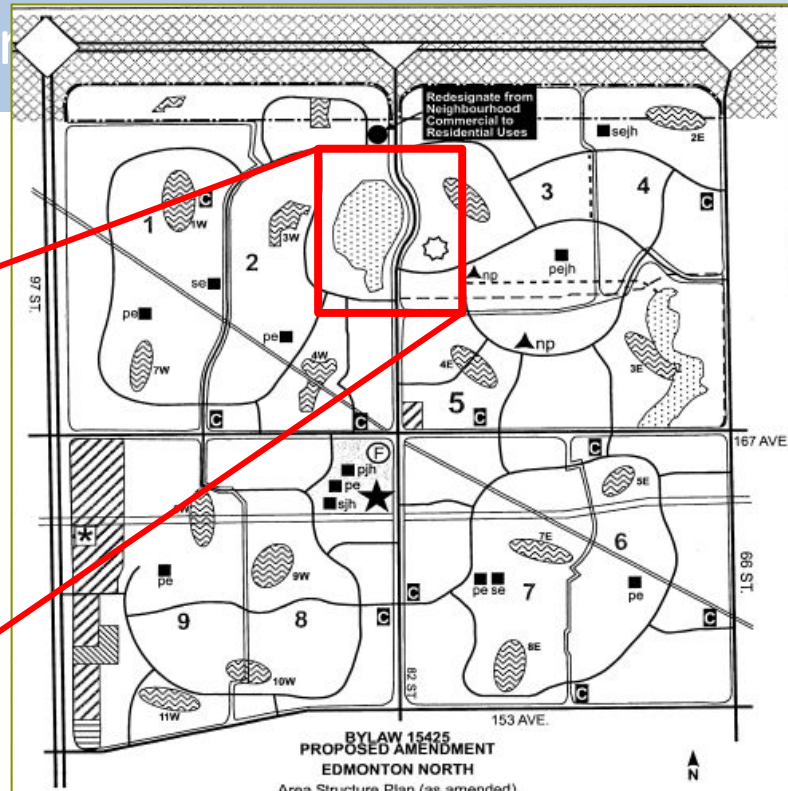
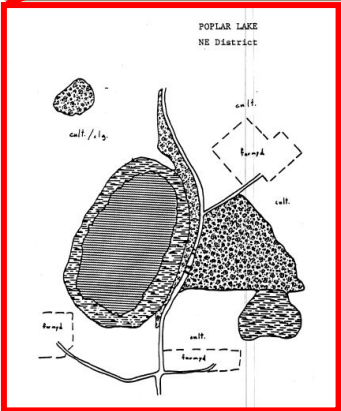


# City of Edmonton Planning P



Strategic Plans, Policies  
+ Guidelines

Area Structure Plans



- BYLAW 15425  
PROPOSED AMENDMENT  
EDMONTON NORTH**  
Area Structure Plan (as amended)
- |  |                                 |  |  |
|--|---------------------------------|--|--|
|  | Residential                     |  | School/Park<br>pe / se public / separate elementary school<br>pjh / sjh public / separate junior high school |
|  | Highway Commercial              |  | Neighbourhood Park   |
|  | District Park                   |  | Neighbourhood Commercial   |
|  | RDA Release Lands               |  | Power Sub-Station  |
|  | Restricted Development Area     |  | Fire Station   |
|  | Stormwater Facility             |  | Housing Opportunity for First Time<br>Homebuyers on Surplus School Site                                      |
|  | Environmentally-Sensitive Areas |  | Natural Area   |
|  | Commercial                      |  | Transit Centre / Park & Ride   |
|  | Collector Roadway Concept       |  | Proposed Amendment   |
|  | Greenway                        |  |  |

# Municipal Reserve as a tool for NA retention

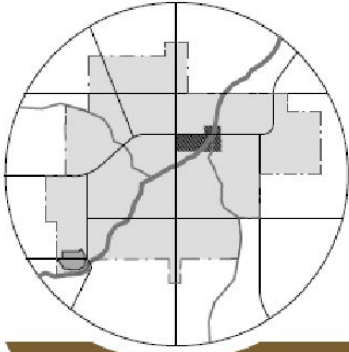
**666(1)** Subject to section 663, a subdivision authority may require the owner of a parcel of land that is the **subject of a proposed subdivision**

(a) to provide part of that parcel of land as municipal reserve, school reserve or municipal and school reserve, ...

**666(2)** The aggregate amount of land that may be required under subsection (1) may ... not exceed 10% of the parcel of land...

**671(2)** Municipal reserve ... may be used for a public park, public recreation areas, school board purposes, and to separate land of different purposes.

# City of Edmonton Planning Process



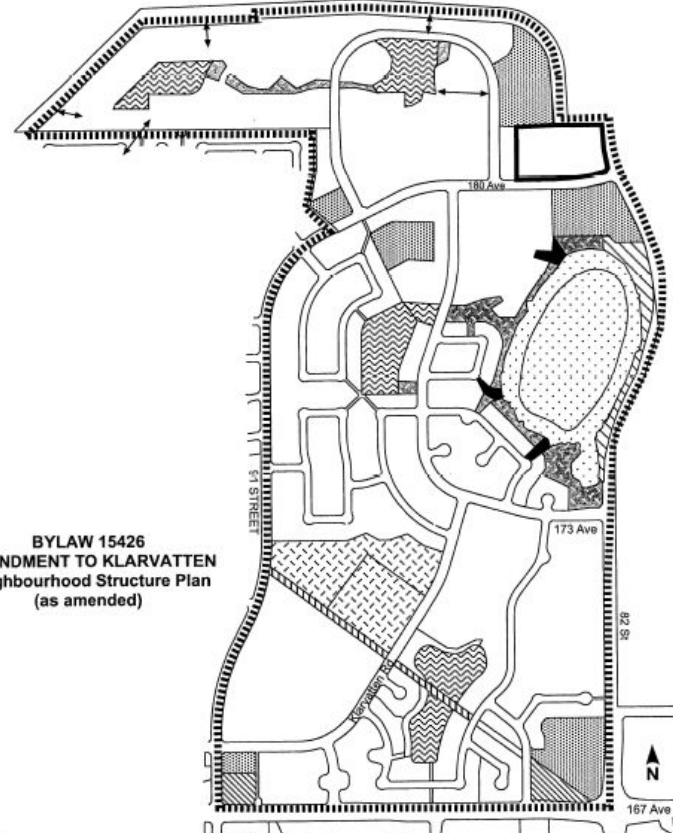
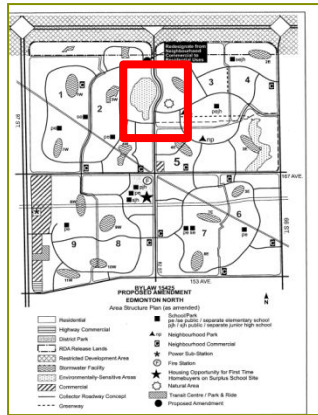
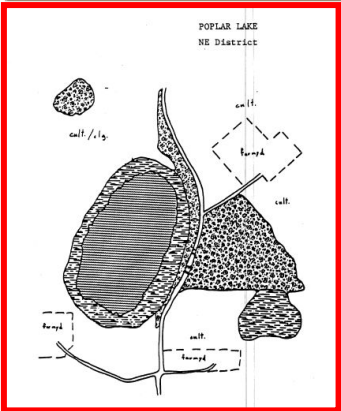
Strategic Plans, Policies + Guidelines



Area Structure Plans



Neighbourhood Structure Plans



BYLAW 15426  
AMENDMENT TO KLARVATTEN  
Neighbourhood Structure Plan  
(as amended)

- |  |                            |  |                                |
|--|----------------------------|--|--------------------------------|
|  | Low Density Residential    |  | Public Utility Lot             |
|  | Medium Density Residential |  | Stormwater Management Facility |
|  | Neighbourhood Commercial   |  | Stormwater Influenced Wetland  |
|  | Park / Open Space          |  | Pipeline R/W                   |
|  | School / Park              |  | Boundary of Klarvatten N.S.P.  |
|  | Connectivity               |  | Boundary of Amendment          |
|  | Wetland Buffer             |  |                                |

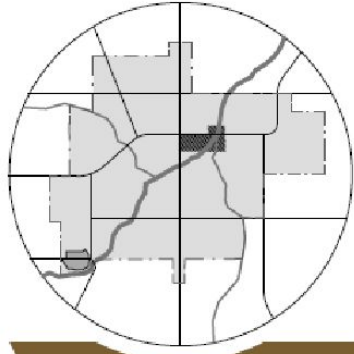
## 2008 New tool approved by Council

### Natural Area Reserve Fund

- Originally approved in 1999 at \$250,000 /year
- 2008 increased to just under \$20 million total
- Purchase environmentally significant tableland NAs



# City of Edmonton Planning Process



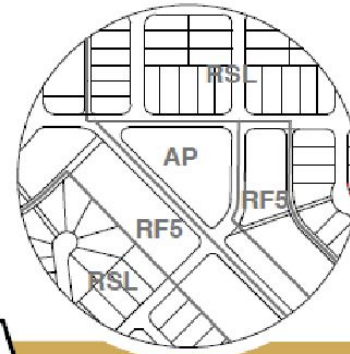
Strategic Plans, Policies  
+ Guidelines



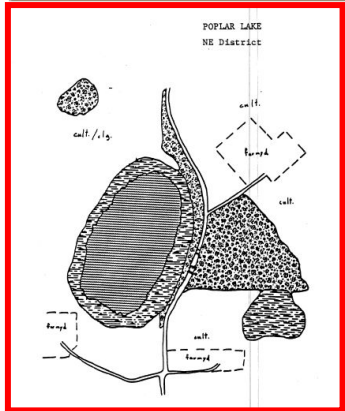
Area Structure Plans



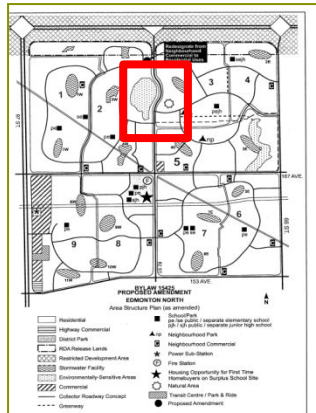
Neighbourhood Structure  
Plans



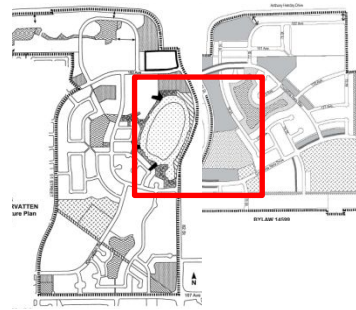
Zoning + Subdivision +  
Servicing Agreements



1986



1979



1982 / 2007



NAMP 1999

**Upland  
Purchase:  
2017**

**31 years to  
protection**



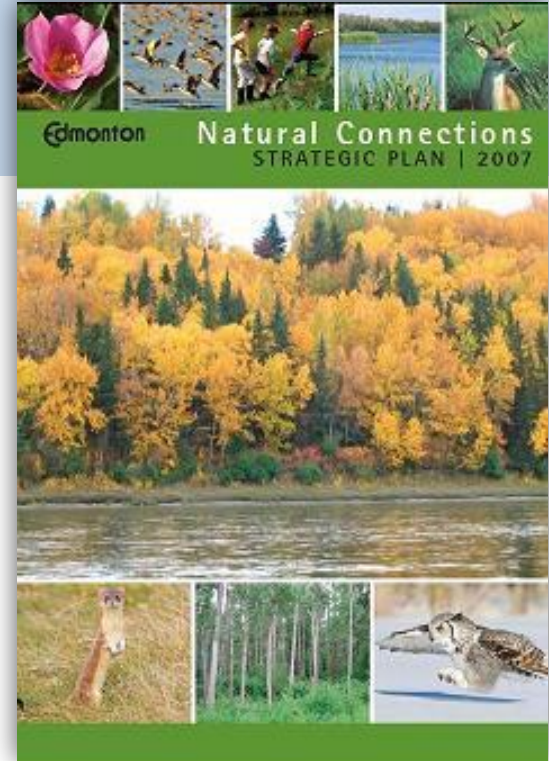
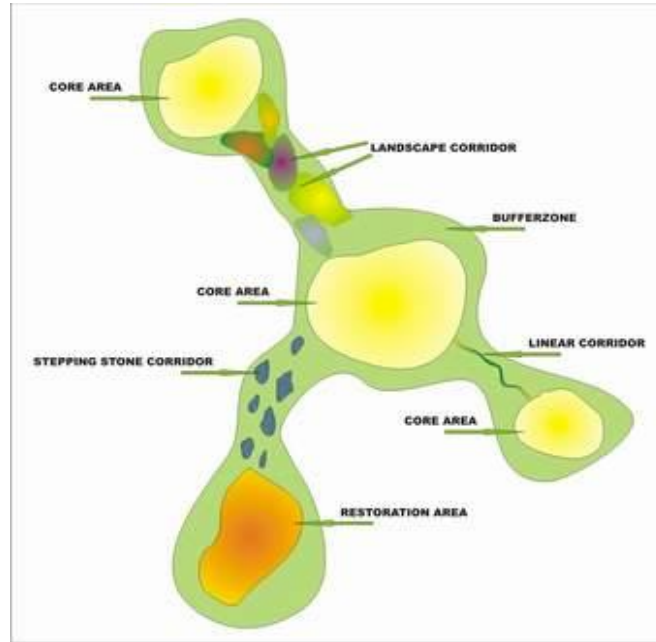
## 2005 Council Direction



- Consider all NAs at a whole
  - River Valley
  - Tablelands
- Create a system that is greater than the sum of its parts
- Paradigm shift:
  - *move from site specific to network approach*

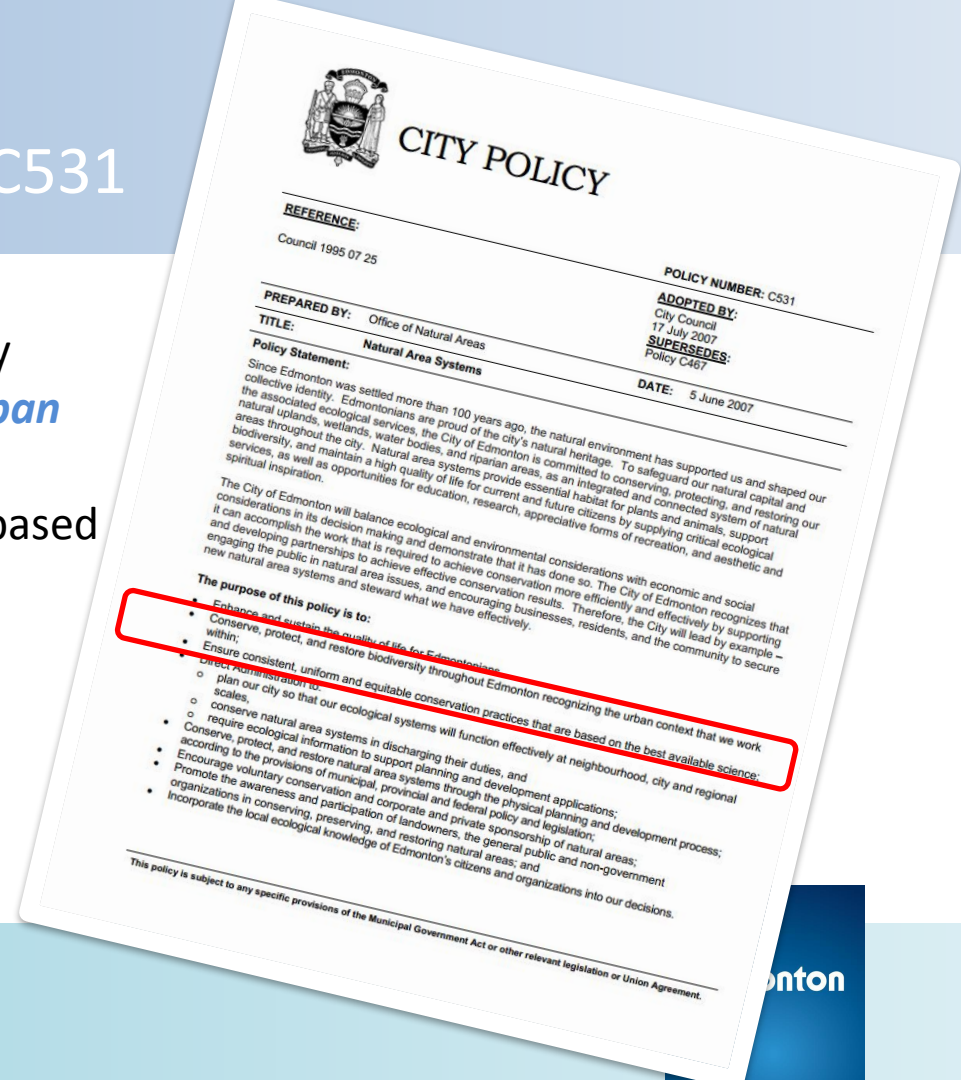
# 2007 Paradigm shift

Natural Area system to be designed around:  
*ecological connections,*  
not  
*isolated protected areas*

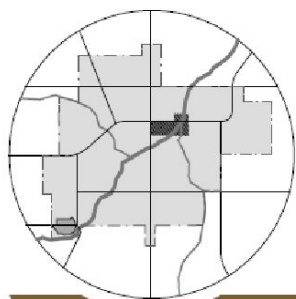


# Policy: Natural Systems Policy, C531

- Conserve, protect, and restore biodiversity throughout Edmonton *recognizing the urban context that we work within*;
- ...[using] conservation practices that are based on the best available science



# Planning: The Urban Land Use Planning “Context”



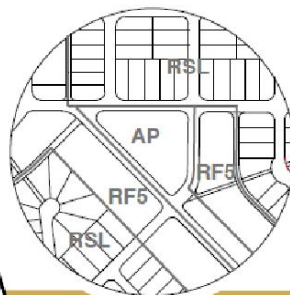
Strategic Plans, Policies  
+ Guidelines



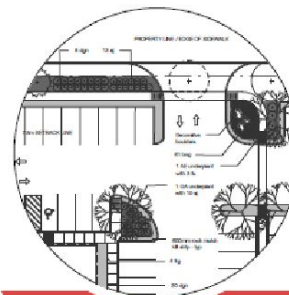
Area Structure Plans



Neighbourhood Structure  
Plans



Zoning + Subdivision +  
Servicing Agreements

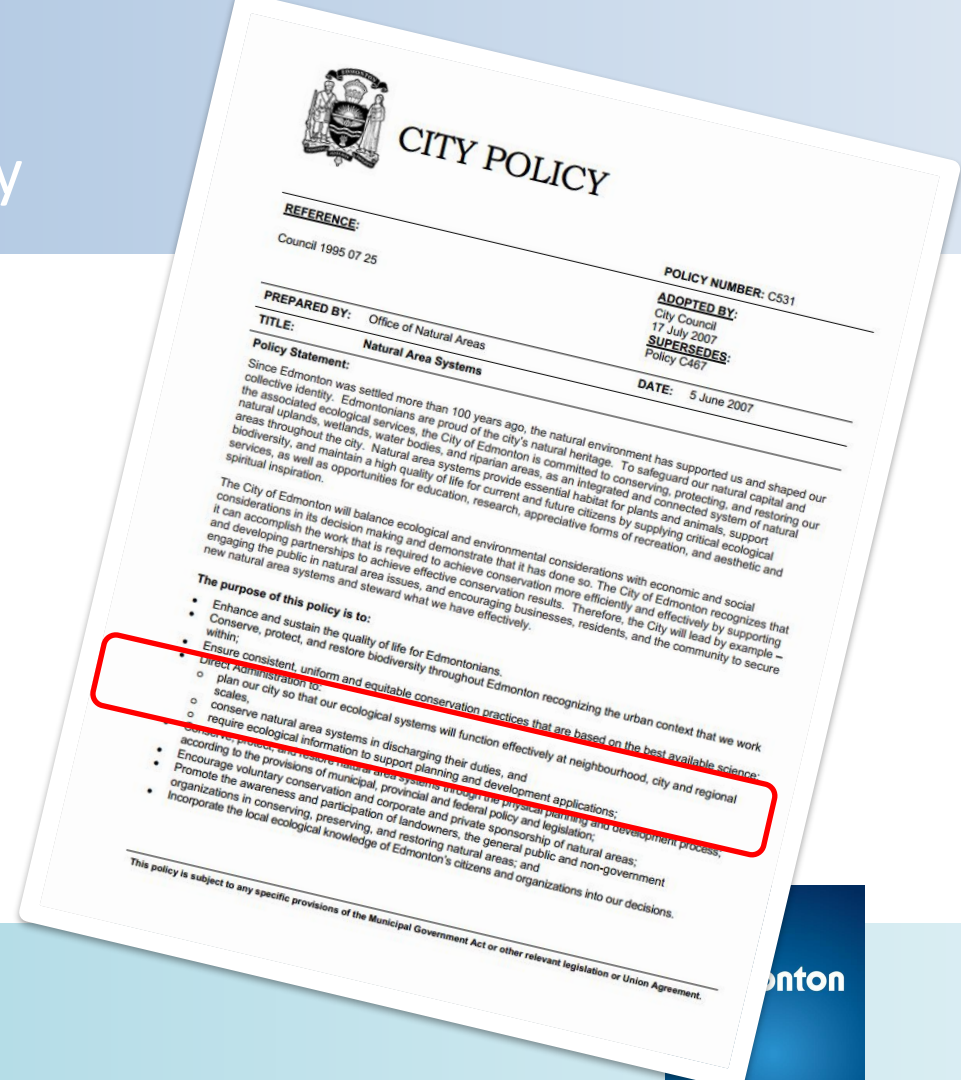


Development + Building  
Permits



# Planning: Implementing the Natural Systems Policy

Policy directs Administration to do three specific items...



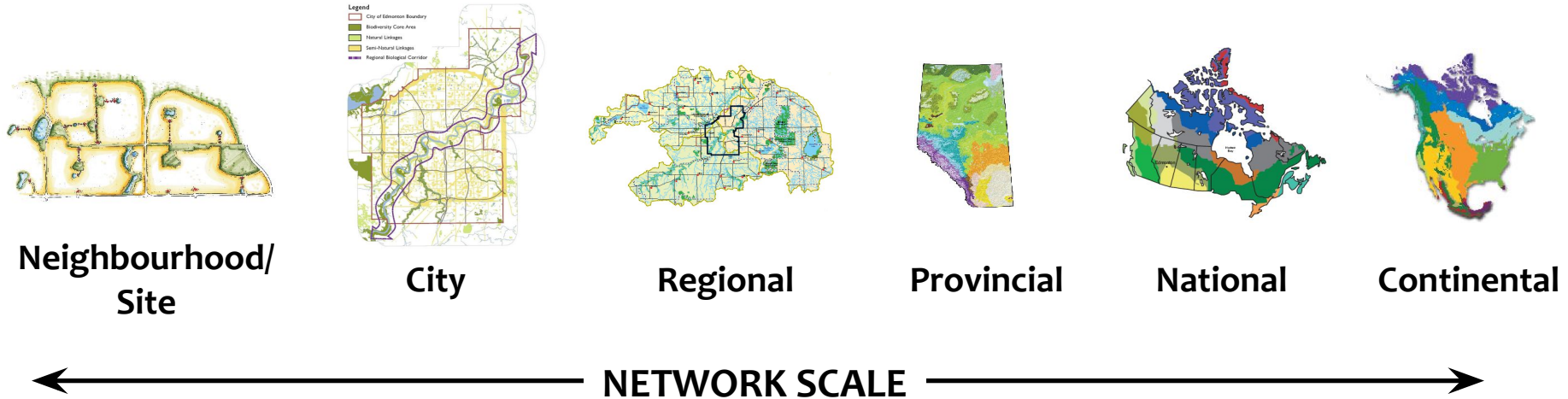
# Planning: Implementing the Natural Systems Policy

## Policy Direction

1) Plan our city so that our ecological systems will function effectively at neighborhood, city and regional scales

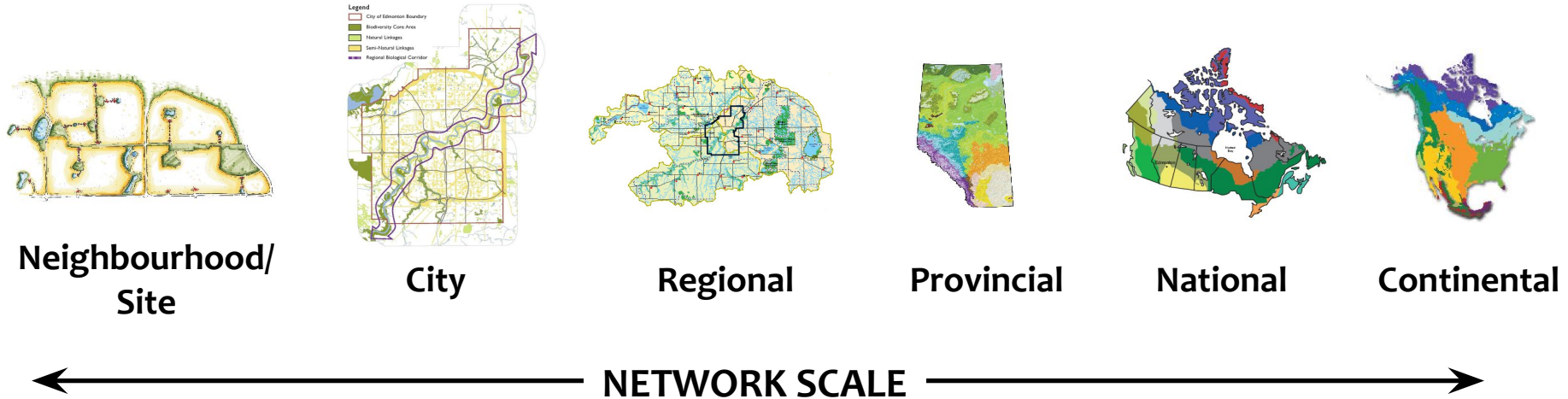
## “Scalability” of Ecological Network Approach

- Ecological Network Model works on any scale: Continental to Site
- Promotes systems thinking, inter-governmental collaboration



# Planning: Implementing the Natural Systems Policy

Policy Direction	Implementation
1) Plan our city so that our ecological systems will function effectively at neighborhood, city and regional scales	Apply the ecological network approach to the urban land use planning process.



# Planning: Implementing the Natural Systems Policy

<b>Policy direction</b>	
1) Plan our city so that our ecological systems will function effectively at neighborhood, city and regional scales	Dev City and
2) Require ecological information to support planning and development applications	



TRANSFORMING | **EDMONTON**  
BRINGING OUR CITY VISION TO LIFE



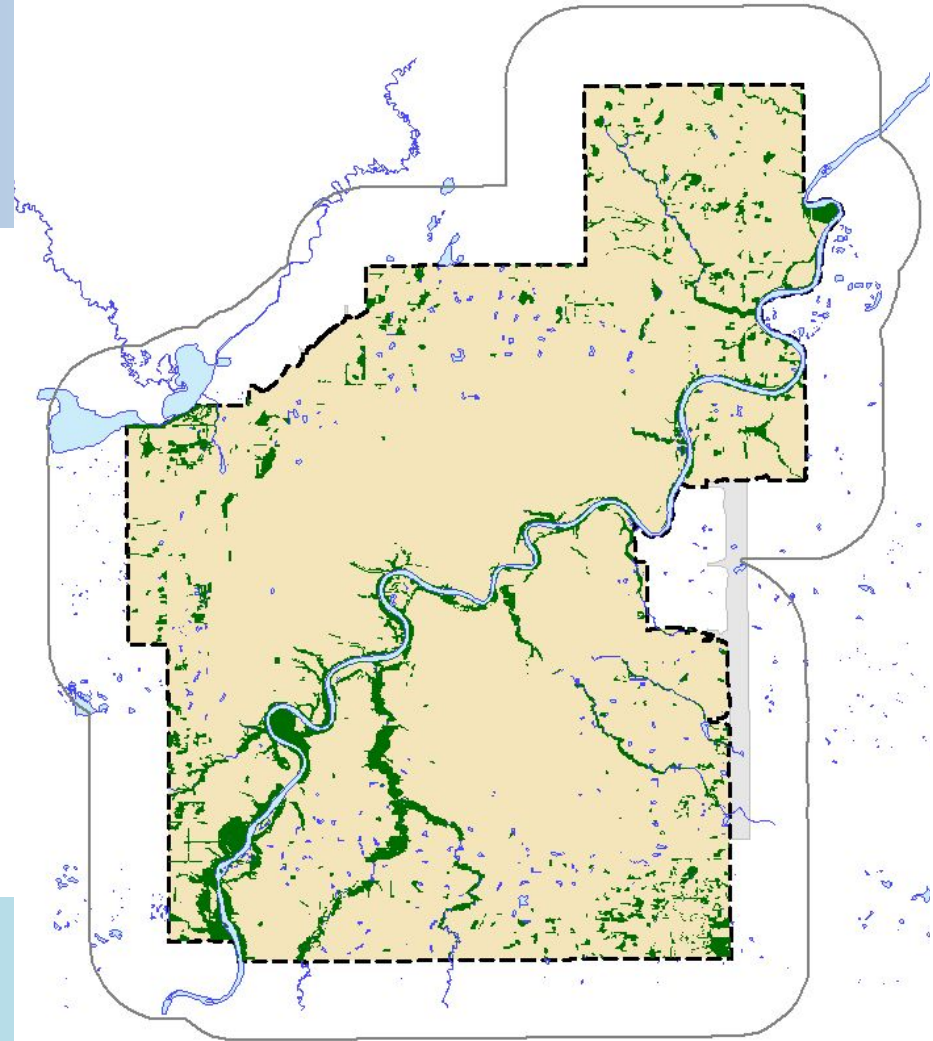


# Planning: Implementing the Natural Systems Policy

<b>Policy direction</b>	<b>Implementation</b>
1) Plan our city so that our ecological systems will function effectively at neighborhood, city and regional scales	Develop a multi-scale spatial inventory of the City's Ecological "Assets." Must be replicable and allow for cross-jurisdictional planning.
2) Require ecological information to support planning and development applications	Standardization of information received by the City appropriate to the relevant planning.

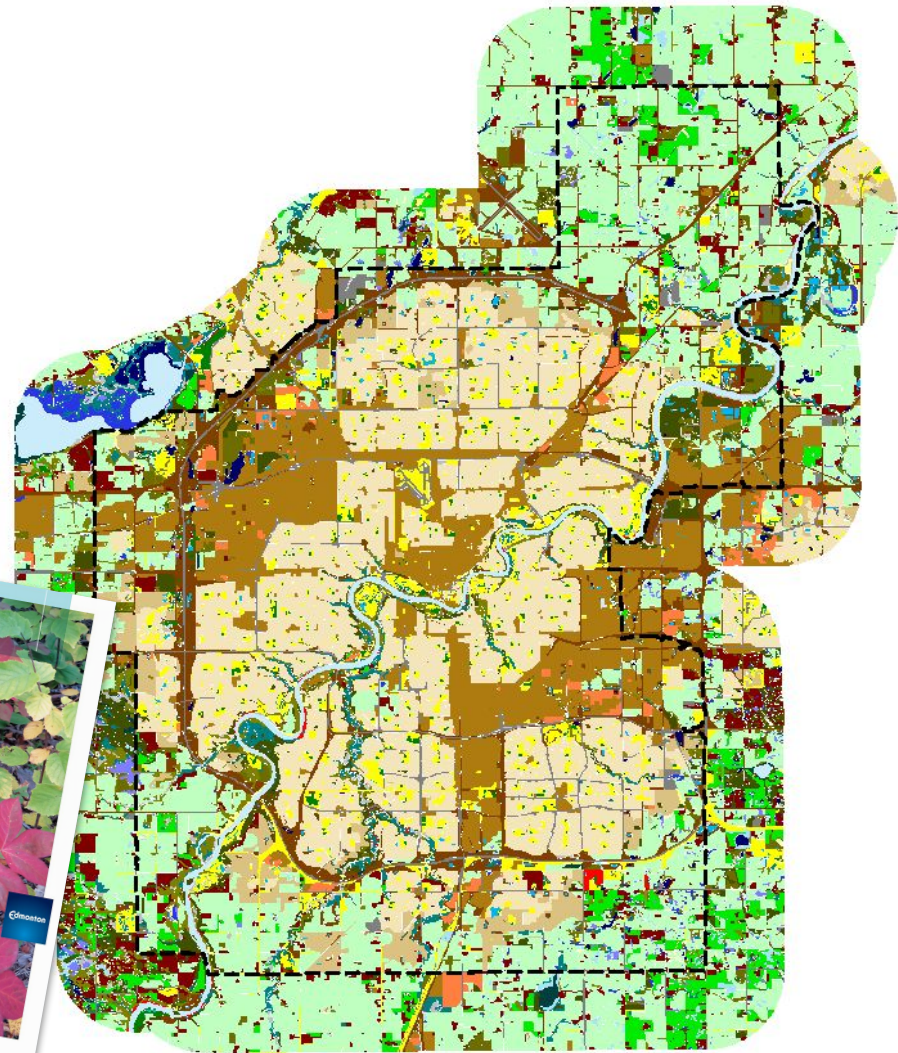
## Planning: Implementing the Natural Systems Policy

- Simple presence/absence mapping
- No information in inter-municipal buffer



# Planning: Implementing the Natural Systems Policy

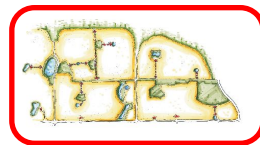
- A detailed ecological inventory with attributes in each mapping polygon
- Main level of classification: ***ecological site phase (ecophase)***
- Standardized protocols:



# Implementing the Ecological Network Approach through planning



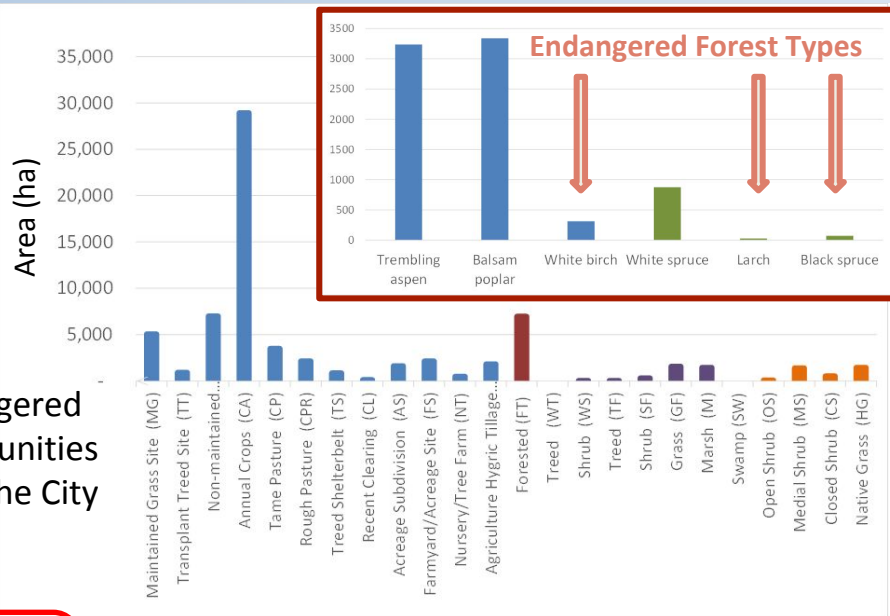
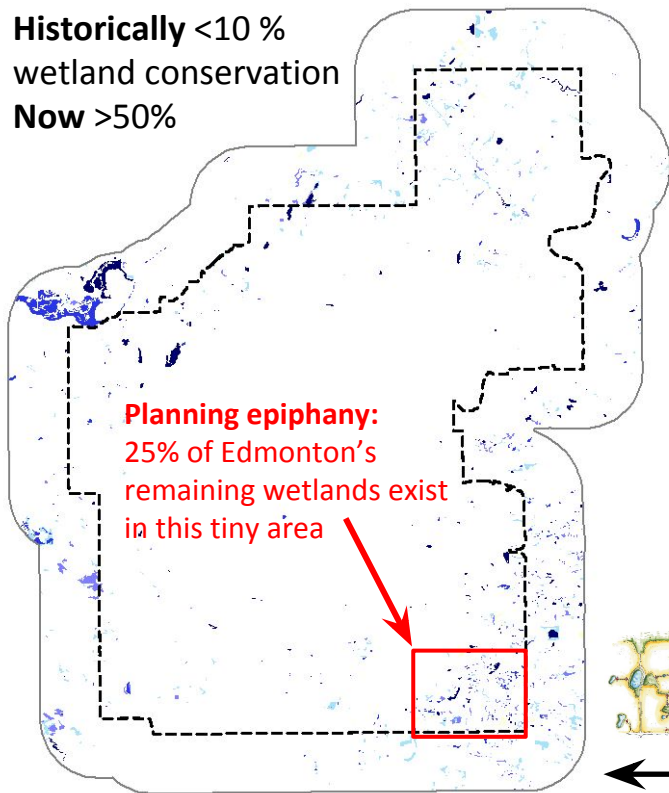
Created a mapping framework that had the ability to capture more detailed ecological information at every level of the Municipal Land Use planning process



← NETWORK SCALE →

# Planning: Implementing the Natural Systems Policy

Historically <10 %  
wetland conservation  
Now >50%



Three endangered forest communities  
<0.001% of the City

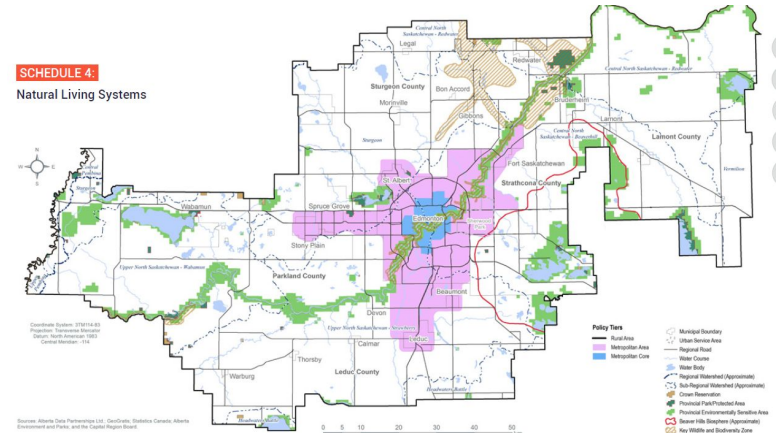


NETWORK SCALE

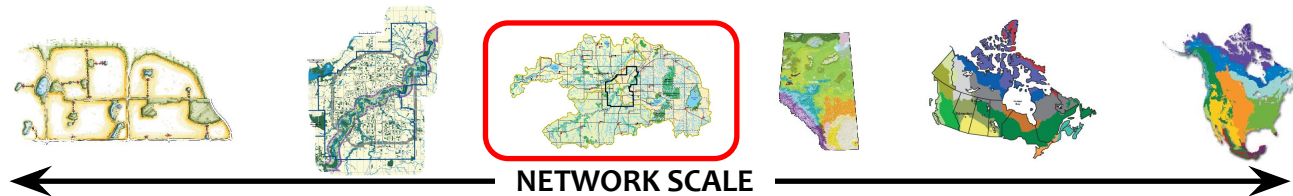
# Edmonton Metropolitan Region Growth Plan (EMRGP)

## Objective 2.1:

- “Conserve and restore natural living systems through an *ecological network approach*”



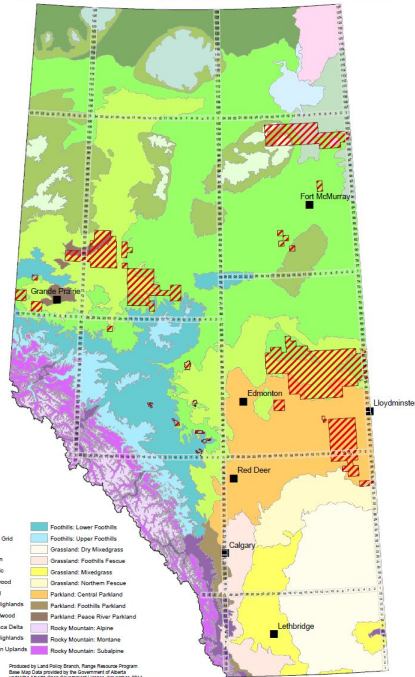
EDMONTON METROPOLITAN REGION GROWTH PLAN RE-IMAGINE. PLAN. BUILD.



# Planning: Implementing the Natural Systems Policy

## Provincial mapping

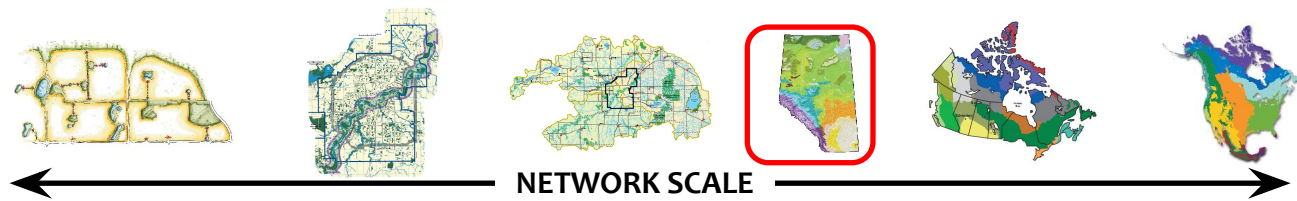
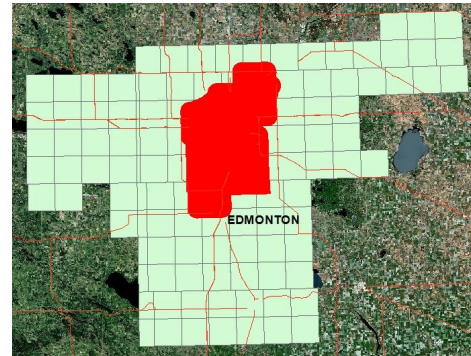
Primary Land and Vegetation Inventory (PLVI) Extent



## Provincial mapping 2018/19

**City of Edmonton 2018  
Natural Asset Mapping:**  
128,696 ha

**Government of Alberta  
2018/19 tie-in mapping:**  
904,000 ha



# Planning: Implementing the Natural Systems Policy

<b>Policy Direction</b>	<b>Implementation</b>
1) Plan our city so that our ecological systems will function effectively at neighborhood, city and regional scales	Apply the ecological network approach to the urban land use planning process.
2) Require ecological information to support planning and development applications	Standardization of information received by the City appropriate to the relevant planning.
3) Conserve Edmonton's natural area systems in discharging their duties	

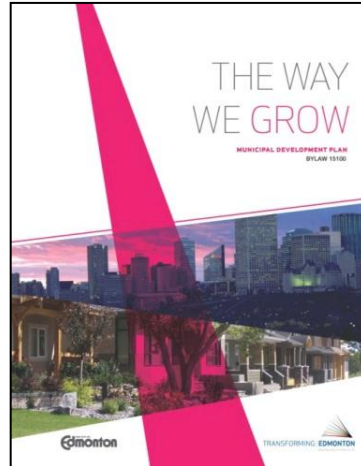


# Current municipal Development Plan (2010)

## THE WAY WE GROW (2010)

### 1 of 9 strategic goals of MDP

“Edmonton protects, preserves, and enhances its natural environment by maintaining ... *a functioning ecological network...*”

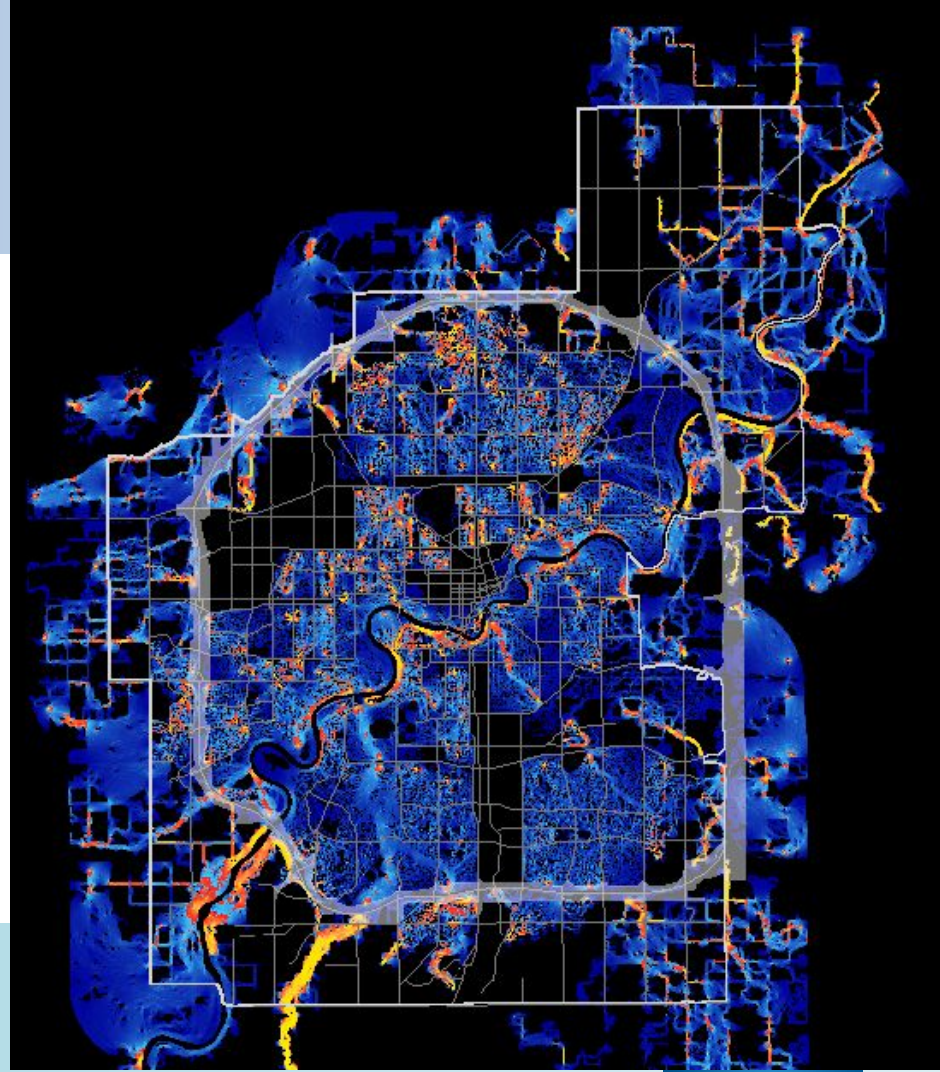


2016

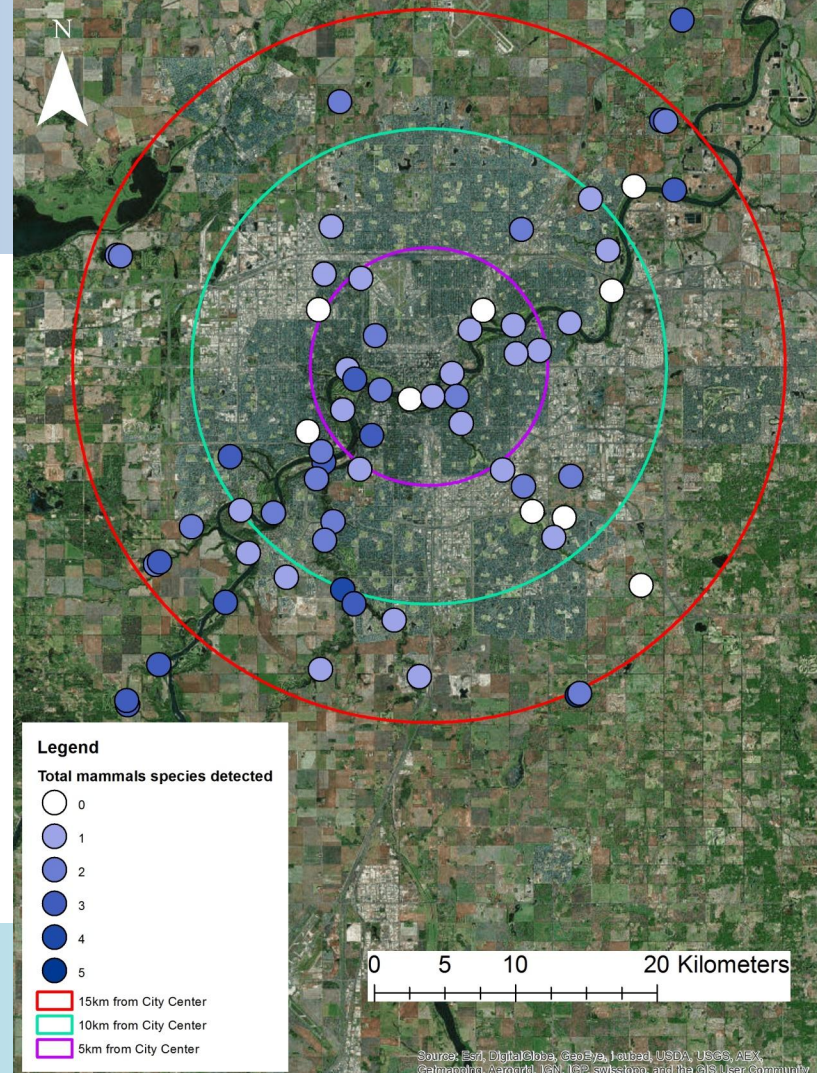
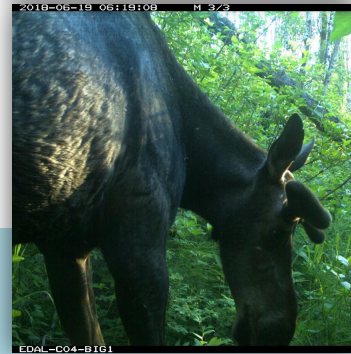
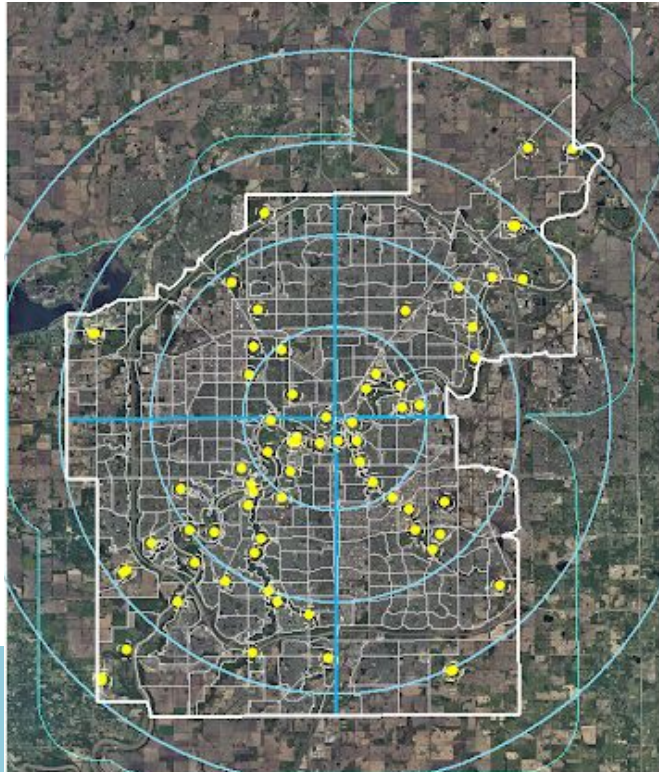
# Assessing ecological function

## Wildlife connectivity analysis

- Using electrical theory, Ohm's law, and resistance mapping
- Circuitscape analysis
- Predicts areas of high wildlife movement



# 2018 Wildlife Monitoring Program



# 2018 Wildlife Monitoring

2018-07-04 5:31:25 AM M 3/3



## After:

- 13 yrs of implementing the ecological network approach,
- 10 yrs of wildlife passage planning and design work,
- 7 yrs of natural asset mapping work,
- 2 yrs of wildlife connectivity modelling work,
- 3 months into the wildlife monitoring program,
- 15+ internal and external partners and
- intense and passionate advocacy by the public

We captured this photo of a mother moose safely moving her two calves under Edmonton's first purpose built wildlife underpass

EDAL-DO4-HAP2

2018-07-04 5:31:55 AM M 1/3



EDAL-DO4-HAP2

# Other Municipal Tools

- Edmonton Area Land Trust (2007)
  - Conservation Easements
  - Land donations
- NEW MGA amendments:
  - Conservation Reserve
  - City Charter Regulations require a Climate Change Adaptation Plan
    - **Goal 10:** Edmonton's natural ecosystems continue to provide essential ecosystem goods and services such as clean air, clean water, and *biodiversity*

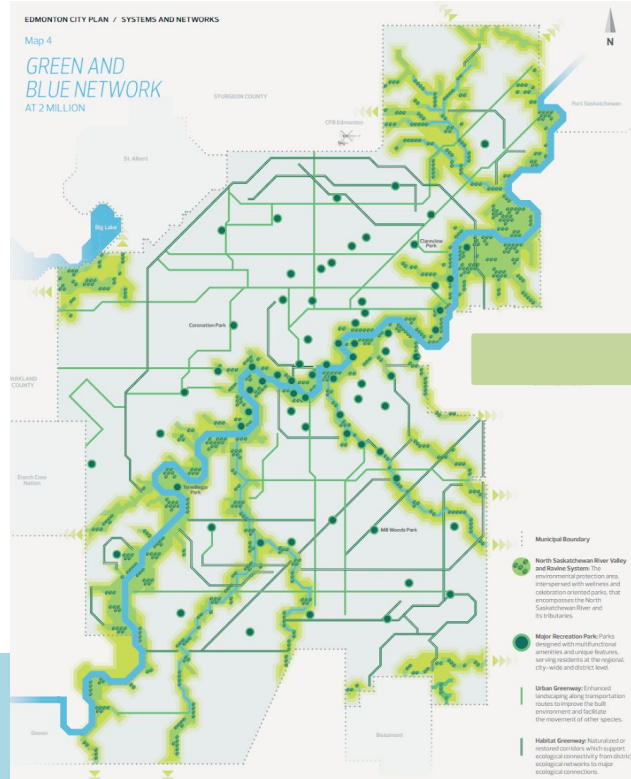


# 2020 MDP: Building on a strong foundation

## THE WAY WE GROW (2010)

### 1 of 9 strategic goals of MDP

“Edmonton protects, preserves, and enhances its natural environment by maintaining ... **a functioning ecological network...**”



**THE CITY PLAN (draft)**  
“1.4.2.1 Protect, restore, maintain and enhance a system of conserved natural areas within a **functioning and interconnected ecological network.**”

**EDMONTON  
CITY  
PLAN**

# Edmonton's (conservation) Planning Framework

**THANK YOU**

[catherine.shier@edmonton.ca](mailto:catherine.shier@edmonton.ca)



**ORDER OF APPROVAL**

