UNHaRMED

Applying UNHaRMED for Risk Reduction Planning – Comparing Strategies and Long-Term Effectiveness

AFAC BNHCRC Research Forum / **2018**

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Two driving principles

Prevention is better than cure

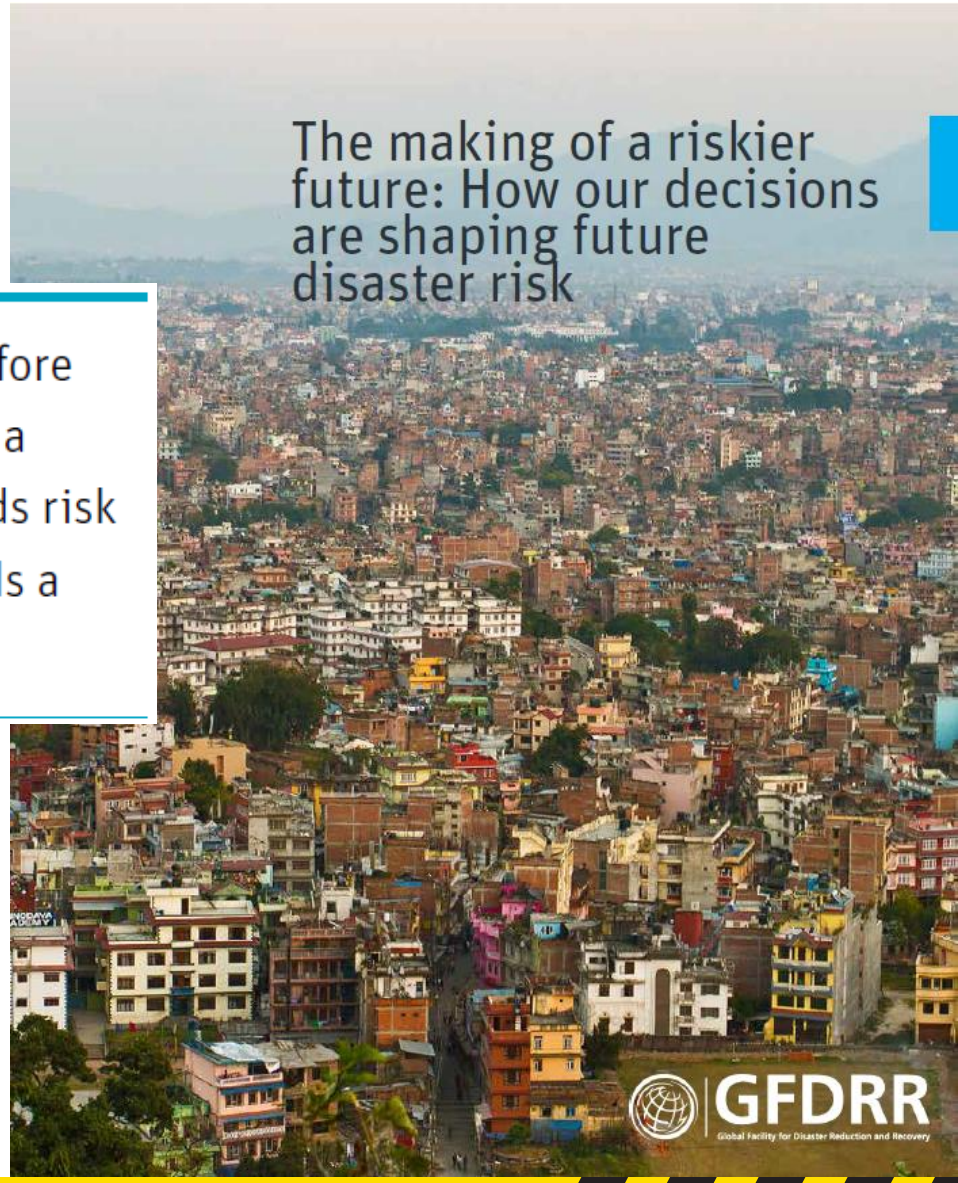
“Better to build a fence at the top of a cliff, than park an ambulance at the bottom”

Helen Clark 2015 Sendai

Tomorrow’s risk is built today

Tomorrow’s risk is being built today. We must therefore move away from risk assessments that show risk at a single point in the present and move instead towards risk assessments that can guide decision makers towards a resilient future.

Global Facility for Disaster Reduction and Recovery (2016)

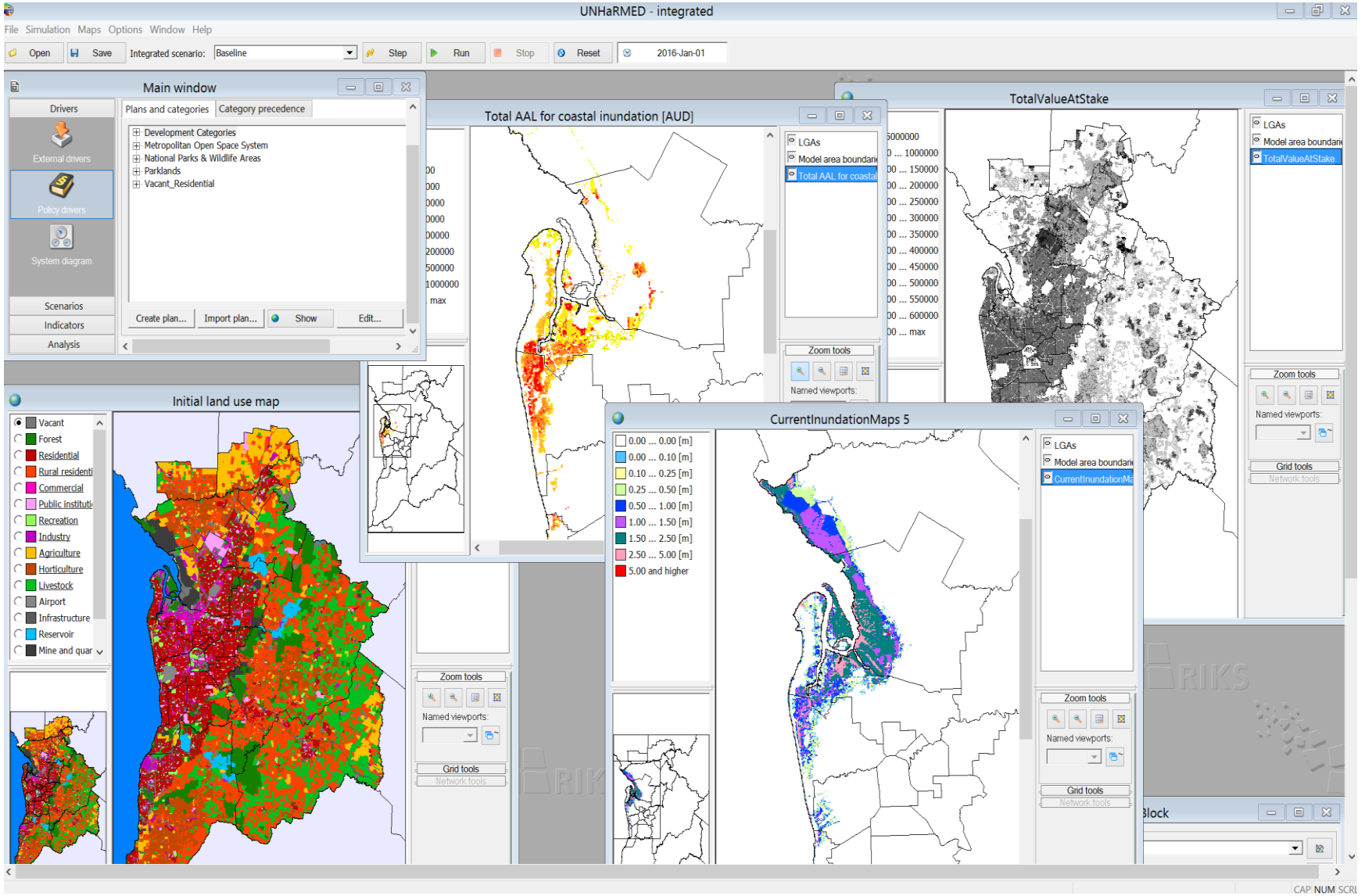


UNHaRMED

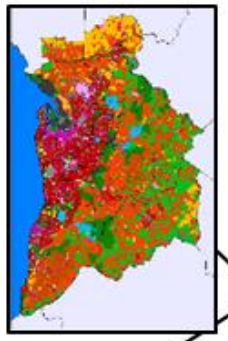
A tool for pro-active disaster risk assessment and reduction planning

- Interactive modelling platform to assist decision making, investment choices and mitigation measures
- Aims:
  - Improve thinking about risk into the future;
  - Better manage and minimise risk;
  - Position organisations to best achieve this and lobby others.
- Considers long-term dynamics and uncertainties of hazard, exposure and vulnerabilities
- Integrated scenario analysis (exposure, vulnerability, hazard)
- Incorporated assessment of risk reduction measures

Regional risk modelling



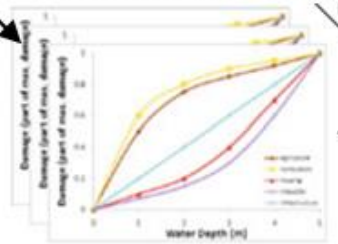
Land Use Map



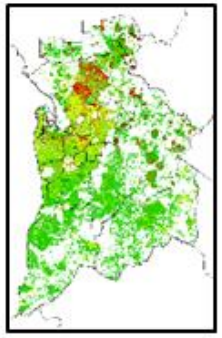
Land Use	Value ($/ha)
Urban Res.	$100,000
Rural Res.	$60,000
Industry	$150,000
Commercial	$130,000
Pasture	$10,000

Values Map ($)

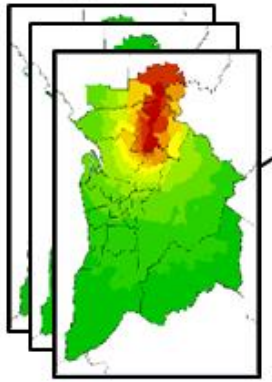
Vulnerability function

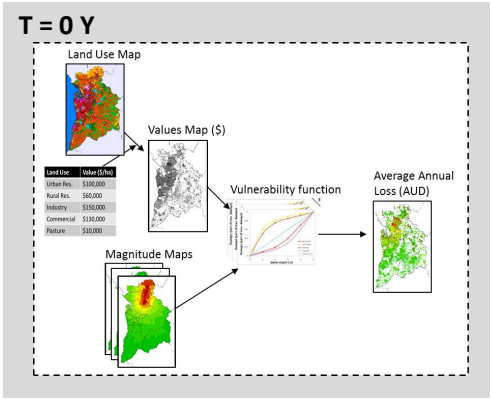


Average Annual Loss (AUD)

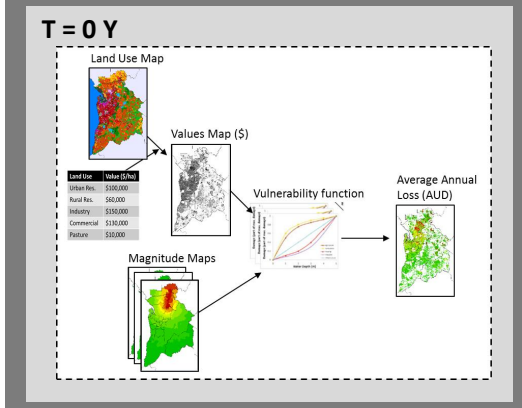


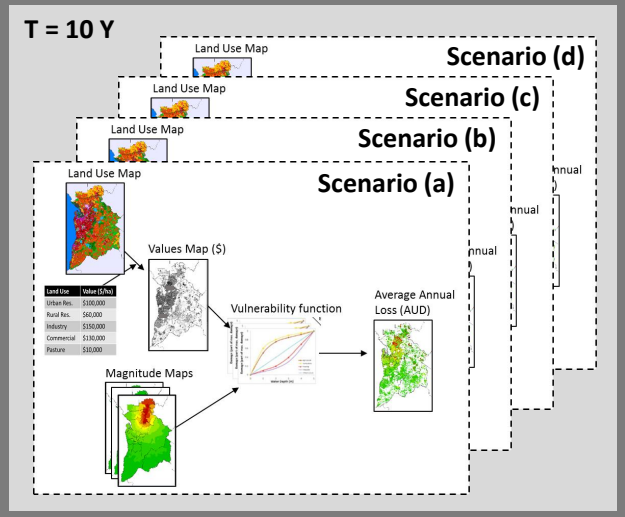
Magnitude Maps

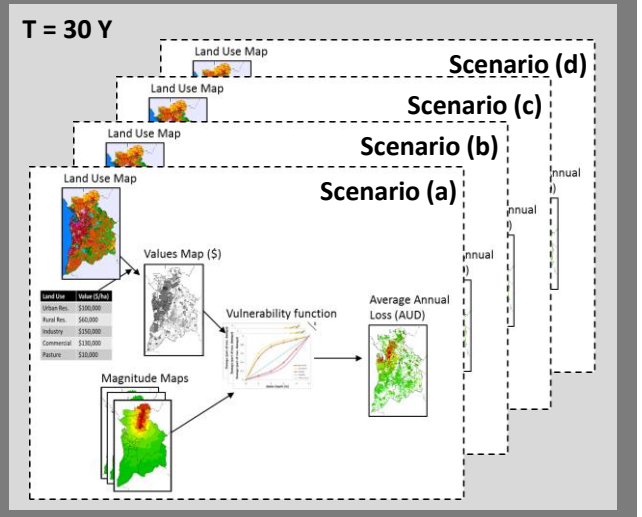


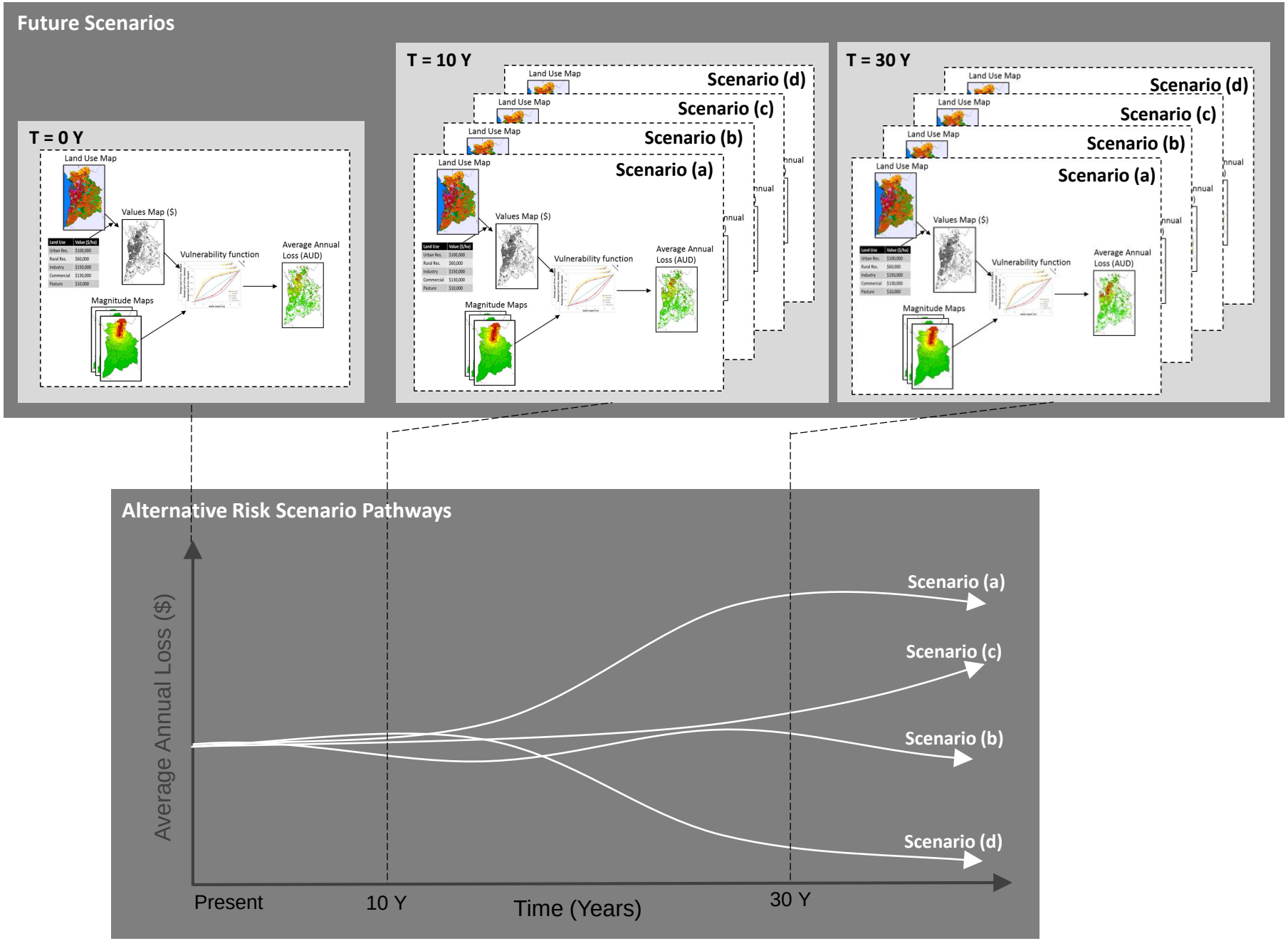

T = 0 Y
Land Use Map
Values Map ($)
Land Use
Value ($/ha)
Urban Res.
$100,000
Rural Res.
$60,000
Industry
$150,000
Commercial
$130,000
Pasture
$10,000
Vulnerability function
Average Annual Loss (AUD)
Magnitude Maps

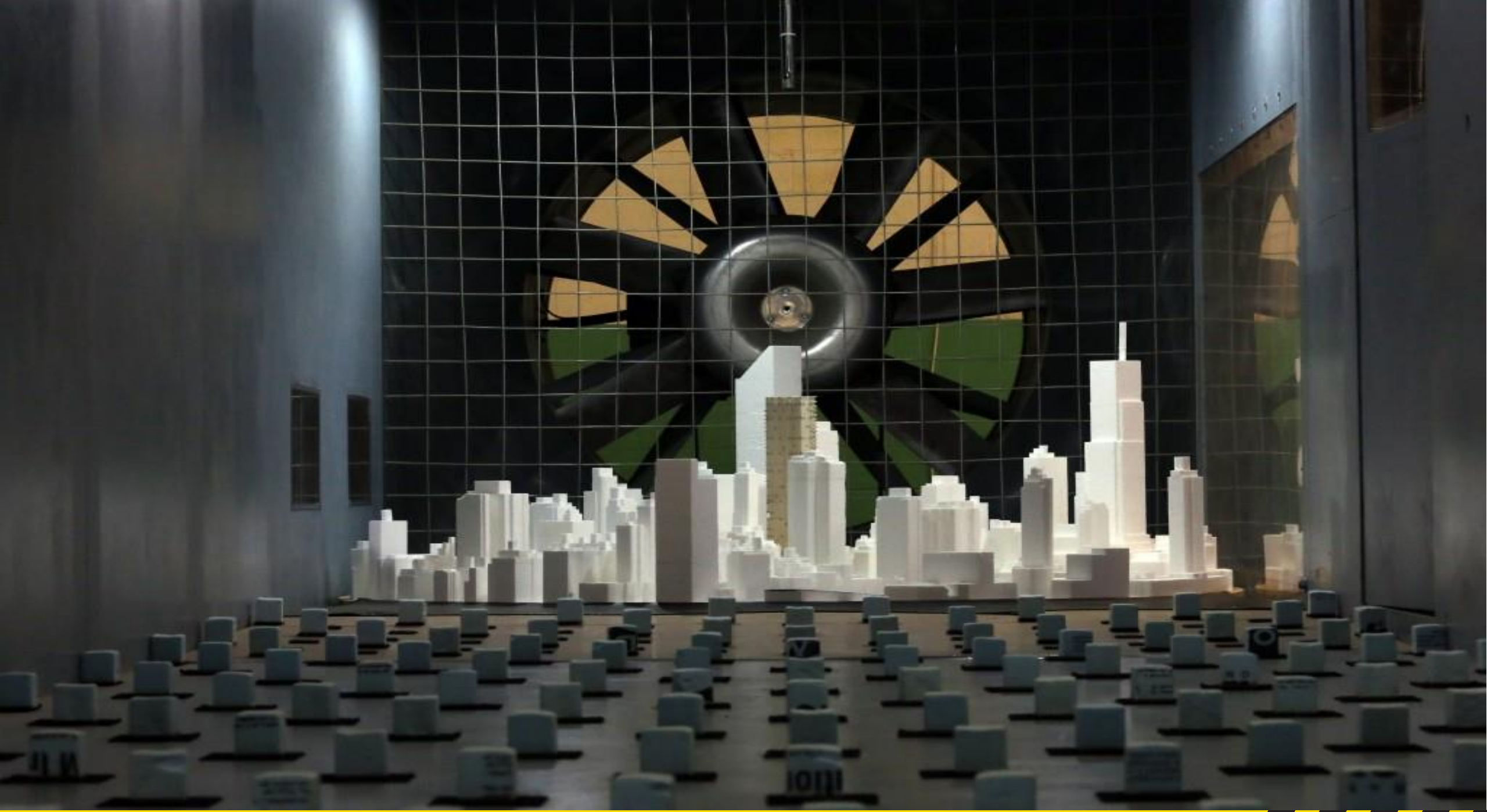
Future Scenarios

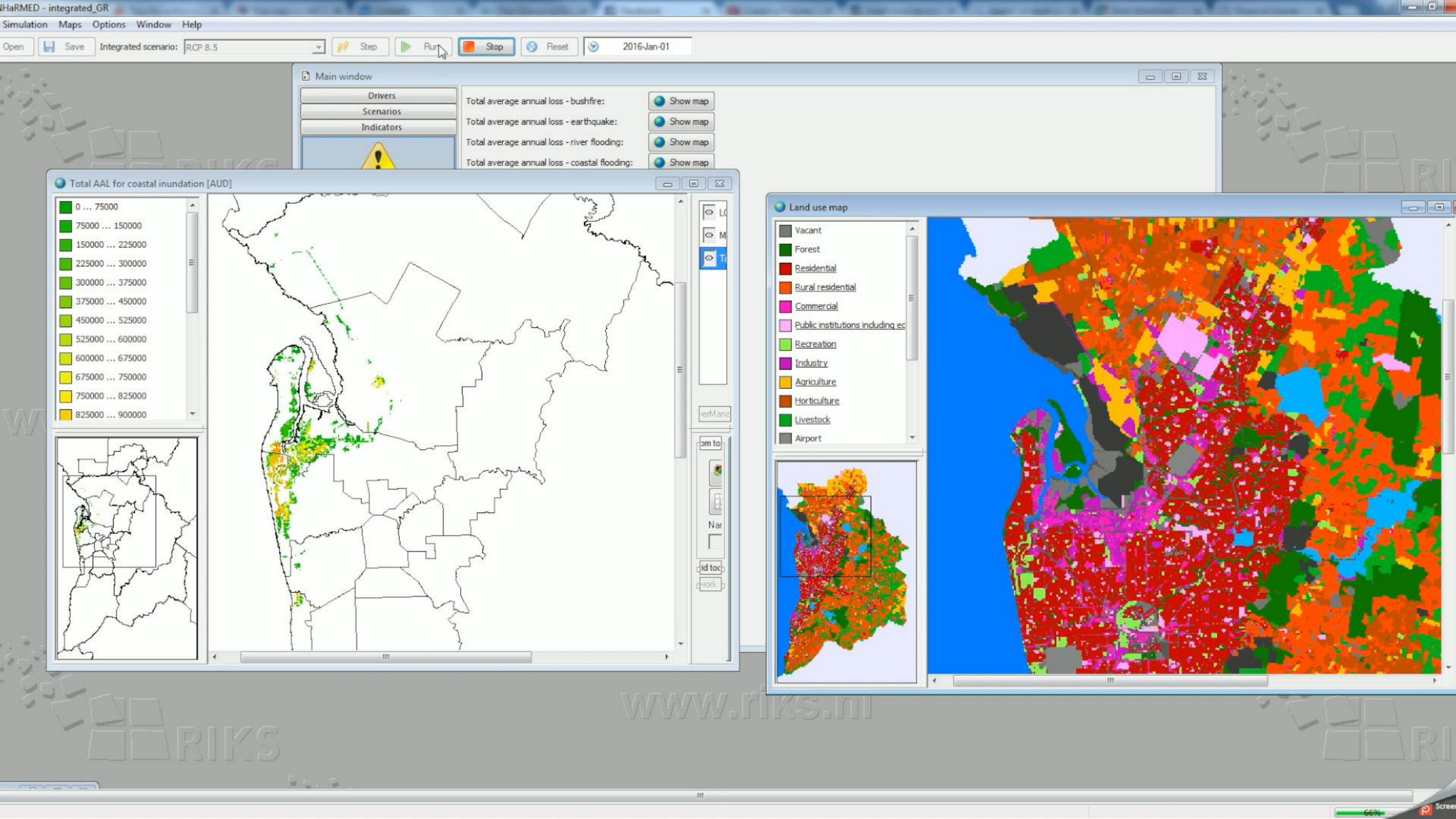




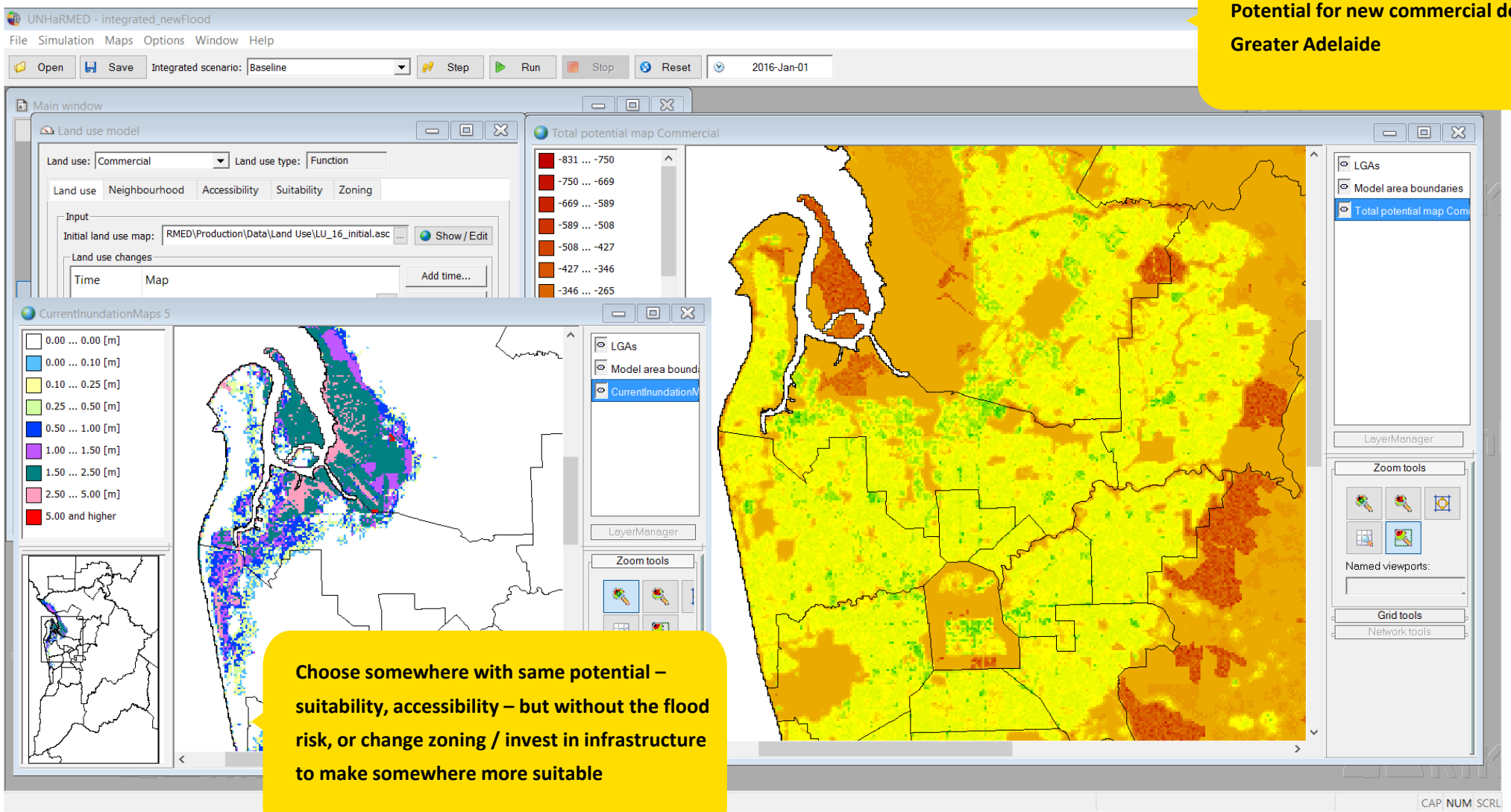



Future Scenarios
T = 0 Y
Land Use Map
Values Map ($)
Vulnerability function
Average Annual Loss (AUD)
Magnitude Maps
T = 10 Y
Scenario (d)
Scenario (c)
Scenario (b)
Scenario (a)
T = 30 Y
Alternative Risk Scenario Pathways
Average Annual Loss ($)
Scenario (a)
Scenario (c)
Scenario (b)
Scenario (d)
Present
10 Y
Time (Years)
30 Y




NHaRMED - integrated_GR
Simulation Maps Options Window Help
Open Save Integrated scenario: RCP 8.5 Step Run Stop Reset 2016-Jan-01
Main window
Drivers
Scenarios
Indicators
Total average annual loss - bushfire: Show map
Total average annual loss - earthquake: Show map
Total average annual loss - river flooding: Show map
Total average annual loss - coastal flooding: Show map
Total AAL for coastal inundation [AUD]
0 ... 75000
75000 ... 150000
150000 ... 225000
225000 ... 300000
300000 ... 375000
375000 ... 450000
450000 ... 525000
525000 ... 600000
600000 ... 675000
675000 ... 750000
750000 ... 825000
825000 ... 900000
Land use map
Vacant
Forest
Residential
Rural residential
Commercial
Public institutions including ec
Recreation
Industry
Agriculture
Horticulture
Livestock
Airport
www.riks.nl

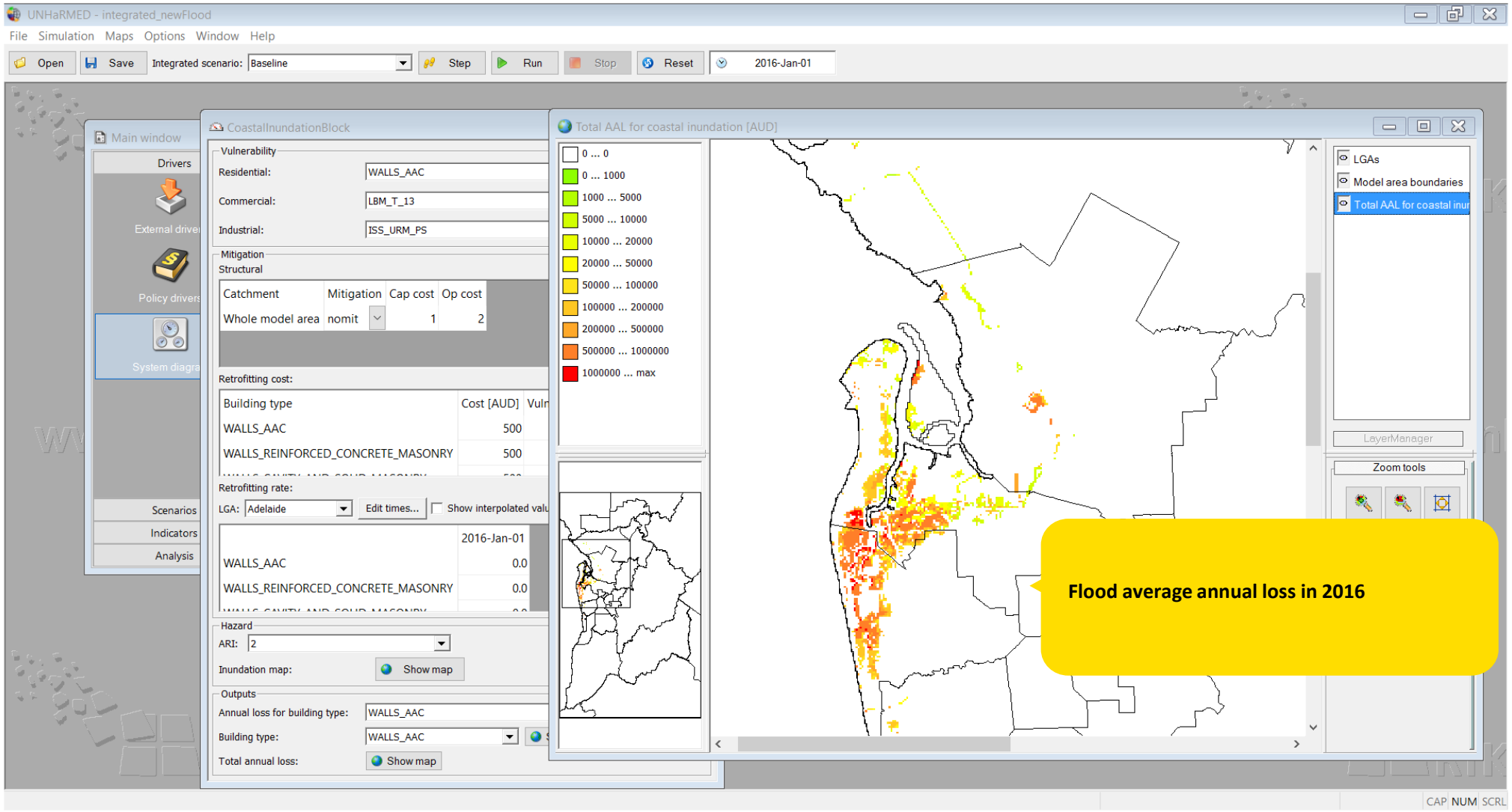
Future Exposure



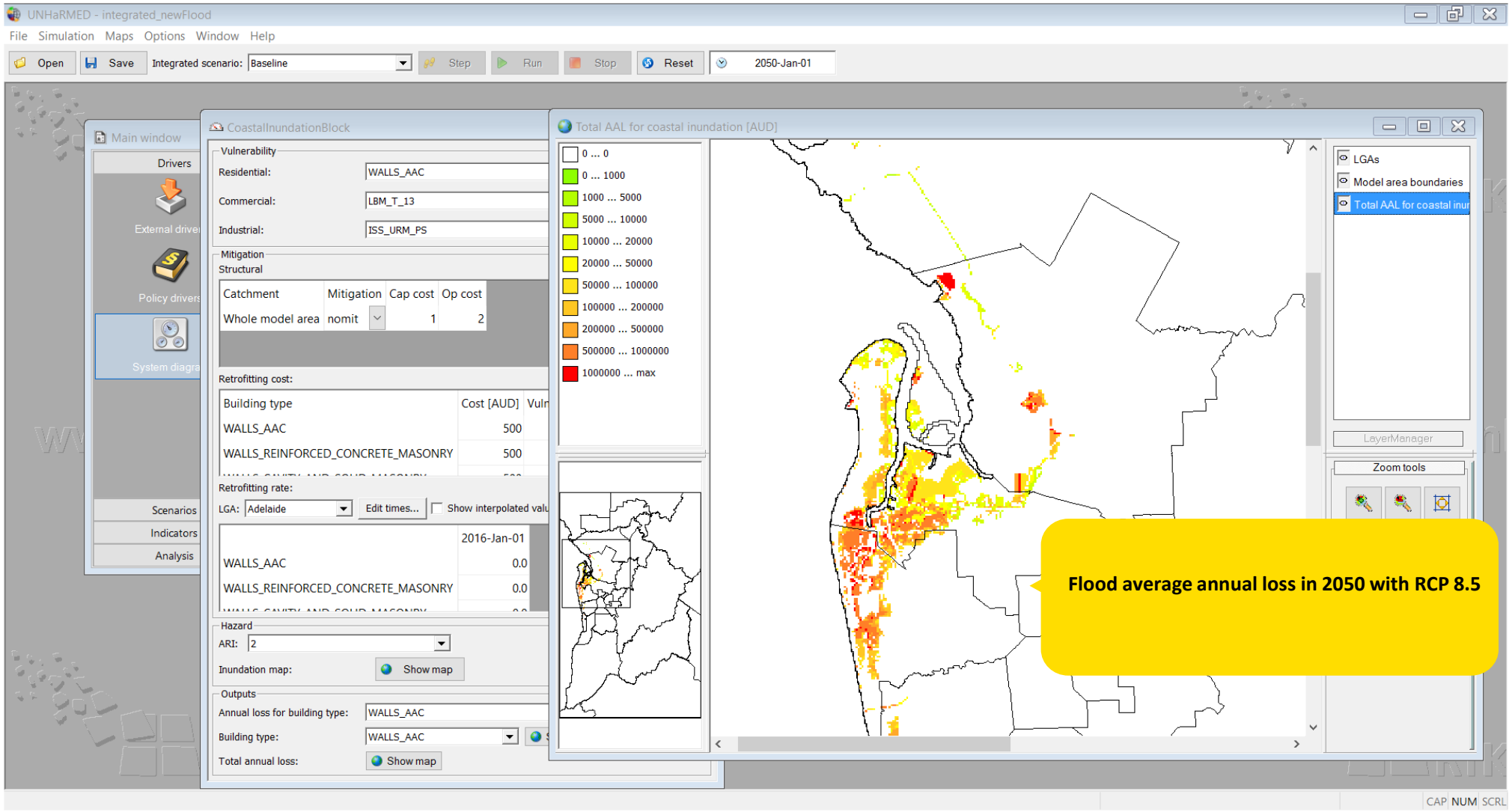
Potential for new commercial developments in Greater Adelaide

Choose somewhere with same potential – suitability, accessibility – but without the flood risk, or change zoning / invest in infrastructure to make somewhere more suitable

Mitigation investment

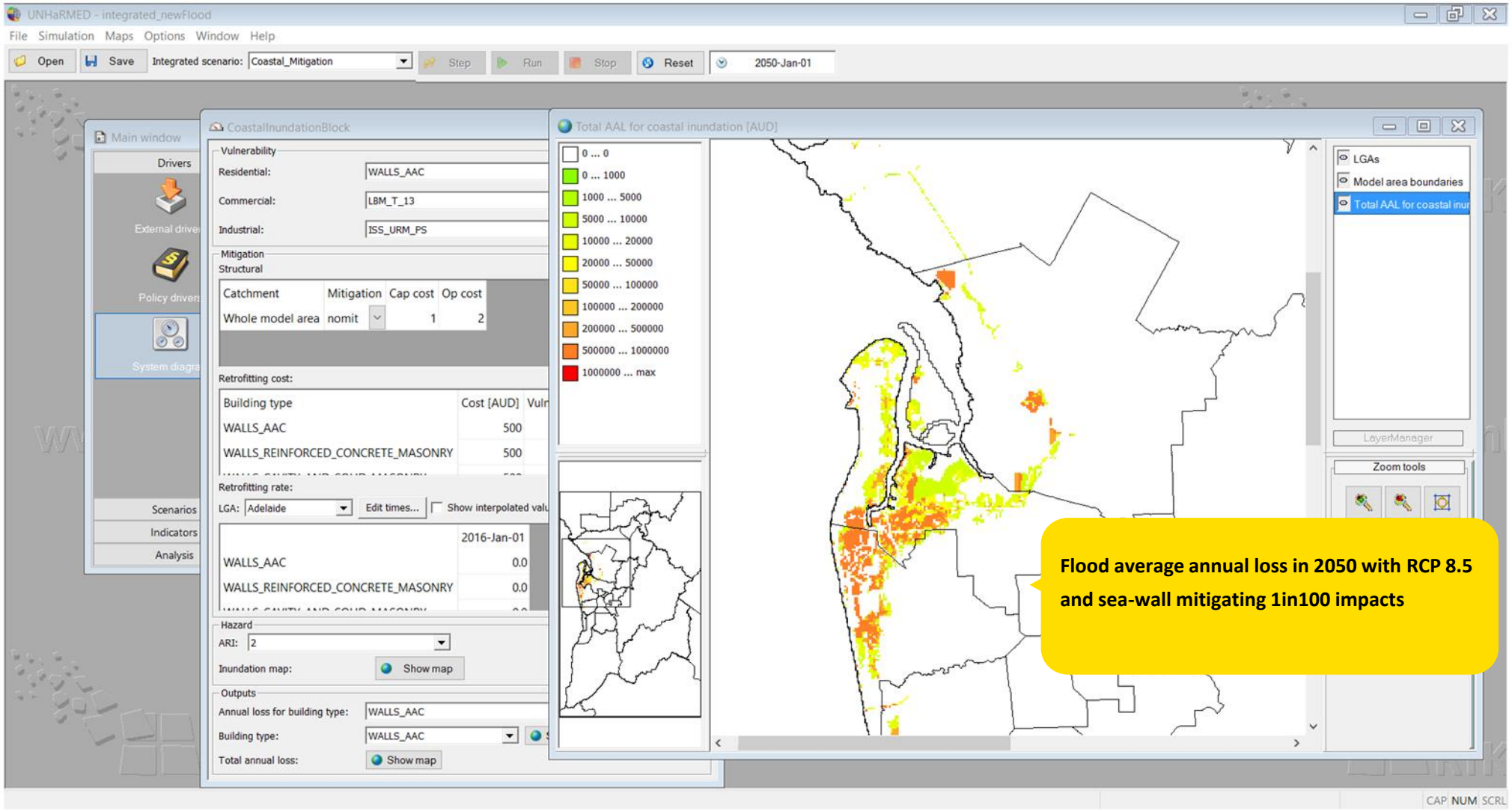


Mitigation investment



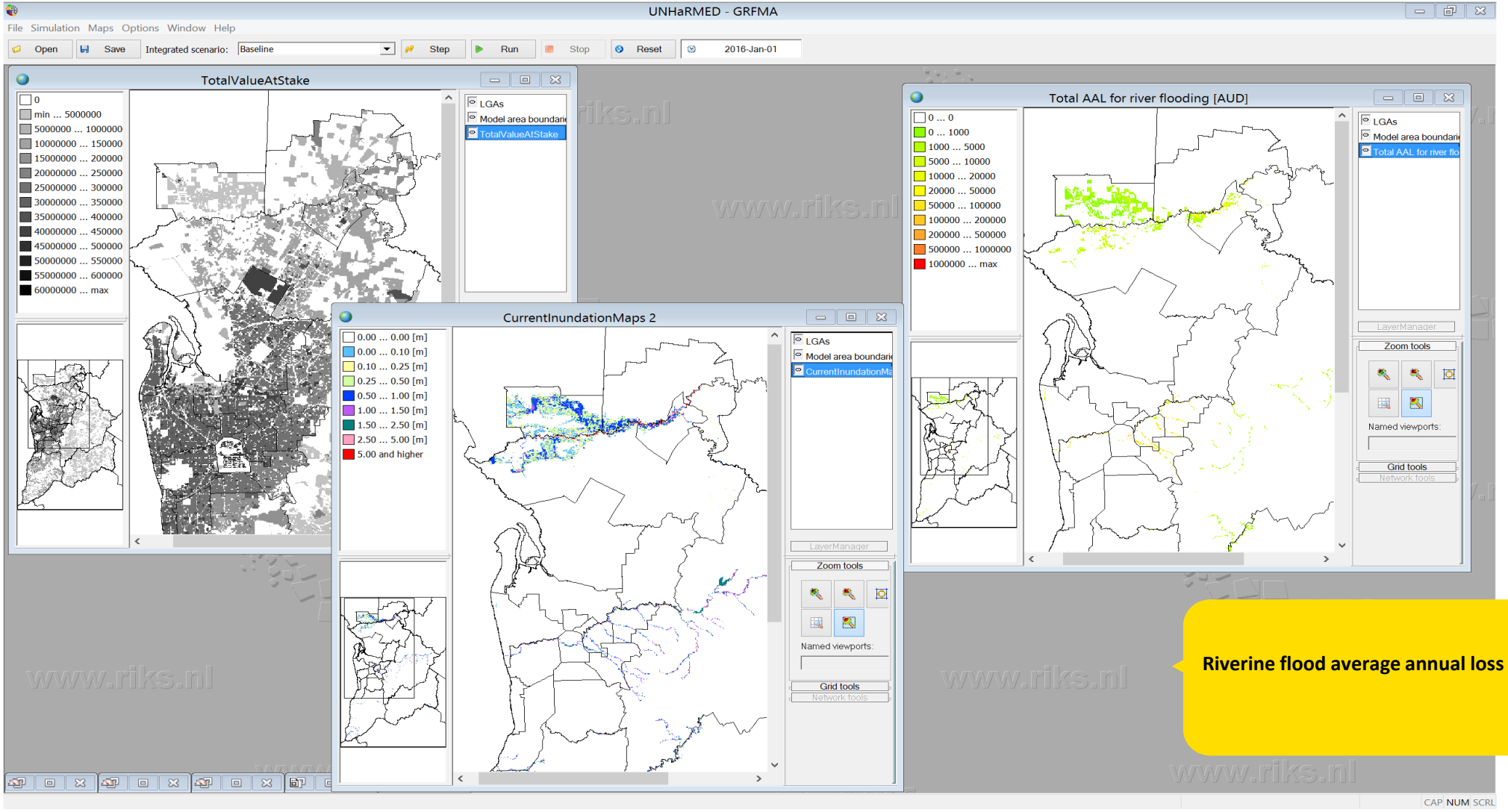
Flood average annual loss in 2050 with RCP 8.5

Mitigation investment



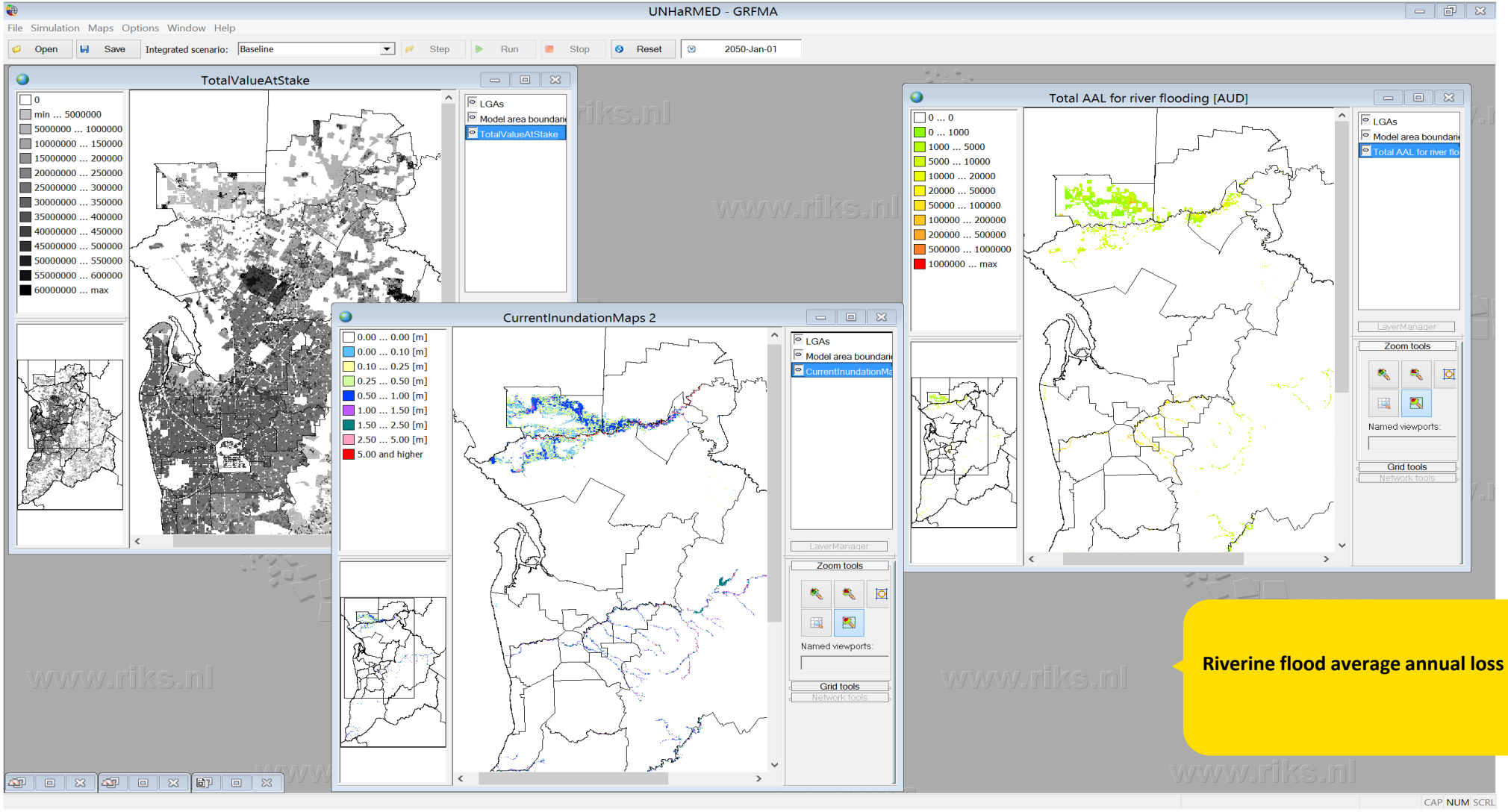
Flood average annual loss in 2050 with RCP 8.5 and sea-wall mitigating 1in100 impacts

Floodplain Development



Riverine flood average annual loss in 2016

Floodplain Development



Riverine flood average annual loss in 2050

Floodplain Development

NORTH

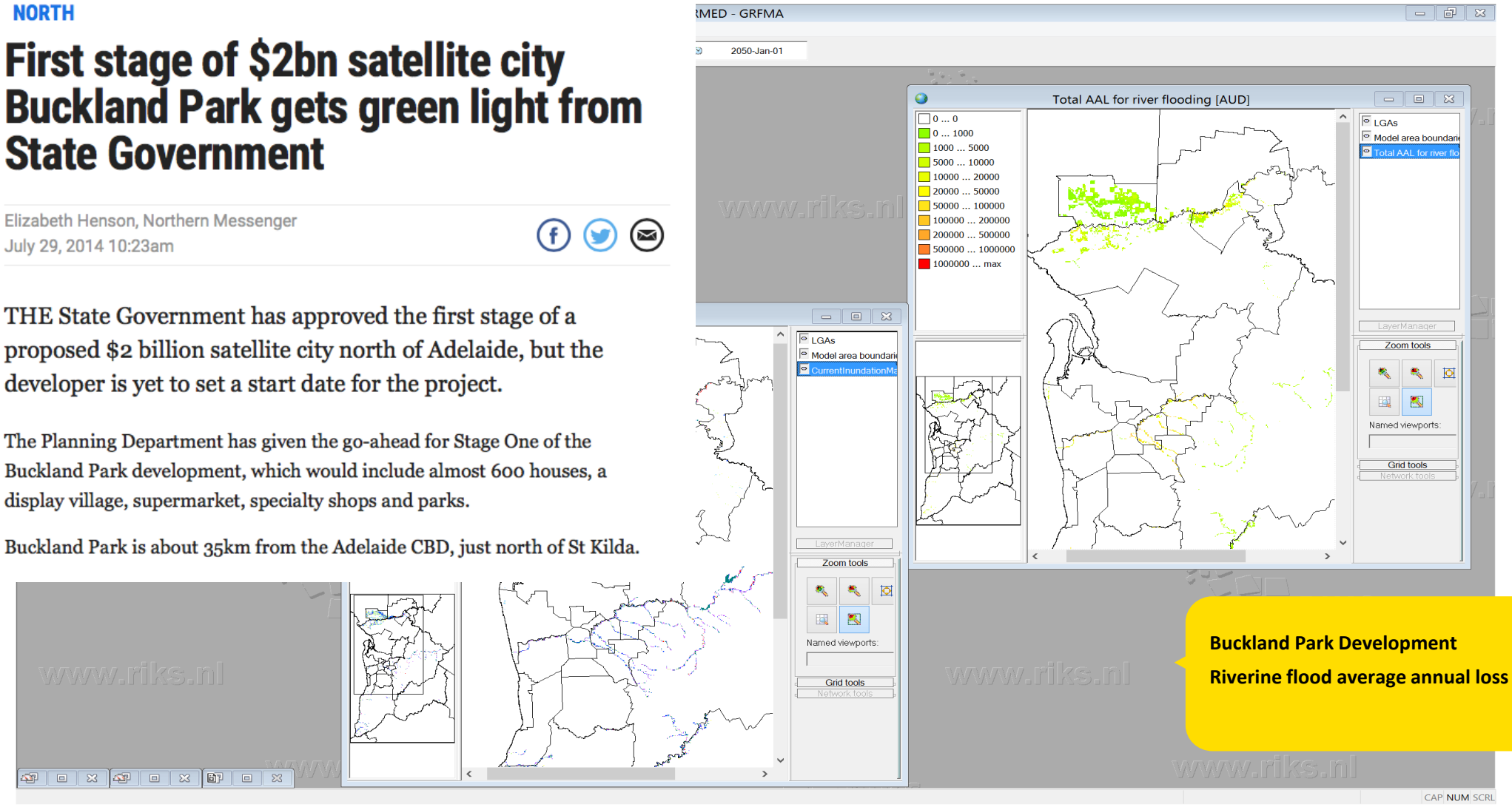
First stage of $2bn satellite city Buckland Park gets green light from State Government

Elizabeth Henson, Northern Messenger
July 29, 2014 10:23am

THE State Government has approved the first stage of a proposed $2 billion satellite city north of Adelaide, but the developer is yet to set a start date for the project.

The Planning Department has given the go-ahead for Stage One of the Buckland Park development, which would include almost 600 houses, a display village, supermarket, specialty shops and parks.

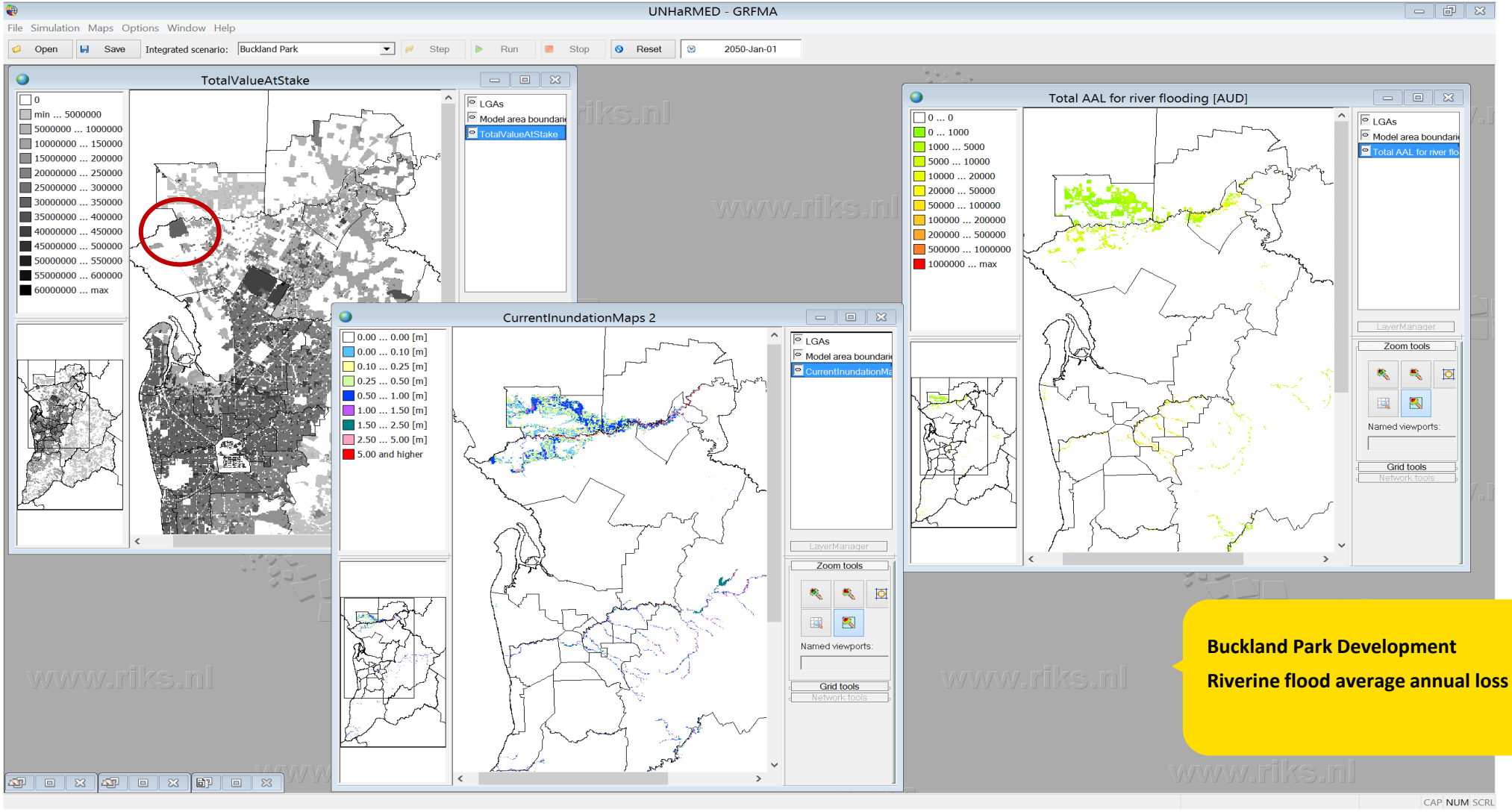
Buckland Park is about 35km from the Adelaide CBD, just north of St Kilda.



Buckland Park Development

Riverine flood average annual loss in 2050

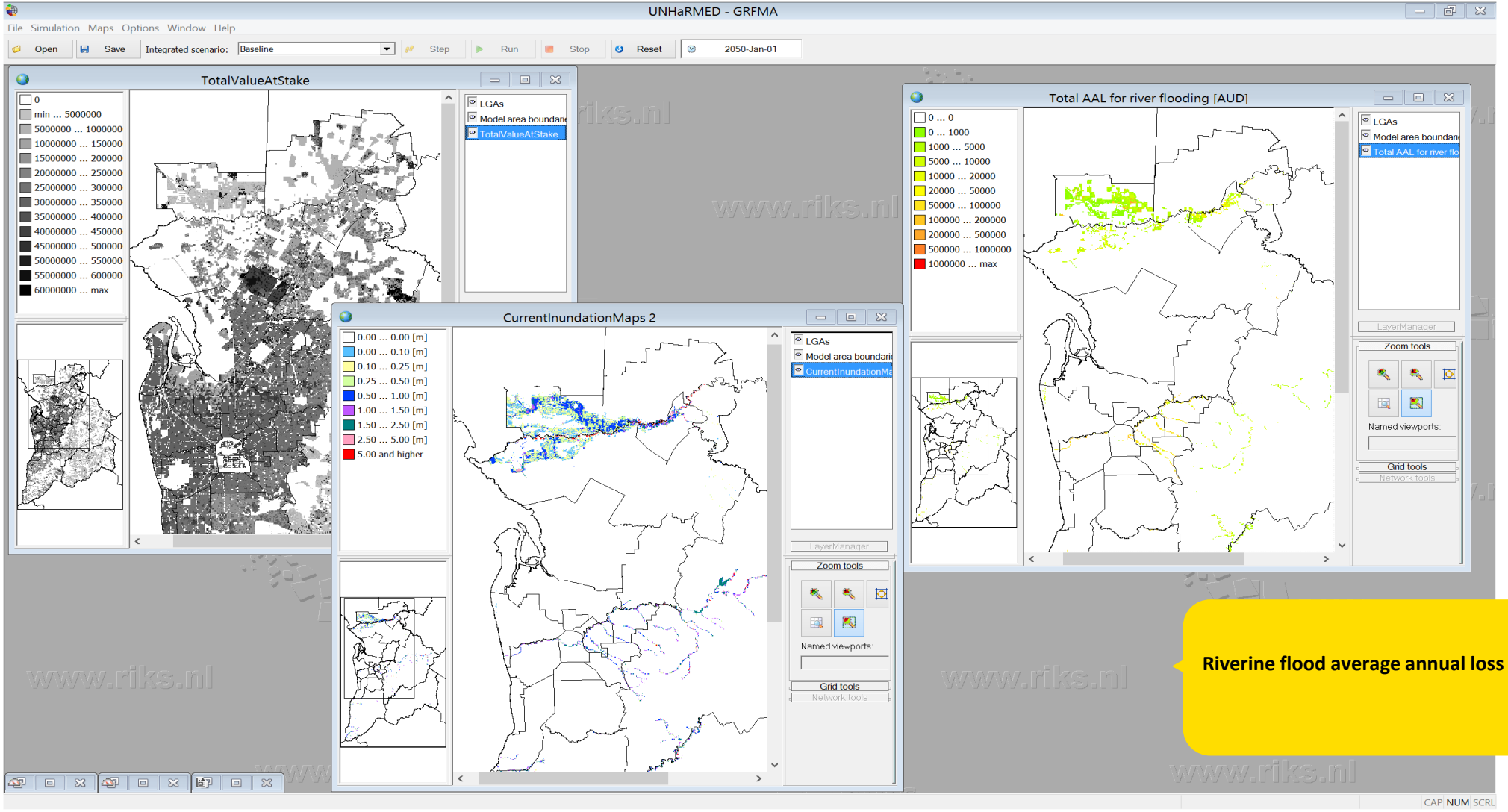
Floodplain Development



Buckland Park Development

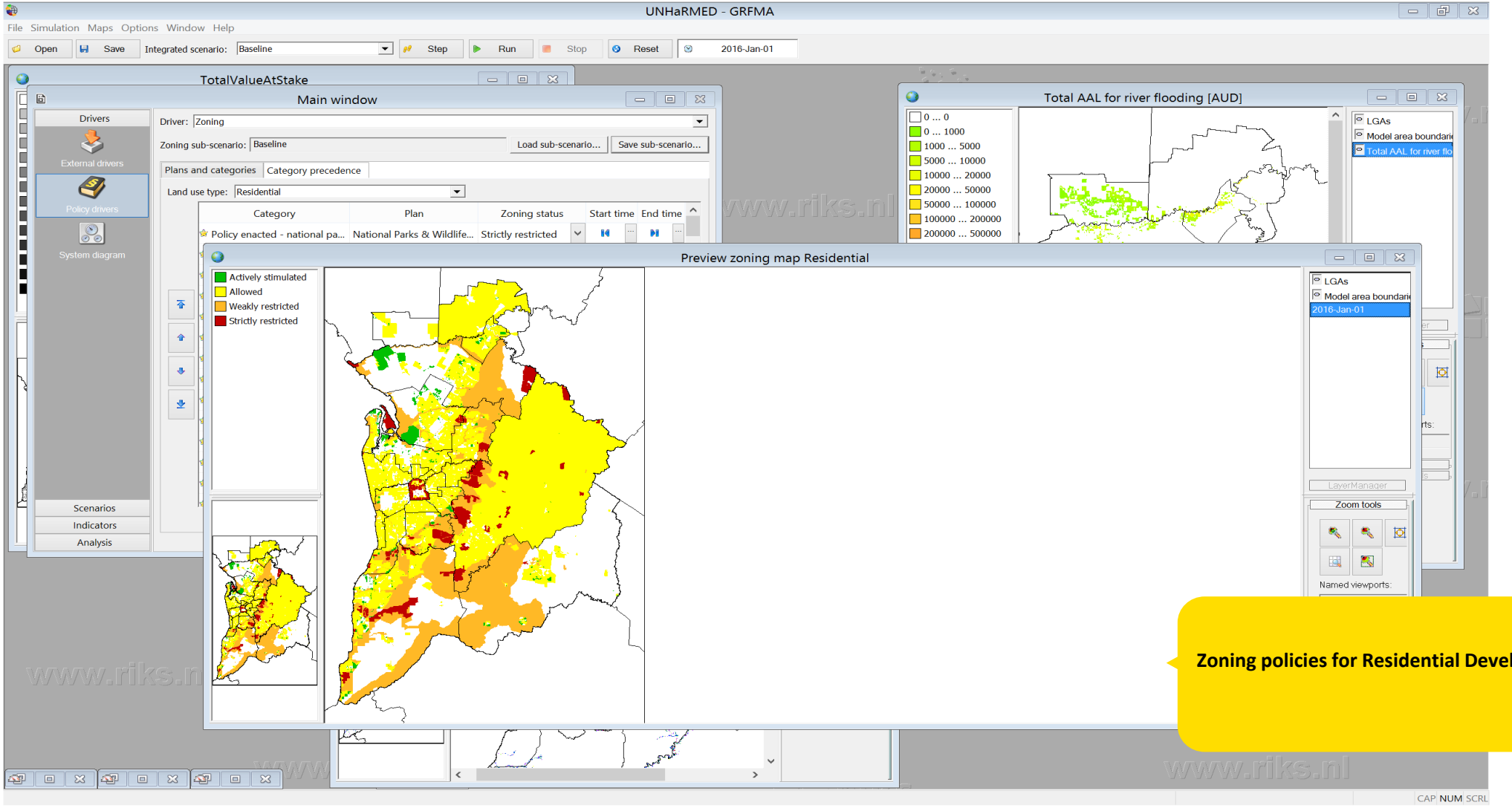
Riverine flood average annual loss in 2050

Floodplain Development



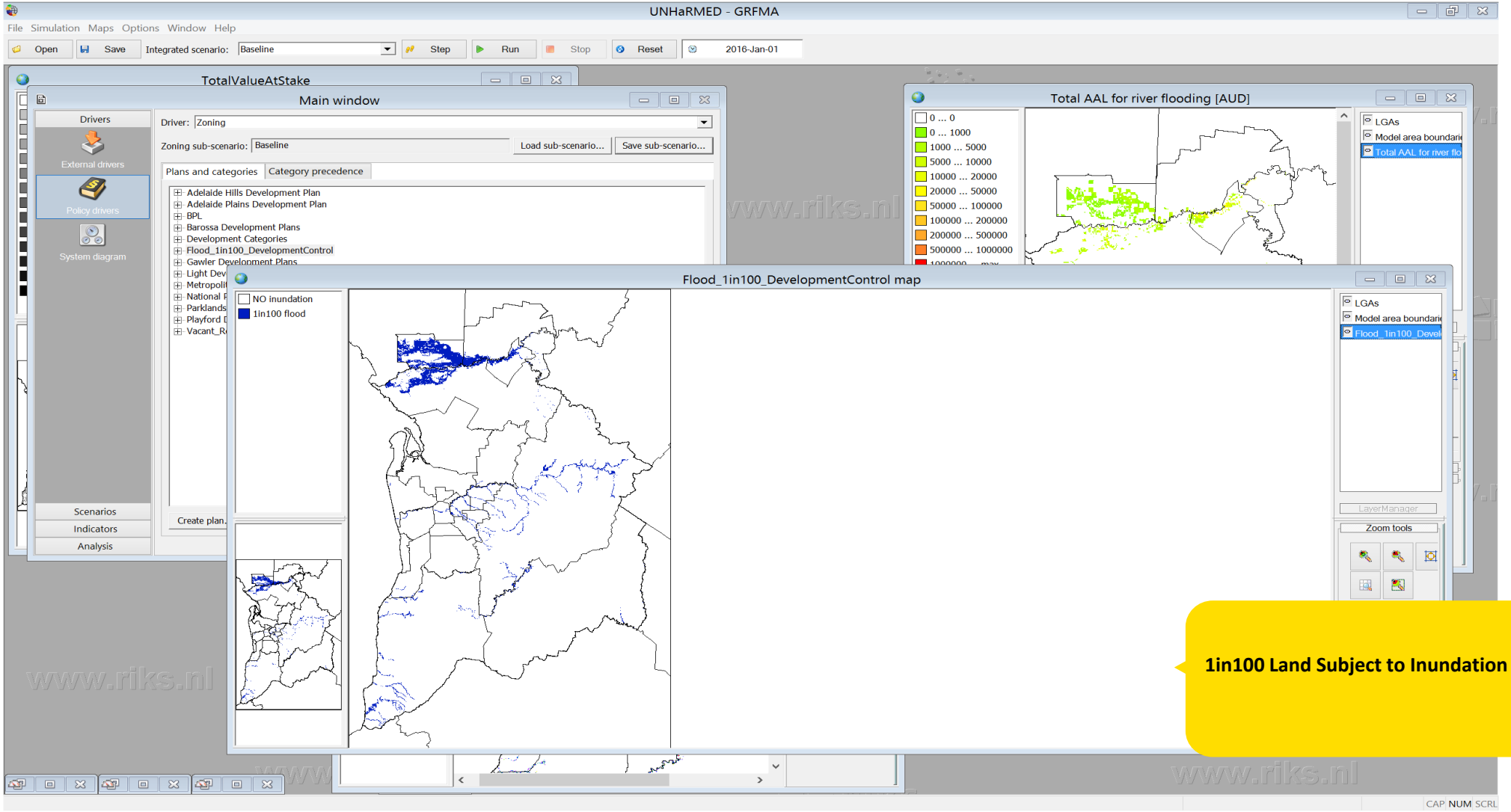
Riverine flood average annual loss in 2050

Floodplain Development



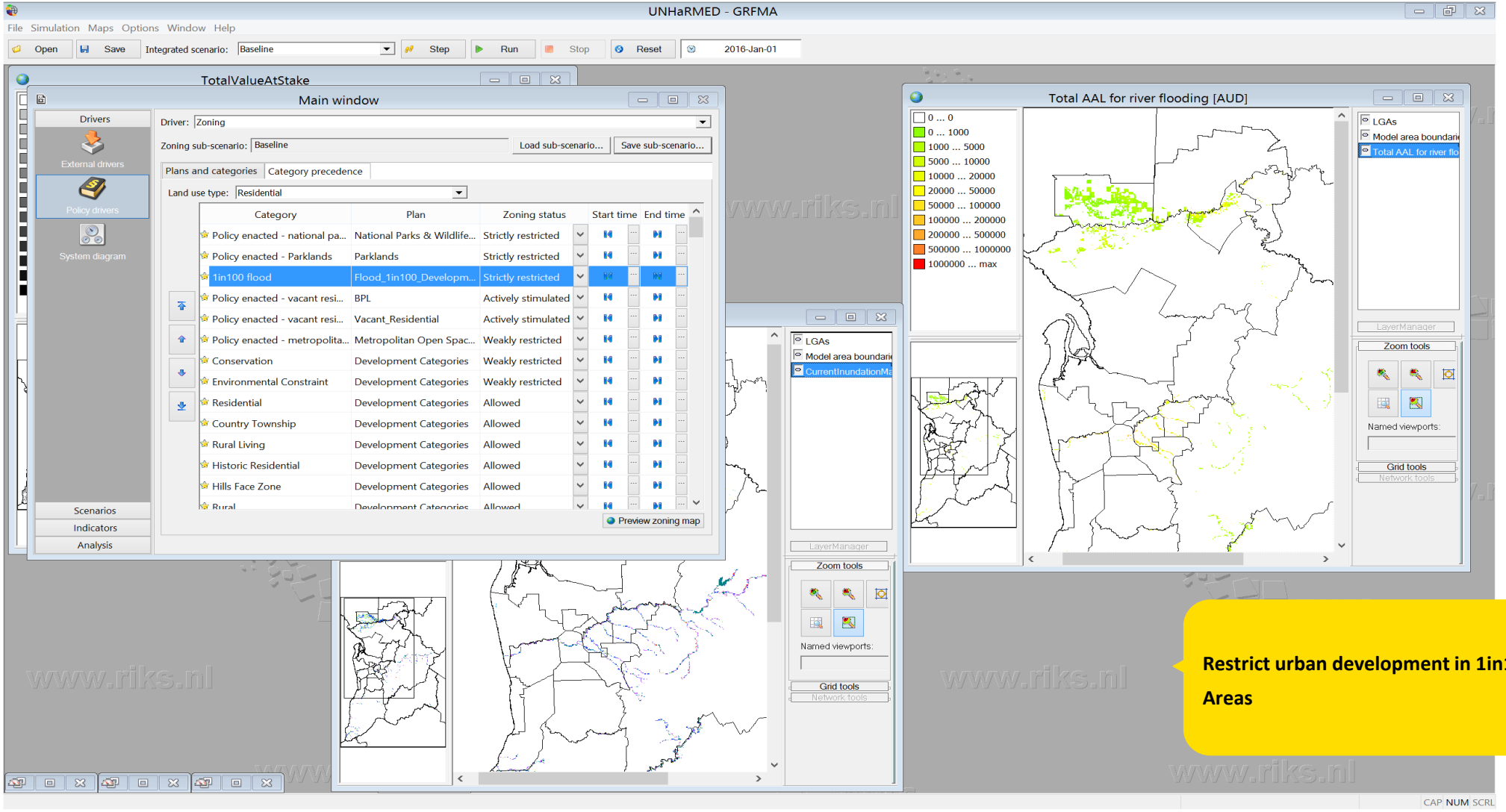
Zoning policies for Residential Developments

Floodplain Development



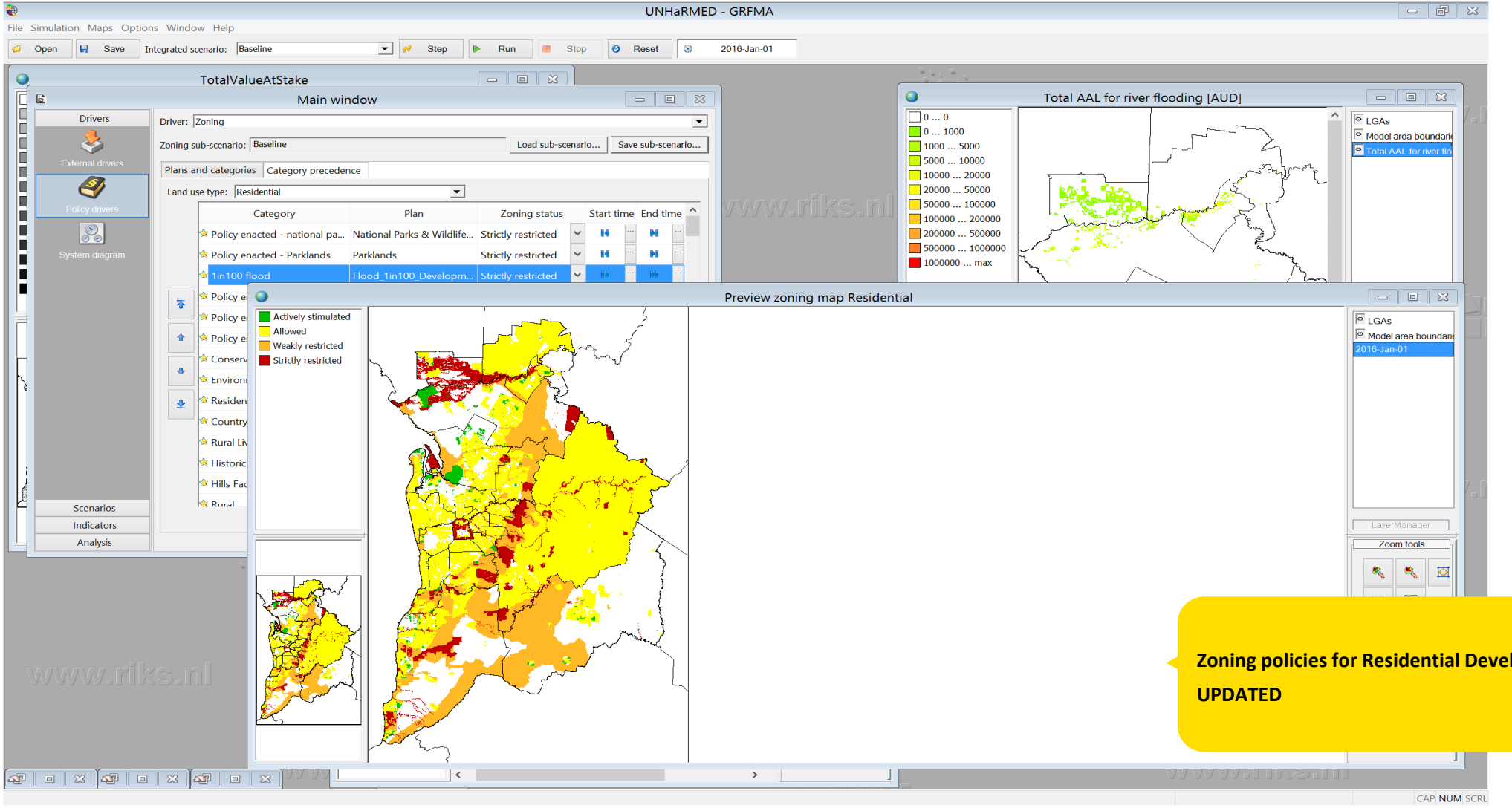
1in100 Land Subject to Inundation Layer

Floodplain Development



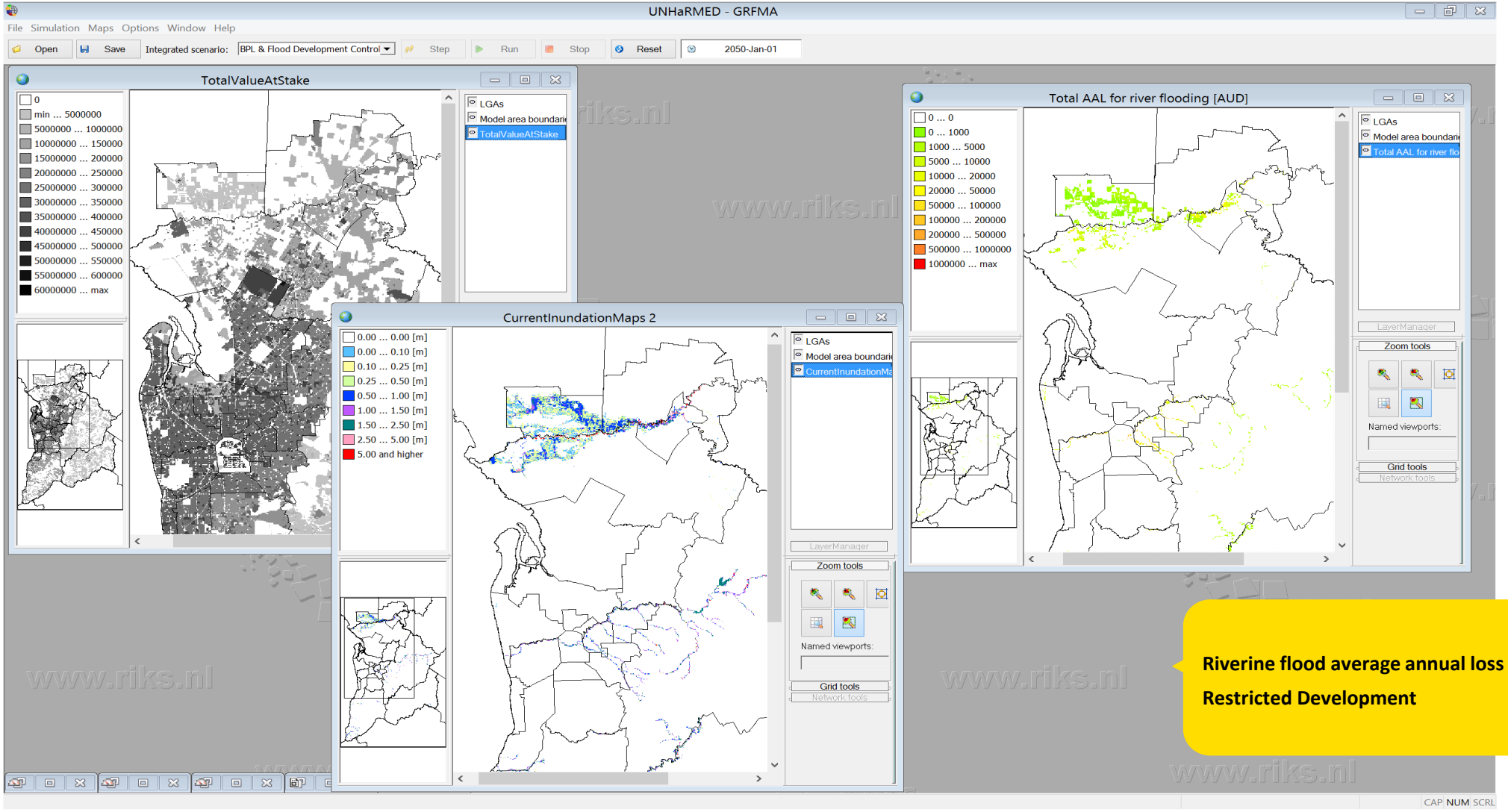
Restrict urban development in 1in100 Flood Areas

Floodplain Development



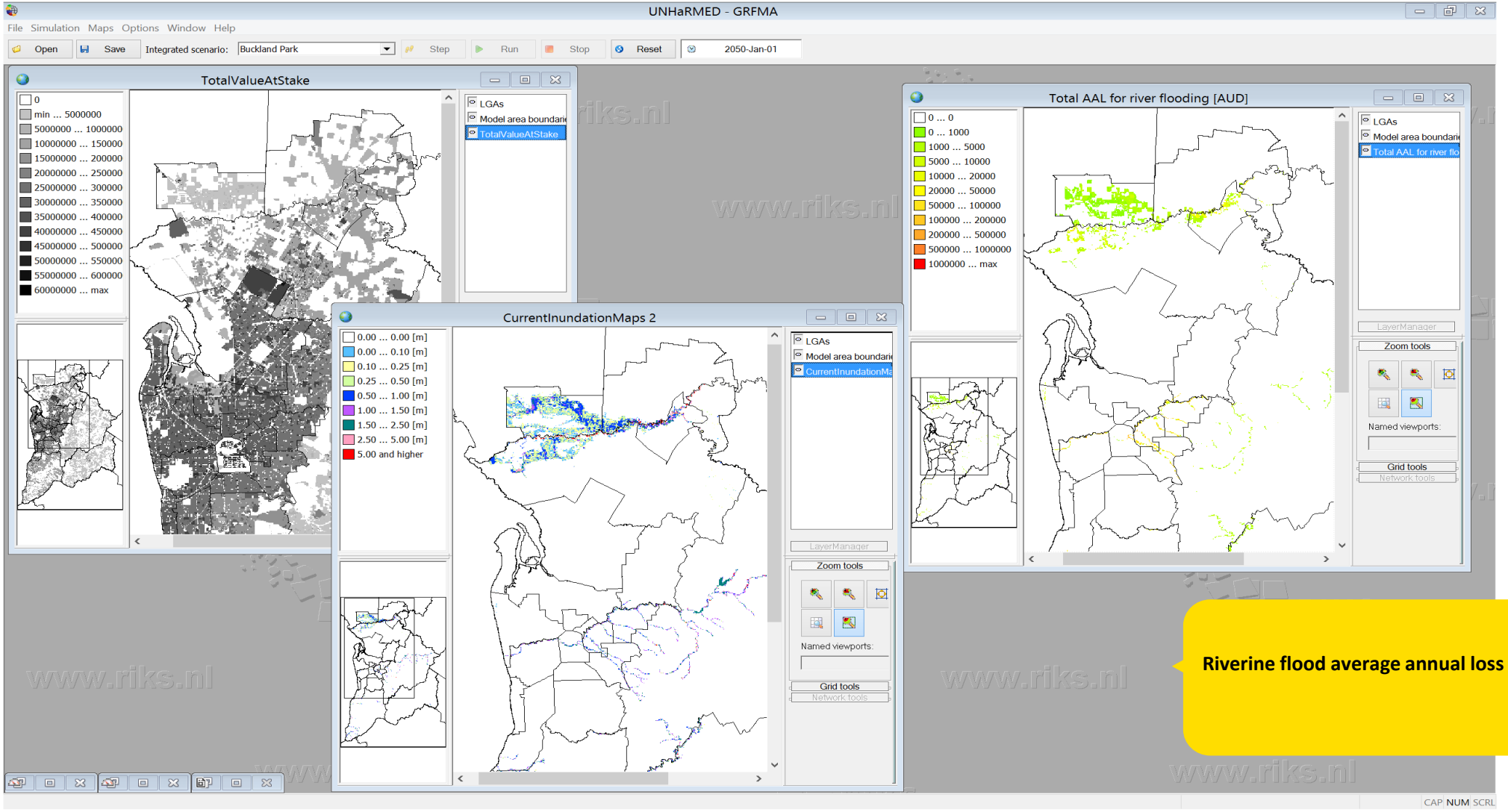
Zoning policies for Residential Developments - UPDATED

Floodplain Development



Riverine flood average annual loss in 2050 – Restricted Development

Floodplain Development



Riverine flood average annual loss in 2050

Where next?

Using and improving UNHaRMED

Improved socio-economic understanding of risk (exposure & vulnerability

Agent and activity based modelling to explore where people are, what they are doing, and how they are vulnerable to risk, or how they can act differently to reduce their risk.

Support current users to use, integrate and enhance UNHaRMED

Working across SA, VIC, WA, and TAS to train and help agencies use the applications. Use this to inform further improvements and justify the application to the region to support better planning.

Applying UNHaRMED to support specific risk assessments, and strategic planning processes

Using existing applications to consider specific risk hotspots, and supporting stakeholders work through issues for long-term strategic planning. The Gawler River floodplain is one location we're looking to do this.

New regions, agencies, hazards

Continuing to expand the use of UNHaRMED in new locations, with diverse stakeholders and adding to hazards included.

Come talk to Holger or I.

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Thank you

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