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WHERE DO WE PUT OUR DOLLARS?

Economic analysis of different bushfire management options in Western Australia

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Department of Industry, Innovation and Science
Business Cooperative Research Centres Programme

THE UNIVERSITY OF WESTERN AUSTRALIA

ECONOMIC EVALUATION OF BUSHFIRE MANAGEMENT IN WESTERN AUSTRALIA

Project aims:

- insights into costs and benefits
- inform policy
- prioritisation management options
- allocation of resources

ECONOMIC EVALUATION OF BUSHFIRE MANAGEMENT IN WESTERN AUSTRALIA

2 case studies:

- Urban + peri-urban + natural areas
- Rural + agricultural + natural areas

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WHAT WE DID

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WHAT WE DID

Workshops with experts

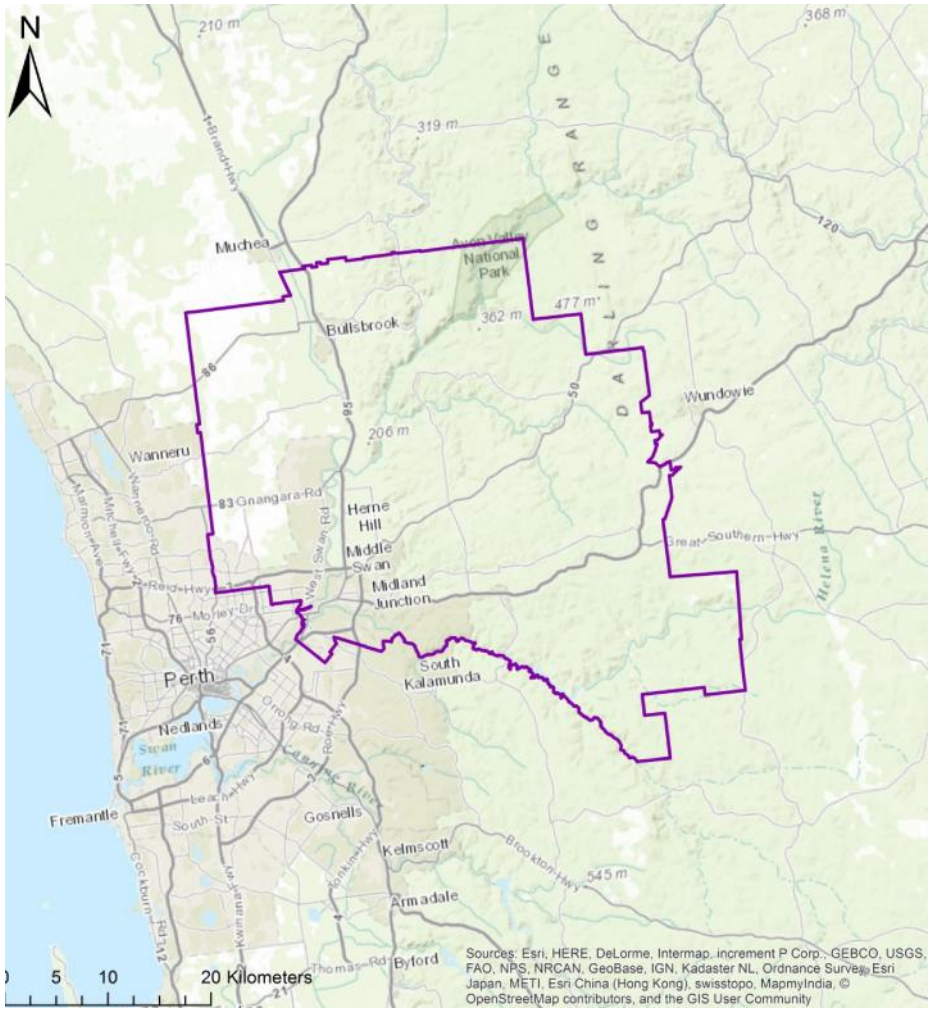
- Fire management context south-west WA
- Decisions about location of case study areas
- Management options

WHAT WE DID

First we selected the case study areas

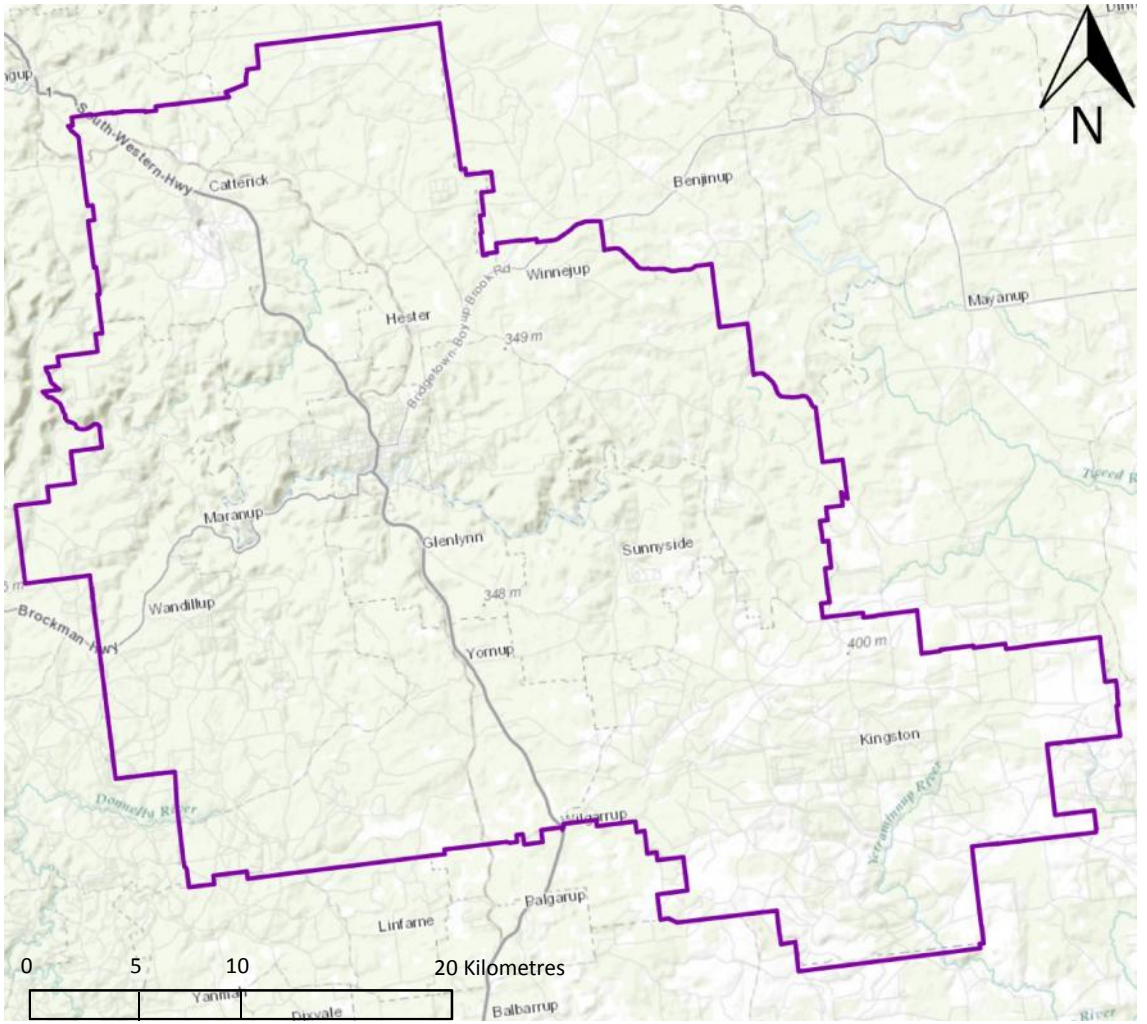
PERTH HILLS

City of Swan
+
Shire of Mundaring



BRIDGETOWN

Shire of Bridgetown
Greenbushes



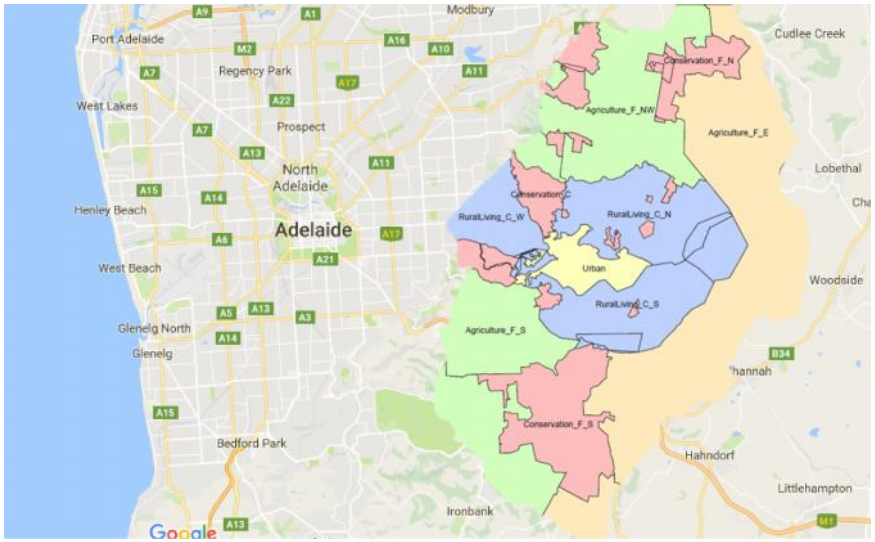
WHAT WE DID

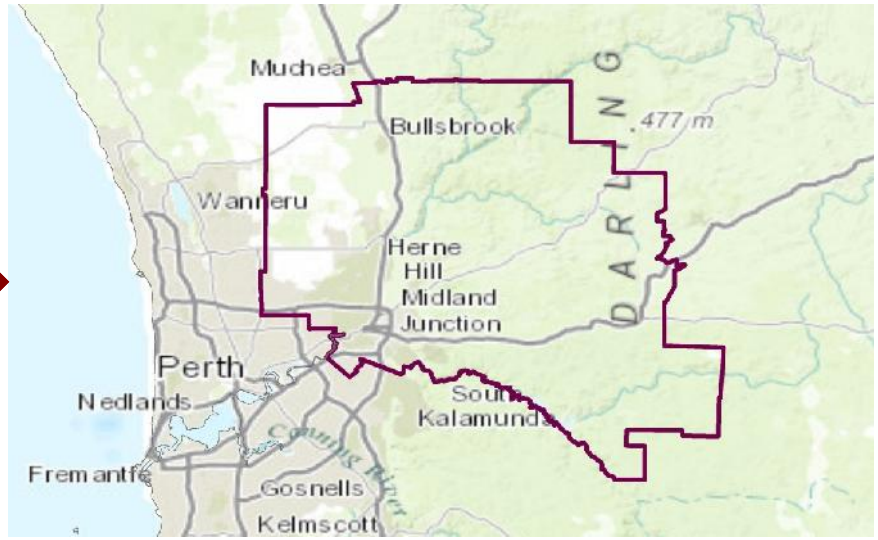
1) Management options evaluated
   a) Increased prescribed burning in public land (DBCA vs. Shires)
   b) Land use planning (development restrictions)
   c) Increased fuel management in private land

2) Benchmark: Business as usual

WHAT WE DID

Adapted a model developed for the Adelaide Hills





WHAT WE DID

1) Identified the relevant assets at risk
2) And their values
   - Plantations and State Forests
   - Biodiversity
   - Built assets
     - Residential
     - Industrial
     - Commercial
     - Infrastructure
   - Population (life value)
   - Agricultural production

WHAT WE DID

1) Collected relevant data to populate the model
2) Used expert opinion where needed

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THE MODEL

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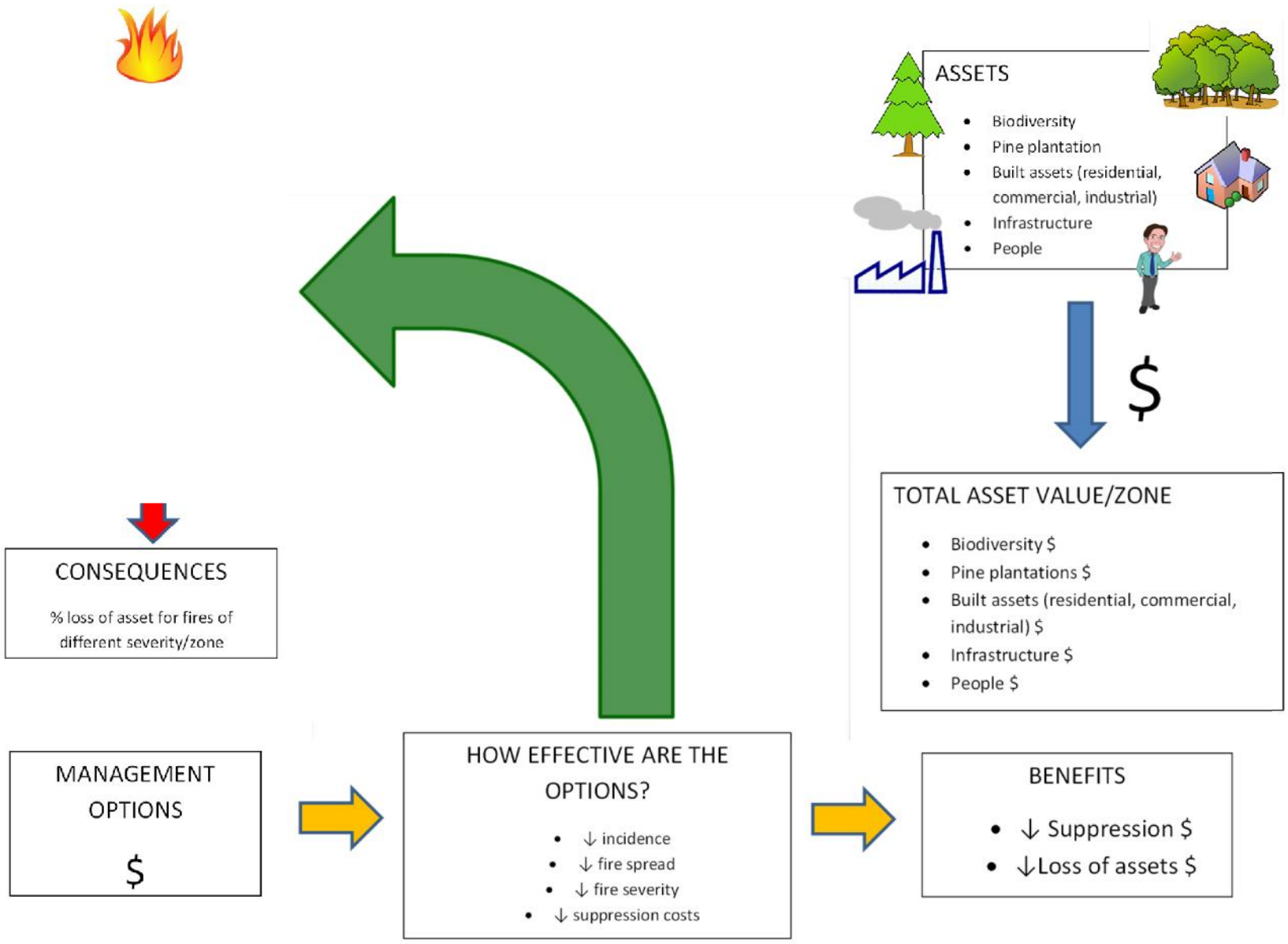
ASSETS
Biodiversity
Pine plantation
Built assets (residential, commercial, industrial)
Infrastructure
People
$
TOTAL ASSET VALUE/ZONE
Biodiversity $
Pine plantations $
Built assets (residential, commercial, industrial) $
Infrastructure $
People $
CONSEQUENCES
% loss of asset for fires of different severity/zone
MANAGEMENT OPTIONS
$
HOW EFFECTIVE ARE THE OPTIONS?
↓ incidence
↓ fire spread
↓ fire severity
↓ suppression costs
BENEFITS
↓ Suppression $
↓Loss of assets $

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RESULTS

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PERTH HILLS

Business as usual

- Current costs: $1.9 million
- Current proportion area treated: 2.17%

PERTH HILLS

	Strategy				
Result	Increased fuel reduction (DBCA only)	Increased fuel reduction (Shire only)	Increased fuel reduction (DBCA and Shire)	Land-use planning	Fuel reduction in private land
Benefit : Cost ratio	4.6	1.8	4.7	15.3	0.9

PERTH HILLS

1) Benefits concentrated around rural living areas

2) Benefits = savings in losses of residential buildings

3) Largest reduction in fire numbers from DBCA strategy

BRIDGETOWN

Business as usual

- Current costs: $463 K
- Current proportion area treated: 3.18%

BRIDGETOWN

	Strategy				
Result	Increased fuel reduction (DBCA only)	Increased fuel reduction (Shire only)	Increased fuel reduction (DBCA and Shire)	Land-use planning	Fuel reduction in private land
Benefit : Cost ratio	2.1	0.6	2.0	0.1	0.4

BRIDGETOWN

1) Benefits are concentrated around conservation areas

2) Benefits = reductions in losses biodiversity, plantations, infrastructure

3) Largest reduction in fire numbers from DBCA strategy

SENSITIVE PARAMETERS

1) Reduction in fire severity

2) Proportion of assets destroyed per fire

3) Cost of management options

KEY RESULTS

1) Expected level of damages different for the case study areas
   - Perth Hills around AU$30 million
   - South-West around AU$1.5 million

2) Difference in:
   - number of high value assets
   - fire numbers
   - prevalent climate
   - land uses

KEY RESULTS

Strategy that provides the best value for money

- Perth Hills: Land use planning (development restrictions)
- Bridgetown: Additional prescribed burning by DBCA

In highly populated areas, development restrictions are a more efficient strategy

In less populated areas, reducing fuels generates more benefits per dollar invested


THANK YOU!
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