CRC for Construction Innovation

Planning, Designing and Rating
A Sustainable Built Environment
Industry Forum
10 February 2005
Brisbane City Hall

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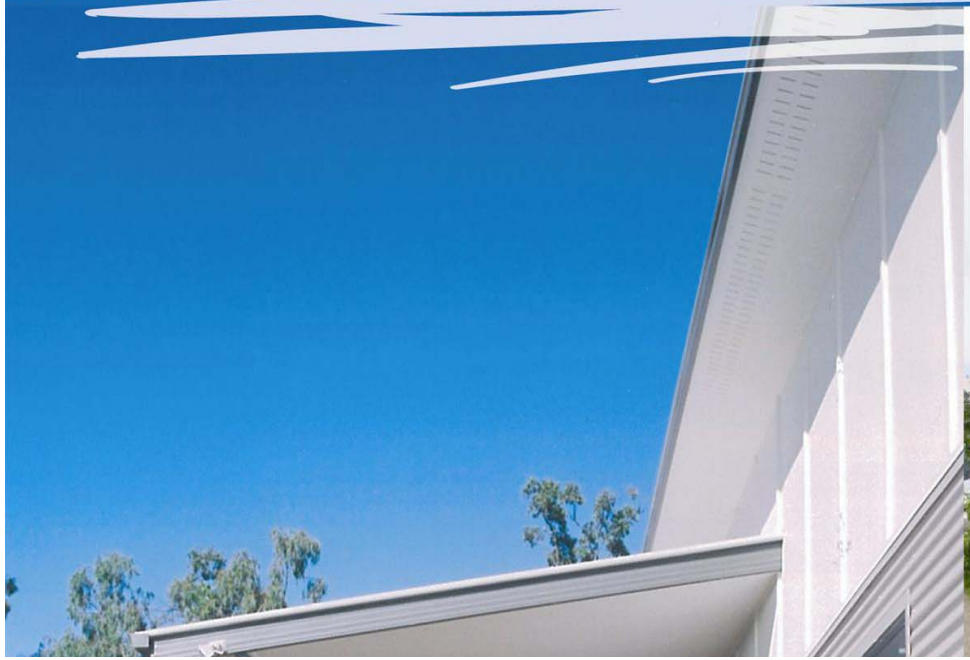
SUSTAINABILITY TOOLS OVERVIEW

Adam Beck - Arup Sustainability
And
Andrew Aitken - Brisbane City Council



Council’s Current Commitments

- Living in Brisbane 2010
- City Plan
  - broad provisions
  - trial precinct provisions
- D.A. Sustainability Team
- Sustainability Rating Tools - Arup
- Incentives
  - background research QUT
  - options for BCC by Arup and Buckley Vann
- SEQROC Sustainable Housing Code

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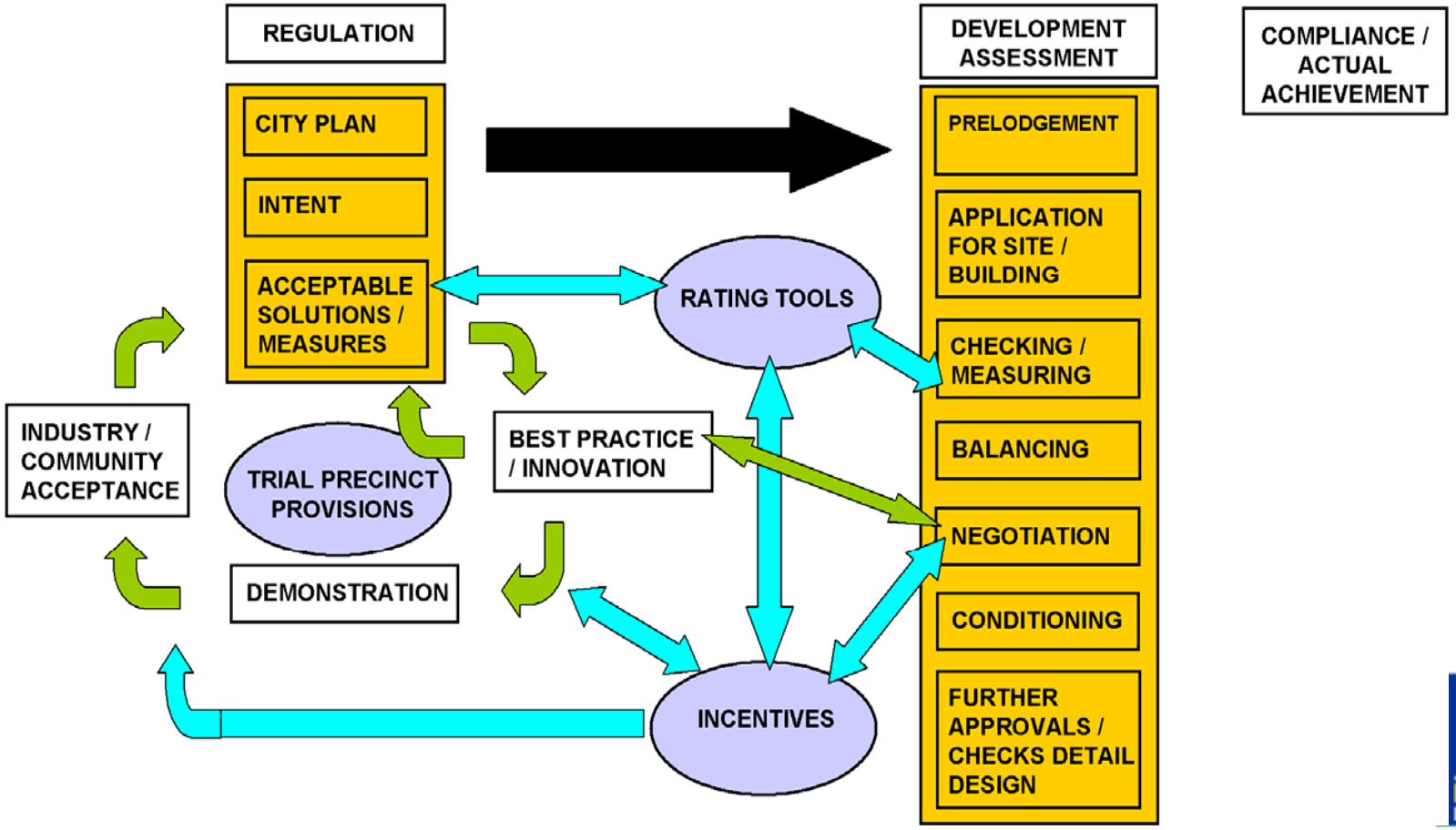
Fostering Sustainable Development



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Drivers for this Study

- Improve the use of City Plan and the development assessment process to encourage and reward sustainable development outcomes
- Work with developers who are designing and constructing sustainable developments
- BCC is receiving a growing number of sustainable development applications
- innovative designs are difficult to assess
- sustainability is about integration
- timeliness of assessment
- multitude of rating tools confusing
- promotion of sustainable development

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Study Focus

- Assess the range of sustainability tools available in Australia

- Determine the suitability of the tool for use in the development assessment process:
  - influence sustainable outcomes early in the DA process
  - assist DA sustainability team
  - measure for awarding incentives
  - ease of checking compliance

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Phase 1:

Review Rating Tools and Their Ability to Suit Council's Needs

- Identify tools for Evaluation
- Define Evaluation Criteria
- Review tools against criteria and develop database
- Review relevant papers and articles
- Consult with Project Steering Group (workshop and on-on-ones)
- Presentation to the Sustainability Working Group

Deliverables:

- Evaluation paper
- Database of tools against BCC's criteria

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Phase 2:

Evaluate Shortlisted Tools in the Context of the Regulatory Planning Framework

- Review DA material for two ‘sustainable’ developments
- Review of developments against the requirements of shortlisted tools
- Gap analysis
- Review suitability of tool indicators in Brisbane context
- Assess requirements for inclusion of tool into the planning scheme

Deliverables:

- Assessment of DA against tool requirements
- Findings and recommendations in final report

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Office / Commercial

- **Green Star**

green star
environmental leadership for buildings

- **ABGR** – Australian Building Greenhouse Rating

BUILDING
GREENHOUSE RATING

- **LCADesign** – Life Cycle Analysis of Design

LCADesign

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Residential

- **BASIX** - Building Sustainability Index

BASIX

- **BERS** - Building Energy Rating Scheme

- **FirstRate**

FirstRate

- **NatHERS** - Nationwide House Energy Rating Software

- **Sustainable Housing Code**

Sustainable Housing Code

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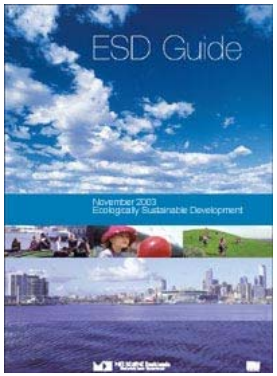
Combination

(Residential/Office/Others)

- **BREEAM** – Building Research Establishment Environmental Assessment Method

- **LEED** – Leadership in Energy and Environmental Design

- **Melbourne Docklands ESD Guide**



- **SPeAR®** - Sustainable Project Appraisal Routine

- **THG Eco Index**

- **NABERS**: National Australian Building Environmental Rating System

Australian Government
Department of the Environment and Heritage

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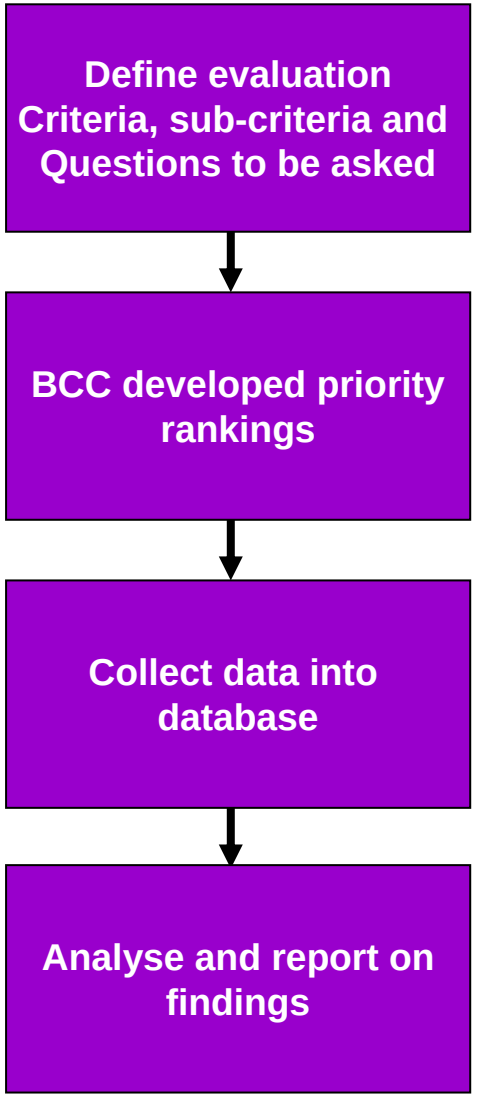
Evaluation Criteria

1. Coverage of sustainability issues
2. Summary of rating tool features
3. Description of Tool's coverage
4. Pros and cons of using the tools and its limitations
5. Benchmarking against best practice
6. Ability of the tool to verify/quantify/measure sustainability issues
7. Ability of the tool to compare between developments
8. Ability for the tool to be updated to reflect improvements in best practice
9. Degree of acceptance/recognition by development industry practitioners and regulators of the credibility of the tool
10. Current usage of the tool in Australia
11. Proposed changes to the rating system
12. Ease at which the tool can be communicated



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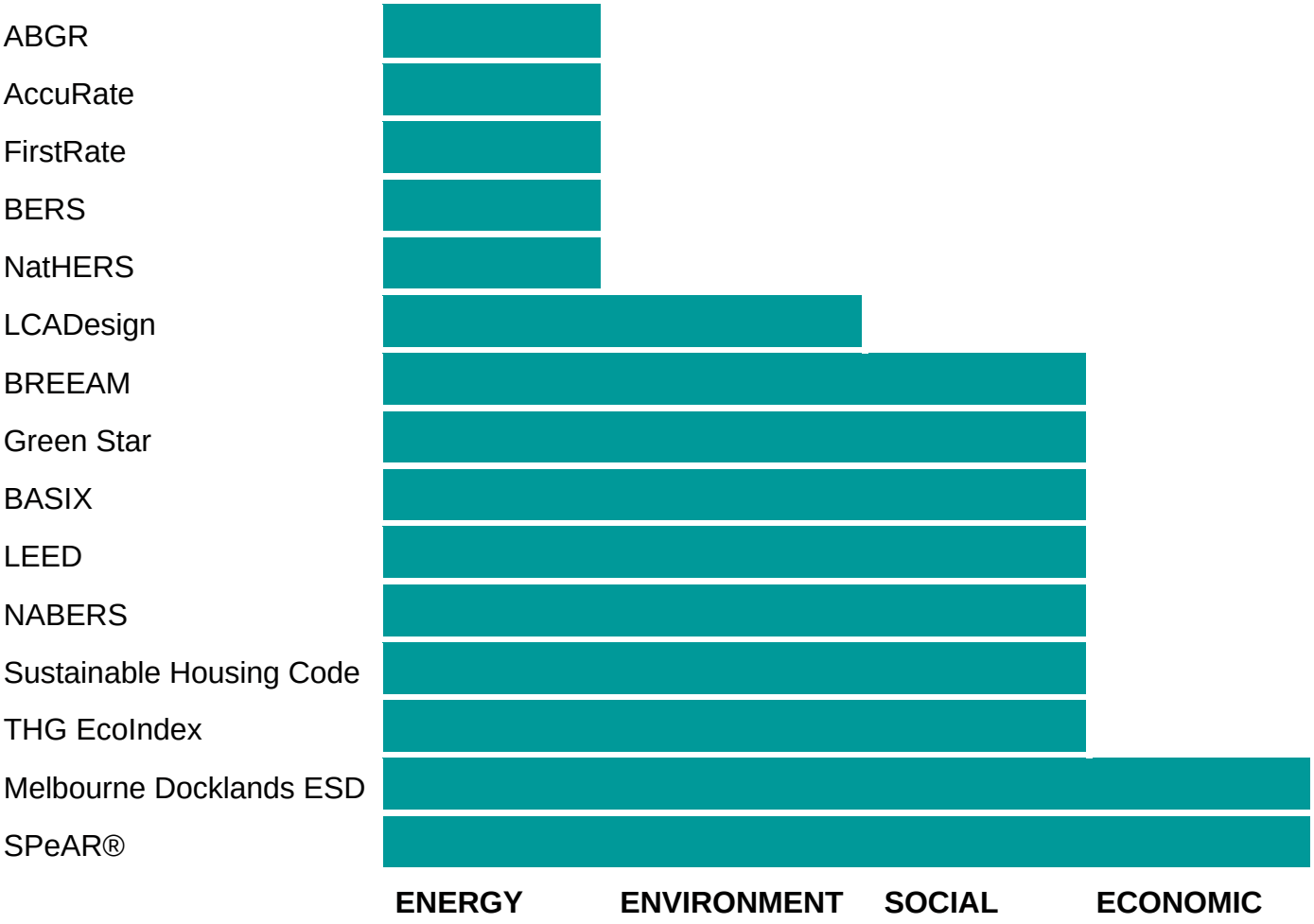
Coverage of Sustainability Issues



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Tool Output

TOOL	SINGLE RATING	GUIDELINE/ OTHER
COMMERCIAL		
ABGR	✓ Star Rating	-
Green Star	✓ Star Rating	-
LCADesign	✓ Rating Number	-
RESIDENTIAL		
AccuRate	✓ Star Rating	-
BASIX	✓ Rating Number	-
BERS	✓ Star Rating	-
FirstRate	✓ Star Rating	-
NatHERS	✓ Star Rating	-
Sustainable Housing Code	-	✓ Credit Points
OTHER		
BREEAM	✓ Performance Rating	-
LEED	✓ Performance Rating	-
Melbourne Docklands ESD	✓ Performance Rating	-
NABERS	✓ Rating Number	-
SPeAR®	-	✓ Performance Summary
THG EcoIndex	✓ Rating Number	-

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Development Type By Tool

TOOL	COMMERCIAL	RESIDENTIAL	OTHER*
ABGR	⊙		
AccuRate		⊙	
BASIX		⊙	
BERS		⊙	
BREEAM	⊙	⊙	⊙
FirstRate		⊙	
Green Star	⊙		
LCADesign	⊙		
LEED	⊙	⊙	⊙
Melbourne Docklands ESD	⊙	⊙	⊙
NABERS	⊙	⊙	
NatHERS		⊙	
SPeAR®	⊙	⊙	⊙
Sustainable Housing Code		⊙	
THG EcoIndex		⊙	⊙

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Stage of Development Covered by Tool

TOOL	NEW BUILDING	EXISTING BUILDING
ABGR	⊙	⊙
AccuRate	⊙	
BASIX	⊙	
BERS	⊙	
BREEAM	⊙	⊙
FirstRate	⊙	
Green Star	⊙	⊙
LCADesign	⊙	
LEED	⊙	⊙
Melbourne Docklands ESD	⊙	
NABERS		⊙
NatHERS	⊙	
SPeAR®	⊙	⊙
Sustainable Housing Code	⊙	
THG EcoIndex	⊙	

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Extent of Development Coverage by Tool

TOOL	DESIGN	CONSTRUCTION	OPERATION
ABGR	⊙		⊙BB & T*
AccuRate	⊙		
BASIX	⊙		
BERS	⊙		
BREEAM	⊙	⊙	⊙BB & T*
FirstRate	⊙		
Green Star	⊙		
LCADesign	⊙		
LEED	⊙	⊙	⊙BB & T*
Melbourne Docklands ESD	⊙	⊙	⊙BB*
NABERS			⊙BB & T*
NatHERS	⊙		
SPeAR®	⊙	⊙	⊙BB & T*
Sustainable Housing Code	⊙		
THG EcoIndex	⊙	⊙	⊙BB*

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Ability for Use in Brisbane

TOOL	NO CHANGE REQUIRED	CHANGE REQUIRED
ABGR	⊙	
AccuRate	⊙	
BASIX		⊙
BERS	⊙	
BREEAM		⊙
FirstRate		⊙
Green Star	⊙	
LCADesign	⊙	
LEED		⊙
Melbourne Docklands ESD		⊙
NABERS	⊙	
NatHERS	⊙	
SPeAR®	⊙	
Sustainable Housing Code	⊙	
THG EcoIndex	⊙	

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Key Findings – Phase 1

- Only one tool has full sustainability coverage
- No one tool meets all the evaluation criteria requirements
- Different tools (up to three) are likely to be required to cover all development types
- Lack of benchmarking for Queensland context

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Tools Taken into Phase 2

Overall 5 tools performed best against the evaluation criteria and were considered worthy of taking forward into Phase 2:

Commercial: Green Star

Residential: BASIX
Sustainable Housing Code

Combined: ESD Docklands
SPeAR®

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Phase 2 Tasks

Undertake Gap Analysis to:

1. Identify potential burden on Council & developer
2. Identify suitability of indicator sets in tools
3. Identify DA strengths & weaknesses (level of detail, etc)
4. Identify what ESD issues are being addressed

Council chose three tools:

BASIX

SPeAR®

Docklands ESD

And two Case Studies:

DA 1

DA 2

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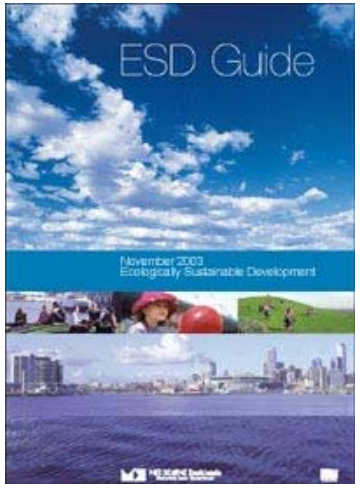
PROJECT DESCRIPTION

PROJECT NAME:	
PROJECT DESCRIPTION:	Mixed-use development comprising residential (units) and non-residential uses (offices, shop warehouse, display sales/showroom, restaurant).
STAGE OF DEVELOPMENT:	Preliminary Planning Approval / Preliminary Design
EXISTING ZONING:	Light Industry
TOOL USED:	Melbourne Docklands ESD Guide
GAP ANALYSIS TIMING	12 hours



DA 1

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INFORMATION GAP ANALYSIS – Melbourne Docklands ESD Guide

% of DA information addressing tool indicators

INDICATOR	DA INFO %	INDICATOR	DA INFO %
Site/Outdoor Space	25%	Energy	44%
Atmosphere	0%	Building Materials	0%
Water Cycle & Wastewater	0%	Indoor Environmental Quality	16%
Transport	100%	Waste	0%
Innovation	25%	**TOTAL**	**23%**

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ISSUES SUMMARY	
OVERALL LEVEL OF DA DETAIL:	Low-Medium
LEVEL OF INFORMATION DETAIL REQUIRED FOR THE TOOL:	High
LEVEL OF EFFORT TO INCREASE INFORMATION DETAIL:	High
KEY INFORMATION GAPS:	Waste, Materials, Water, Atmosphere
APPROXIMATE TIME FOR COUNCIL TO REVIEW AND CHECK:	1-2 Days (based on level of detail and structure of the DA)
APPROXIMATE TIME FOR TOOL ASSESSMENT BY DEVELOPER:	2 Days

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Coverage of Sustainability Issues

<u>Can you achieve sustainability without economic reality?</u>

Only 2 tools!

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Key Findings – Phase 2

- Tools have a focus predominantly at detailed design
- Inconsistent reporting
  - Lack of sustainability reporting framework
  - Lack of integration of issues
  - Resource implications for BCC
- Some developers willing to try and incorporate sustainability into developments, however,
- Danger it may be used to get ‘unsustainable’ developments up with credibility issues for Council
- Lack of economic reality in proposals at preliminary approval stage – has implications for what gets built
- Site contextual issues generally absent in the tools

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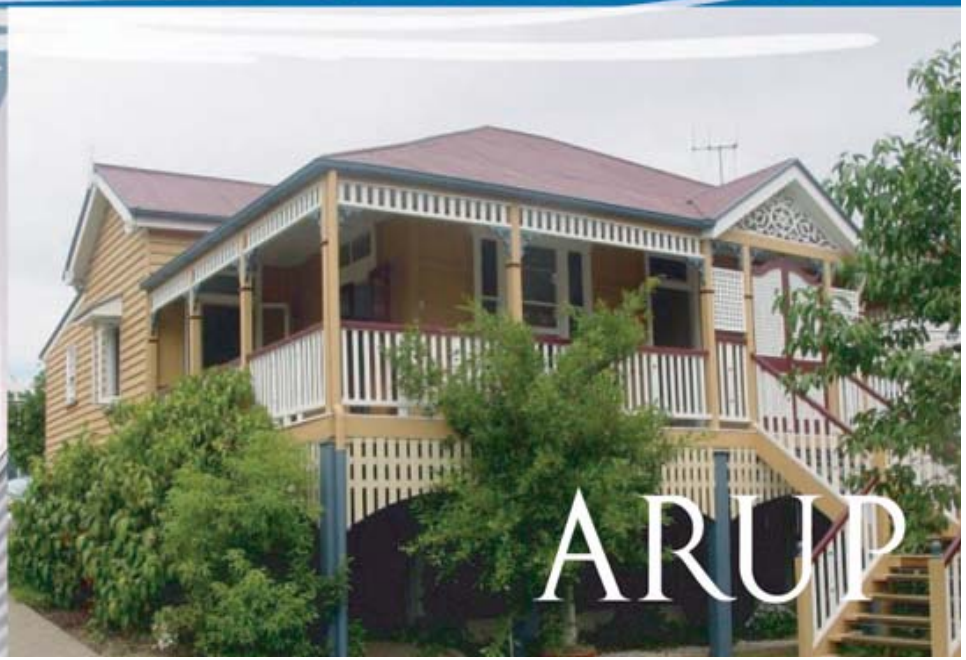
Conclusions + Recommendations



Key Issues

- Rating Tools are not the panacea.

- They have limitations:
  - only applicable to specific development types
  - too late in the development assessment process
  - rarely cover the spectrum of sustainability issues

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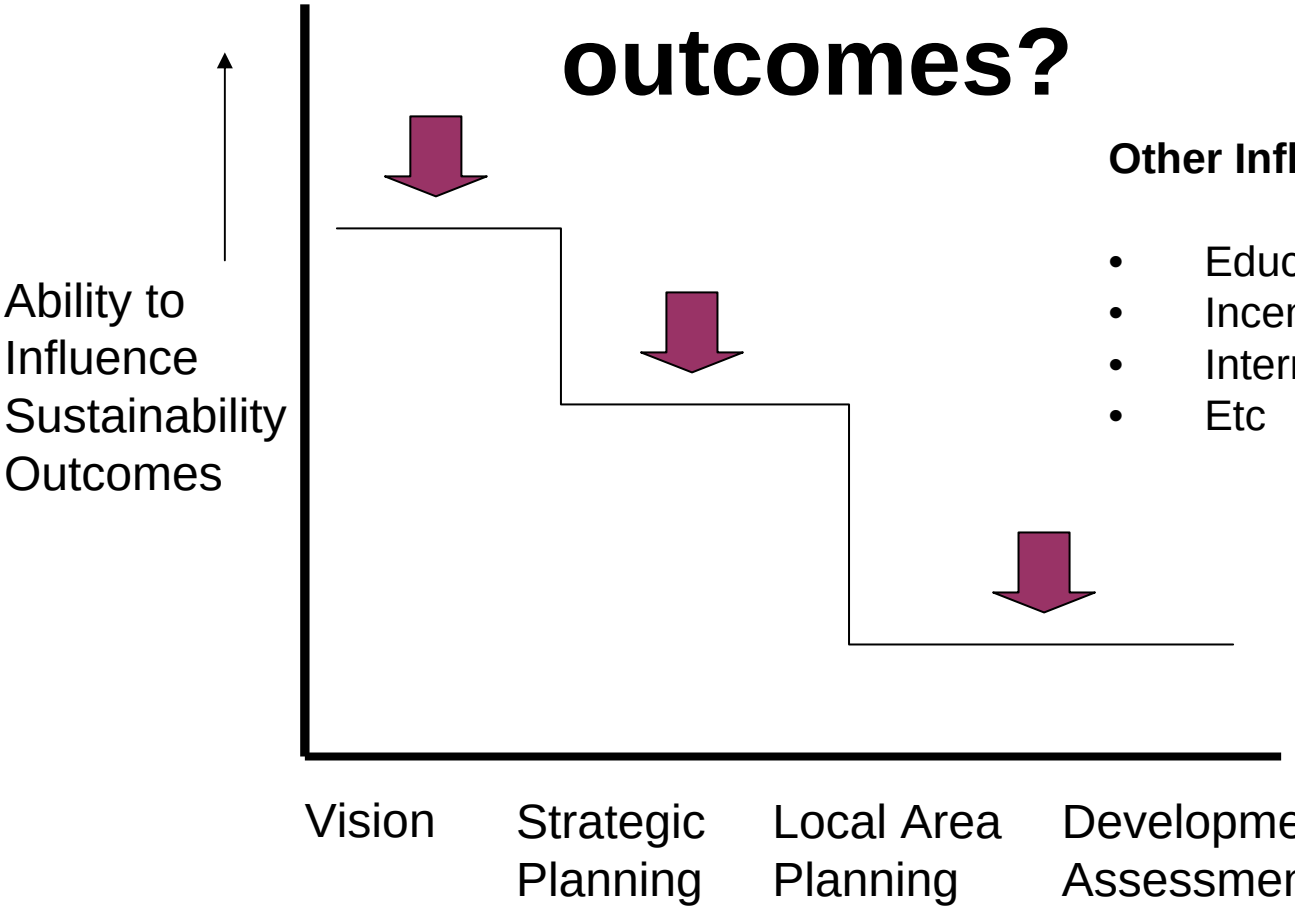
What are the most effective means to influence sustainability outcomes?



Other Influencing factors:

- Education/awareness
- Incentives
- Internal/external systems
- Etc

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Sustainability Framework

- Moved away from the need for a tool to integrating and embedding sustainability at all levels:
  - Corporately
  - Within the Community
  - Strategic Planning
  - Local Area Planning
  - Development Assessment

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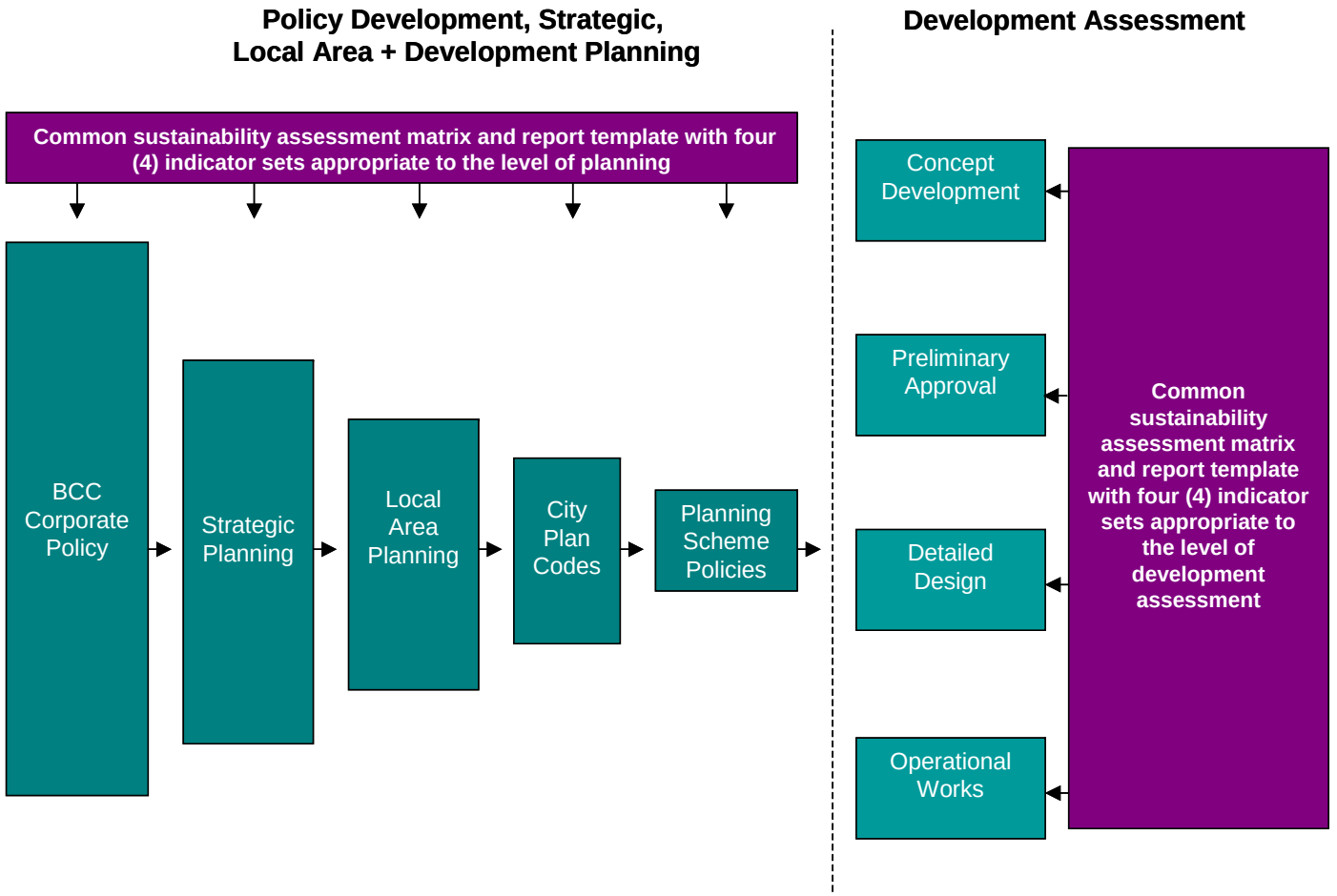
Integrating Sustainability



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Recommendations

Phase 1 – Immediate System Improvements
Phase 1 responds to Council's immediate need to improve consistency and transparency in dealing with applications for sustainable developments.

Phase 2 – Tools Adoption
Phase 2 recommends Council define sustainability outcomes for the City and potential adoption of selected rating tool(s).

Phase 3 – Integration
Phase 3 provides Council with a suite of tasks that integrate sustainability throughout the regulatory planning process, ensuring that all developments are subject to sustainability assessment and reporting and not just a select few. Phase 3 builds on the previous work undertaken in Phase 1 and 2 of the recommendation.

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What Council is Doing Now

Phase 1 – Immediate System Improvements

- Principles and Guidelines for Sustainable Development
- Additional Work on Incentives
- Case Studies of Successful Projects

Phase 2 – Longer Term Improvements

- Development of a Sustainability Policy and Implementation Strategy for Brisbane

Phase 3 – Integration

- Integration of Sustainability Principles into City Plan
- All DA Assessment teams to Address Sustainability of Development

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Questions?