

C-CHANGE

IDRC * CRDI

CANADA-CARIBBEAN

Coastal Climate Adaptation Strategies



SSHRC CRSH

C-Change Community of Practice Meeting Ottawa, October 29-31, 2012

Perth-Andover Case Study C-Change Original Problem Inputs and Results

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March 21, 2013

This document provides the results of the Perth-Andover Case Study adaptation strategy analysis using the problem hierarchy, community prioritization, and flood impacts data provided by the C-Change development team as the “original case study” used for illustrated purposes. The data below are provided for illustrated purposes to demonstrate the AHP methods of problem solving and decision support for complex problems.

Comparable data were also compiled in two exercises that were run with the partners as part of the C-Change Community of Practice meetings held in Ottawa, October 29-31, 2012. (See reports under separate cover and for each C-Change partner.)

All outputs provided below are output tables and figures produced from the *Expert Choice* product software system (see also: <http://expertchoice.com/>).

The next page (“1 of 28”) provides the results for the “original” case study adaptation rankings based on the model inputs provided in pages “2” to “28” of this document.

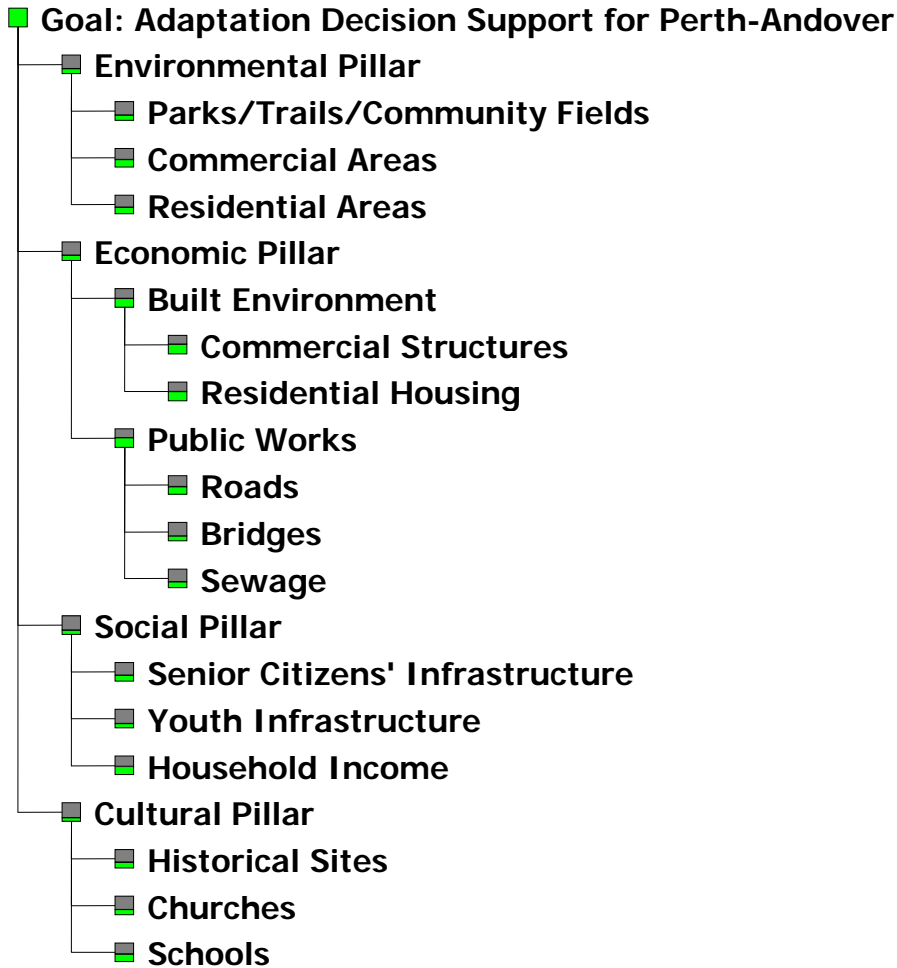
For more details, see also:

- (i) the **Original Case Study Report** – that presents the inputs and results as provided in this document; and
- (ii) the **Case Study Follow-up Report** – that provides the inputs and results of the C-Change Partner provided inputs for this case.

Ottawa
March 21, 2013

Model Name: Perth-Andover Problem Formulation

Treeview



Alternatives

Protect: Flood-proofing/Backfill/Levees/Emerg Road	.264
Accommodate: Dredge/Forecast/Monitor Water/Model	.335
Retreat: Relocate affected homes	.237
Status Quo: Do nothing with 82.5cm flood	.164

* *Ideal mode*

Data Grid

		INCR	INCR	INCR
Alternative	Total	Environmental Pillar Parks/Trails/Community Fields (L: .270)	Environmental Pillar Commercial Areas (L: .381)	Environmental Pillar Residential Areas (L: .349)
<input checked="" type="checkbox"/> Protect:	.659	.054	.324	.581
<input checked="" type="checkbox"/> Accommodate:	.743	.304	.439	.851
<input checked="" type="checkbox"/> Retreat: Relocate	.573	.150	.163	.944
<input checked="" type="checkbox"/> Status Quo: Do	.404	.103	.133	.630
Status Quo: No	1.000	1.000	1.000	1.000

	INCR	INCR	INCR
Alternative	Economic Pillar Built Environment Commercial Structures (L: .540)	Economic Pillar Built Environment Residential Housing (L: .460)	Economic Pillar Public Works Roads (L: .403)
<input checked="" type="checkbox"/> Protect:	.009	.595	.909
<input checked="" type="checkbox"/> Accommodate:	.191	.847	.705
<input checked="" type="checkbox"/> Retreat: Relocate	.063	.912	.000
<input checked="" type="checkbox"/> Status Quo: Do	.026	.360	.134
Status Quo: No	1.000	1.000	1.000

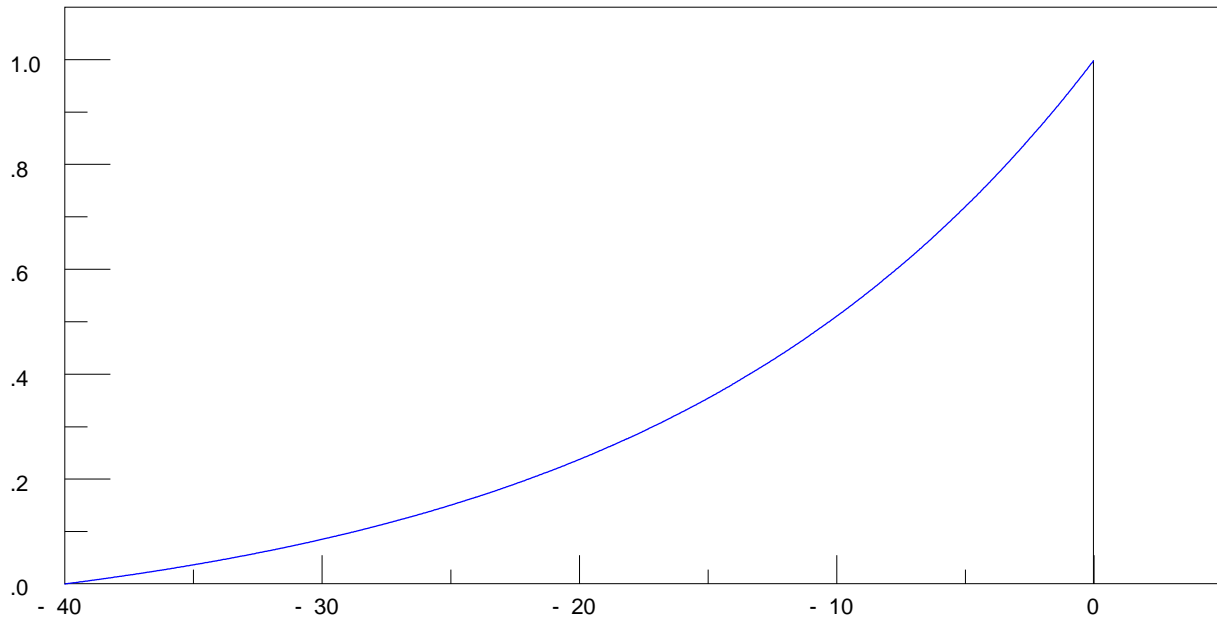
	INCR	INCR	INCR
Alternative	Economic Pillar Public Works Bridges (L: .278)	Economic Pillar Public Works Sewage (L: .318)	Social Pillar Senior Citizens' Infrastructure (L: .330)
<input checked="" type="checkbox"/> Protect:	.958	.394	1.000
<input checked="" type="checkbox"/> Accommodate:	.927	.777	1.000
<input checked="" type="checkbox"/> Retreat: Relocate	.606	.598	.898
<input checked="" type="checkbox"/> Status Quo: Do	.308	.282	.898
Status Quo: No	1.000	1.000	1.000

	INCR	INCR	INCR
Alternative	Social Pillar Youth Infrastructure (L: .250)	Social Pillar Household Income (L: .421)	Cultural Pillar Historical Sites (L: .307)
<input checked="" type="checkbox"/> Protect:	.972	.810	.935
<input checked="" type="checkbox"/> Accommodate:	.937	.850	.894
<input checked="" type="checkbox"/> Retreat: Relocate	.233	.915	.652
<input checked="" type="checkbox"/> Status Quo: Do	.233	.580	.291
Status Quo: No	1.000	1.000	1.000

	INCR	INCR
Alternative	Cultural Pillar Churches (L: .289)	Cultural Pillar Schools (L: .405)
<input checked="" type="checkbox"/> Protect:	.936	.981
<input checked="" type="checkbox"/> Accommodate:	.892	.956
<input checked="" type="checkbox"/> Retreat: Relocate	.763	.922
<input checked="" type="checkbox"/> Status Quo: Do	.558	.814
Status Quo: No	1.000	1.000

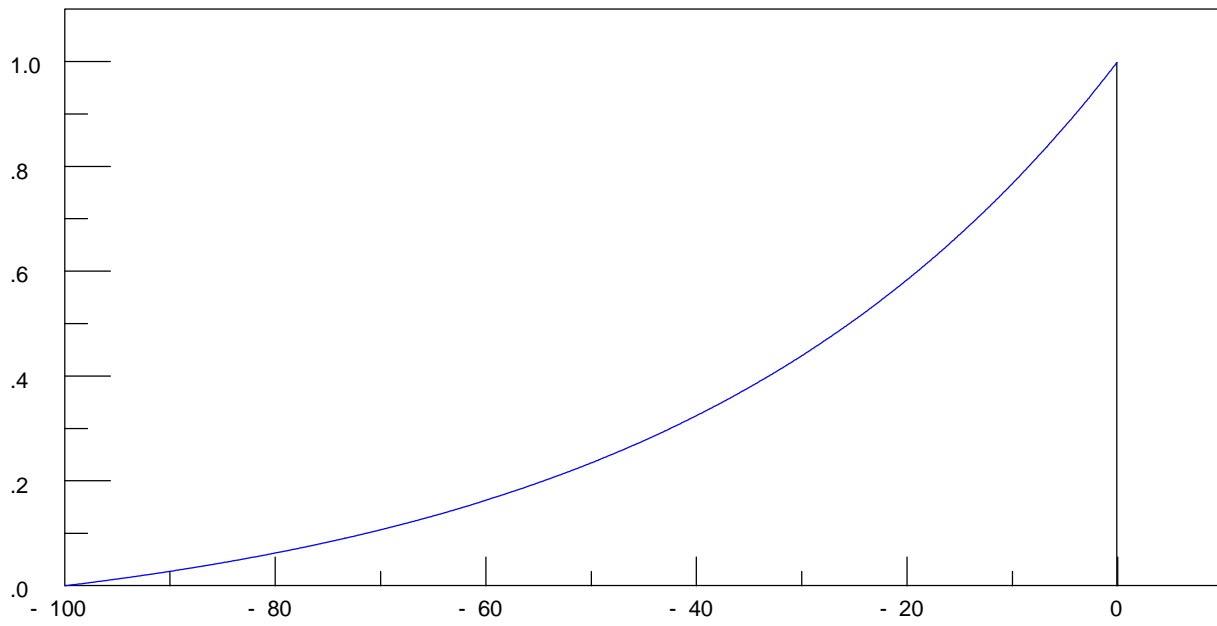
Utility Curve

Parks/Trails/Community Fields (L: .270)



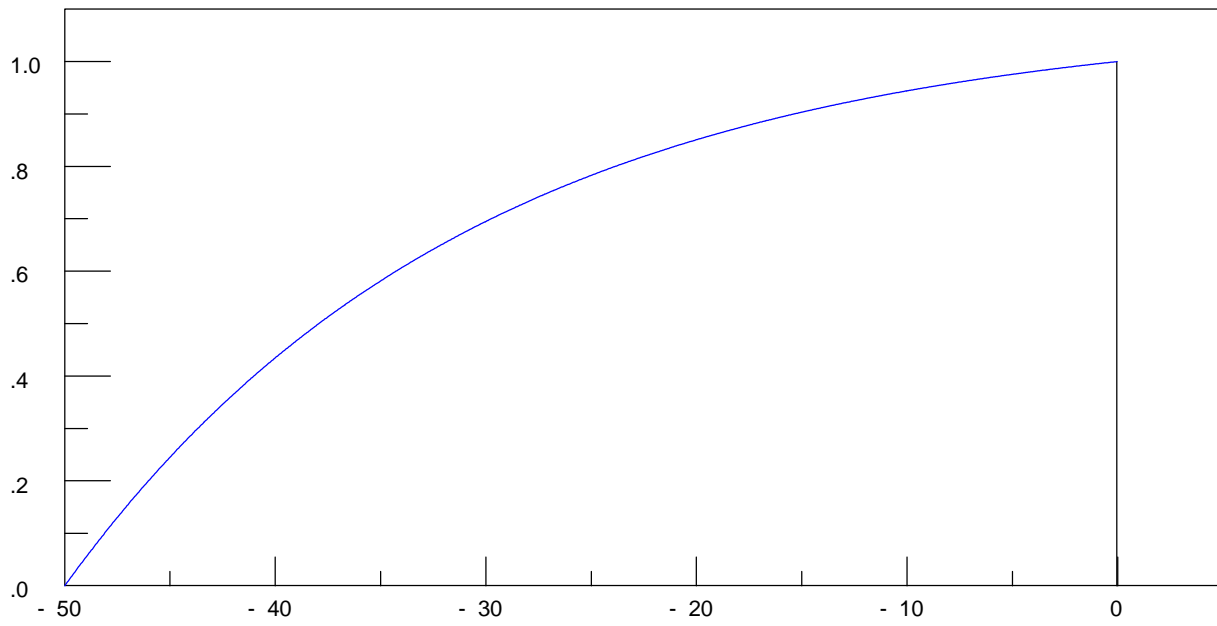
Xaxis

Commercial Areas (L: .381)



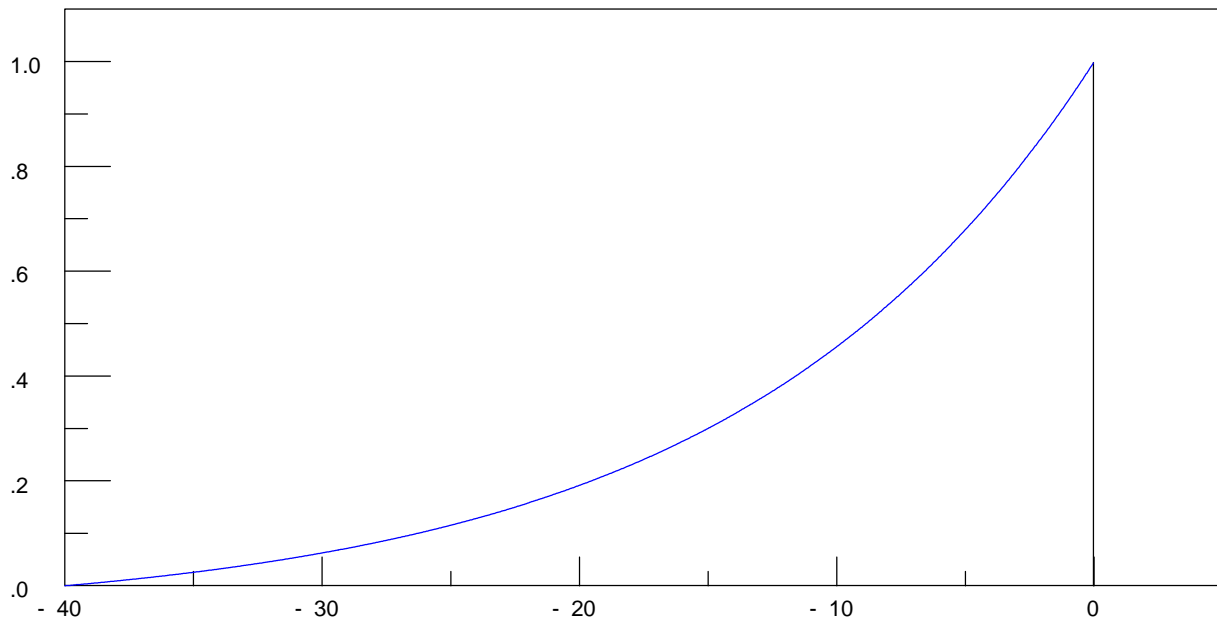
Xaxis

Residential Areas (L: .349)



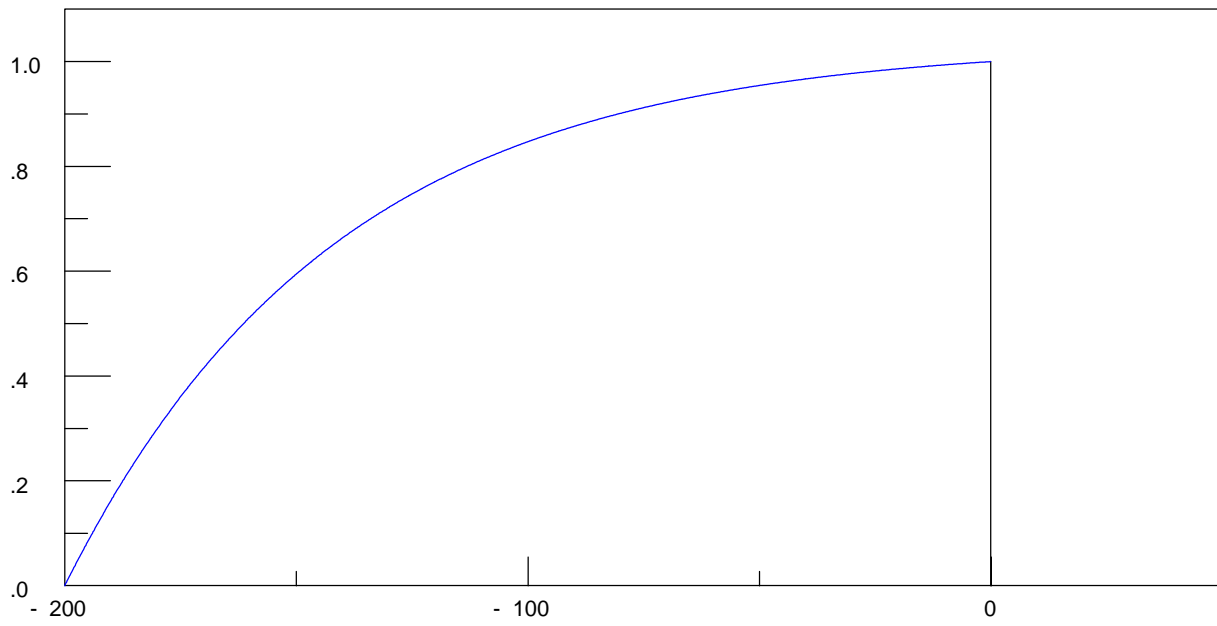
Xaxis

Commercial Structures (L: .540)



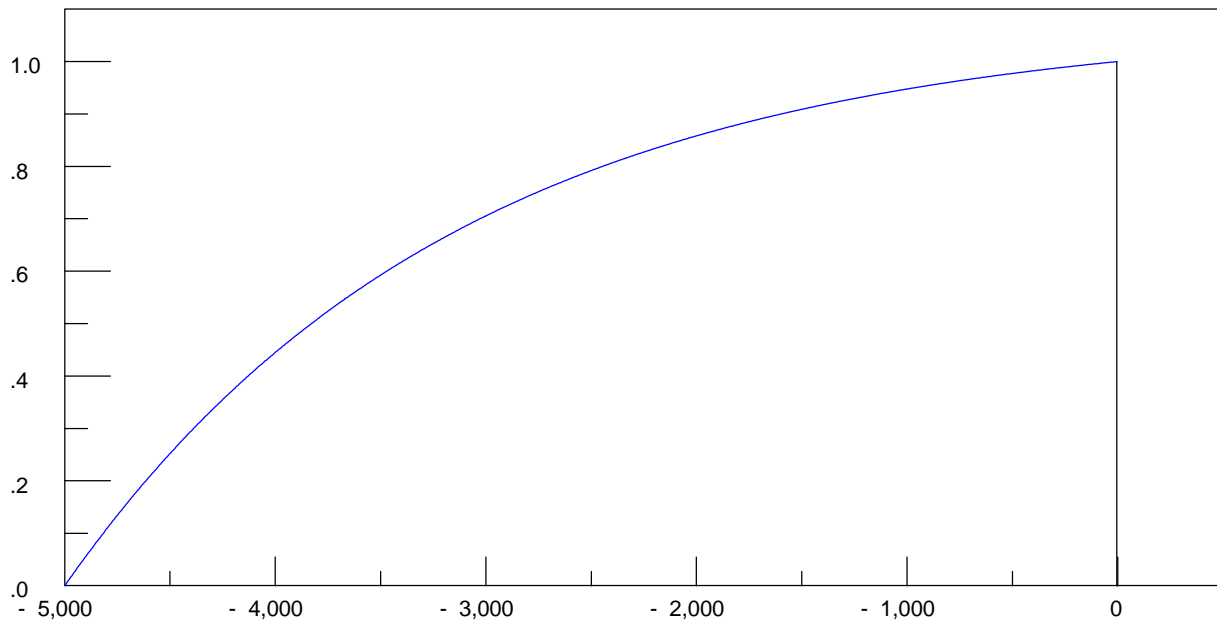
Xaxis

Residential Housing (L: .460)



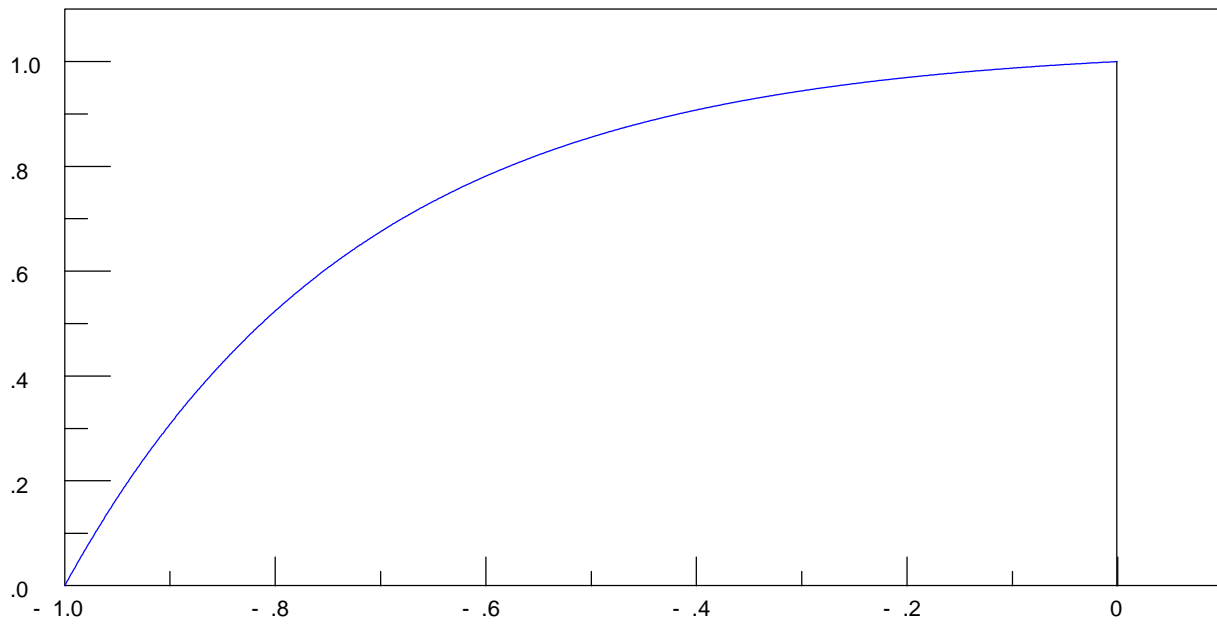
Xaxis

Roads (L: .403)



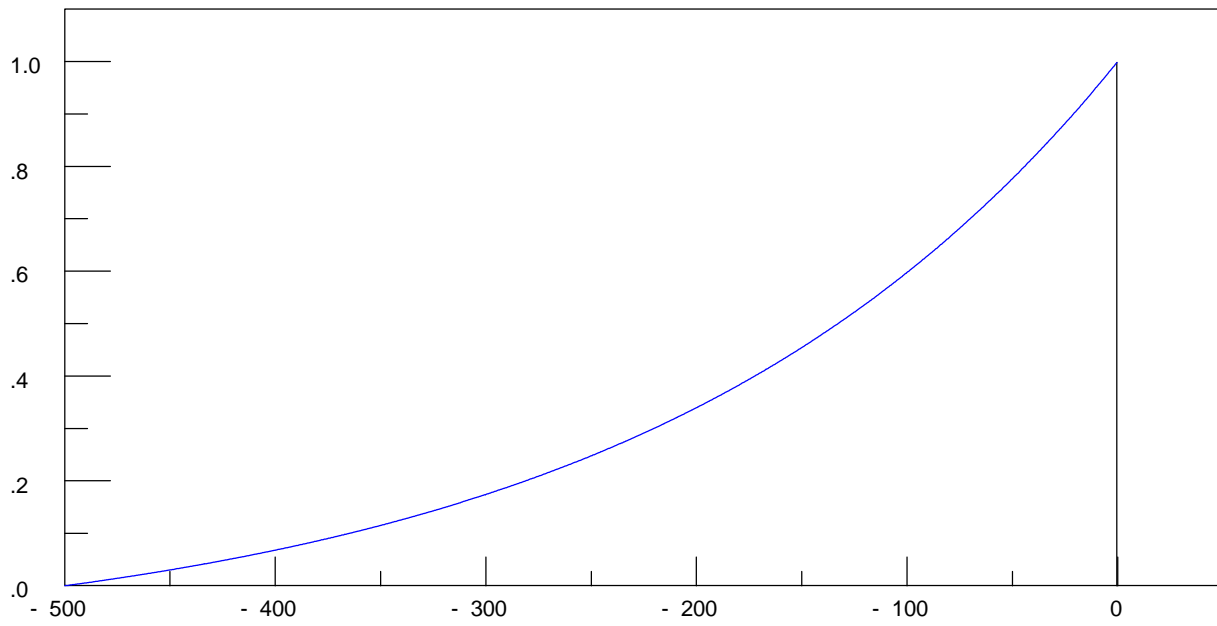
Xaxis

Bridges (L: .278)



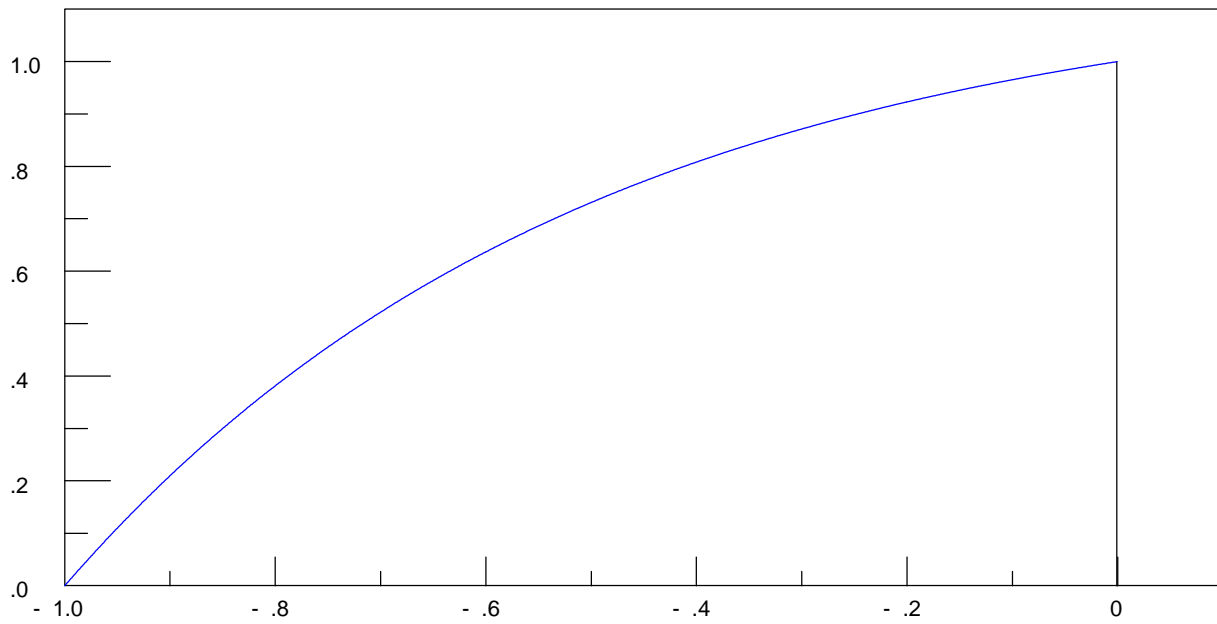
Xaxis

Sewage (L: .318)



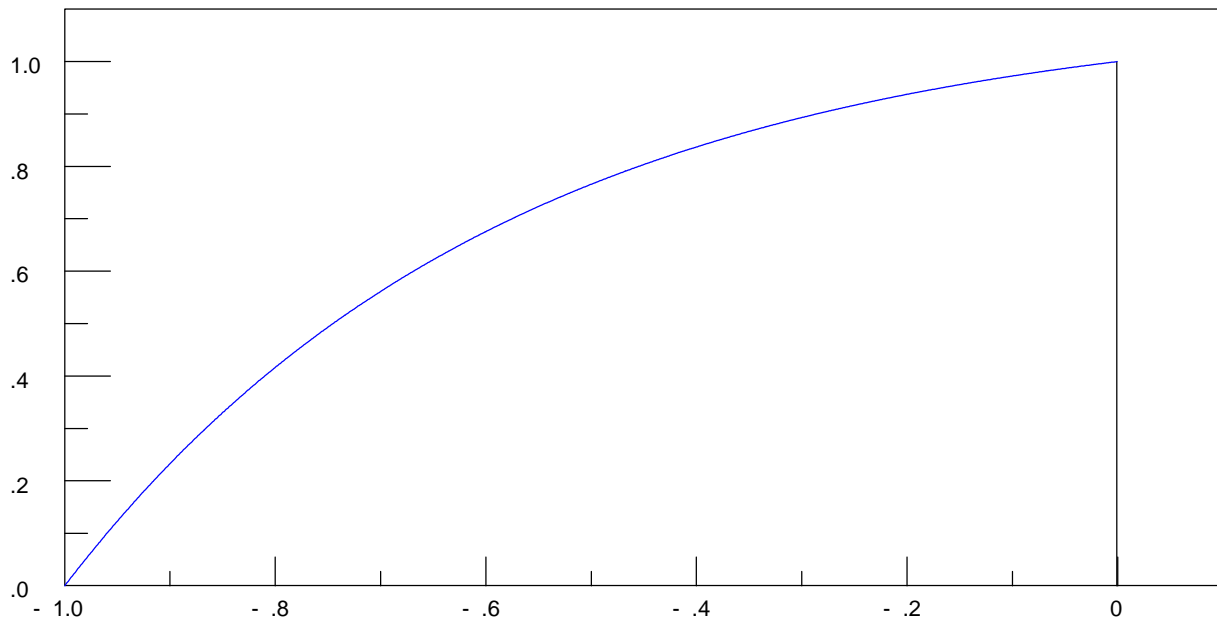
Xaxis

Senior Citizens' Infrastructure (L: .330)



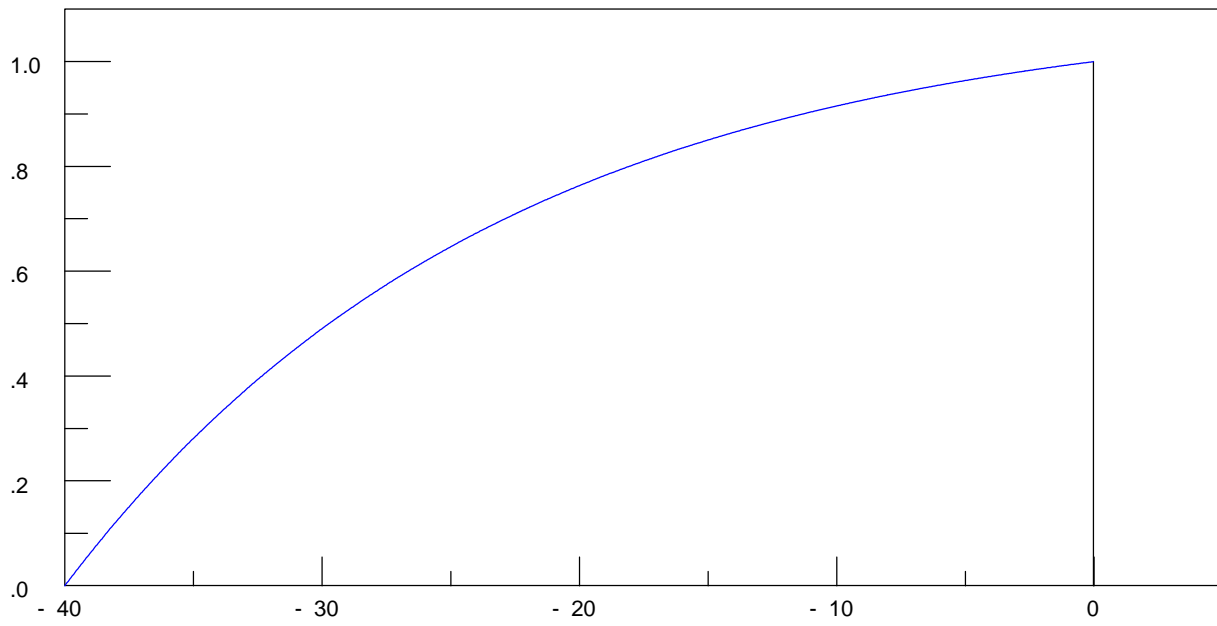
Xaxis

Youth Infrastructure (L: .250)



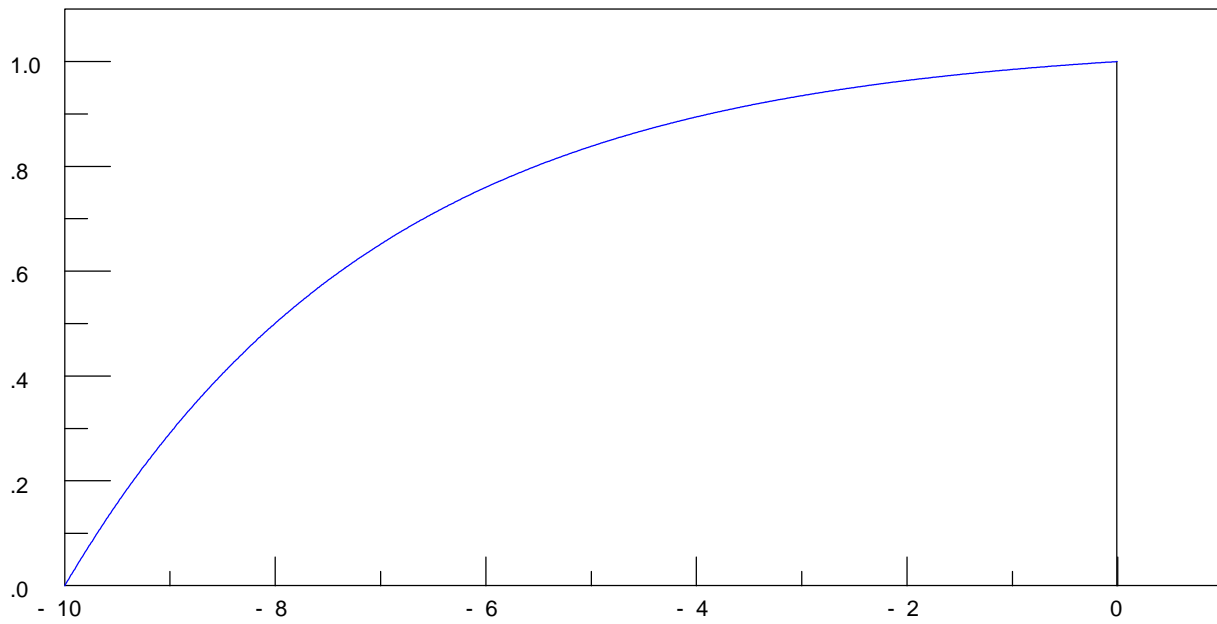
Xaxis

Household Income (L: .421)



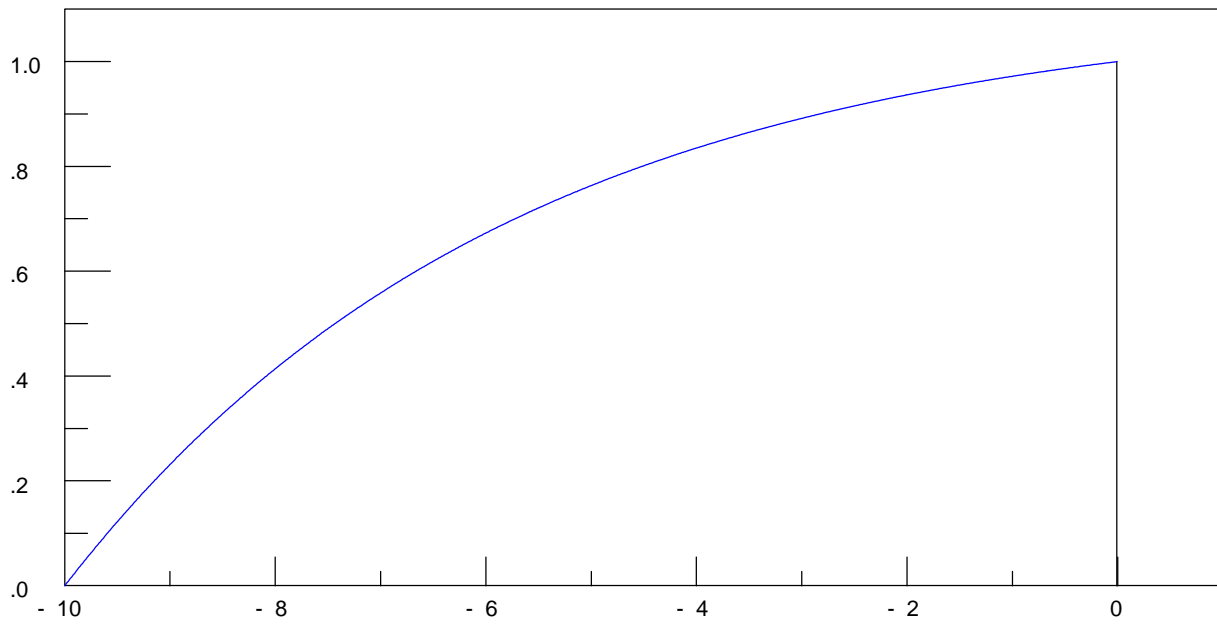
Xaxis

Historical Sites (L: .307)



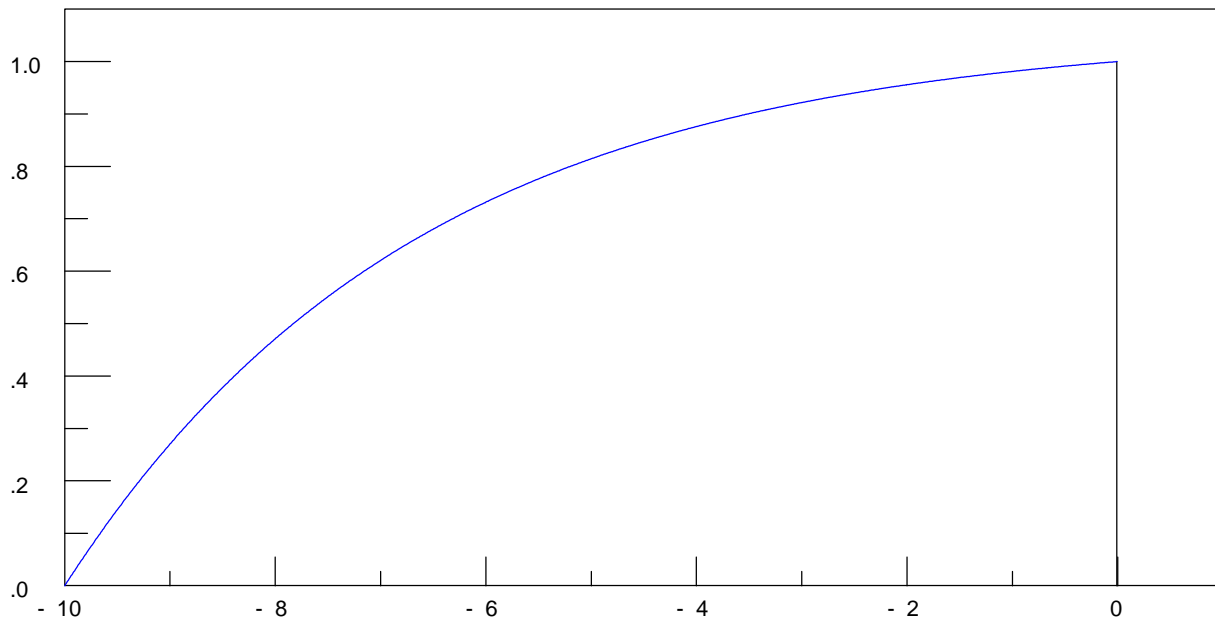
Xaxis

Churches (L: .289)



Xaxis

Schools (L: .405)



Xaxis

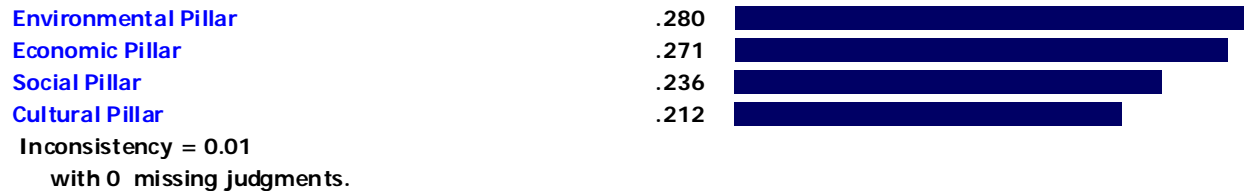
List of Participants

PID	PersonName	Combined	Email	Participating	Eval	Location	Weight	Keypad	Wave	Password
1	Combined	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
2	P2	<input type="checkbox"/>		<input checked="" type="checkbox"/>				2	1	
3	P3	<input type="checkbox"/>		<input checked="" type="checkbox"/>				3	1	
4	P4	<input type="checkbox"/>		<input checked="" type="checkbox"/>				4	1	
5	P5	<input type="checkbox"/>		<input checked="" type="checkbox"/>				5	1	

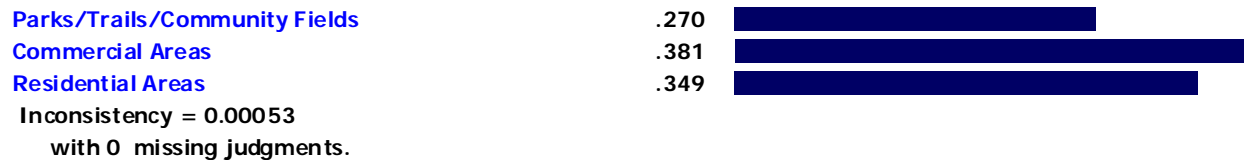
PID	PersonName	ProgressStatus	EvalCluster	Organization	LastChanged
1	Combined				10/23/2012 10:06:25 PM
2	P2				10/23/2012 10:06:14 PM
3	P3				10/23/2012 10:06:14 PM
4	P4				10/23/2012 10:06:14 PM
5	P5				10/23/2012 10:06:14 PM

Priority Graphs

Priorities with respect to: Combined
 Goal: Adaptation Decision Support for Perth-Andover



Priorities with respect to: Combined
 Goal: Adaptation Decision Support for Perth-Andover
 >Environmental Pillar



Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Environmental Pillar

Combined

Parks/Trails/Community Fields

.270



Commercial Areas

.381



Residential Areas

.349



Inconsistency = 0.00053
with 0 missing judgments.

Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Environmental Pillar

Combined

Parks/Trails/Community Fields

.270



Commercial Areas

.381



Residential Areas

.349



Inconsistency = 0.00053
with 0 missing judgments.

Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Environmental Pillar

Combined

Parks/Trails/Community Fields

.270



Commercial Areas

.381



Residential Areas

.349



Inconsistency = 0.00053

with 0 missing judgments.

Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar

Combined

Built Environment

.460



Public Works

.540

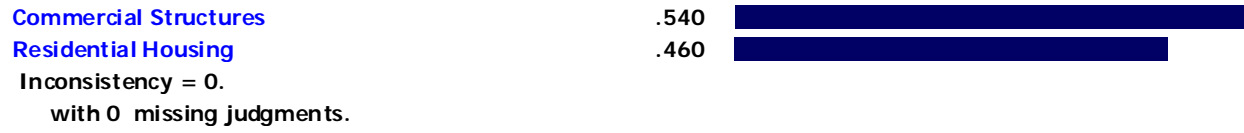


Inconsistency = 0.

with 0 missing judgments.

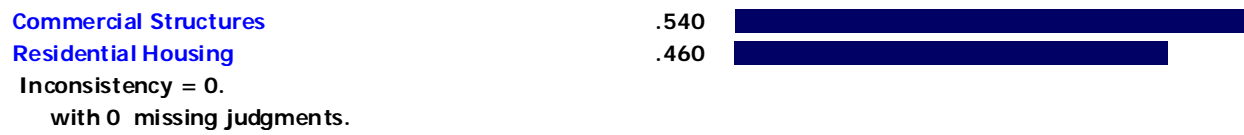
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Built Environment

Combined



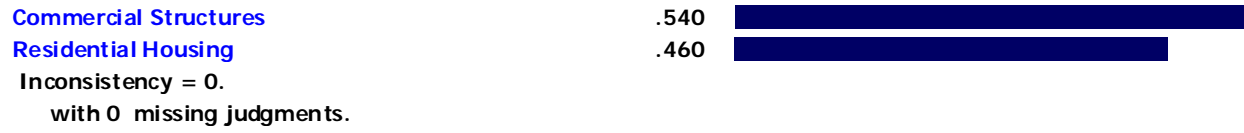
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Built Environment

Combined



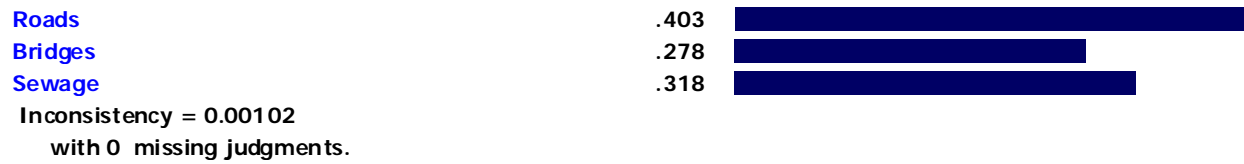
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Built Environment

Combined



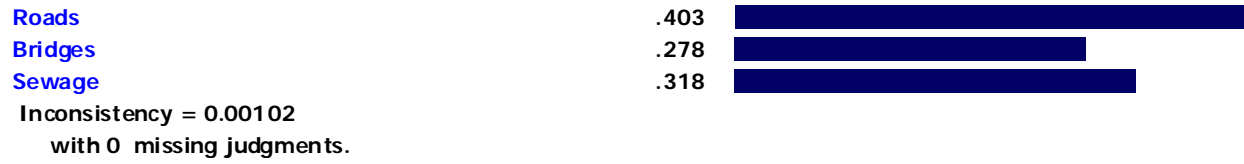
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Public Works

Combined



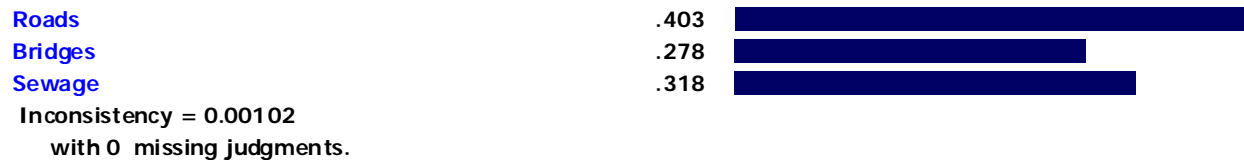
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Public Works

Combined






Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Public Works

Combined



Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Economic Pillar
>Public Works




Combined

Roads	.403	
Bridges	.278	
Sewage	.318	

Inconsistency = 0.00102
with 0 missing judgments.

Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Social Pillar

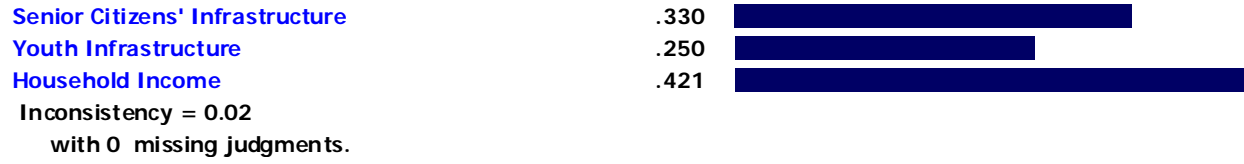
Combined

Senior Citizens' Infrastructure	.330	
Youth Infrastructure	.250	
Household Income	.421	

Inconsistency = 0.02
with 0 missing judgments.

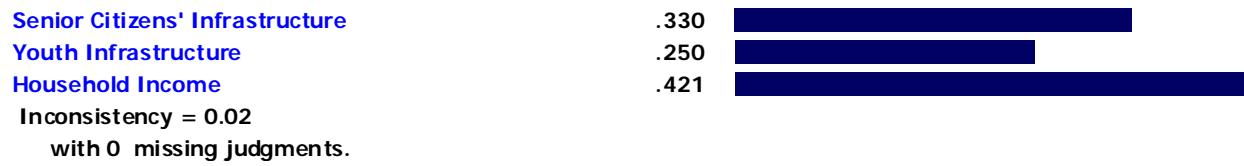
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Social Pillar

Combined



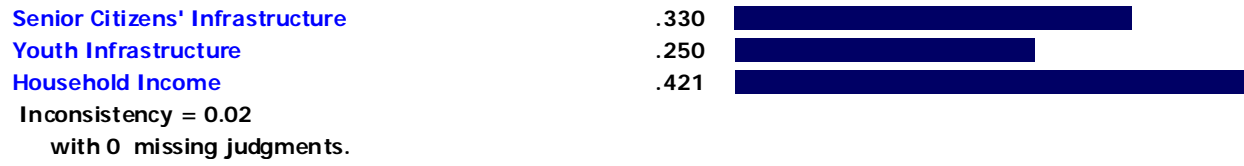
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Social Pillar

Combined



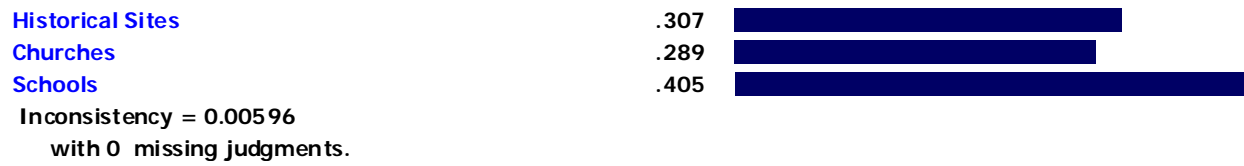
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Social Pillar

Combined



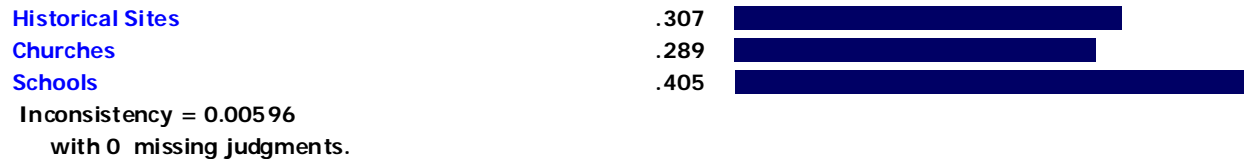
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Cultural Pillar

Combined



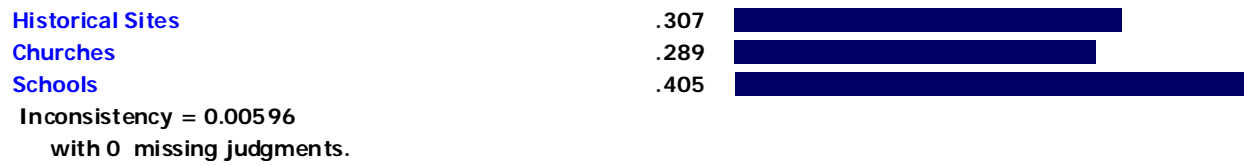
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Cultural Pillar

Combined



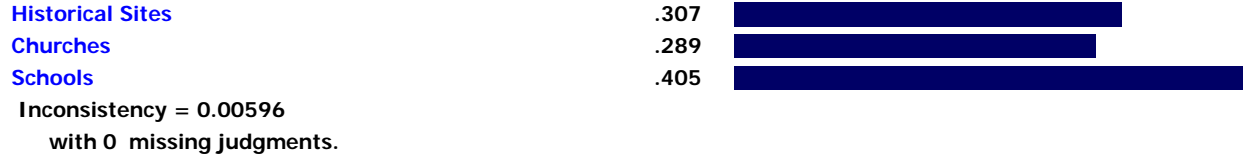
Priorities with respect to:
Goal: Adaptation Decision Support for Perth-Andover
>Cultural Pillar

Combined



Priorities with respect to:
 Goal: Adaptation Decision Support for Perth-Andover
 >Cultural Pillar

Combined



Synthesis: Summary

Combined instance -- Synthesis with respect to:

Goal: Adaptation Decision Support for Perth-Andover

Overall Inconsistency = .01



Compare the relative importance with respect to: Goal: Adaptation Decision Support for Perth-Andover

Circle one number per row below using the scale:

1 = Equal 3 = Moderate 5 = Strong 7 = Very strong 9 = Extreme

1	Environmental Pillar	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Economic Pillar
2	Environmental Pillar	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Social Pillar
3	Environmental Pillar	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Cultural Pillar
4	Economic Pillar	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Social Pillar
5	Economic Pillar	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Cultural Pillar
6	Social Pillar	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Cultural Pillar