EARTHSONG ECO-NEIGHBOURHOOD

PROJECT EVALUATION QUESTIONNAIRE

Infrastructure Auckland

(Small Stormwater Projects)

PROJECT DETAILS

Please complete the following details.

Project Title:	Earthsong Eco-Neighbourhood	**Project Number:**	

Name and Address of Applicant:	Cohousing NZ Ltd P. O. Box 70001 Ranui, Auckland 1230
Contact Person:	Peter Scott
Contact Details:	Phone: 09 832 4004 Mobile: 025 624 0154 Fax: 09 833 4409 Email: ps@pl.net
Project Location:	457 Swanson Rd, Ranui, Waitakere City,
Project Description	Construction of detention pond with riparian planting vegetated swales, rainwater detention tanks, rain-garden and permeable paving areas within an overall ddemonstration of socially and ecologically sustainable urban housing.

Financial Summary:

Total Project Cost:	$	663,000	
Amount Sought from Infrastructure Auckland:	$	121,360	
Percentage Sought from Infrastructure Auckland:		18.3	%

PRELIMINARY FINANCIAL ANALYSIS

The following spreadsheets are attached:

- Stormwater related project cost breakdown
- IA Funding Contribution Calculations
- Benefit cost ratio of rainwater tanks
- Operating cost present value calculation
- Tank benefits methodology
- Effect of rainwater tanks on peak run off

RISK IDENTIFICATION

1. Risk Factors

Identify the **key risk factors** that will affect the outcomes of the project.

- Project unit sales (particularly stage 2) failing to meet expectations
- Changes in weather patterns
- Increases in costs arising from currency and/or fuel prices.
- Unforseeable magnitude of maintenance required

Explain **how each risk factor will affect the outcomes of the project**, particularly where it will affect the quantitative "Best Case" and "Worst Case" outcomes identified in the remainder of the questionnaire.

Sales expectations: While stage one is nearly fully sold, 13 stage two units remain to be subscribed. Completion of the whole project depends on total project sales.

Weather patterns: Extraordinary storm patterns may conceivably place extra demands on storm-water systems beyond the capacity of that proposed.

Increased costs: Any reliance on imported products, and perhaps those with heavy transportation components may result in unusual price rises, beyond that budgeted.

Maintenance: Community labour is a significant component of the maintenance figures and is likely to be a reasonably elastic resource.

OVERVIEW OF PROJECT OUTCOMES

Introduction
'The project' for IA purposes is a package of advanced stormwater treatment technologies, which are in themselves a component of a larger project, the totality that is 'Earthsong-Eco-Neighbourhood'. Various attachments outline the scope of both. To reduce confusion the phrase 'Neighbourhood' will be used to refer to the overall project.

It is important to note that elements within any sustainable system design have a complex intertwined nature. The holistic nature of both the wider Earthsong Eco-Neighbourhood project, and the project design for IA purposes, creates many interrelated benefits for the region and for global society as a whole.
This argument is also articulated clearly by ARGS (1999:7): "One of the core elements of the [Auckland Regional Growth Strategy] is sustainability. Sustainability involves interdependence of economic values, social values and environmental values…The strategy aims to capture and enhance the synergies between these values to create a vision for a sustainable future for the Auckland region."

There are two notable consequences of this. Firstly both direct and indirect benefits will accrue, and secondly the benefits overlap any attempt to neatly categorise benefits. Notwithstanding that in some cases the project outcomes may be more peripherally related to IA's brief, note will be made throughout the course of this application questionnaire of both direct and indirect benefits. This serves to illustrate the *multiple* outcomes of sustainability oriented projects. Attempt will be made to note them distinctly where possible.

Validity of Neighbourhood as a model
The Resource Management Act 1991 requires us "sustain the potential of natural resources…to meet the reasonably foreseeable needs of future generations" and to "safeguard the life supporting capacity of air water soil and ecosystems". In practice this is not always a straightforward task, and which in itself is something to be mindful of when contemplating substantial regional growth as with the Auckland Regional Growth Strategy (ARGS).

An understanding of the process of change is important to those seeking sustainable outcomes, attitudes and uptake of environmental behavior. One of the key characteristics of the Earthsong Eco-Neighbourhood project is that it's purpose is to serve as a model that will act as a concrete demonstration and *catalyst to change*.

Dr Robert Gilman describes the innovation adoption curve (Gilman 1991:181): "for those innovations that emerge from the experimentation stage as proven successes the next stage is adoption by forward thinking members of the *mainstream* of society. The process however is not automatic it usually requires the active promotion of the innovation…to enable the idea to reach the first 5% to 15% of the population… Once it reaches about 15% adoption it usually has enough momentum so that it spreads fairly rapidly up to about 75% of its eventual full adoption". (See also figure 1)

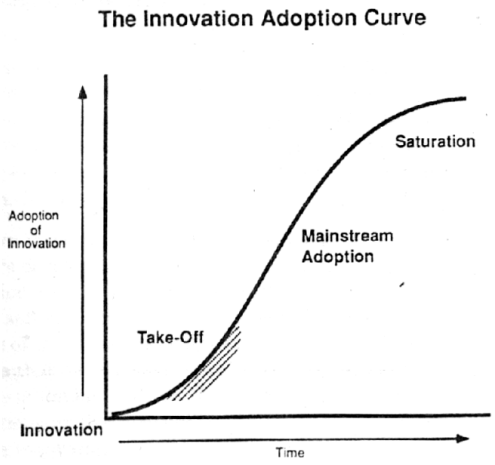

Figure 1: Innovation curve, after Gilman (1991:181)

The neighbourhood while having stormwater innovations similarly combines advances in low impact urban settlement generally. The fundamental nature of the neighbourhood design illustrates the 'synergistic' combination of outcomes. This provides multiple benefits of for instance a healthy more socially supportive secure living environment, which reduces energy and water consumption and which stimulates a market for sustainable products.

The reason this point is made in advance is that outcomes resulting from the demonstrational nature apply to most if not all of the questions in the questionnaire and will be linked back to this introduction.

Project Demonstration Value

Earthsong Eco-Neighbourhood is the first of its kind in NZ, but has successful precedents overseas. To substantiate the value of this project and neighbourhood as a model, data was sought from overseas projects of a similar nature. Data obtained (at short notice) gives some idea of the project's likely visitor exposure, and is tabulated in table 1 below.

Table 1: Visitor records from overseas cohousing/ Eco-neighbourhood projects.

Project Name	Location	Interested visitors/ month	Family and friends/mth	Total/month	Contact
Cascadia Commons	Portland Oregon. (Pop. 400,000 1.5 million in the metro area.)	30	40	70	cccoho@teleport.com
Harmony Village	Golden, Colorado, (14,000)	12+ events		35	virmaco@aol.com
Monterey Cohousing	St Lewis, Minneapolis, MN, (400,000 reg popn)	45-60 to events 5-10 individual visitors	100 (new project)	160	baxter@epi.umn.edu
Pinakarri Co-operative	Hamilton Hill (18,000) Near Fremantle, Western Australia			50	zen@iinet.net.au

Average direct physical exposure over these 4 projects is 945 visitors per year. The following quotes further illustrate the kind of exposure overseas projects receive (see also figure2):

> *"... hundreds of visitors to Pinakarri during our first year. These include journalists, neighbours, University lecturers and their students, architects, town planners, Councillors from various shires, futurists,*
> *politicians, academics, energy efficiency and sustainable technology experts and Ministry of Housing personnel. The photo is one recent group of university sustainable technology students and their lecturers... We also get groups of architecture students." (pers. comm. Robyn Williams Sep 2000)*

> *"…take the public meetings in our Common House, the outsiders who come here for study groups, our collection center for Community Supported Agriculture, public gatherings, political meetings, a wedding on the lawn, a potluck with neighbors, the families and friends visiting our members -- that by my rough tally comes to 340 people in the year. Add the 10-12 here for orientation[s] monthly -- you're up to close to 400 a year. Add to that if you want, an article in an airline magazine, an article just last week in the metropolitan newspaper (circ about 500,000), a program in the local public television station, and a segment in Dateline (TV) with national coverage and you get into millions of people exposed to what we are doing at Harmony Village." (pers. comm. Macon Cowles Sep 2000)*

Figure 2: University sustainable technology students and their lecturers visiting Pinakari.

Cowles raises the valid point that media exposure in itself is an influence on people's attitudes, and Earthsong Eco-Neighbourhood has had a similar level of media exposure[1]. Harmony Village was also the recipient of several major awards including the 1997 National Building Innovation in Homeownership Award, this being awarded by the US HUD and a consortium of 58 national organisations.

Currently there are so many 'excuses' to avoid change. The desired outcome from this project is ultimately that more people recognise the value of sustainable design and systems, which leads to more rapid uptake, which will in turn mean that sustainable actions cease being the more *costly* option. At that point we can all look forward to a future for our children.

[1] Excerpts of media coverage exist both on the neighbourhood's website, and in it's resource consent application.

ECONOMIC OUTCOMES

2. Capital Expenditure

2a What is the total amount of **capital expenditure** (expressed as a Present Value) involved in the project?

$ 663,300

2b What are the **'Worst Case'** and **'Best Case'** projections for the total amount of Capital Expenditure (expressed as Present Values) involved in the project?

Worst Case: $ 695,000 Best Case: $ 565,000

2c Use the format indicated in the table below to show the **funding sources for the capital expenditure** (Infrastructure Auckland may be one).

Source	Amount	Percentage of Total Amount
Private funding from unit sales	$ 541,640	82 %
Infrastructure Auckland	$ 121,360	18 %
	$	%

3. Operating Expenditure

3a What is the total amount of **operating expenditure** (expressed as a Present Value) involved in the project?

$ 326,800

3b What are the **'Worst Case'** and **'Best Case'** projections for the total amount of Operating Expenditure (expressed as Present Values) involved in the project?

Worst Case: $ 400,000 Best Case: $ 300,000

3c Use the format indicated in the table below to show the **funding sources for the operating expenditure**.

Source	Amount	Percentage of Total Amount
Private funding from Body Corporate	$ 326,800	100 %
IA	$ 0	0 %

4. Revenue

4a What is the total amount of **revenue** (expressed as a Present Value) generated by the project?

$ 326,800

4b What are the '**Worst Case**' and '**Best Case**' projections for the total amount of Revenue (expressed as Present Values) involved in the project?

Worst Case: $ 300,000 Best Case: $ 400,000

4c Use the format indicated in the table below to show the **sources of revenue**.

Source	Amount	Percentage of Total Amount
Private levies payable to Body Corporate	$ 326,800	100 %
IA	$ 0	0 %
	$	%

Note:
Potential regional economic benefits will likely flow on from this project as follows:

- Increased or in many cases create new demand for sustainably oriented land development services and products.
- Economic consequences of eco-tourism to region, economic multiplier effect etc.
- A more economically transparent outcome from the project. (The project and neighbourhood have gone to some lengths to avoid externalising the costs of development as is common in land development at present.)
- Efficiencies created through multiple benefits and synergies, ie elements performing many tasks such as landscape amenity, wildlife habitat and water treatment

ENVIRONMENTAL OUTCOMES

9b What impact will the project have on **water quality?**

☐	☐	☐	☐	☒	25%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	Area Affected

Catchment and technical information
The catchment concerned is Ranui's Swanson Stream Catchment 19, which has the third highest catchment unit priority in Waitakere City with a ranking of 0.679. This scale takes into account criteria such as catchment ecology, contamination, flooding, stability/erosion, land development potential, existing stormwater network, and community use (WCC 2000:44). ARC (1998) also ranks this catchment with a 'A= highest threat', and 'A= highest value' weighting. The Ranui village is projected to grow by 5000 people in the ARGS timeframe. (see also related attachments)

Watercourses in this catchment drain directly into the Waitemata Harbour, and Hauraki Gulf. These water bodies are considered critically important receiving environments and regional assets comprising some 25% of the region. It is known that the upper harbour has particular problems with slow tidal flushing.

The neighborhood's proposed stormwater systems will result in water quality improvement substantially in excess of that required by TP10. See technical attachments by David Kettle. Direct water quality improvement from this reasonable small project may in itself be considered a slight to medium positive.

However, the importance of this project goes a significant additional step beyond this. By serving consciously as a demonstration project it can be considered as having an 'outcome magnifying effect' which is exponential in nature. To the degree that other people gain confidence resulting from precedent and are inspired to adopt similar measures, and these projects in turn inspire others, and indirectly over 20 years the benefit to the region from this project is considered to be a *significant* positive.

Importance as a stormwater model
The role of 'pilot' projects is recognised in ARGS (1999:4) by stating that mechanisms which will be used to implement the strategy include " practice and design guides; accords and heads of agreement between partners and major stakeholders; joint ventures and *demonstration* projects"(italics mine). WCC's (1998:61) strategic planning document *Greenprint* concurs: "Council does have a valid role in promoting good innovative design…[part of list] by undertaking joint ventures or *demonstration* projects which incorporate particular design features…"

This particular demonstration project for IA purposes is an assembly of multiple advances in urban stormwater management. These are outlined in more detail in the attachments by D. Kettle and C. Angell. It is stressed that the technologies involved are not experimental, having been tested and in use individually in numerous often isolated places and manners.

Bio-retention Stormwater Features
The features included as part of this application generally adopt a minimum-engineered approach, preferring biologically oriented solutions. Certainly the project's swales, 'rain garden' and detention pond embody this bio-retention approach, and the resilience of nature's processes suggest this approach will be a durable one. This approach is consistent with the Auckland Regional Council's (2000) *Technical Publication No. 124*: *Low Impact Design Manual for the Auckland Region*.

Regardless of the stormwater *technologies* to be installed the neighbourhood has a number of other features which directly effect stormwater quality outcomes.

A comparatively low lot density[2], while having positive stormwater outcomes, comes at some financial cost to the neighbourhood. The provision and protection of 2500m^2 of open green space on the site's northern boundary in addition to approximately 1600m^2 of internal common space, including the retention of trees and native bush assist substantially with stormwater soakage, also at cost. Significant new native screening and productive Permaculture plantings are also proposed which will absorb more rainfall than do lawns. Double to 2.5 story clustered construction further minimises impermeable surfaces as does the low roading "pedestrian friendly' circulation design. These latter however in all probability represent cost *savings* to the neighbourhood.

Furthermore CNZL have a policy of undertaking only minimal earthworks, and minimising the disturbance of topsoil. Compared to 'scalping' the site as is normal development practice and the replacement of only a small layer of topsoil sufficient to establish grass, this will protect to a large degree the sites existing predeveloped capacity for stormwater absorption.

Both EcoWater and landscape advice confirm that with this approach of providing sufficient bio-retention there is no reason why all but unusual rain events can not be absorbed directly on site. Landscape consultant Cathy Angell provides supporting information in this general regard, as attached. The significant water quality outcome is that, paradoxically, stream ecologys are enhanced due to increased water table levels, leading to balanced stream flows, as compared with 'boom or bust' flows arising from engineered approaches.

Recycling quality outcomes
In addition to practicing and modeling development that enhances downstream water quality, the project also will demonstrate stormwater *recycling* which has a number of related benefits to the region. Significant reductions in stormwater runoff especially peak flows have positive outcomes for water quality. By avoiding or reducing the physical erosion of watercourse banks sedimentation levels are reduced. WCC (2000:22) *Comprehensive Urban Stormwater Management Strategy and Action Plan Report 4* confirms this: "High sediment release potential during erosive episodes yield large volumes of sediment into the catchment drainage network, degrading stormwater quality". Therefore some allowance has been made by David Kettle for this in his benefit calculations.

Also noted is the potential for reduced impact on upland water-supply catchments either by placing less physical demand on existing dams, or obviating the need for further construction of water supply dams, necessitating valley flooding and ecology destruction. These all in turn can contribute to increased perceptions by the inhabitants of the region of care for the environment, protection of natural resources and habitat and the retention of a clean high quality water supply.

Finally the reduced mains water demand and reduced pressure on regional sewerage services[3] may be completely irrelevant for IA's present purpose, but are unmistakably a positive outcome, locally, nationally, and globally. This would seem especially so in a region struggling with infrastructure provision.

A copy of a letter from Tony Miguel, Network Manager of EcoWater is attached endorsing the projects water features and quoting an official council resolution to support the neighbourhood. A transparent assessment has been made as to the value of the project as a demonstration.

[2] The gross density of the neighbourhood is about 400m^2/ household (inclusive of all roading and common areas, exclusive of front future development lot). A probable standard density on this site would be 200-300m^2/ house.
[3] Estimated neighbourhood household demand on mains potable water supplies is approx. 20% that of std, while load on wastewater infrastructure may be as low as 40% by volume even without an on site waste water system.

10. Air Quality Outcomes – complete Question 10a OR 10b

10b What impact will the project have on **air quality?**

☐	☐	☐	☒	☐	3%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	Area Affected

The following points are made in relation to air quality outcomes:

- Vegetated, biological solutions to stormwater enhance local air quality and enhance habitat.
- Because the stormwater has been pretreated by the swales and raingarden by the time it reaches the pond, the pond ecology will remain in good state of health avoiding odor or insect problems.
- Retention of predeveloped and additional tree planting areas will help increase the absorption of increased vehicle emissions associated with urban growth.
- Also it has been shown that flooded water supply dams release methane over long periods, methane being a significantly worse greenhouse gas that CO2.

The numbers of people effected are those effected relatively directly. The magnified percentage resulting from other projects catalyzed from this one could be much more.

Note:
Incidentally, the high insulation and thermal storage of the passive solar designed neighbourhood houses means a dramatic reduction in fossil fuel combustion for electricity generation. The combined reduction arising from solar water and space heating alone is in the order of 56% less. This equates to about 60 tonnes CO2 reduction per household per year. This benefits the regional air quality by reducing gas-fired emissions from Mt Wellington turbine plants. It can be argued that by reducing air pollution by 56% this enables twice as many people to enjoy living in the Auckland region without further degrading air quality--an outcome not inconsistent with ARGS objectives.

12. What impact will the project have on **visual and landscape outcomes?**

☐	☐	☐	☐	☒	3%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

The existing landscape is that of a 'somewhat run down orchard'. As residential development in this area is a permitted activity under WCC's district plan, the substantial clearance of existing trees would have been a likely outcome under traditional development. Thus the proposed tree retention, including areas of native bush and mature exotics, is a significant gain to the region. CNZL plans to develop an on-site nursery to propagate many new trees to further enhance the local landscape. The past 'organic' management of the site will continue. Landscape architect Helen Ballinger in the project's resource consent application (Bentley 1999:Attach 6:36) notes that "overall the proposed development will have a positive effect on the existing landscape".

A stormwater system that functions via predominantly visible elements[4] has the side effect in this case of creating naturally beautiful living landscapes. This is, on one level, a private benefit for residents and immediate neighbours, however the magnitude of expected visitors is such that many people from the wider community will also benefit.

Proposed topsoil retention is also a significant gain, as most developers strip topsoil for sale, replacing only a thin layer. A full layer of topsoil assists with vegetation establishment, and absorbs stormwater.

[4] 'Legible' services also ensure users understand them, and treat them appropriately.

The IA meta data makes numerous references to the people of Auckland desiring the protection of natural open space because they wish to 'tune out' from urban life, and get closer to nature to relax. An example is from ARGS consultation: "common aspirations were health and access to natural environment…parks beaches wilderness areas, access to rural land, greenery, birds…" (No Doubt 1999:160).

The various plantings associated with the stormwater management features in this project such as swales and pond riparian vegetation serves double duty, by also enhancing a sense of open space, and greenery. This is particularly important in the sense that the region can benefit from good models of medium density living which instead of attempting to 'pack' in the maximum amount of units, actually incorporate positive open space. Alexander et al (1977) stresses the importance when designing buildings of considering equally the design of the resulting outdoor spaces, and not see them as 'left over'.

The project also draws from the key Permaculture principles to where possible utilise multiple elements to serve any given function, and ensure any given function is met by a number of elements. This ensures a durable robust landscape. Multilayering is achieved with fruiting trees, underlaid and intermingled with natives, herbs and flowers, as an example.

The project poses the idea that by integrating an element of nature into urban life at the neighbourhood level, people will enjoy a more peaceful and satisfying urban existence. While wide-open natural and recreational open spaces are still important, pressure is somewhat removed from these by this approach. A sense of place and cultural ownership will more likely result, with numerous other social repercussions, discussed later.

One example that relates to landscape and visual amenity specifically is rubbish and litter. In a neighbourhood where residents know each other and identify with a sense of physical place, in part created by landscape elements, litter is a significantly less likely phenomena in the first instance. But secondly the inevitable stray windblown items will find their way and be trapped by the rain-garden, swale and pond system, which under local body corporate management will no doubt be cleaned up quickly. This will keep rubbish out of local waterways, a positive visual outcome for a much larger populace. This compares with litter and stray rubbish washing into stormwater drains and hence into rivers and harbours where no one in particular has a responsibility for it.

Landscape consultant C. Angell has undertaken a preliminary design for the pond riparian area, and the scheme plan design and accompanying documentation are attached. The result appears to be very handsome indeed. It is relatively easy to see how this is money better spent than expensive unsustainable hardware buried underground until such time as it either fails or exceeds its capacity.

The numbers of people effected are those effected relatively directly. The magnified percentage resulting from other projects catalyzed from this one could result in much higher percentages. (Estimated number of visitors over 20 years 1000 people x 20 =20,000 =2% of regional population + 10,000 for wider community exposed to less littered and stagnant waterways etc)

SOCIAL OUTCOMES

14. What impact will the project have on promoting a feeling of **community identity and belonging?**

☐	☐	☐	☐	☒	3%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

As mentioned above a 'sense of place' and local 'vernacularness' will more likely result in a sense of local ownership. Both the beauty of the stormwater system and the knowledge that it was carefully and responsibly designed to have a low environmental impact will help engender this sense of belonging. This sense of local pride in one's neighbourhood has been associated with factors such as community spirit, political activity and self and community empowerment generally[5].

The increased regional water quality over and above that required and an adequate and sustainable stormwater infrastructure could well result in peace of mind for people in the community. This is another meta data theme that emerged from ARGS consultation. People are reportedly quite concerned about the prospect of regional growth when existing infrastructure is already at or beyond capacity. This peace of mind combined with identification with the regions less spoiled natural assets is a significant positive outcome.

The people of Ranui are already noted for their community spirit. The village scale locality combined with a diverse multi-cultural community indicate the wider community as well as Earthsong Eco-Neighbourhood residents may well become 'attached' to the stormwater accomplishments. This is already reported to be the case, as locals offer that the project is bringing additional energy into the township's revitalisation.

This neighbourhood identity factor partially in consequence of proposed stormwater systems gives direct effect to ARGS objectives of creating more 'livable' or 'desirable' and strong local communities. The prospects of crime or other antisocial behavior is almost unimaginable within such a living environment[6].

The sense of place associated with contact with the environment and natural elements within suburban areas particularly those located on common space could likely result in less housing turnover. In fact McCamant and Durrett (1994) suggest this to be the case in 'cohousing' communities overseas. It is partly to do with a sense of intention to live more socially supportively and partly due to the physical landmarks such as good design and natural features. Either way the flow-on effects reported are occurrences such as looking after neighbours when sick, swapping baby sitting, car pooling, helping out with garden projects etc.

In summary the project has a large potential to influence social outcomes. Through the magnifying effect of the tens of thousands of people that will be exposed to it, the project residents and public attitudes in general, have significant potential to shift away from anonymous suburbs dislocated from responsibility for infrastructure provision and towards caring ones with a sense of *stewardship* for local and regional areas.

[5] In this instance other factors enhance this likelihood, viz: the neighbourhood having been self-developed by residents-to-be; Design layout for neighbourly interaction, eg clustering and minimised vehicle disruption. The Eco-neighbourhood also has a common house which provides an area for neighbours and the wider community to meet.

[6] 'Eyes on the street' design, and familiarity with neighbours will also help create a naturally secure minimal crime area, without hi tech security or becoming a 'gated community'

15. What impact will the project have on promoting **awareness of conservation** of the environment?

☐	☐	☐	☐	☒	15%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

Earthsong Eco-Neighbourhood's main purpose is to serve as a model of socially and environmentally sustainable urban living. It is planned to have regular open days to show visitors around the site, and explanations given for the various features such as solar hot water and space heating; non toxic construction materials; permeable paving, swales, Permaculture orchards and gardens; rainwater storage and recycling, rammed earth construction etc.

The reason that the whole development is attracting such interest is because that in combination these advances serve as a model housing services and land development that is sufficiently interesting to attract widespread attention, and that people would go out of their way (perhaps far) to look at it. The neighbourhood will be open to pre-arranged group visits in addition to regular public open days. Schools and groups of children may be particularly interested and welcomed accordingly.

I wish to restate that most of the proposed stormwater (and other neighbourhood) technologies are in themselves not unique or new, and in this sense there is very little risk relating to product or systems failing to meet expectations. For instance EECA reporting on individual installations of solar water heating that these now commonly displace 75% of the hot water electricity heating needs. Earthsong brings together a large number of tested sustainability innovations into an integrated built form, whilst also incorporating best practice urban design.

Beyond the estimated 2% of the regional population physically exposed to the project the projects media presence will cast the educational net significantly wider. The project and neighbourhood have had wide ranging exposure in the media over the last 3 years including 1/4 page colour illustrated articles in the NZ Herald, local papers and a slot on Prime TV. As the project proceeds to implementation stage this exposure is predicted to increase substantially. Additionally a recent open day attracted over 500 people and the project's website also receives in excess of 500 *distinct* visitors each month. Considering these issues, over 20 years a 15% regional reach is considered a minimum.

Most agencies are in accord of the value of pilot projects and their role in the innovation cycle. This is a important opportunity to pilot many of the kinds of things commonly agreed comprise livable and sustainable communities.

Regarding the question of whether the particular model demonstrated by this neighbourhood, a business survey in 1997 by WCC found that only 9% of businesses were unsupportive of WCC's Eco-City goals. (No Doubt 1999:118).

Philip Brown (WCC 2000:4) Principal Planner at Waitakere City Council, said in the neighbourhood's landuse consent: "The proposed cohousing development is unique within Waitakere City, as it is founded on the principles of sustainability and Permaculture. Many of the design features and approaches to infrastructure provision are innovative and can be viewed as demonstration projects to illustrate how alternative and sustainable development practices can be successfully implemented".

Another letter of reference has been provided by Earl Shaver who has been intimately involved in the ARC's *Low impact urban design manual*. He says "Your approach to site development is innovative and represents a new stormwater management direction for land development that the ARC is very supportive of". (Letter attached.)

The neighbourhood will also feature as a case study in the new *Sustainable Land Development Handbook* being produced under the Standards NZ protocols and with MfE funding. (Contact Lisa Gibelini of Lattey Consultants Wellington, 04 9026161, lisa@landlink.co.nz)

CNZL will be carrying out monitoring for its own purposes as may other organizations. A specific example is the ARC's construction waste minimisation project, which will be undertaking a full audit of this project in this regard.

16. What impact will the project have on **sense of safety** at the community level?

☐	☐	☒	☐	☐	100
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

The project will not contribute much in this area. Perhaps it could be said that the reduction in hard surfaces for stormwater purposes also results in more soft surfaces, and soft landscaping. What is probably more significant though is the contribution to personal and property safety and security resulting from the sense of place and community resulting partially from the project. The avoidance of steep sided open drains or stormwater hardware will ensure user safety.

17. What impact will the project have on the **public health consequences of water-based recreation?**

☐	☐	☐	☒	☐	10%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

Beyond the intrinsic ecological benefits to water quality IA meta data confirms that the people of the region place great value in maintaining and enhancing regional water quality (No Doubt Research 1999: 84;95;133;148). "The public considered the environmental quality as the most important factor when considering the direction of growth" (p98) "Overall the outcome deemed most important across all groups was water quality" (p84). The Waitemata, its streams and tributaries are important for recreation and time out from urban stresses, tourism and food gathering.

The spiritual importance to iwi of clean water bodies, which do not have untreated effluent discharged directly into, is noted in Waitakere City's District Plan (WCC 1995). The project has at various stages consulted with tangata whenua, including both Te Kawerau a maki and Ngati Whatua. A dawn blessing was carried out by Monte Rihari in April, and it is satisfying to be working in accord with iwi on this a water based project.

The actual quality of the detention pond water will be high as stated above, ensuring a healthy pond and the health of users.

In these regards at least 10% of the regions population will benefit directly. The point has been made elsewhere that this project has the potential to catalyse a significant improvement of Waitemata and catchments water quality. Water users health improvements therefore have a medium positive outcome. This outcome may reach 10% of the region over time. Directly outcomes would be in the order of about 0.25% or less.

22. What impact will the project have on **opportunities for water-based recreation?**

☐	☐	☒	☐	☐	0.25%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

The proposed detention pond will be of insufficient size and depth for any major water recreation. However the pond and swales and associated riparian planting will create opportunities for residents and visitors to enjoy these amenities in mostly passive ways, such as paddling and pondering the ripples of life.

Children particularly will benefit from having ready but controllable access to water, for paddling and games. This will enhance the children's sense of well being and inner development. Compared to a traditional approach of hiding water movement with culverts and drains, watching water moving and percolating through the various elements on site could be quite entertaining for people of all ages!

The incidental incorporation of early sustainability education for children while at play is one of those intangible and difficult to quantify side effects, but one which could in fact pay global dividends as children become the future stewards of resources.

23. What impact will the project have on **opportunities for land-based recreation?**

☐	☐	☐	☒	☐	<0.25%
Negative	No Impact	Slight Positive	Medium Positive	Significant Positive	People Affected

Because the water bodies themselves are minimal in size, and are set within approximately 9000m2 of common neighbourhood space more opportunities for land based recreation will arise.

The nature of the projects stormwater installations is that they are land area intensive. However because the space serves so many functions and will be planted attractively and intensively over time they will provide incidental opportunities for picnics, BBQs, tree climbing and swinging, kiteflying, meditation and day dreaming, sharing life's little moments with nature and other passerbys.

Resting and picnic seating has been suggested by Cathy Angell in her pond design. An appropriate level of access to key elements of the stormwater system will be ensured through attention to planting design and signage, as well as education of users via the body corporate. As an example defined paths have been designed to access the detention pond.

In this way the project directly assists the creation of more liveable housing, which helps to reduce the stresses of modern urban living. The retention and enhancement of 500m^2 of native bush planted by the previous owner of the project site, will be a favourite retreat spot for many people to come.

TIMING OF OUTCOMES

24. Will advancing or delaying the **timing** of the project change its outcomes? ☐ No ☒ Yes

The project is critically dependent on being managed on a strict timeline basis, and in this regard Promanco Kenman Ltd have been retained to oversee the completion in a timely manner of the project and neighbourhood. (Chris Ellis is the project contact there, phone 3009980.) Resource management law requires stormwater systems to be in place prior to development, and construction finance and land holding costs are factors in the need to proceed as planned on time.

In this regard all the herein documented outcomes are dependent on the projects synchronisation with the neighbourhood's construction.

Building consent has been lodged and construction is due to start on the 1 November 2000, with the project and neighbourhood complete approximately 18 months after this date. The neighbourhood will be built in two stages, however the logistics of the design and construction sequencing and legal requirements of subdivision are such that the majority of the stormwater installation is completed in advance of stage one.

CONSISTENCY WITH REGIONAL STRATEGIES

25. Does the project contribute and give effect to the following **regional policies and strategies?**

1. The Auckland Regional Growth Strategy ☐ No ☒ Yes

The ARGS (1999) has been referred to throughout this questionnaire, as sustainable growth is a key imperative of the strategy and thus is aligned with the present project in many ways.
The ARGS aims and vision are understood to be that :

> *"The diversity and well being of people and communities living in the Auckland region will continue to prosper in a sustainable manor which:*
> - *Promotes strong supportive communities*
> - *Ensures a high quality living environment*
> - *Creates a region that is easy to get around and*
> - *Protects our coast and surrounding natural environment."* ARGS (1999:8)

Of the critical outcomes sought by ARGS, water quality, coastal environment, the sustainable use of resources, open space and social and physical infrastructure comprise six of them and are dircetly related the present project.

No Doubt Research (1999:84) makes the following statement testifying to the obvious need of good models of sustainable urban containment based housing: "Note those who were negative or uncertain about higher density living often suffer from a lack of a clear vision of how a more densely populated city would look and operate. They also lack positive examples of higher density cities and living spaces". I think this statement makes it clear that what is presently proposed is inherently and significantly compatible with ARGS.

2. The Auckland Regional Land Transport Strategy ☐ No ☒ Yes

"The purpose of the RLTS is to ensure that the transport system contributes towards the Auckland region being a desirable place to live" (ARLTS 1999:12)[7]. Other than investment in passenger transport and roading investment the ARLTS embodies strategies surrounding walking and cycling and 'traffic demand management'. In these latter respects the Eco-Neighbourhood concept is also firmly rooted.

However the way that this relates to the Earthsong IA project is more to do with the open space common access quality of the stormwater proposals, viz:

- assisting community cooperation in such things as car pooling and possible shared car ownership.
- Reducing the need to drive for land and water based recreation as noted above
- Creating a distinctly walkable and pedestrian friendly neighbourhood that is 'permeable' safe to walk at night, and responsible in terms of hard surface percentages.
- The project is not coincidently located within a urban growth transit node and is accessible within 500m of a train station, and local shops and community facilities. This couls conceivable mean visitors actually arrive by train!

[7] Planners today are of course concerned as much with accessibility as they are with mobility. I am sure ARLTS also acknowledges this.

3.	The Auckland Regional Council Passenger Transport Action Plan	☐ No	☒ Yes
4.	The Auckland Region Urban Stormwater Strategy	☐ No	☐ Yes

The overall goals of the ARUSSS (1998:21) are "to avoid, remedy and mitigate the adverse effects of urban stormwater on the environment. To protect and enhance the mauri of fresh and marine waters from the adverse effects of urban stormwater". Of course these are statutory obligations already implicit within the RMA 1991 and the plan (as yet formalised) is focused on TLA actions.

In this regard, the point has already been made about the significant divergence between the law and the pragmatic reality. Earthsong Eco-Neighbourhood makes an honest attempt to comply with the spirit and essence of these laws and stargeies. Robert Scott (Bentley 1999:28) the neighbourhood's resource management planner said in the s5 analysis of the AEE: "the project is considered to be wholly consistent with the purpose of the act…it addresses many global environmental issues such as energy efficiency, global warming, depletion of natural resources, reuse and recycling sewage and waterbased waste management and pollution control. In this regard the proposal embodies that sustainability principle of think globally and act locally".

Specific policies are to
- reduce stormwater runoff,
- to reduce contamination of stormwater from sediment,
- encourage reuse of stormwater,
- improve understanding of the environment; and conduct education campaigns;
- manage stormater systems efficiently.

Again a significant, in fact almost 'exact fit' in regard the proposed project.

CONSENTS

26. Explain the **consents status** of your project.

26a Which consents are required for the project?

☒ Resource Management	☒ Building	☐ Other (specify)	☐ Other (specify)

26b Which of these consents have been applied for?

☒ Resource Management	☒ Building	☐ Other (specify)	☐ Other (specify)

26c Explain the status of those applications.

The project and neighbourhood landuse resource consent was granted in April 2000.

Building consent for all siteworks and services and stage one dwellings was lodged in early September 2000, due to be granted first week in October. Only final fine points remain to be clarified before the commencement of construction can be permitted.

REFERENCES

Alexander et al (1977), *A pattern Language*, Oxford Press NY
ARC (2000), *Low impact urban Design Manual*, ARC
ARGS (1999), *Auckland regional Growth Strategy*, ARGF Auckland
ARLTS (1999), *Auckland Regional Land transport strategy*, ARC
ARUSSS (1998), *Auckland Regional Urban Stormwater Strategy Statement*, Territorial authorities - ARC SW liason Group.
Bentley (1999), *Waitakere Eco-Neighbourhood Cohousing Project Application for Resource Consent and AEE*, Bentley Ltd Auckland
Gilman (1991), *Ecovillages and Sustainable Communities*, Context Institute,
McCamant and Durrett (1994), *Cohousing a contemporary Approach to housing ourselves*, 2bns edition 10 speedd press , Berkely
No Doubt Research (1999), *Using IA's Desirable Communities metadata resource*:, No Doubt Research, Auckland
RMA (1991) *Resource Management Act 1991*, NZ Govt
WCC (1995), *WCC District Plan*, Waitakere City, Auckland
WCC (1998), *Greenprint*, Waitakere City, Auckland
WCC(2000) *Discretionary Activity report and landuse consen*t , WCC, Auckland
WCC(2000b) *Comprehensive Urban Stormwater Management Strategy and Action Plan*