The NOW House Project

Bayne, KM and Kane, CD

Part 1: The NOW House Design Process and Insights for Future Projects

A confidential report prepared for Beacon Pathway Ltd

September 2004

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Beacon Workstream: NOW Home Knowledge and Future Monitoring Recommendations

Project: NOW 1

Approved for distribution

Date

The authors would like to acknowledge the aid of Megan Calvert and Garry Tonks in conducting independent interviews with the NOW house team members, and analysis of these results.

EXECUTIVE SUMMARY 5

THE NOW HOUSE PROCESS 6

AN HISTORICAL OVERVIEW 6
Background to the Birth of an Idea 6
Project Objective And Aims 8

THE NOW HOUSE 10

NOW HOUSE DESIGN PROCESS 13
Establishing a Project Vision 13
Feature and Benefits Assessment 13
Formulating a Design Brief 13
Design Iterations 14
Project teams and governance structure 15
Builder choice and resource consent process 17

Beacon ESTABLISHMENT PHASE 18

NOW HOUSE PROJECT ACTIVITIES RECORDS 19
Vision 19
Project Objective 19
Quarter 1: July - September 2002 19
Quarter 2 : October – December 2002 20
Quarter 3: January – March 2003 21
Quarter 4: April – June 2003 22
Quarter 5: July – September 2003 23
Quarter 6: October – December 2003 24
Quarter 7: January – March 2004 24
Quarter 8: April – June 2004 25

RECOMMENDATIONS FOR FUTURE 'POST-KYOTO' HOUSE PROJECTS 26

INSIGHTS INTO THE PROCESS 26
Planning, Management and Project Governance 26
Scope definition for project objectives 28
Project Integrity 30
Funding security and source 32
Holistic approach vs. piecemeal approach 33
Commitment and Morale 34
Insights into the process from individual team members 34

RECOMMENDED PRACTICES FOR FUTURE NOW HOUSE PROJECTS 36
Appendix A The research path for Development of the 'NOW house' concept A1
Appendix B Minutes of NOW house project workshops and meetings B1

Appendix C Features and Benefits Analysis Template _____ C1
Appendix D Core team Minutes_____ D1
Appendix E Owners Team minutes_____ E1
Appendix F Design Brief Reviewers Comments _____ F1
Appendix G GJ Gardner Build Estimates _____ G1
Appendix H Interview Summary Report _____ H1

EXECUTIVE SUMMARY

This report provides an overview of the NOW house design process from a review of project communications and documentation regarding the NOW house during the period July 2002- June 2004. The NOW house concept had the objective of meeting the requirements of a 'post-Kyoto' (2012-2015) market environment, whilst being constrained to using materials and technologies which were currently available or able to be achieved in the present technological environment during 2002-2003.

Forest Research, BRANZ and Winstone Wallboards progressed the need for 'raising the bar' in terms of new build residential performance, by initiating the NOW house project in late 2002. A core team, evolving between January and June of 2003, were engaged by Forest Research and Beacon partner companies to explore the concept, and develop the parameters and design, for one representation of this concept on a given site within New Zealand. The site for the project became a present section (road reserve) at Olympic Place in Waitakere city.

The communication records; minutes of meetings and workshop notes for the project from June 2002- June 2004 were collated and analysed to give an historical overview of the formation of the project, its aims and objectives, give an outline of the design process and establish the major events and decisions during the two year period. Some additional documentation was also available outside of that mentioned, and this has also been included – however no representations are made that **all** aspects of the process have been captured.

From analysis of these records, insight into those things which aided and those that hindered the meeting of the initial key objective(s) are discussed. An interview procedure with members of the core, design and owners team allowed us to ascertain different member perspectives on the project as a whole, and what went well or badly throughout the process.

Detailed recommendations follow, and at first sight appear to show a failed initiative, however this is certainly not the case. While the house itself shows a number of gaps to achievement of the core objective – meeting the criteria required for a 'post-Kyoto' residential building –the team has created a robust method to design sustainable housing that the majority of New Zealanders can afford, and which will significantly (compared with today – c.f. Beacon Project SF1.2) reduce the energy, water, and resource use burden on the Built Environment imposed by residential housing.

Key recommendations for the next iterations of the NOW process:

- Clearly articulate to all key stakeholders the goals, process, and governance structure involved. This includes all lines of control, including the Project Manager and other project staff.
- Ensure that funding is available to complete the project to the satisfaction of all key stakeholders within acceptable timeframes, or that gated decision points are included
- Run the technical design process in parallel with an academic "discussion group" to ensure that the primary aims are met whilst still drawing in the value to be had from pointed discussions on hot topics of the time.
- Ensure that the agreed design brief is in full view of all operating teams at all times.
- Ensure that all discussions and decisions are captured – appoint a "technical secretary"
- Know the scope, and stick to it.

THE NOW HOUSE PROCESS

This report provides an overview of the NOW house design process from a review of the NOW house project during the period July 2002-June 2004. Through analysis of documentation produced in the course of the research project during this time period, and from interviews with the core project team members, the history and major actions within the project are established, core insights into the process given, and recommendations for future research homes in the 'post-Kyoto' vision outlined.

AN HISTORICAL OVERVIEW

Background to the Birth of an Idea

In 2000-2001, Forest Research initiated a strategic futures study using Scenario Planning techniques to find 3 to 4 different, but likely, scenarios for the Australasian urban environment in the year 2015. Three scenarios emerged: a continuation along the present urban sprawl trajectory; a movement towards intensified, higher density urban landscape via SmartGrowth; and a focus on regional development and the formation of satellite cities. Establishment of the 3 scenarios was, however, not an endpoint in itself, but the beginning of a journey to more clearly understand the requirements for future buildings, and therefore the implications for wood-based building products in coming years. The work to establish these criteria was undertaken as part of a 'Concept House' research project aimed at meeting the needs of 2015 through new and retrofit wood-based building technologies.

In early July 2002 a meeting was held with representatives of The Energy Efficiency and Conservation Authority (EECA), Building Research Association New Zealand (BRANZ), Forest Research (FR) and Winstone Wallboards (WWB) to investigate the need for a 'Climate Change and the Built Environment' strategy, based on gaps in existing policy documents. At this meeting sharing of findings and discussion was based on the above research by Forest Research, studies on energy use and likely climate change impacts by BRANZ, and customer studies undertaken by Winstone Wallboards. This discussion highlighted gaps in ability to meet these needs despite a number of Government policy statements and strategies being released looking to plug certain aspects of the gap. This discussion led to a mutual agreement that 'raising the bar' in terms of what the residential sector could rightly expect as standard was needed. The term 'Post-Kyoto' was first voiced at this meeting. The diagram below shows the thinking behind the group's feeling on 'raising the bar' – that raising the bar will need to take *quality of life* as well as *whole of life* into account (Figure 1).

Minutes of a meeting between WWB and Forest Research on the 14th of August 2002 state "Post Kyoto Building: FR have some FoRST funding (Non-Specific Output Funding - NSOF) available to build systems for inclusion in a 'house'. The house will need to address and balance both whole of life and quality of life issues. WWB were keen for their building systems to be included in this 'house'. GIB had/have a partnering programme so may have been be able to provide roof, cladding etc." This document pinpoints the beginning of the NOW house relationship between FR and WWB.

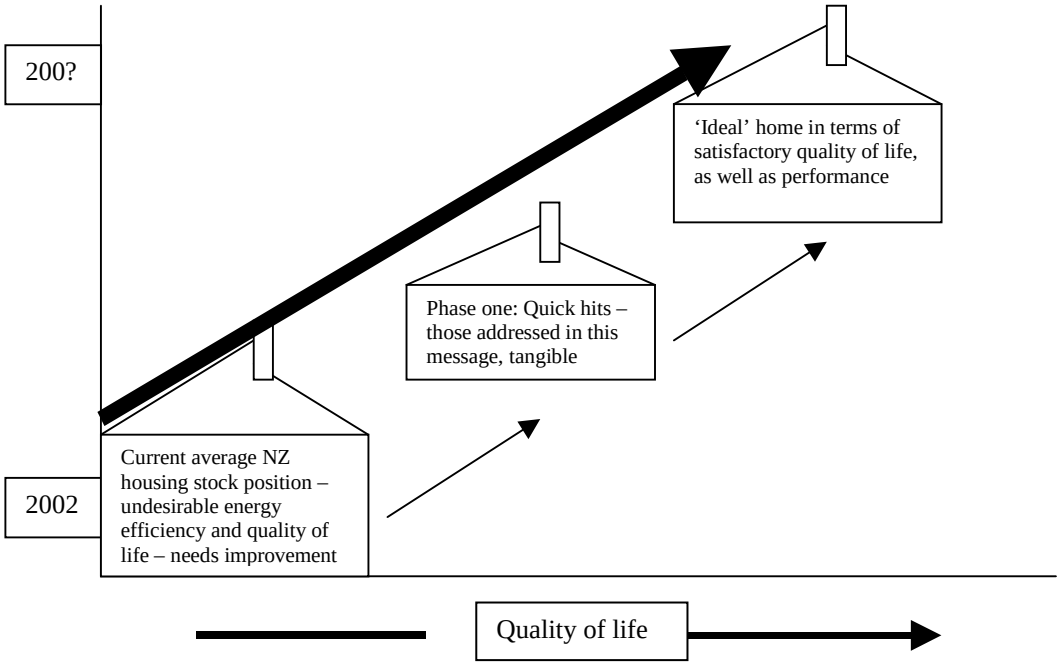

Figure 1: 'Raising the bar'

Meanwhile, Forest Research and BRANZ were in the midst of a Foundation for Research Science and Technology (FRST) bidding process, to progress funding in the Built Environment programmes. Their approach incorporated the thinking from respective previous research programmes, as well as the outcomes of the Climate Change (CC) in the Built Environment (BE) 'raising the bar' meeting, and involved a joint venture being formed between themselves and University of Canterbury to deliver the intended research. WWB & EECA were amongst the stakeholder groups envisioned to aid in focussing the delivery and transfer of the research results to industry/ Government sectors. Both Forest Research and BRANZ had previous FRST monies to undertake research in these areas. BRANZ had the ongoing Household Energy End-Use Project (HEEP) study. Forest Research was continuing with the 'Concept House' project, and the NSOF funded 'Value through Design/ 'post-Kyoto' house' – which looked at showcasing novel wooden building systems and housing concepts that addressed the criteria required to meet the needs of 2015 from the previous scenario visualisation work.

Following a meeting at WWB offices between FR and WWB in early September 2002, FR developed a 'post-Kyoto' conceptual vision incorporating NOW, THEN and FUTURE buildings as a means of addressing these future needs, and marrying quality of life and whole of life aspects. At this stage the vision did not stretch to seeing these buildings constructed, however, in talking with BRANZ and University of Canterbury (UoC), the research bid was seen to be strengthened through this vision, with building research projects whereby people could actually 'kick the tyres' so to speak, and the vision was written into the FRST bid (Performance Targeted Engineered Systems) with the aim of delivering this vision via predominantly wood-based solutions, thus tying into the wood processing strategy and export market opportunities in Asia.

During November 2002, WWB invited FR to meet and discuss initiating the NOW programme immediately, rather than waiting for the funding round to pan out, and stated that they saw their role as 'more than just in building of the houses'. This meeting was a critical point in the evolution of both the NOW house project and the eventual Beacon consortium – in hindsight, an

historical event. From this meeting, which developed the project to include aspects of marketing, and exploring how a collaborative success might be achieved, a contract was signed between FR and WWB to allow the NOW house project to be initiated from December 2002, and a project manager (Kimball Fink-Jensen) was appointed to the project. This heralded the requirement to change the focus of the NSOF-funded project from construction and testing of wood-based building system solutions to 'show what can be done with wood', towards a more holistic wood-based house building project – in order to fund the project contract with WWB.

An initial meeting was held between Kevin Golding of WWB and the FR team on 3rd December 2002, to discuss the aspects required for writing a design brief, and demographic needs analysis. Kevin contacted Rachel Hargreaves (BRANZ) and Karen Bayne (FR) in mid December and discussed running an 'expert forum' in early January – based around Climate Change, to explore the Sociological and Industry aspects of 'raising the bar' – however, the appointment of the Project Manager, and Christmas stalled this process. Instead, a meeting was set up to discuss 'Needs analysis' at the inaugural NOW house workshop on 29th January, where Stephen McKernon (Q-Zone) and Susan Bates (FR) outlined future consumer needs. During December and January, in preparation for the project's inaugural workshop, Karen and Kimball constructed a 6-month research plan to enable a) a design brief to be written by late March and b) the house designed to these specifications by late May (in retrospect, a highly ambitious timeframe) …and a great idea took flight.

Project Objective And Aims

The Post-Kyoto building

The term 'post-Kyoto' era (being 2012-2015) sprang from two ideas – one in that the FR scenarios were set in this era, and the second being that the end of the first reporting period of the Kyoto Protocol (ratification by NZ was expected) was in 2012. It represented a timeframe by which we would need to have made significant changes to our built environment in order to meet both societal and industry expectations; and Govt strategy statements (of which there were many being released with a 10-15 year timeframe) relating to climate change impacts, energy use, waste, health and affordability.

In the FRST Built Environment Joint Venture (BEjv) bid, John Duncan (BRANZ) described the 'post-Kyoto' building thus:

> **"**The 'post-Kyoto' Building is a simple expression of a building that will provide for the built environment needs of our future society. The future building will have to deal with 'whole-of-life' requirements in a changing natural environment, and more effectively address the 'quality-of-life' issues than the existing built environment does"

A 'post-Kyoto' building, was therefore defined as one *"that enhances the whole of life and quality of life of the inhabitants and the natural environment which nurtures it"*

Key successes for the vision were termed as:

- A sustainable Built Environment which people can afford and want to live in.
- Consumer demand for buildings consistent with National Climate Change, Energy and Sustainability objectives.

- Innovations arising from these outcomes that New Zealand industry can exploit for financial gain.

At a presentation to Hon. Pete Hodgson (Minister of Research, Science and Technology, and Minister of Energy) in Rotorua on January 30th 2003, the nascent NOW house project was discussed, and the diagram below shown to represent the mismatch between today's housing, and that which would be needed in the 'post-Kyoto' world of 2015 (Figure 2).

The key to bridging this "gap" was described as being through provision of three things:

- Changing attitudes to the way people build and use their Built Environment
- Understanding what the 'post-Kyoto' world actually encompasses and educating people about the impacts.
- The provision of tools and demonstrable solutions to show people and industry how to move from the "pre-Kyoto" to the "post-Kyoto" world.

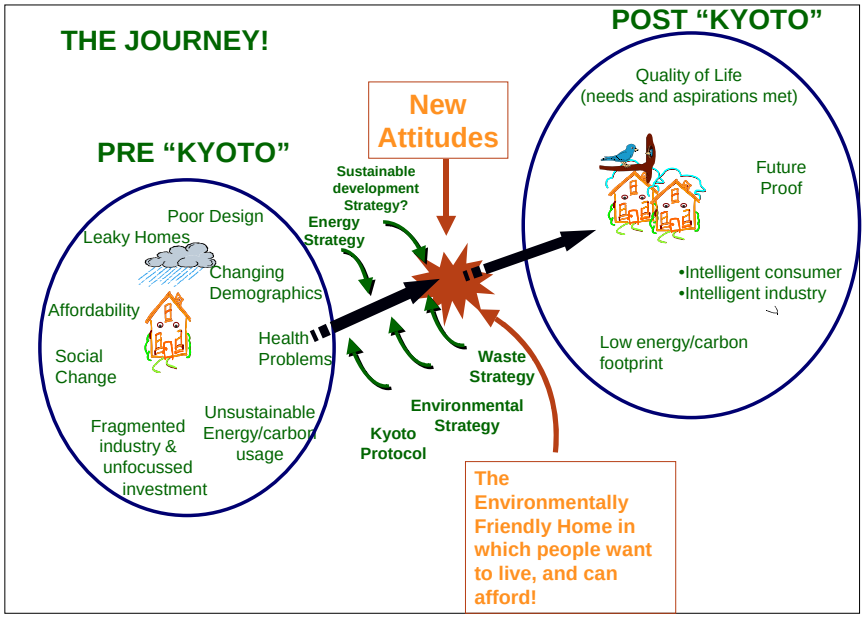

Figure 2: The gap between the present and the envisioned needs of the 'post- Kyoto' world

The original sustainability indicators for a 'post-Kyoto' building are shown in the original 'hedgehog diagram' in Figure 3.

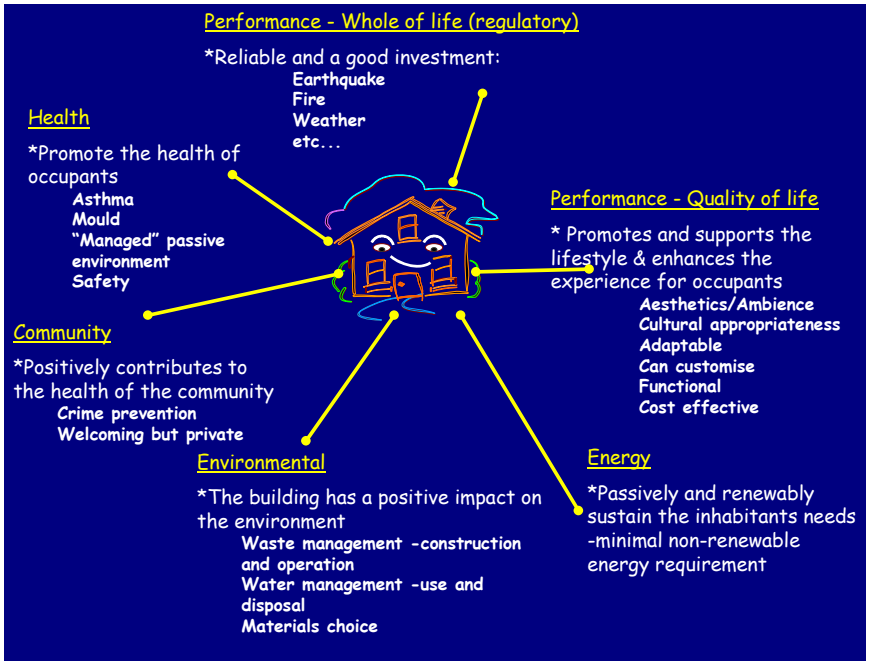

Figure 3: The original sustainability framework or 'hedgehog' diagram

THE NOW HOUSE

The 'post-Kyoto' vision has three aspects:

- The creation of a 'NOW House' – which establishes a benchmark for further demonstration houses, and demonstrates best use of today's technologies in the pathway to creating a 'post-Kyoto' building.
- The creation of a 'THEN House' – which demonstrates how to retrofit an existing house to turn it into a 'post-Kyoto' building.
- The creation of a 'FUTURE House' - which will be built from new systems, technologies, and materials currently not yet commercialised, but that help to enable us to achieve the truly 'post-Kyoto' building.

The NOW house is the first 'cab off the rank' in delivery of the 'post-Kyoto' vision. It has as its project aims (from the agreed design brief):

1. The NOW House project aims to research and encapsulate what we know today about best practice in meeting the needs of the next decade – the 'post-Kyoto'[1] society. Identified should be: preferred design processes, design ideas and also identifiable gaps in the knowledge.
2. The project aims also to demonstrate this via one possible built solution on a given site[2].

[1] 'post-Kyoto' refers to the time period after the 2012 reporting period under the terms of the ratified Kyoto protocol. It indicates a time period 10-15 years hence, whereby certain societal changes have been anticipated due to lifestyle and demographic trends and indicators, as well as the Government regulatory environment which will affect both consumers and industry players.

[2] This single representation became the Olympic Place NOW home.

3. The built demonstration house will not be a show home, but is rather an attempt to physically represent best practice, in order to assess gaps in meeting the needs and therefore set research priorities for future housing projects.
4. While recognising the limitations of studying a single house in isolation, the project will also install adequate provision for energy, thermal, water and moisture metering (wired-house) for evaluative purposes; and study waste streams and labour processes during the construction process.
5. All system decisions will be the most appropriate for the situation with regard to the following filtering elements:
    - Affordability (capital and running costs)
    - Resource use (labour, land, transportation, sustainable and renewable materials)
    - Energy efficiency (operating and embodied)
    - Desirability (heritage, fashion, comfort and aspiration)
    - Performance (durability, seismic, fire, wind-loading) also Future-proof (functional needs, flexible design, maintenance needs)
    - Water and Waste management (minimised city-supply water usage, reusability and/or recyclability)
    - Personal Health (physiological, safety and security, peace/relaxing(mental))
    - Community Health (social cohesion, neighbourhood etc)
6. None of the above filter elements is to be regarded as any more, or any less important than any other filter element.
7. The project will reflect the Vision throughout: be inspiring & affordable (appeal), healthy and resource efficient (sustainable), smart, innovative and marketable (education) and fit for purpose for the needs of future 'post-Kyoto' society (performance).
8. House design will need to provide a 'meaningful' house to reflect NZ character and values.
9. The house is being designed with the average New Zealand family in mind. The costing is therefore something which is within reach for most (with a 10-20% deposit), but for which they will still need to save and work quite hard towards obtaining.
10. The completed construction will be finished with interior chattels such as that of a vacant possession sale, with modest exterior landscaping. Appliances to be included in chattels include an oven, a dishwasher.
11. The Now House is about building a home requiring whole house considerations in terms of Function, Light, Indoor Air Quality, Safety and Security, Cost, Warmth, Acoustics, Aesthetics, Energy Use, and Environmental friendliness. The benefits of this house will be a home that is: of higher quality, more comfortable, safer, quieter, requiring less maintenance and is more durable incurring lower monthly operating costs to support a state of complete physical, mental and social well-being for its occupants.
12. Aim to use the least environmentally-damaging and resource-intensive materials.

The 'NOW house' project is therefore about a house building approach or concept, for houses in the 'post-Kyoto' era (2012-2015), but constrained in that it can only utilise materials/ technologies which are currently available or able to be achieved today. The 'NOW House' is not a show home, but physically demonstrates current best knowledge and practice in one possible solution, designed with the 'average' New Zealander in mind, rather than as a social housing project, or for the more wealthy customer who would normally gain the expertise of an architect. The 'NOW house', though affordable, is an aspirational 'stretch' target - something which is within reach for the median household income of $NZD48,500[3], but for which they will

[3] This being the median household income in 2003, from Statistics New Zealand data.

still need to save and work quite hard towards obtaining the 10-20% deposit required for a mortgage.

NOW HOUSE DESIGN PROCESS

The research undertaken during 2003 - 2004 to underpin the practical demonstration house encompassed 4 main stages: Establishing a Vision; Identifying Key Features and Benefits; Formulating a Design Brief; and Design Iterations [*see Appendix A "The Research Path for development of the 'Now house' concept"*].

Establishing a Project Vision

The key mission for the NOW House project is in raising awareness of the 'post-Kyoto' issues to building industry professionals, materials manufacturers, government agencies and the general public. Similar to the the scenario planning evaluation, successful execution will be seen when the consumer and industry begin to ask questions about the issues they face, and thought-provoking discussions ensue about the future for both the industry and the nation given these needs. In enabling this to happen, 4 main success criteria were established:

- **Environmental Sustainability** : Noteably, this is just one of the 4 factors for successful 'post-Kyoto' living, however, it was felt that any demonstration house needed to show a 'raising of the bar' with regard to (particularly climate change and energy) issues.
- **Quality:** Good craftsmanship, code compliance, weathertightness and functionality are key success factors.
- **Appeal:** To attract interest and stimulate sustainable building as a desirable market factor, rather than for a fringe or 'weird' market sector.
- **Education:** Through innovation and marketing, provide and show people smarter ways of tackling the issues.

Adequate evidence of Performance, Sustainability, Appeal and Innovation (to educate the public on how to change behaviour/systems and get a 'NOW home') will be required to be able to brand the concept, and market it with credibility.

Feature and Benefits Assessment

Over 20 features and benefits were identified as being important factors in the design of a sustaianble house, and these were studied in depth to create necessary criteria for a NOW house, and then transferred to become performance specifications in the Design Brief.

To ensure a good link between the success criteria of the Vision, and the important features and benefits of the house, a series of linking mechanisms were researched to provide a solid basis for filtering products and systems, and ultimately designing the house. These included looking into likely branding opportunities, the values of New Zealand culture, the way houses are utilised and their inherent meanings, and the index and rating systems available.

Formulating a Design Brief

Format: The Design Brief was written outlining the core performance specifications for each feature and benefit category. Spelled out alongside is the reason these specifications are seen as

key to successful implementation of the feature or benefit.. Usually this relates to best practice knowledge, research reports or expert advice, so that to the best of the team's ability, all the specifications given priority in the 'NOW House' were justified from the 'best practice' understanding of the team at that time. The brief also provided a target value for each component feature (pg 8-11 of the brief) and an indication of how the research team aimed to measure successful implementation of the performance specifications. A data log for the designers to show tradeoffs between conflicting performance specs, how these were resolved and the justification for the decision was also provided.

Site location: Early in the project, a number of site locations had been discussed, principally sites within the Rotorua and Waitakere cities. At the March 5th worshop, the issue of location was an agenda priority, and New Lynn's Olympic Place was the chosen site for the first NOW house to be constructed (the NOW Home) by mid March. This decision was critical in the development of the design brief, as site specific information regarding target market (likely occupants of the suburb), budget, and site features could be included in the brief.

Need for monitoring: The intention that the house be monitored to gain real data was firmly established soon after the decision to physically construct a house. The reasoning for this was more than purely academic, in that we needed to measure up to scrutiny and our claims that the house design was 'above average/ standard construction' once built. Target values were included in the brief during May, with a monitoring brief included outlining the likely monitoring methodology and needs from the design to incorporate equipment fixation.

Design Iterations

Layout: Establishing the basic footprint and room layout of the home was an iterative process, and centred around three core aspects. Firstly, the wider neighbourhood of New Lynn set an appropriate target size for the home, and was matched with the budget to allocate basic overall home space dimensions. Secondly, the site itself was a corner section with a busy road, there were existing buildings near the site to consider, and the site had a sloping corner, which backed onto an established track and the greater Olympic Park. In addition to these were wind and sun positioning considerations, in order to both place the home in the context of its surrounds, and maximise passive design elements. Lastly, were the feature components themselves, which took into account the required lifestyle and living arrangements for a modern, but flexible, family structure, and enabled the designer to allocate rooms, and appropriate space and dimensions for the expected living functions of the occupants.

The design layout process went through 7 iterations[4]:

1. Preliminary sketches of the home on the site were prepared, however, the drawings at this stage were more concerned with house and site position via indications of Northerly direction, sun path, wind and existing site features to be taken into account, than the shape and featurues of the home.
2. The initial shape of the house was given, and rooms indicated with interior wall divides. The garage and main bedroom were larger than subsequent designs.
3. The site dimensions were altered, and house shape and size reduced. The house placement shifted on the site to be more north facing, and to come away from the sloping bank at rear Greater glazing levels were added to the north face. The rooms were allocated rough

[4] See pgs 1-22 of hardcopy notes

dimensions, and the kitchen was given position near the north wall, creating a breakfast 'nook' in space # four. The computer area backed onto the bathroom, and two small passageways were created separating the bathroom from the bedrooms, and the garage from main living space. House 132m2. Garage 28m2

4. The kitchen was moved to a more central position, the computer area backed onto this, and the central corridor space removed so as to allow maximised living space. The wall between kitchen and computer area contained a glass panel, and a cupboard space was added to the bathroom to allow for more privacy from the second living area. House 137m2. Garage 26m2
5. The bath and shower were switched away from the master bedroom wall. A solid roof eave was placed over the dining area for shading. The hot water cupboard was placed closer to the bathroom and kitchen, and an entrance path made from the garage to the living space via the kitchen. The kitchen had a solid eastern wall, and a dormer window to give natural light. House 137m2. Garage 26m2
6. The dining room was extended outwards, and a translucent panel added in the kitchen, and the kitchen ceiling lowered for task lighting. House 139m2. Garage 26m2
7. The entranceway was given an airlock, and the hall cupboard and glass panel removed. The drawing plan was also detailed (fully dimensioned), appropriate for tendering. House 139m2. Garage 26m2

Selecting materials: Desired products and systems were initially passed through a 7 point filtering index to choose the elements suitable for the Waitakere demonstration 'NOW Home'. The filters were: Personal wellbeing, Community wellbeing, Environmental wellbeing; Performance; Affordability; Desirability; Energy Resource management; Water Resource management; and Solid Waste Resource managment. These were ranked on a High, Medium, and Low subjective scale, as the ability to score a quantitative value for some of the filters was limited.

Materials database: The need to have credible, referenced materials and systems decision making framework became apparent when team members debated the merits of different systems, and did not come to a clear agreement on all the materials choices. A database structure (MS Excel-based) was set-up such that team members could list the various products and systems they were aware of (generic non-branded), and outline referenced performance measures for the system in each of the filter categories.

Landscaping Design: A landscaping design brief was written in August 2003 in order for Boffa Miskell to landscape the site [*see Appendix H for Landscape Design*]. The site, being part of Olympic Park, had to have certain features to tie into the overall park landscape and blend with Ecomatters Trust landscaping. The initial design did not adequately meet the team's expectations, and at a meeting in Hamilton during October 2003, revisions to the brief were made. Two subsequent designs were distributed to the team during June and July 2004.

Project teams and governance structure

The NOW house project developed into three integrated team structures throughout the project, as the need to have experts focused on various aspects of the project emerged. Initially, due to the workshop structure of meetings, and the desire for everyone's involvement and viewpoint, a single project team was all that was required. This large team was soon split into four subteams to develop the features and benefits and vision linkages, and as the project became focussed around key governance, building science and design aspects, a smaller 'core team' evolved, and some members decided to take a more hands-off position within the project. This 'core team' consisted of the following people:

Kimball Fink-Jensen (project manager) from Qwant
Annika Lane and Katja Lietz from Waitakere City Council
Karen Bayne, Louw van Wyk and Mike Collins from Forest Research
Albrecht Stoecklien, Roman Jaques and Chris Kane from BRANZ
Jo Duggan (and to a certain extent Kevin Golding) from Winstone Wallboards
Barbara Joubert (appointed by EECA)

Additional to this core grouping, two members (Dave Moore of COHFE and Robin Allison of Cohousing New Zealand Ltd.) were invited to join the contracted designer (Greg Burn of Structure Ltd.) on a 'Design Team'. Three additional members were added to this team to give input at design team meetings – Mike Collins and Karen Bayne of Forest Research and Roman Jaques of BRANZ.

As the project moved past the June 30th deadline, and as Beacon establishment lagged, an Owners team was established to make key governance decisions. The Owners Team consisted of the following team members:

Russell Burton of Forest Research (chair)
Kevin Golding of Winstone Wallboards
Chris Kane of BRANZ
Karen Bayne of Forest Research
Annika Lane of Waitakere City Council
with Kimball Fink-Jensen (project manager) attending meetings.

The team was established as a "Board of Management" representing the senior representatives of the companies investing in the NOW Home

The Owners Team are to be involved in the following decision points ("gates") [5]

- Features and benefits
- Design brief
- Concept design
- Filter framework
- Monitoring (how, what)
- Developed design
- Working drawings (including QS cost)
- Information base (Olympic Place version)
- Builder contract
- Construction commencing
- Completion
- Handover
- "Virtual architect" database (strategy)
- Promotion/communications (strategy)
- Brand (strategy)
- Tech transfer (strategy)

Governance and Council clearance to proceed

[5] From minutes of t he 17th June 2003 inaugural Owner's Team meeting

During December 2002, Winstone Wallboards, Forest Research and BRANZ obtained clearance to proceed with the NOW house project from their respective CEO's. To obtain the site at Olympic Place, Annika Lane engaged with Kimball Fink-Jensen in a clearance process. This initally involved establishing the various legal clearance steps to obtain the right to build on the site, as well as initiating meetings with Community boards and Council to aid progress of Council support for the project.

Builder choice and resource consent process

At the inaugural Owners Team meeting in June, the team was requested to put up a builder choice proposal for ratification by the Owners Team. At the next Owners Team meeting on 24 July, Kevin Golding outlined the process GIB had taken in selecting a builder. They had examined Club Gib® builders and narrowed the list, and had subsequently investigated the possibility of using Fletcher Residential, but they didn't believe they could be a strategic partner longer term. The next obvious next obvious choice was G J Gardner Homes. Some of the team expressed concern at the meeting that the builder needed to be both local, and experienced in non-standard procedures – i.e. know the trade well. An assurance was given that the Manukau franchise had these preconditions in builder Bob Greenbury, and G J Gardner Homes was chosen.

(At the time of writing the resource consent process and working drawings are currently still underway)

Beacon ESTABLISHMENT PHASE

With encouragement from FRST (while they were considering the BEjv funding application), talks were being held between various parties mooting the possibility of developing a wider consortium-based research programme to deliver the 'post-Kyoto' vision more effectively. In early 2003, Waitakere City Council were approached regarding a 'Sustainable Cities' FRST bid, and other potential organisations that could aid in the delivery were approached, including the Gibson Group TV production team.

John Duncan had stated to FRST in the BEjv FRST bid that:

"It is the intention of the partners in this set of linked programmes to turn the vision into a reality, and thereby focus both the suppliers and the users of the built environment on what can be possible. There are three underpinning reasons for setting out on this course:

- To deliver the best science, by putting together the best teams in the fields which lead to this 'post-Kyoto' Building that New Zealand can muster, and thereby make collaboration attractive to strong international peer groups, and create room for new entrants to the fields of research that are being addressed.
- To create a larger entity in the field of research into the Built Environment, which can better raise the profile of research for the sector, better attract Government attention to the research needs of this important sector, and provide a more diversified entity to better attract industry investment in longer-horizon research in the sector.
- To create a better vehicle to apply research findings through formal courses as well as publications and seminars targeted to industry participants, and collaborations with industry participants in product enhancement.

The overall programme is designed to deliver the knowledge base from which the new generation of buildings which New Zealand will need in the mid-21st century can be constructed."

FRST did not fund the original BEjv bid, but encouraged the BEjv to form a wider consortium, and the beginnings of Beacon appeared, culminating in an application for funding in May 2003, which was ultimately successful in July 2004, and allows a longterm research programme to deliver the original 'post-Kyoto' vision.

NOW HOUSE PROJECT ACTIVITIES RECORDS

The NOW house project was an ambitious project, and was recognised as being significantly different from other global projects in the research area of sustainability and housing-improvement, as to have a contribution to make internationally. This was mainly due to the need to move forward equally on three aspects – affordability, desirability, and efficiency – rather than to focus on one aspect only and do it well.

Vision

"The environmentally friendly home that people want to – and can afford to – live in"

The project will: be inspiring & affordable (appeal), healthy and resource efficient (sustainable), smart, innovative and marketable (education) and fit for purpose for the needs of future 'post-Kyoto' society (performance).

Project Objective

The 'NOW house' project is about a **house building approach or concept**, for houses in the 'post-Kyoto' era (2012-2015), but constrained in that it can only utilise materials/ technologies which are **currently available or able to be achieved today**

Quarter 1: July - September 2002

During July, three distinct, but historically interwoven, events occurred that would lay the foundation for the NOW house project and ultimately, Beacon Pathway Ltd. Consortium. The first was a meeting in early July with representatives of EECA, BRANZ, Forest Research and WWB to investigate the need for a 'Climate Change and the Built Environment' strategy, based on gaps in existing policy documents. The upshot of this meeting was that there was a definite need to 'raise the bar' in terms of sustainability performance of houses in the New Zealand built environment. Concurrently, Forest Research held an internal funding round to allocate monies under the 'Non-Specific Output Fund' (NSOF). The Built Environment team gave a presentation entitled 'How to achieve sustainable buildings using wood'. One of the proposals entitled 'Value through design' proposed "that NSOF seed funds the opportunity to develop wood-based wall and floor building systems, suitable for retrofitting existing homes to be more comfortable and easy-care"[6]. This approach was partly due to the fit with a larger FRST-funded programme called 'Concept House'[7] which aimed to develop building technologies to meet the criteria identified for a 2015 built environment. This presentation was successful, and integral to the NOW house development, in that the funds allocated enabled much of the project work during June 2002-June 2003, including funding of the contractual arrangements with WWB. Additional to these two events, the bidding process for continued FRST funding from the Built Environment Joint Venture (FR/BRANZ/UoC) was underway, and a five-part programme was developed. Following the meeting in July around 'raising the bar', Winstone Wallboards were contacted to see if they could act as a commercial "outlet" for the research. Kevin Golding responded on September 10th by email that WWB saw their involvement as more than building the house – also marketing, and exploring how a collaborative success might be achieved. Following a meeting between FR and

[6] Refer pg 161 of hardcopy notes "How to achieve sustainable buildings using wood"
[7] Refer to pg 171 of hardcopy notes "Concept House project".

WWB during late September, Bryan Walford formulated the 'Now', 'Then' and 'Future' concepts for the different research houses. One of the FRST project bids, Performance Targeted Engineered Systems, was modified to incorporate actual physical building of these 'post-Kyoto' houses, with WWB seen as key in technology transfer and delivery.

Quarter 2 : October – December 2002

During October and November, the NOW House concept started to take shape into the form we now recognise. The BEjv was formalised with University of Canterbury, with an MoU being signed between Russell Burton and John Raine. On 13th November 2002, a breakthrough was made in the development of 'post-Kyoto' homes, in the form of a meeting to discuss promptly progressing the 'post-Kyoto' concept. At this meeting, the 'post-Kyoto' concept was defined, in terms of what a 'post-Kyoto' home was and wasn't; the challenges and early leaders that would need to be engaged in the process to realise such an initiative, and finally, the commitment to actually undertake a project to build a 'post-Kyoto' home and market it through GIB Breakthrough Centre technology transfer routes[8]. Following this meeting at Felix Street, Penrose, between FR and WWB, the initial 'post-Kyoto' house project became known as 'the Now House project' on 14th of November[9]. At this stage, the NSOF funded work around floor and wall systems was seen as being incorporated into the NOW house in order to meet the higher performance requirements for a 'NOW house'[10]. BRANZ were also seen as having key skills and technologies to incorporate, particularly in relation to environmental aspects and monitoring, and formal commitment from the three firms was timetabled for 29th November. Winstone Wallboards sent a draft proposal to FR for undertaking the management of the project, and technology transfer through the Breakthrough Centre in late November[11]. This document formed the basis of the contractual arrangement, and allowed WWB to employ Kimball Fink-Jensen as Project Manager. On 3rd December, an initial meeting was held between FR staff, and Kevin Golding to disuss what would be required to form a design brief, and various people were allocated tasks, including Rachel Hargreaves and other staff from BRANZ[12]. The FR NSOF funded project adopted and defined the "post-Kyoto Vision" from earlier 'Concept House' research and recent discussions with WWB, as a change to the project emphasis was required to fund the contract with WWB from NSOF monies. During early December, the NOW House project was pitched at the CEO of FR, Bryce Heard, who signed off subject to Ministerial Approval, which was duly obtained. With the appointment of Kimball Fink-Jensen, a new project plan was written[13], and Karen Bayne, as project co-ordinator, and Kimball discussed the research team required to meet this, and the overall purpose of the project, and a scope and timeline for the house was refined into a six-month research project. Additionally, a project framework for vision and governance was devised by the Breakthrough Centre, which outlined clear lines of authority, and expectations of governance partners[14], and Greg Burn was contracted to lead the design of the house.

[8] Refer pg 144 of hardcopy notes "Concept House and Post Kyoto Community Projects"
[9] Refer pg 120 of hardcopy notes " Research aspects for Built Environment Concept House Project"
[10] Refer pg 122 of hardcopy notes – fax from Karen Bayne to Kevin Golding 22nd November 2002.
[11] Refer pg 139 of hardcopy notes "Proposal to develop a post-Kyoto 'now house' and facilitate technology transfer"; also pg A of the hardcopy notes which gives the timeline Kevin envisaged for the early stage of the project.
[12] Refer pg 117 of hardcopy notes "Concept 'Now' house meeting'
[13] Refer pgs 124 and 112 of hardcopy notes " Post-Kyoto Community 'Now house' Project plan" and " Post-kyoto Communities – Making it happen"
[14] Refer pg 98 of hardcopy notes " Post-Kyoto Now House Project Framework"

Quarter 3: January – March 2003

The NOW house project kicked off on 29th January with the first workshop[15] [*see Appendix B for workshop minutes*]. At this stage, anyone and everyone willing to be part of the project was welcome to contribute ideas, and nearly 20 people were present on the day. The first workshop introduced the scope, constraints and budget for the project, with Susan Bates (FR) explaining the rationale in terms of demographic and lifestyle trends, environmental factors, and the state of current building practice and industry[16]. This formed the basis of the Features and Benefits reference documentation –the sustainability aspects of the house – all stemming from earlier FR work on the "meaning" of house and home, with additional input from the team present. During the afternoon, Stephen McKernon of QZone was invited to facilitate development of the vision, and linkages between the vision and the likely features and benefits identified by the team[17]. Following this inaugural workshop, those wishing to continue being involved in the project were subsequently divided into four teams to scope out various features and benefits, in order to determine performance specifications of a design brief [*refer to Appendix C for template]*. A project outline for the overall NOW project research was provided by Karen, in consultation with Kimball, and adopted by the team. The second workshop on March 5th involved an exercise to further describe a method of relating the features and benefits a house has, to people's perceived needs and wants, and a rating matrix of the design implications of each feature and benefit was made. Meanwhile, a second FRST bidding round in Sustainable Cities was underway between BRANZ and FR, and a visit was made during February by BRANZ and FR to Waitakere City Council (WCC) to investigate potential development sites for a 'sustainable community' project. Waitakere City Council were later invited to attend the second workshop, due to the interest shown in the 'NOW house' project. Following the failure of the BEjv FRST bids, a Built Environment Consortium was promoted as a sensible alternative, however, UoC no longer wished to be part of this project. The first consortium meeting was held on 21 February, with representatives from FR, WWB and BRANZ, and the Built Environment Advanced Consortium (Beacon) name surfaced once more as an interim brand in a draft consortium investment memorandum of 13th March.

During March, an expedition was arranged to visit the Queensland Government's Research House, in Rockhampton. This was initiated by BRANZ due to Rachel Hargreaves being on secondment to the Australian Building Codes Board, and the trip saw Russell Burton, Bryan Walford, Chris Kane, Jo Duggan and Rachel Hargreaves visiting the Rockhampton site. This meeting initiated much excitement about our proposed house, and the scope was seen to be 'Smart' by the Queensland Department of Works. The contact began a process of information sharing between the two projects throughout 2003. The issue of where to build the NOW home was still unresolved, as initially, the project was envisaged to be built on the FR Campus in Rotorua. However, following the Waitakere City Council site visits in February, the possibility of building the house in Waitakere was explored, and found much favour with the Forest Research CEO. Led by Annika Lane, the project began to negotiate the legal framework of Waitakere's planning process during late March– with the assumption that the home could be built at Olympic Park in Waitakere City, using reserve land that the council had set aside for green awareness activities. This was seen as a logical step as Ecomatters Trust already had a house promoting

[15] Refer to pg 96 of hardcopy notes
[16] Refer pg 95 of hardcopy notes for a memorandum tabled at the workshop concerning the state of current building practice
[17] Refer to pg 89 of hardcopy notes

community sustainability across the lane, and there was nearby access to public transport and shopping facilities.

Quarter 4: April – June 2003

During April, the Features and Benefits template[18] was used as the base document for an initial design brief. The design brief was considered necessary to both incorporate the background scoping aspects of all the features and benefits work to the designer, as well as incorporate project scope, constraints and target market. In a meeting held at Ron Trotter house on April 30th, the demographics for the New Lynn suburb were used to identify the major site constraints and target market as Olympic Place was now the proposed site for the demonstration NOW home [*refer to Appendix D for minutes from Core team meetings*]. A budget was established, based on the location and size of a typical New Lynn house, at $150,000. Two additional 10% allowances were made on budget – 10% extra for "sustainability features of note" and 10% for the monitoring equipment requirements (i.e. house budget of $165,000 total; and monitoring equipment budget of $15,000). In early April, there was concern that the designer might not have expertise relevant to all aspects of the sustainability requirements for the house, and Robin Allison (Earthsong EcoNeighbourhoods Architect) was appointed, along with Dave Moore (ergonomist from COHFE) to aid Greg Burn as a Design Team. An initial monitoring brief was requested and developed by Louw van Wyk and Albrecht Stoecklien, as there were concerns that the monitoring aspects would place design contraints and additional requirements to the design brief, in order to monitor the house. A number of ideas in terms of novel systems and materials were being discussed, and the design brief was significantly reformatted by Dave Moore to spell out WHAT the house should have (Performance specifications), rather than HOW the house should be built and what to incorporate in the way of systems. However, to meet certain funding criteria/ in-kind contributions from (particularly FR and WCC), a number of design constraint 'givens' were outlined. Waitakere City Council (Ecomatters trust?) at this time indicated that they were unlikely to underwrite the House construction. FR indicated they could only underwrite the house if it was relocatable, and thus relocatability was also added as a project 'given'. There was concern by the project owner, Russell Burton, as well as others on the team (notably Kevin Golding and Chris Kane), that the design decisions must be justifiable to a number of stakeholders. During the first 'post-kyoto' home discussions in 2002, a 'hedgehog diagram' [*refer Figure 3 on page x*] was devised by Russell Burton, and used to show the range of sustainability elements such a home should improve upon. The first attempt at a filtering document, based on these various elements emerged with the first draft of the design brief. These 'filtering elements' (aka sustainability framework) were further developed by Katja Lietz (WCC) to incorporate nine elements. On Dave Moore's request (and as a response to concerns that the meeting discussions and design decisions were not being adequately captured) provision for a log of designer's thoughts, decisions, and rationales, etc were added to the finalised design brief[19].

Beacon formation was a key discussion issue during April and May, with respect to how the NOW project would map into Beacon, and there was growing awareness that Beacon was unlikely to be in a shape ready to take ownership of the NOW house come 1st July, as previously expected. This led to the acknowledgement that the project had involved much more effort on the part of researchers than the 1-2 months initally envisaged, and that there was a lot of vested interests from the collaborative team in how the project was taken forward. Although FR remained as formal owner of the project, an 'Owners team' was formed to ensure all interests

[18] A hardcopy is included with this report
[19] A bound hardcopy of the final design brief is included with this report

were present in governance decisions, and the first Owners Team meeting was held on 17th June [*refer Appendix E for minutes from Owners Team meetings*]. The virtual house concept had its first airing, as an alternative to physical house construction, and negotiations also began for access to the house as a show home. It was pointed out that the house must be built, as it is integral to Beacon funding application. There was concern that the house still had no public face, or even proper name, and a marketing strategy was clearly needed, although no marketing strategy team is formed until August.

Quarter 5: July – September 2003

The NOW house design brief was reviewed by two entities, Carl Emerson of Freepower during late June (with no Owner's team or FR permission given), and Robert Vale of University of Auckland during July [*refer Appendix F for reviewers comments*]. The team was not happy with Freepower's comments, as it was clear that background information regarding the purpose of the project, and project vision was not made clear to the reviewer. Robert Vale's review dated 23 July 2003 raised a number of concerns with the targets and constraints of the project. Robert warned the team not to make more of the project than what it was — an improvement over current practice only, but not a house that would meet the needs of 2012-15 based on performance targets. The intended performance of the house appeared risk averse and 'disappointing' in terms of objectives and innovation, but the briefing document and proposed design process was 'throrough'. Re-litigation surrounding the definition of NOW technology occurred, possibly stirred up by Robert Vale's comments, and Karen referred the group back to the earlier definition of NOW technology. The following definition was agreed at upon the 16th July phone meeting:

> "if you can design for manufacture without having to experiment or research something new, and required materials are available today --> then should be able to use as a NOW technology"

During May and June, the design brief had been used by the design team to establish a footprint of the house, through a number of design iterations regarding layout[20]. During this time, the 'core team' (those who were named as 'experts' in the design brief) met to review each design iteration. It soon became apparent that in order to finalise layout and structure, a number of key materials decisions were needed, and the core team was requested to make recommendations regarding the priority of materials selections now being made. A list of materials were selected, but it was agreed by Chris, Kimball and Karen that there needed to be a way of explicitly defending these decisions, as the 'experts' would come under fire from manufacturers if there was not sufficient, unbiased, justification. Kimball requested justification be given for the selected materials from 24th July meeting, however, little evidence could be produced on some decisions, realising the need for the materials selection database, which had been earlier mooted in the 30th April core team meeting. This took an inordinate amount of time to fill, being populated by FR and BRANZ predominantly, and even then seeming to be empty[21]. This was for the most part due to the difficulty in sourcing similar, objective, and accurate data relating to the filtering element aspects of the product, despite overwhelming volumes of product brochures and reports on material specifications available. Late in July, FRST finally approved the Beacon consortium bid in principle, subject to due diligence.

[20] Refer to pages 1-22 of the hardcopy notes for the various design iterations.
[21] The final materials database can be found in electronic format on the enclosed CD ROM as file "Material Choices v10 –master .xls"

During August and September, while the materials database was being populated, Waitakere City Council due process began with the project being aired for the first time at a New Lynn Community board meeting on 4th August[22]. A demo CD version of the proposed FR 'NOW virtual house' project was created by 3D Graphics, in preparation for presentation at an Owners team meeting on 13th October.

Quarter 6: October – December 2003

This period was concerned with locking down the materials selection and landscaping design, so that the consenting process could begin. Also, the wheels were turning in Waitakere City Council to enable the house to be built at Olympic Place, and Annika arranged for Kimball, Russell and Karen to present on the NOW home and Beacon to the City Development Board. The relocatability issue arose again via email communications also, with there being a team consensus that if we did have to design the house to be moved, that would involve additional cost outside of the "typical" or "extras" budget. A lot of discussion took place regarding the purpose of the NOW house, and the expectations that it raised – for example that EECA would be mortified if there was no solar hot water system – versus the very possible scenario that a heat pump may deliver better service. The pressure to begin consenting was eased somewhat, as the team did not want a Christmas/ early January 'launch' of the NOW home. At this time, objective leaders were asked to prepare research programmes for Beacon, and the NOW research plan received further scrutiny from a Beacon perspective, to ensure that it was aligned with the Beacon plans. Russell Burton was appointed by the Beacon Establishment Board to pull aspects of the NOW house together into a common understanding, however Forest Research retained ownership until it was transferred to Beacon. WWB took on the responsibility of contracting out the house building with the expectation that it would be reimbursed once Beacon formally existed.

Final design decisions were made by the Core Team regarding the exterior envelope of the house, however, a reminder was circulated that the final choice of materials was to be made by the design team, and the final design recommendations were to go to Russell Burton for signoff[23]. The final house design was to be costed by GJ Gardner, as a standard house with 'extras' then added. Once again, relocatability, solar heating, and double glazing were brought to the top of the list for attention. On December 1, the Beacon shareholders and key stakeholders assembled in Auckland for a BRANZ-organised day with Dr Ian Cooper, one of the UK's sustainability gurus. He added a considerable amount to Beacon's collective understanding of the issues we face when mainstreaming sustainability for the RBE. Shortly after that, info came to light from the builders that they had a solution for potential house removal and relocation, however, issues with landscaping costs further slowed progress.

Quarter 7: January – March 2004

A request for GJ Gardner to update the build cost, showed a considerable shift from the original estimate [*refer to Appendix G: GJ Gardners build estimates*]. The Core Team went back and revisited what MUST be included in the house, and concluded that the original budget assumptions needed to be revisited, increasing the base budget by 9%. An adjustment to the size (less 23m^2) of the house to bring it back into line with the available funds when an acceptable list

[22] Refer to page 43 of harcopy notes for extract from New Lynn Community Board meeting regarding "NOW home demonstration project"
[23] Refer to page 25 of hardcopy notes "Brief to design team on construction materials decisions" for final material preferences.

of features was included, was adjudged acceptable by the Core Team, on the advice of the Design Team, who reinforced that the change would not be noticeable. Landscaping costs still had to be revisited, and there was lack of clarity around exactly what the inside of the house would look like, and responsibility for this aspect.

Quarter 8: April – June 2004

Paul Minett (acting Beacon GM) entered into discussions on the timeline and eventual budget with Kimball. Late in June, Annika asked Robin Allison to rewrite the landscape design specification to meet a $10,000 budget, in consultation with Boffa Miskell, and a revised plan came back to the team [*Refer Appendix H: landscape design*]. GJ Gardners pricing included standard items only where no decisions had been made – to prevent the inclusion of contingency pricing. The price maximum was set at $180K, but Gardner's quote came in at $183K.A mistake was found in the GJ quote enabling it to finally squeak in at $37 less than our $180,000 target.

RECOMMENDATIONS FOR FUTURE 'POST-KYOTO' HOUSE PROJECTS

INSIGHTS INTO THE PROCESS

In evaluating the comments and major activities of the project, a number of insights into the process, in the form of key themes, became apparent, and have been drawn upon to give recommendations for future NOW - type projects:

Key themes:

- *Planning, Management and Project Governance*
- *Scope definition for project objectives*
- *Project Integrity*
- *Funding security and source*
- *Holistic approach vs. Piecemeal approach*
- *Commitment and Morale*
-

Planning, Management and Project Governance

Scope Creep and Clarity of Governance: The initial planning for the NOW house project indicates that this was clearly thought through, had deadlines, assigned persons in each role, and project commitment and budget from the organisations contributing. This was in the context of having a six month project, with three core stages – research, design, building. Unfortunately, as time progressed 'this thing became bigger than all of us' – and this is probably related to the emergence of the nascent Beacon whose objectives unwittingly began to override the original NOW ones. It appears that one of the key issues with regard to the NOW house project was that what began as a defined, costed, and fairly well planned project quickly developed both scope creep, and lost clarity of governance due to the overhanging desire to create 'an exciting entity for NZ'. This meant that although the openness to suggestion and inclusion of further skills, pathways forward and team members was welcomed, and rated as one of the better aspects of the project [*refer Appendix I : Interview Summary report by Garry Tonks*], the ability to keep a focussed and functional team lessened because of this. As partnering organisations were drawn into fold, their own needs and desires had to be accommodated, sometimes expanding or subtly shifting the project objectives. The requirement of ensuring the NOW house fit with the requirements in terms of: formation of Beacon[24]; the consortium application (where building the house became integral to the intended delivery)[25]; and Beacon Pathway Ltd objectives through transference[26] caused further scope shift as the NOW house was being mapped into Beacon.

[24] "Research for NOW Home and Beacon" by Barbara Joubert and Albrecht Stoecklien (15/10/03)

[25] From "Housing Advances for Environmental Responsibility and Sustainable Living" – the Beacon consortium application to FRST, which states *" The **NOW HOME** becomes a key benchmark against which to gauge and develop future solutions and the building of a Beacon solutions profile*". The first phase of Objective three began with monitoring of the NOW home, implying the construction of the NOW home was integral to enabling this to occur.

[26] Russell Burton requested by Beacon Establishment board on 26th November 2003 to pull together all aspects of the NOW house into a common understanding

Transferral to Beacon also caused uncertainty around the appropriate level of disclosure of information; ownership of the project; and marketing/ branding aspects[27]. We "began a journey and made decisions as went along" – not a good idea for a well planned and exacted project.

Narrow planning for a larger strategy: Funding issues, relocation issues, underpinning resources and consenting issues were not thought through clearly from the start. The project in January 2003 began without a clear site, budget, or target market in mind. It was seen as essential to get traction in this area such that FRST (through the BEjv or Beacon consortium) would see preliminary results and know we were a proactive team worthy of funding (whether this was true or not is another matter). The fact that the project ran well past the six month deadline (up to which point there was certainly a plan and significant progress to the plan) may have also been a factor in the later stages not having clarity on these matters. There is evidence that as early as May 2003, there was a wish to get the brief , concept design, developed design and working drawing actions laid out on the Beacon timetable[28]. Things appear to have 'dropped off the radar' in the transitionary phases from FR to NOW Home Owners Team to Beacon, or else were never clearly outlined as either within or without the 'wider strategy'. It appears that a large part of this is due to the later than intended start of Beacon Pathway Ltd – which was originally June 2003, and would have been a smooth transition from the original six month programme and budgeted phase planned. However, indications that the project could overrun were made clear as early as mid-February, with the Project Manager stating "There are a number of risks that could affect the achievement of the NOW Home within a reasonable timeframe. Examples include the choice of an actual site and any site-specific issues arising (eg resource consents), securing funding, confirming a builder, having sufficient knowledge to complete the footprint, etc. Assessment of these risks and how they will be managed is underway."[29] Although actions were assigned to hurry the decision-making about site location in order to meet the timeline at the consortia meeting of 21st February, despite this notification from Kimball, it does not appear from the minutes that adequate discussion or contingency planning for potential timing slippage past June was had on the part of either the NOW house governance bodies, or the consortia establishment board.

The Project Manager served two masters: The nature of reporting from the Project Manager was initially inadequate, with Russell on 7th stating in April "I have not as yet seen any of your notes from the meetings – are all these aspects covered and outlining to Kimball in this memo a number of success measures for the NOW home, including innovation, branding, monitoring capabilities and sustainability framework, which Russell wanted to discuss with Kimball 'soon'[30]. It seems that the discussion notes were not disseminated to the team until later in May[31]. Despite this

[27] Forest Research's aims were to ensure as much knowledge as possible was made accessible through information dissemination, as the knowledge was only of value when distributed to those who could use it to make more appropriate design decisions. Much of the knowledge and key learnings had already been disseminated by various team members over the course of the project when in November, Beacon's requirement that all information be co-ordinated through a central marketing and branding company i3m came into play.

[28] Email memo from Russell to Kimball 25 May 2003

[29] Kimball Fink-Jensen's status report #2 from 14th February 2003

[30] email Russell to Kimball 07/04/04

[31] Karen wrote in an email to Kimball on 09/05/03 *"I have not received from you any fortnightly reports since March 14th, nor the minutes from both the 2nd and 3rd workshops. It is imperative we receive these documents for our records, and you keep the wider team updated regularly so that momentum and interest does not wane."*

reporting setback, the first part of the project (the research and design phase until late May 2003) was well organised, and proceeded according to plan. Once the scope started to drift, and further people became involved, the lines of control started becoming blurred. The Project Manager did not appear to have clear instructions in terms of who was the main governance team past June 30th, which led to frustrations in achieving decisions-making and reporting requirements. The Project Manager's brief was not clear to the team[32], and as the latter grew it undoubtedly became less so. The nature of the contractual arrangement between FR, the project funders, and Qwant, the project manager, was hazy, as it involved Winstone Wallboards as intermediaries. The project manager hence had two masters and an evolving brief. After June 2003, it is not recorded in the project documentation whether the PM had any responsibility to FR/Beacon at all. Similar comments apply to the designer, Greg Burn, and his contractual relationship to the project.

Ownership and funding requirements: Concerns were raised regarding ownership of the project, and funding criteria – FR had stated to its CEO, Board, and Minister (P. Hodgson) in January that the NOW house project was an FR project to be used to showcase wood[33] – however, it was being seen as a wider 'team effort' and a 'Beacon' project. There was concern raised within FR, (and also by outside team members) in terms of the funding used and scope creep of the programme; what this project was for; and whether the project goals still fitted within the funding criteria *"I am concerned that FR may damage its credibility with FRST. Either by being perceived to have allowed research funds to simply assist commercial organisations in marketing their existing products, or, by producing substandard research by being unduly led by commercial or media interests"*[34].

Scope definition for project objectives

Project Rationale: Early on in the project (Nov '02), the rational for undertaking the project *" Is this a separate project from that (the kyoto house) proposed in the BE FRST bid? I am assuming it must be if its starting now!"*[35], and the scope this project was to take was raised by Rachel Hargreaves *"Is it an eco-home, or a carbon neutral one, or an zero-energy house, or what?"*[36] Actually, the original intention was that it was none of these things. The team set out initially to meet the future needs for housing, so it was a 'future housing project'. We set out to do this by demonstrating ways to address implications for housing from lifestyle changes; demographics; climatic changes; resource and waste efficiency regulations; materials and technology improvements; communications needs, etc. The scenarios showed a changing world by 2015, and it was obvious changes were needed in the way buildings were designed and built, particularly the

[32] email Karen to Russell 17/04/03*: "If it is not Kimball's role to ensure the research team are adequately briefed with workplans and overall project research needs, whose is it, and can we please ensure the momentum and enthusiasm for the project doesn't die away while staff wait for direction"*

[33] A presentation around the NOW house project was made to the Minister on 29th January 2003 by Karen and Russell. The project used FRST funding from the Forest Research Concept House project, with the objective of Solutions Development – "Developing and prototyping concepts into software, systems and components which show the future for wood use in buildings. This will arise from both better understanding of the social, environmental and physical limitations and constraints, technologies which ease these effects, and the use of design to overcome these in the total building system. Increasing the responsiveness of building systems, materials and approaches to social and cultural needs and identity." However, the bulk of the funding came from NSOF funding for the project 'Value through Design' (refer to hardcopy notes pages 163a)

[34] email from Dave Moore to Karen Bayne 13/03/03

[35] email from Rachel Hargreaves to Karen Bayne 26 November 2002

[36] email from Rachel Hargreaves to Karen Bayne 26 November 2002

housing stock, to allow for these changing needs - so it wasn't actually seen as a 'sustainable housing project' at all initially, except that to meet those needs, it was necessary to look at a range of things which fell into 3 major categories which needed improvement: Affordability, Desirability, and Efficiency. And these relate well to the social, economic, and environmental sustainability goals. The scope of the project is given in the design brief as the following:

> The 'NOW house' project is about a **house building approach or concept**, for houses in the 'post-Kyoto' era (2012-2015), but constrained in that it can only utilise materials/ technologies which are **currently available or able to be achieved today**

However, throughout the project, several definitions surfaced from various team members and outsiders:

- meeting needs of today sustainably, rather than the needs of next decade[37]
- looking at identified future needs for buildings for the 'post-Kyoto' world, and through brainstorming clever systems and solutions, show what can be done with wood[38]
- about creating the home for Mr and Mrs average[39], and suitable for a higher density model[40]
- is as a test-bed to identify 'black-boxes' in do-ability[41]
- to be aimed at drawing in stakeholders rather than just public[42]
- a benchmark, with research component to uncover what we don't know – i.e. designing for what we need for future and then discovering what bits can't be met today[43].
- A literature search in 3D[44]

There were obviously a variety of understandings of what the NOW house is all about[45], despite the design brief having a clearly scoped definition, and both this definition, and the key success criteria being reiterated at a number of team meetings. Reasons for this include:

- the original FR Concept House project never intended to build a house, only to demonstrate components and systems, or a 'virtual' house
- the original NSOF project (which funded the majority of the NOW house during 02/03, excluding "in-kind" contributions) was aimed at showcasing what could be done to improve housing using wood; and the original FRST bid had a strong link to the Wood Processing Strategy and export of wood products through timber-based housing system solutions
- The 'sustainable' aspect of the project was equated by a few with 'energy efficient' or 'climate friendly', rather than the original 'future-proof' and 'raising the bar' concept of whole of life and quality of life aspects.

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[37] email from Karen to Russell on 4th April *2003 "Kimball appeared surprised yesterday that this NOW Home project was about future-proofing, and insisted it was primarily about NOW (today)"*

[38] Karen to Kimball in Dec 02 (refer page 102 of hardcopy notes), NSOF presentation (FR internal, refer page 161 of hardcopy notes)

[39] From 1st workshop minutes

[40] FR team, 14 Nov 2002 (refer page 120 of hardcopy notes)

[41] Russell, email to Dave and Karen 14/03

[42] Karen to Kimball in Dec 02, (refer page 113a of hardcopy notes)

[43] Russell email 14/03/03 to Dave and Karen

[44] Russell to FR team, 2nd April 2003

[45] Russell email to Kimball on 07/04/03 also has this concern "*There still seems to be to be a variety of understandings of what the NOW Home is about - the afternoon session still seemed to be flipping between NOW and FUTURE in the minds of the attendee's.*"

– The definition of a NOW technology was seen as being one that is presently in the market, and commonly used by industry today, rather than the original intention which was that if it could be achieved today (commercialised or otherwise) it was a NOW technology.

Project Integrity

Need for reputable enterprise: Throughout the project, a strong sense of wanting to be transparent, thorough, and answerable to scrutiny[46] prevailed. This is possibly due to two main factors:

a) the scientific presence in the team
b) the awareness that this was not just another eco-building project, and that we had gained the interest of some pretty influential characters – the need to show quality thought processes and reasoned decision making to these people was a strength to the project, and kept the imperative to deliver, and deliver well.

Despite this imperative, the actual integrity of the project was tarnished in some ways due to delays and slippage (particularly in the materials choice and costing stages), not following due process (material decisions were seen to be being made with unfounded reasoning – "where is the scientific evidence for such decisions"[47]), and a lagging morale over the last 6-8 months of the project, possibly due to other commitments and lack of payment. Reiteration of the need to ensure design decision-making processes were caught, not just final design decisions, were made by both Russell and Kimball to the project team at various stages of the project[48]. Additionally, the rigour around ensuring design decisions were captured was enabled through the designer's log within the brief. Unfortunately, the latest log of design decisions within the design brief document of 15th July 2003[refer CDROM for this document:], shows only the final decision and compliance with performance spec, but not the route taken to achieve this, however, a number of the design

[46] Russell email to Karen and Kimball 23/05/03 "*everything must go through a filter and there is a clear story behind everything we do. Vary from that one iota and we will be contaminated*"

[47] The following statement comes from a memo written to Karen and Russell by Mike Collins on 09/09/2003 : "*The decision to reject light weight, sheet metal material roofing was made on two grounds, neither of which was adequately supported with data.*

i) Zinc pollution. There may be a zinc pollution problem in Auckland harbours and this may emanate from zinc clad roofing materials. The fact that modern prepainted steel roofing systems prevent zinc run-off and minimal maintenance is required to maintain the protective paint coating, was discounted with no evidence presented on the grounds for dismissal. It was simply stated that it would be politically unacceptable for any risk to be taken in this regard. This decision would appear to eliminate the use of any zinc coated products in the Now Home.

ii) Sustainability criteria. It was stated that on embodied energy criterion and life-cycle analysis, concrete tiles outperformed steel roofing materials. This may be so but the evidence was not submitted to the meeting. Nor was account taken of additional materials required to support the heavy roof compared with the light weight roof ." The elimination of contaminants by first flush, nor the statements in the Kingett Mitchell and Associates 2001 report "Preliminary examination of the nature of urban roof runoff in New Zealand" showing that while metal roofing is the most common roofing type in New Zealand, it is rarely unpainted, appear to have been considered.

[48] Database template from Kimball sent to the team on the 4th August 2003 states: "*The idea is to record our comments, references, etc about all the options and the choices made, so as the whole shooting box will stand up to scrutiny. That means proper references for all assertions made, checking for completeness for our thinking about each option, etc*." also Russell's 24th August 2003 request *for "The detailed material specs with full rationale as to the choice of materials and how they sit within the decision making framework"*

iterations were outlined in a comments document produced with each of the drawings at team meetings[49].

The project was intended as a research house, not a demonstration or show house, but as interest grew, the need for greater integrity and 'polish' became apparent so that the public could 'kick the tyres'. To research the needs and possible solutions for a non-standard house, establish how to monitor it and build it onsite, in itself, was a difficult task, especially with a six month timeframe. Defining the gaps in meeting future needs was a further task to be undertaken post the six month period, and allowing the design and landscaping to be suitable for a future owner (Ecomatters Trust), and public display/ demonstration added further complexities to the project.

One question is why did the project continue in a haphazard manner from July- December, rather than be halted, or modified? Part of this may have been the imperative to actually build the house, and that we had created so much 'buzz' that to stop the project or rethink the objectives would have been to admit failure. The project originally ran to June 2003, but as the objectives had not been met by then, it was deemed necessary to continue on until these were met, with the expectation that funding would become available to complete them. (from Beacon)

Material decision process: Materials decisions caused some consternation, and although all decisions were to be run through the filter, and also having validating documentation to support their use in the NOW home, due to the nature of the project (it was not a sterile scientific project, and material decisions had to also to suit the design, rather than just the highest sustainability score), sometimes materials were not validated to the point some in the team would have liked[50]. Where governance stakeholders wanted to clarify that materials choices were indeed going through the filter, often it was difficult to find supporting evidence, or there were different points of view in the 'evidence'[51], or the choice of material was inconsequential, and the designers made an executive call to their taste. There was an underlying assumption that the information was readily available – it was, but in various forms. Although it was easy to source databases of products, and certain facts and comments, it was difficult to put all these into a similar format, and many were not adequately referenced. To satisfy this governance request, Kimball put out sheet of decisions and requested people to put in the full references and rationale for the decisions made at the NOW home meeting of 24th July, 2003, to ensure the integrity of the decision making process was fulfilled (unfortunately, examination of the briefing document to the design team indicates little in the way of referenced reasoning for materials choice[52], and although the materials database gives some referenced evidence for each of the filter elements, scoring was undertaken subjectively, apart from the framing lumber which has some reasoning stated behind the numbers[53]). To satisfy the need of justifying material decisions, the role of the core team of experts went past the point of aiding the designers in 'best practice' knowledge, to being actively involved in the materials choice decision-making process.

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[49] Comments from Dave Moore on Version 6 of the design from 22/03/*03 "One of the aims [arguably the biggest from a research perspective?] is exposing knowledge gaps. ie where the final design decision has to be based partly or wholly or a guess. Such gaps will exist for most if not every element in the brief. Wouldn't want Greg to be so pedantic as to pick out them all but the most significant should be getting logged as he goes. No evidence of that yet."*

[50] See footnote 49

[51] As can be seen in the variety of comments in the materials database.

[52] Refer to hardcopy pg 24

[53] Refer sheet entitled "" of file Materials Choice v10-master.xls on CDROM

Funding security and source

Ongoing funding: The issue of ongoing funds for the NOW home past the June 2003 date was complicated by two events. FRST did not fund the BEjv bid, which would have provided funding from July 2003; and Beacon consortium did not begin until 12 months after the intentional start date of June 2003, despite conditional funding approval from FRST in July 2003.

Although these issues were beyond the control of the governance team, contingency planning in terms of ongoing funding for construction, physical home management, marketing, and potential project over-run could have been undertaken to a greater extent, or the project halted until new funding streams were found.

The need for relocatability sprang from an inability to obtain underwriting of construction and ownership from participant organisations[54], due to the chosen site being a road reserve. Throughout the project there were differing opinions apparent in terms of the weighting of this issue, and no clear guidelines given[55] – despite being listed as a design constraint in the brief, and being a decision at the 18th June core team meeting[56] it was moved on and off the agenda over time.

There were also budgetary restraints in terms of the site being part of Olympic Park, and the requirements of landscaping to park standards. The design brief indicates the need for 'modest landscaping', however, the $10,000 budgeted does not appear to be enough to meet the site landscape needs[57], and the latest quote is nearer $40,000 [*refer Appendix H*].

Builder Quote: The degree to which the mainstream building industry is tied to supplier deals, subbie's skills, standard specifications and materials, and general skillsets, in order to complete a job on time and on budget constrained the project to using very standard methods and materials, due to builder's perceived project risks with including 'unknown' or 'non-standard' items and systems. The approach of building quote was not to quote for building the whole house as designed, as the standard and sustainable parts were split out and quoted separately – this allowed a trade-off to occur on the sustainable aspects – the only thing not traded off was the cost, and this goes against both the normal practice[58], as well as the balance we desired with the NOW home design. The requirement for the house building quote to come in on or under $180,000 necessitated the size of the house to be reduced by 23m^2. Kimball requested that Core team members rank preferences for what features 'MUST' be included because we might not be able to

[54] email 20/05/03 Russell to Karen "*if Waitakere cannot underwrite it then we need to ensure that the house can be removed"*

[55] email to team from Barbara Joubert 31/10/03: *"I would hate to think we are curbing other vital issues due the the fact that the house MAY be moved in future. We (at least I) have not seen a Marketing plan to explain WHY or WHEN this house has to be moved .If this is such a vital criteria, surely it would have had greater discussion by now or featured more prominately in the decision matrix".*

[56] From minutes of 18th June 2003: "Design features would have to be built in to ensure relocatability was possible, and how the house would be relocated would need to be explained."

[57] As stated in email from Kimball to owners team, 25/05/04

[58] The following statement from Kimball (30/03/04) emphasizes usual tradeoff practice, and highlights that the NOW home in trading off only desirability and environmental aspects but no tradeoff in budget is against common practice: *"The homeowner typically ends up with three trade-offs when deciding on their new house specification: size, features, and budget. Its often the latter that is the element that is finally moved (upwards) to deal with the trade-offs!!"*

afford everything – in reality this was a moot point as the design constraints outlined specifications that 'MUST' be met as first priority[59].
This started a process of tradeoffs and cutting of core features in order to meet the budget, which as stated above, is against the principle of the NOW house being a 'balanced' design of affordability, efficiency and desirability – affordability in this case won out. This appeared to be due in part to the quoting procedure of the builder along a standard pricing model, where double glazing and solar water heating where therefore seen as 'extra's' rather than core elements of the design.

Holistic approach vs. piecemeal approach

Analysis vs. Design: The 'post-Kyoto' building principle aimed to marry whole of life and quality of life together in a holistic housing solution. Fundamental to the process of design are the interactions between elements, and the Gestalt theory that the whole created should be more than just the sum of the parts. Likewise, sustainable building design is hinged on the house:land relationship, and access to key public amenities.
The design approach of the NOW home, while taking all these aspects into account, tended to overanalyse these and may have been in danger of creating a too sterile end result. The appointment of a Designer, with the power of final say in design issues, reflected the explicit recognition by the team that this may be a problem. The balance between analysis and design was never fully established, however.

Emphasis on building envelope: Holistic design was never fully addressed, in that the envelope of the house was prominent (possibly reflecting the leaking buildings crisis which broke at the time), and the design of the interior, and landscaping was not envisaged and planned for at the outset of the project. It was unclear (and still is) whose responsibility it was for the kitchen and interior design aspects, and the landscape design was eventually undertaken after the house was almost fully developed. One design team member[60] asked several times for the site plan when assessing the house plan, and was particularly concerned about liveability flows - placement of things like compost bins, washing lines and the water tank in relation to the living spaces.
A number of things in the design brief relied on material factors being correctly married in order to achieve the target specification, however, the materials choice process seemed to look at materials system by system, rather than as a whole.

Design Team purpose: The purpose of having more than one designer was to ensure the three sustainability aspects of economic, social and environmental were present in the design. Robyn Allison was appointed for environmental design skill, Greg Burn for economic (i.e. industry reality check), and Dave Moore for the social element due to his work in ergonomics. Other people with design backgrounds were added to the team to review the design iterations and provide support for these three. In reality, however, the design team never really worked that way – Greg soon became 'the designer', and in hindsight it must be asked whether a single designer might not have been a better proposition anyway?
The design brief was intended for use by the design team to make decisions on the house design, and to contact experts (who were stated as such) to aid in decision-making process:

[59] Kimball email to team 25/03/04
[60] Robin Allison repeatedly requested seeing the house plan in the context of the site during design stages 4, 5, and 6.

> "Design decision process will see Design Team discussing any areas of debate with identified subject matter experts, then putting forward a preferred design based on their expertise"[61]

However, the core team meetings were still occurring, and these people were making the materials recommendations independent of design team – not the original plan, and in hindsight where we could have made things difficult for ourselves (and Greg as the designer) Cursory referral by folks to design brief constraints also saw constant deliberation about issues that were moot points as they were required to meet the brief.

Commitment and Morale

The project began with much buzz, and personal commitment drove the project forward over time. People certainly 'signed up' to the BHAG of "The environmentally friendly home that people want to – and can afford to – live in". When the project was discussed with outside parties, the interest, support, and recognition that we were looking at the problem in a unique and 'smart' manner also aided with morale. However, by the 22 October 2003 meeting, only 7 people were present for a full day meeting – many seemed to have higher priorities, or reluctance to attend due to non-payment. There is only so far that a 'good buzz' will go, even when you can see the need and are inspired by it. Having a BHAG (pronounced "beehag" – Big Hairy Audacious Goal) as the ultimate end of the project certainly created buzz and momentum to get on and start the project earlier than intended in the FRST bid. The BHAG This was seen as a very positive aspect of the project – it brought different players together around a common goal, stimulated discussion and action, and has created a team of dedicated folks who still have held onto the original goal, believe strongly in it, and wish to see it enacted.. The NOW team saw strongly that they were creating something necessary, worthwhile, and were (without being clichéd) 'working for the good of society, the nation, the earth'. However, a caution must come in terms of the downside of this buzz: A good buzz alone is not enough – people need to be recognised and rewarded for their efforts. With greater buzz comes greater expectations, and when things start to go wrong, the disappointment is greater, as one can see the potential of what might have been.

Insights into the process from individual team members

The NOW house core team consisted of:

- *Kimball Fink Jensen – Project Manager, QWANT*
- *Greg Burn – design team leader, Structure Ltd.*
- *Robin Alison – design team, Earthsong Econeighbourhood (Waitakere City Council)*
- *Dave Moore – design team, COHFE (Forest Research)*
- *Stephen McKernon – QZone*
- *Karen Bayne, Louw van Wyk, Mike Collins – Forest Research*
- *Jo Duggan – WWB*
- *Chris Kane, Albrecht Stoecklein, Roman Jaques – BRANZ*
- *Kevin Golding – Governance team, WWB*
- *Annika Lane, Katja Lietz – WCC*
- *Russell Burton, Governance team– Forest Research*

[61] From Core team minutes of 2 July 2003.

(all of the above were interviewed as part of this review, except Dave Moore (out of country) – and Bryan Walford was interviewed due to his early involvement in deriving the 'post-Kyoto' vision)

There was a positive approach to this project with affirmation of the worth of the discussions, and the sharing of knowledge between members, which in turn was seen as a high level of achievement of the outcomes. Establishing the design brief around Forest Research's initial sustainability criteria went well, with the first couple of draft designs providing feedback and this allowed better communication and output between the group members. "The first 3 to 4 months went well with the participants when discussing the features and benefits of the project". "This phase was seen as well structured" "The iterations of the house design also seemed to go well because the ideas were seen realised'. All respondents were positive about the energy and working collaboratively with people from different organisations and the gaining of knowledge beyond their own. A sense of being involved with a project that could/would have long ranging impacts on the NZ building stock. In contrast to this, project leadership was seen as unsatisfactory by a majority of the respondents, and a negative response to the management of the project was given in many responses through out the survey document. Several members raised the concern that information arising from discussions at workshops and meetings did not appear to be adequately recorded. Many respondents complained that there was no structure or system in place for capturing the information, and as a consequence forward progress was seriously impaired. There were no regular checks at the core team meetings to ensure the brief was being followed. There was a general agreementt that the level of work undertaken was over and above that expected when initially coming into the project, with complex and exhaustive tasks. The project went well beyond the six months intended. Most participants were contributing their time as an adjunct to their company obligations. This resulted in a lack of performance and completion of tasks. 'the incentives for being involved in the project did not match the hard work being done by people.' Further, the amount of work required by the parties was not foreseen at the outset of the project. This resulted in the budgets allocated by the various stakeholders being expended well before the project was completed. Some members indicated that some of the mebers had their own agendas, and this complicated the process. This was apparent in the movement of some organisations to generate background IP.

Key learnings this team identified were:

- A need for a clear and traceable method of arriving at decisions regarding sustainability, and recording them.
- The need to keep a clear and consistent vision, and the projects overall objectives from the beginning.
- The need for better communication (on line) between group members was seen as important.
- The need for a visionary manager, co-ordinator and driver, working with a smaller team.

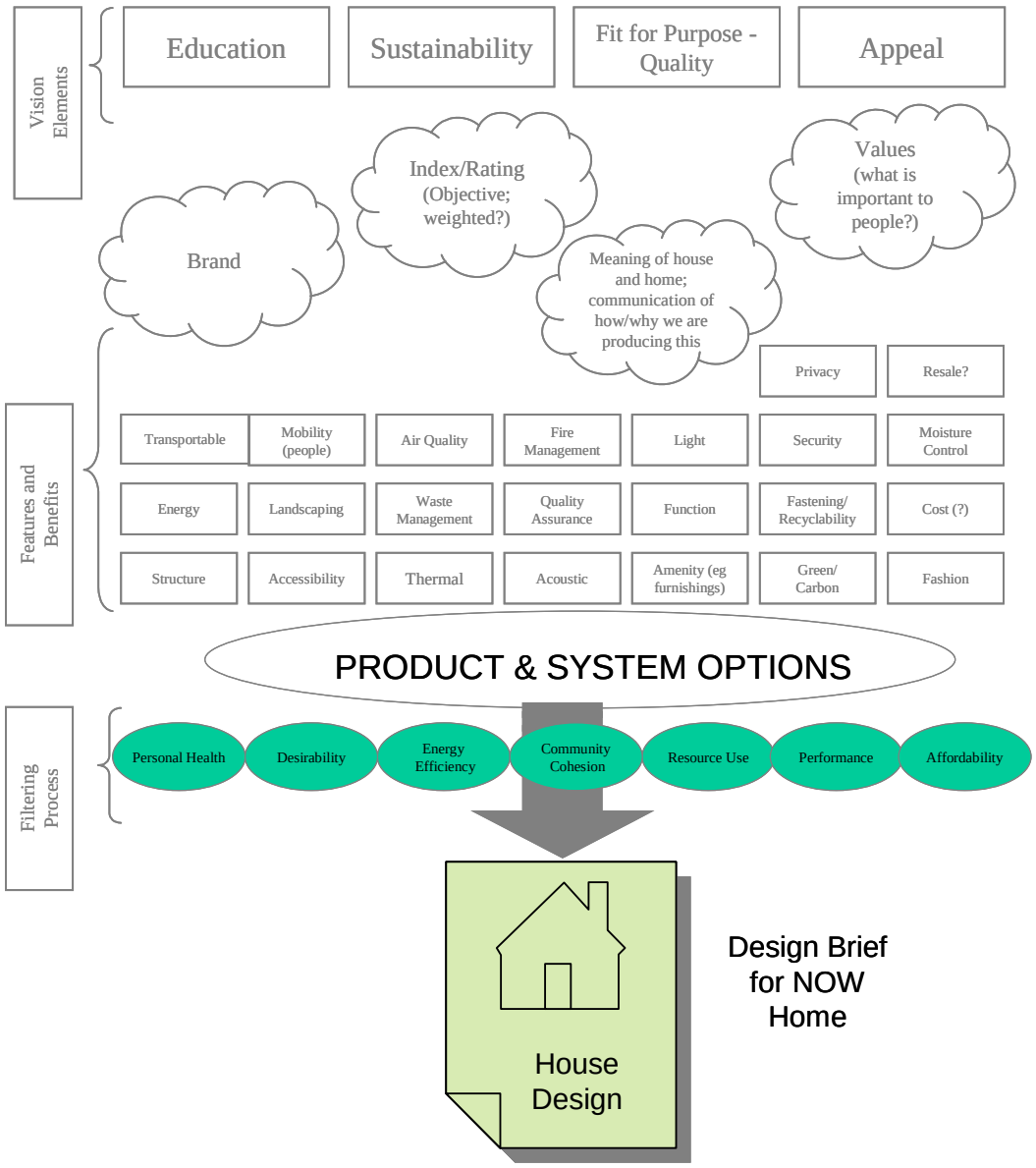
RECOMMENDED PRACTICES FOR FUTURE NOW HOUSE PROJECTS

- Outline clearly the design process, team members, and governance structure at the start of the project, and stick to this.
- Ensure the project itself, all partners, and funding are defined prior to the start of the project, and the project is staged to create the goal over time, rather than expanding to meet the goal.
- Have two projects running concurrently – one as an academic discussion team around the issues that arise, and how to improve on current practice, which provides provocative comment and suggestion as to the 'actual' project progress; and another 'actual' project to 'stick to the knitting' of developing the original scoped project and seeing it through to completion according to plan. This will allow firm project definition, and ensure that governance issues and changes in ownership do not allow the project definition and scope to creep.
- Either undertake the project as it was intended (designer/ design team (small) to call on experts *as needed*) with regular updates and decision queries, or have a single designer to do the job.
- Ensure regular communication between the Project Manager, team members and Beacon to provide a means to ensure all involved have the same expectations in terms of the wider picture, and 'assumptions' about who is taking charge of such wider matters don't ensue.
- Beacon should contract directly with a PM and Designer rather than via 3rd party, to retain greater control of the project. Ensure also that deals/ statements made to bring people onboard a project do not conflict with the initial scope, and funding criteria of the project.
- Regularly refer the team to the design brief. Use this document in workshops to interrogate design decisions and bring it to prominence once established, referring all decisions back to it.
- Hold regular project reviews with the team (suggest quarterly), and stage the design process into 2-3 month actions.
- Ensure any appointed PM is empowered to make executive decisions (or demand a timely decision from governance 'master') in order to keep the project moving forward in a timely fashion.
- The decisions to use each material or system should be validated by two things – there is supporting evidence that it is the more sustainable of two (or more) possible options AND it fits the requirements of the design criteria.
- The process to use the most sustainable materials (through filtering) possibly does not meld well with the process of design, which is about trade-off and compromise. A more suitable approach is for the designers to be given material options for various systems, with indicative sustainability values and supporting evidence for this, as a 'design kitset', from the experts in the team, and then left to make the material choices and log their decisions for use. This is a far more 'true to actual practice' method, and reflects the original intention of setting up the design team, and the core team, as separate roles.
- Explore with the builder, ways to enable a more holistic or ensemble approach to the pricing, even if bulk supply discounts are unavailable. An indemnity clause covering non-standard elements in the contract with the builders may give the builder more confidence in using 'non-standard' building systems and practices.
- Keep the project outside of the mainstream builder market, or indemnify the building contractor against using 'non-standard' practices and products.
- The design of the house envelope, interior, materials used, and the landscape and site relationship, needs to be undertaken from the outset as a single framework that is fleshed out in parallel, although subcommittees may be making detailed decisions on each of these

things. Integration and communication between these subgroups is essential for a holistic design to emerge.

- Clear support, financially and managerially, and a solid and attainable endpoint are required to stay the distance. Contract with team members, and employ a technical secretary or knowledge manager to keep records of the process.
- Beacon's projects in THEN and FUTURE (as well as further NOW projects) should tap into the buzz already established with the NOW house project, and ensure the goals are large enough to recreate this buzz in new projects – it is what keeps these projects and teams focussed and able to ride out the difficult times.
- Seek (perhaps) to divide the team up into two, one to formulate the sustainability criteria, and the other to design the building. Don't rely on volunteers for a project of this size.
- Select a Project manager with excellent leadership skills – and tell him/her where s/he needs to lead the team to.
- Seek critical review of the proposal, goals and progress of the work from an expert outside of the projects group.

Appendix A
The research path for development of the ‘NOW House’ concept


Vision Elements
Education
Sustainability
Fit for Purpose - Quality
Appeal
Index/Rating (Objective; weighted?)
Values (what is important to people?)
Brand
Meaning of house and home; communication of how/why we are producing this
Feaures and Benefits
Privacy
Resale?
Transportable
Mobility (people)
Air Quality
Fire Management
Light
Security
Moisture Control
Energy
Landscaping
Waste Management
Quality Assurance
Function
Fastening/ Recyclability
Cost (?)
Structure
Accessibility
Thermal
Acoustic
Amenity (eg furnishings)
Green/ Carbon
Fashion
PRODUCT & SYSTEM OPTIONS
Filtering Process
Personal Health
Desirability
Energy Efficiency
Community Cohesion
Resource Use
Performance
Affordability
House Design
Design Brief for NOW Home

Appendix B
Minutes of NOW house project workshops and meetings
January – April 2003

NOW Home Workshop
Forest Research, Rotorua
29 January 2003

Points Made That Relate to Vision Elements

Education

- ➔ NOW Home is not a "showhome" per se, but an encapsulation of what we know today
- ➔ An education process – less of a research project for testing technologies, more about understanding how people make decisions, use technologies, and interact with their house; who makes decisions about what type of houses are built in the future?
- ➔ A wonderful thing about this project is that it is huge – climate change/environmental mitigation is a global matter; while technology exists, I have no idea how to build an ecologically friendly house; so what to see people educated and communicated to about the possibilities; and how do people decide how and what to build
- ➔ While lots of information exists about eg Smart Growth, there is a dearth of information about how to do it
- ➔ Educating the public
- ➔ Giving people information
- ➔ Is the right question who do we target, or is it instead how we target? If we are change agents, how do we change (not who do we change)? How is it going to change things for people? Our success measure – people walk in the front door? Our change agenda is underway if people start asking "How can I get some of this?"
- ➔ Also builders need to be educated (they sway the homeowner)
- ➔ Comes back to knowledge – people know what they need, and ensure they get it
- ➔ Limit to the level to which homeowner can question the process (how much knowledge can they have?)
- ➔ Nowhere for a homeowner to go to have their hand held through the building process – is what I want being incorporated, and how well is it being done?
- ➔ Education process extends to the land as well (eg gardens blocking ventilation)
- ➔ "How To Look After Your House" book is not provided by anyone, but needs to be (cf. the manual that comes with the car or the dishwasher)

Sustainability

- ➔ About building houses for 'post-Kyoto' environment (2012-2015)
- ➔ So many new ways of doing things, new technologies; cost-based mentality in NZ is a downward spiral; damaging our environment, and ultimately our future
- ➔ In terms of meeting Kyoto protocol, NZ unique as most emissions come from agriculture; research will slowly help here, but means less relative focus on other areas; yet improvements in eg housing stock allow us to make real contributions; how do we transmit this information to the market
- ➔ Auckland sustainability is important to NZ and this project is an important contributor to that project
- ➔ Sustainability – environmentally, of NZ's position in the world
- ➔ Promotion of environmental messages – recognising environmental constraints
- ➔ Building Code is only a minimum standard
- ➔ New guideline emerging – eg insulation targets
- ➔ Renewable energy targets emerging

- ➔ HEEP – where energy is used, demographics; lifestyle insights related to energy usage; components of energy consumption in house; cooling may be an issue (air conditioning expected in future Auckland houses?)
- ➔ Zero and low energy houses projects – capturing non-energy benefits from energy projects (eg soundproofing from doubleglazing); how do these get marketed to get around the payback issue (eg no wiping of condensation, not just cheaper over 10 years)
- ➔ Development of assessment tools and methodologies; Green Home scheme works as checklist for architect/building technologist and get overall rating of houses environmental performance; also being used to facilitate the design process; ½ to ¾ of an hour to do; based on UK 1990 scheme, now in its third iteration; gets simpler and simpler every iteration; in NZ started in 1997 and is a bit of a slow burner (why?????); being reviewed now; challenge appears to be the marketing of the message and the acceptance of the (perceived) benefit; will shift in green policies make a difference? **We need to repackage "green"!!!!** Needs to be perceived as important to us, our families, our country and our planet

Fit for Purpose (Quality)

- ➔ Fitness for purpose – demonstrable quality
- ➔ Bridging gap between what we are actually doing, vs what we are capable of doing (technologically); unfortunately, people don't buy into lifecycle costs! But quality is now (or about to become) a major issue
- ➔ Desirable to think of the lifecycle costs, but lack of long-term involvement with a house tends to reduce the importance to the homeowner

Appeal

- ➔ Has to have people appeal – demonstrate the potential in a way people can relate to
- ➔ Housing is aligned with people's lifestyle aspirations; design might have something to do with transport, indoor/outdoor, etc; but apart from functionality, needs to appeal to people; people say they want a flexible house – but this is not a demographic, rather a lifestyle consideration; house used to be a status symbol and sign of maturity; in future will be a consumable and about delivering experiences; not about ownership anymore – often now a business decision
- ➔ Why can't be have better-looking houses?
- ➔ Poor design being used, costing a lot of money
- ➔ There has got to be a better way of doing housing (than eg Papamoa); when I see a product, I want to improve it
- ➔ Appeal to people's existing aspirations (in a sustainable manner), and help shape future aspirations (of all)

Mission for the NOW Home

- ➔ To raise awareness of the 'post-Kyoto' (and wider) messages
- ➔ To promote the asking of questions of the industry (consumers starting to "pull" the NOW Home thinking through, rather than one or two in the industry "pushing" it to consumers)

What is the NOW Home project?

- ➔ About building houses for 'post-Kyoto' environment (2012-2015)
- ➔ Scenario planning showed possible views of future

- ➔ NOW Home – what can we build from today's materials/technologies?
- ➔ THEN Home – how do we retrofit existing houses?
- ➔ FUTURE Home – how do we build houses in the future?
- ➔ NOW Home is not a showhome, but an encapsulation of what we know today
- ➔ The first step as part of a larger ambition to move the Built Environment towards the 'post-Kyoto' environment
- ➔ Has to have people appeal – demonstrate the potential in a way people can relate to
- ➔ Commercial and other built environment areas will be covered in the future – now we are focusing on housing
- ➔ Location is important – previously limited to Rotorua or Auckland; issues such as land availability, people access, socio and demographic considerations will need to be considered; however transportability is a possibility that could reduce the impact of the initial decision
- ➔ Timing – ambition is to bring all the work streams (vision/brand, design/construct and research and solution development) together such that by July we can have a house underway
- ➔ Funding – FR NSOF finishes in June; BRANZ may be interested in contributing funds

Scene Setting

- ➔ Median age of NZ population consistently increasing and will do so for next 40 years
- ➔ Age factor may not be such an issue in Auckland
- ➔ 3.9 million people in NZ, gradually increasing; only 800,000 in South Island; more than 50% north of Taupo and most growth will focus in Auckland
- ➔ Auckland, Manukau, North Shore and Waitakere will account for more than 50% of population growth in future
- ➔ 80% of population is European, 13% Maori, 8% Pacific Island, rest Asian; Asian part increasing
- ➔ Auckland population 33% non-European, by 2050 will be 50% non-European
- ➔ Pacific Islands and Asian proportions increasing
- ➔ Fairly obvious we are targeting Auckland and north
- ➔ Is any focus on ethnicity inconsistent with our approach? We are identifying characteristics (types of people buying/building new homes), rather than creating targeting matters
- ➔ Is multi vs standalone housing relevant? Yes; increasing focus on multi-housing developments in Auckland
- ➔ 69% of children are still brought up as part of a single home, two-parent family; but patterns of family formation are changing; issues such as economic hardship contributing
- ➔ Lots of variation between ethnic groups in family formation; Pacific Island/Maori ethnic groups less likely than Europeans to be living in tradition two-parent family formations
- ➔ In Upper North Island, getting increasing land values; rise in Sunset belt (Coromandel to Tirau) – retirement zones; people selling homes in expensive Auckland and buying for a lot less in rural areas; trend towards apartment in the city and large house in the rural area (reverse of traditional small bach/large city house); although still relatively privileged part of population that can do this
- ➔ Median income figures - $14,500 for women, $24,000 for men; present in all age groups; household income around $45,000; 16% of children in households with income < $20,000
- ➔ Satellite cities starting to grow up, with commuting to city or suburban parts of Auckland (eg Huntly as a home and working in Southern Auckland); partly driven by finance
- ➔ Trend toward renting vs buying; majority of houses still owner-occupied, but percentage declining; Central Auckland: only 55% of housing owner-occupied
- ➔ Housing is aligned with people's lifestyle aspirations; design might have something to do with transport, indoor/outdoor, etc; but apart from functionality, needs to appeal to people;

people say they want a flexible house – but this is not a demographic, rather a lifestyle consideration; house used to be a status symbol and sign of maturity; in future will be a consumable and about delivering experiences; not about ownership anymore – often now a business decision

Why Are We (This Group) Interested in Building a NOW Home?

- ➔ Project discussed for several years; each of us probably has own agenda – research, commercial, etc
- ➔ Have bright ideas want to see put into a building
- ➔ There has got to be a better way of doing housing (than eg Papamoa); when I see a product, I want to improve it
- ➔ So many new ways of doing things, new technologies; cost-based mentality in NZ is a downward spiral; damaging our environment, and ultimately our future
- ➔ Why can't be have better-looking houses?
- ➔ Poor design being used, costing a lot of money
- ➔ Housing consumers exposed to international trends so tastes are changing
- ➔ Is it NZers dream, or is it being imposed from outside
- ➔ Architects want to put their signature on a house; fashion statement; of course, then run into conflict with Building Code
- ➔ An education process – less of a research project for testing technologies, more about understanding how people make decisions, use technologies, and interact with their house; who makes decisions about what type of houses are built in the future? Is there a demographic gap to be worked on here? BRANZ (Ian Page) has some information here
- ➔ A wonderful thing about this project is that it is huge – climate change/environmental mitigation is a global matter; while technology exists, I have no idea how to build an ecologically friendly house; so what to see people educated and communicated to about the possibilities; and how do people decide how and what to build
- ➔ In terms of meeting Kyoto protocol, NZ unique as most emissions come from agriculture; research will slowly help here, but means less relative focus on other areas; yet improvements in eg housing stock allow us to make real contributions; how do we transmit this information to the market
- ➔ Auckland sustainability is important to NZ and this project is an important contributor to that project
- ➔ Envisage a selling tool being created; smart – interacts with customer; eventually could be packaged up in a container and sent off to eg China
- ➔ While lots of information exists about eg Smart Growth, there is a dearth of information about how to do it

Vision Elements for NOW Home

- ➔ Educating the public
- ➔ Giving people information
- ➔ Promotion of environmental messages – recognising environmental constraints
- ➔ Fitness for purpose – demonstrable quality

Mission for the NOW Home

- ➔ To raise awareness of the post-Kyoto (and wider) messages

- ➔ To promote the asking of questions of the industry (consumers starting to "pull" the NOW Home thinking through, rather than one or two in the industry "pushing" it to consumers)

Decision-Making Elements

- ➔ Sustainability – environmentally, of NZ's position in the world
- ➔ Appeal to people's existing aspirations (in a sustainable manner), and help shape future aspirations (of all)
- ➔ Who do we target? Blended multi-ethnic family in New Zealand?
- ➔ Is NOW Home a reflection of current position, with flexibility built in to enable it to adapt? Or do we take the long-term trends into account and try to address the future
- ➔ Bridging gap between what we are actually doing, vs what we are capable of doing (technologically); unfortunately, people don't buy into lifecycle costs! But quality is now (or about to become) a major issue
- ➔ Where do we have the house (transportability means this could be different from where we construct it)
- ➔ Multi v standalone?
- ➔ (Financial constraints)
- ➔ Is the right question who do we target, or is it instead how we target? If we are change agents, how do we change (not who do we change)? How is it going to change things for people? Our success measure – people walk in the front door? Our change agenda is underway if people start asking "How can I get some of this?"

Environmental and Energy Considerations

- ➔ Building Code a minimum standard
- ➔ New guideline emerging – eg insulation targets
- ➔ Renewable energy targets emerging
- ➔ HEEP – where energy is used, demographics; lifestyle insights related to energy usage; components of energy consumption in house; cooling may be an issue (air conditioning expected in future Auckland houses?)
- ➔ Zero and low energy houses projects – capturing non-energy benefits from energy projects (eg soundproofing from doubleglazing); how do these get marketed to get around the payback issue (eg no wiping of condensation, not just cheaper over 10 years)
- ➔ Development of assessment tools and methodologies; Green Home scheme works as checklist for architect/building technologist and get overall rating of houses environmental performance; also being used to facilitate the design process; ½ to ¾ of an hour to do; based on UK 1990 scheme, now in its third iteration; gets simpler and simpler every iteration; in NZ started in 1997 and is a bit of a slow burner (why?????); being reviewed now; challenge appears to be the marketing of the message and the acceptance of the (perceived) benefit; will shift in green policies make a difference? **We need to repackage "green"!!!!** Needs to be perceived as important to us, our families, our country and our planet

Building Practice Considerations

- ➔ (See Chris Kane's memo)
- ➔ Comes back to knowledge – people know what they need, and ensure they get it
- ➔ Also builders need to be educated (they sway the homeowner)
- ➔ Limit to the level to which homeowner can question the process (how much knowledge can they have?)

- ➔ Nowhere for a homeowner to go to have their hand held through the building process – is what I want being incorporated, and how well is it being done?
- ➔ Education process extends to the land as well (eg gardens blocking ventilation)
- ➔ "How To Look After Your House" book is not provided by anyone, but needs to be (cf. the manual that comes with the car or the dishwasher)

Economic Considerations

- ➔ Desirable to think of the lifecycle costs, but lack of long-term involvement with a house tends to reduce the importance to the homeowner
- ➔ Targeting is an issue as part of the communication of the economic aspects
- ➔ Middle-income target relevant
- ➔ Ethnicity-neutral (generic factors) would be good
- ➔ Trade-offs (eg size reduction to allow for sustainability factors built in) can help keep it affordable
- ➔ In middle to upper brackets, affordability is more about perceived value
- ➔ What is the character of the 20,000 new houses built each year – who is building them?
- ➔ 51 new people arrive in Auckland every day, needing 20 new houses every day
- ➔ Shuffling up the ladder – demand nearer the bottom ripples up to the top
- ➔ Divorce the affordability question from the location (can't control the land component)
- ➔ What is average cost of building a new house?
- ➔ Communication of the cost of the house should be done as part of the package of communicating the benefits of the house
- ➔ Average size of new house = 195 m^2
- ➔ Average cost of new house = $180,000

Stephen's Brainstorming

What features would we describe about the NOW Home in 20 years time from point of view of owning/living in it?

Healthy
Comfortable
Looking good/in good repair
Substance/permanence
Good resale value
Classic/timeless
Fits neighbourhood
Broad appeal
Well built
No garage (!)
Low running costs/maintenance
Warm in winter, cool in summer
Nurturing, relaxing
"NZ" Character
Inviting/makes you smile
A home not a house (liveable)
Contributes to getting on with life
Native plants
Nicely trimmed

(TECHNICAL LANGUAGE)

What is important about having a house like this?

Proud of it
Low/no stress
Happy
Refuge
Sense of home
Stable
Escape
Entertaining

Hassle free
Friends
Done my share for environment
Meets my needs over 50 years
Kids/grandkids call it home
Enjoy coming home to
Safe
Affordable/debt-free
Value-appreciating/good investment
Sentimental

What do you gain from having these values?

Peace
Satisfaction
Achievement
Low medical bills
Health
Long-life
Well-being
Status and power

What examples are there of these in the rest of your life?

Holidays
Family
Garden
Activities
Music
Gym
Nature
Beach
Hobbies
Sport

(CONSUMER LANGUAGE)

If the industry is cost-driven, how do we reconcile these things? We make houses an experience rather than being a cost

The NOW Home Project

Fortnightly Report # 1

Friday 14 February 2003

Introduction

This is the inaugural fortnightly report of the NOW Home project. It will be issued every second Friday, and will contain a brief overview of the two weeks just gone, matters upcoming, and issues under management.

Progress Against Plan

(A draft project plan is being reviewed by various team members at present, and will be circulated to the remainder of the team for their comment early next week.)

Key Achievements in Past Fortnight

A workshop was held with all team members on Wednesday 29 January (see attached workshop notes).

Following the workshop the team was split into four sub-teams and each sub-team was asked to analyse the elements linking the key vision elements arising from the workshop to the features and benefits areas which will have to be assessed in order to convert the NOW Home vision into a design brief, construction guide and ultimately the NOW Home itself.

A meeting was held with the Gib® partner network on 5th February to explain the NOW Home concept to them and test their reaction. There was a very positive response and a general recognition that this project could be the beginning of some very important developments for the future of building in New Zealand. It also well for our chances of securing some material donations towards the construction of the NOW Home.

Upcoming Milestones

On Monday team members will be asked to carry out analysis on features and benefits of a NOW Home, and to assemble the research that supports our knowledge base about those features and benefits.

The next team workshop is proposed for Wednesday 5 March in Rotorua. The broad agenda of the Workshop will be to:

- ➔ Refine and complete the vision linkages work of the last fortnight
- ➔ Complete the team input to the vision and key brand messages
- ➔ Commence the process of deciding the features and benefits to be included in the NOW Home (including reviewing the existing information base and gaps in our knowledge)
- ➔ Consider location issues

Key Risks being Managed

There are a number of risks that could affect the achievement of the NOW Home within a reasonable timeframe. Examples include the choice of an actual site and any site-specific issues arising (eg resource consents), securing funding, confirming a builder, having sufficient knowledge to complete the footprint, etc. Assessment of these risks and how they will be managed is underway.

The NOW Home Project

Fortnightly Report # 2

Friday 28 February 2003

Progress Against Plan

The major decision on location was intended to be made last week but has been delayed slightly while the available sites are evaluated against the decision criteria that have been established.

Production of a first draft design brief can commence once the location decision is made.

Otherwise activities are in accordance with the project plan.

Key Achievements in Past Fortnight

The project plan has been reviewed by a number of team members and a final draft will be discussed at the team workshop on March 5th.

A decision process for the location of the NOW Home has been designed and sites are in the process of being evaluated against the criteria.

Key criteria for an initial design brief have been identified, which will commence as soon as the location has been decided.

A positive meeting was held with the Gibson Group over the possibility of basing a TV programme in part around the development and construction of the NOW Home. A representative intends to attend the team workshop on 5th March.

Discussions with EECA and Waitakere City Council will result in attendance of representatives of each at the workshop and the provision of additional skills for the project team.

Good progress has been made with the Gib® partner network and specific offers of assistance have begun to be made.

The team has been preparing analysis of the features and benefits that may potentially be included in the NOW Home. This will be brought together and key decisions identified at the workshop.

A brand framework is progressing, recognising both consumer and building industry segments.

Upcoming Milestones

- Team workshop in Rotorua on 5th March
- NOW Home location decision
- Initial design underway
- Funding framework developed

Key Risks being Managed

The major risks being dealt with at present are related to the effect on the timing of the project from not having yet made a decision on location or having commenced initial design work. Two further risks are also being assessed: the availability of funding for the house; and determining how to fill some resource gaps in the team.

The NOW Home Project

Fortnightly Report # 3

Friday 14 March 2003

Progress Against Plan

A preferred location has been identified, and our NOW Home design planning will commence based on this site. The site is in Olympic Place, New Lynn and is in close proximity to the Ecomatters Environmental Trust's Sustainable Living Centre, providing the potential for wider exposure in conjunction with their activities and a possible link to the upcoming THEN Home project.

Production of a first draft design brief will now move forward at full pace.

Other activities are in accordance with the project plan.

Key Achievements in Past Fortnight

The second Wider Team workshop was held on March 5th in Rotorua, and dealt with a wide range of matters including location options; continuing work on vision elements and the linkages from the vision to the feature and benefits; definitions of features and benefits themselves; and the filters to be used to convert the features and benefits into design decisions.

Attendees from Waitakere City Council, EECA and Gibson Group were present and their contributions were appreciated.

The identification of a preferred location enables a number of other work streams to be pushed forward in more specific ways, eg builder identification, consent planning.

Upcoming Milestones

- Completion of the vision, linkages, features and benefits, and filtering work
- Initial design brief outcomes
- Next workshop: 2nd April. Location, attendees and agenda to be confirmed over the coming fortnight

Key Risks being Managed

A major risk around location has been dealt with over the past fortnight, enabling the initial design work task to get underway, and unlocking key parts of the timeline. Work continues on the question of funding for the house, with the location decision helping to clarify some issues around this. Completion of the vision, linkages, features and benefits and filtering work is essential to ensure a good design brief process to be completed and is being carefully monitored.

Workshop #3
Russell Burton Comments to FR Team

2 April 2003, Rotorua

Initial Comments

- Pre-Kyoto world:
    - Non-sustainable housing practices
    - Energy – generation, fuel, EECA, targets
    - Waste, water, transport, demographics, etc
    - Health

- Impacts – case for change:
    - Energy strategy
    - Waste strategy
    - Auckland Regional Growth Strategy
    - Kyoto Protocol

- New order:
    - Consumers asking for outcomes in accordance with triple-bottom line framework

- Filters:
    - Desirability
    - Affordability
    - Etc

- Mechanism: Beacon
    - FR, BRANZ, EECA, Waitakere City, Gib
    - Housing NZ also involved – 60,000 houses, $6 billion maintenance backlog *(may not have captured this correctly as this number seems very large!)* – talking of tipping their entire R&D budget into Beacon
    - Climate Change Office have volunteered Andy Reisinger to be involved; he has a high degree of knowledge about climate change activities around the world
    - Russell to meet Ministry of Health soon
    - Also talking to an energy company
    - Future targets include appliance companies
    - FRST matching $ for $ for industry contributions over $1 million

- Outcomes
    - NOW Home
    - THEN Home(s)
    - FUTURE Home(s)
    - FUTURE Communities

- Values:
    - Show me
    - Affordable/desirable
    - Implement
    - Insight

- Innovation
- Intervention policies (encouragement)

Questions Raised During the Discussion

- What is the innovation component?
  - Three dimensional literature search
  - Innovation exposed through the interaction/integration of systems and solutions around the outcome
  - Use of sustainability framework:
    - Community health
    - Personal health
    - Performance
    - Resource
    - Energy
    - Desirability
    - Affordability

- If we are looking for a 20% improvement, what is the benchmark?
  - Answer: we have that information and need to bring it to bear on the project

- FRST:
  - What is the link to FRST?
  - What funding is being used to build the house?
  - Is FRST comfortable with where we are going with this project?

  No answers to these questions were recorded. However there is no FRST funding being used to actually fund the house

- Code compliance for the NOW Home?
  - Needs to be squeaky clean (remember a Council is a partner, and public perception is an important issue)

- What about donated (free) materials?
  - Don't want favours
  - Need to be seen to be doing the right thing
  - Donated materials are OK provided the materials are desired as a result of having passed through the filter

- What are the desired outcomes of the participant organisations? Whose project is it?
  - Fits within Beacon

- What are the benefits to Forest Research?
  - Materials research
  - Intellectual Property ownership/access
  - Meets a key FR vision element – to effect cultural change

- How does the decision-making framework work?
  - Beacon is the body involved
  - Informally now (Russell consulting with other partner representatives)

Formally later (once Beacon is established and the Board is

Action Points from Meeting
Russell Burton, Kimball Fink-Jensen and Karen Bayne

17 April 2003, Rotorua

Budget

- Add monitoring costs (capital, operations) **Kimball**
- Update capital costs (three layers: base, cost/benefit justified, research-related) **Kimball**
- Recognise participants time and out-of-pocket expenses **Kimball**
- Stream budget out by month and relate to milestones from project plan **Kimball**
- Identify funding options (for project costs) **Kimball /Russell**
- Enlist support of Beacon partners **Russell**

Measurement of House/Lifestyle Outputs

- Setting up **Kimball**
  - Address as early as possible (QLD learning)
  - Establish cost
  - Establish responsibility for making it happen, and carrying out the monitoring
  - Establish a process to get completely on top of this issue
- Fully cost and include in budget (as above) **Kimball**

Marketing

- Establish ownership (responsibility for outcome) **Russell**

Sustainability Framework

- Discuss issue of appropriate owner with Karen Bayne **Russell**
- To be run as a stream throughout the rest of the project (will continue to develop throughout and after the completion of the NOW Home)
- Needs to be stepped up (see below)

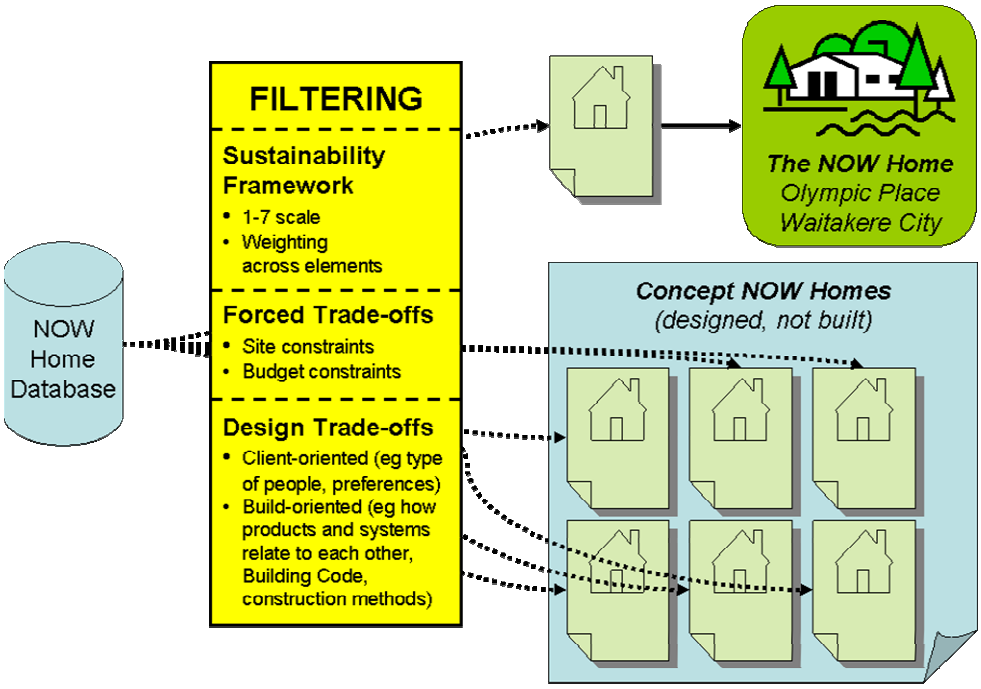
Capturing Knowledge

- Monitor Greg's capture of the design process **Kimball**

- Develop a process for increasing Sustainability Framework knowledge — **Karen/ Kimball**

- Implement that process (in context of NOW Home design requirements – see diagram developed in meeting as set out below) — **Karen/ Kimball**

- Establish database for capturing that knowledge — **Karen/ Kimball**



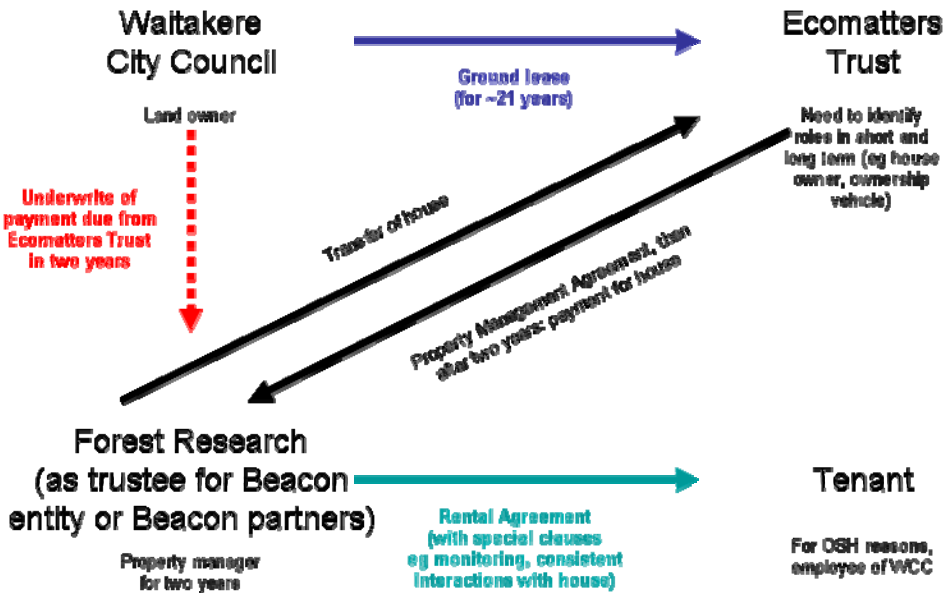
Land Ownership

- Negotiate amount to be paid by Ecomatters Trust at end of two years — **Russell**

- Establish who is responsible for resolving land ownership issue — **Russell**

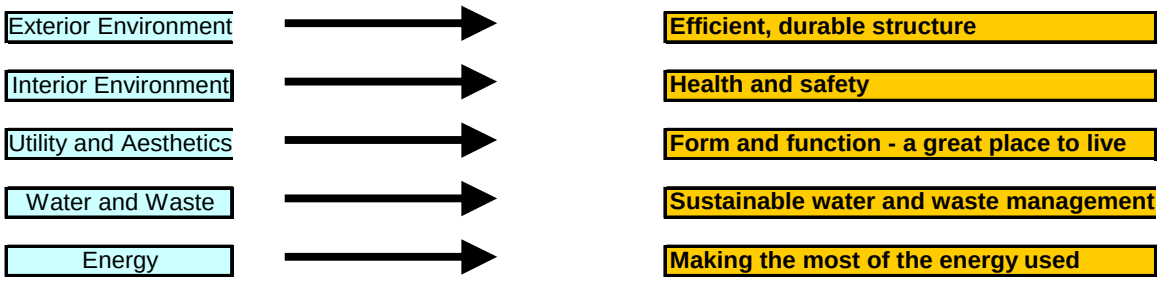
- Issues that will arise include:
  - Who bears the risk in the two years until payment by the Ecomatters Trust? Who has the insurable interest?
  - Who keeps the rental income (if any) over the two years?

- Note suggested approach from Waitakere City as per diagram below, with addition of underwrite transaction and query as to nature of role(s) of Ecomatters Trust


Waitakere City Council
Land owner
Underwrite of payment due from Ecomatters Trust in two years
Ground lease (for ~21 years)
Ecomatters Trust
Need to identify roles in short and long term (eg house owner, ownership vehicle)
Transfer of house
Property Management Agreement, then after two years: payment for house
Forest Research (as trustee for Beacon entity or Beacon partners)
Property manager for two years
Rental Agreement (with special clauses eg monitoring, consistent interactions with house)
Tenant
For OSH reasons, employee of WCC

Feature and Benefit Matrix

Design Criteria Development from Workshop 2



Emerging Key Design Criteria

Category	Estimated Impact on Design (1=low,7=high)	Design Element (those ranked 6 or 7 in terms of impact on objectives)
Energy	1	HWC Insulation
Waste-Water	1	Water meter
Waste-Water	1	Water/waste efficient appliances
Internal	1	Ventilation - Passive
Internal	1	Fire Safe (People and Property) - Smoke Detectors/Placement
Internal	1	Fire Safe (People and Property) - Water Source
External	1	Community amenities - shops
Energy	2	Double glazing
Waste-Water	2	Water efficient fixtures
Energy	3	Ventilation
Waste-Water	3	Water pressure (including cylinder)
Internal	3	Temperature Control - Active
Internal	3	Moisture Control at Source
External	3	Privacy - screening, proximity to neighbours
Energy	4	Insulation
Waste-Water	4	On-site water collection
Waste-Water	4	Appropriate planting (no irrigation)
External	4	Noise (inwards) - vehicles, neighbours
Utility-Aesthetics	5	Traffic flow
Utility-Aesthetics	5	Indoor-outdoor flow
Utility-Aesthetics	5	Materials
Utility-Aesthetics	5	Shape - silhouette
Internal	5	Ventilation - Active
Internal	5	Fire Safe (People and Property) - Sprinklers
External	5	Security
Utility-Aesthetics	6	One or two stories
Utility-Aesthetics	6	Function of rooms
Utility-Aesthetics	6	Light
External	6	Weathertightness - envelope (monolithic or board cladding)
Energy	7	Site parameters (height restrictions, slope, surrounding buildings)
Utility-Aesthetics	7	Style - architectural
Utility-Aesthetics	7	Layout - room relationships
Utility-Aesthetics	7	Fashion - trend in taste (social)
Waste-Water	7	Minimisation of impermeable surfaces
Waste-Water	7	Zero run-off site
Waste-Water	7	Waste reduction through design
Internal	7	Temperature Control - Passive
External	7	Orientation - sun - views - daylight

Appendix C
Features and Benefits analysis template

NOW Home Project: Features and Benefits Analysis

Feature or Benefit	
Team	
Short Description	
How does this Feature or Benefit interact with our vision elements and linkages?	
Vision elements: ➔ Education	
➔ Sustainability	
➔ Fit for purpose (quality)	
➔ Appeal	
Vision linkages: ➔ Brand	
➔ Index/Rating	
➔ Meaning of "house" and "home"	
➔ Values	
What do we already know (or not know) about these possible impacts? Think as broadly as possible eg environmental and health "footprint", build issues, marketing the NOW Home (eg communicating the benefits), lifecycle costs, existing NZ & overseas experiences, measuring benefits	
➔ Research already available	
➔ Known research gaps	
➔ Solutions or systems already available	
➔ Products (or companies) that may help deal with the impacts	
What is your best guess as to how this Feature or Benefit might ultimately be reflected in our decisions for building the NOW Home?	
➔ Cost?	
➔ Location?	
➔ Timing?	
➔ Materials to be used?	
➔ Trade-offs required when there are multiple possible solutions?	
➔ Construction method?	
➔ Measurement of effects?	
➔ *(Other)*	

Appendix D
Core Team Minutes

NOW Home Core/Design Team Meeting

Ronald Trotter House, Great South Road, Penrose, Auckland
30 April 2003

Minutes

ITEM	ACTION (Who, When)	
General Update - Builder • Identification of G J Gardner (Manukau) as preferred builder was noted • Importance discussed of ensuring builder is aware of and in agreement over timing, given EECA's experience of consequences of changing builder due to a project delay • Comment made about the importance of integrating the builder into the design process, and for them to take responsibility for the quality of the house (they need to "craft" the house) • Discussion about the need for a good plumber • Landscape architect was discussed, and need to identify whether WCC can provide expertise (also to ensure co-ordination over WCC needs and plans for the area) • Desirability noted of a documented and photographed construction process; Ecomatters may be able to assist?	Katja Katja	13 May No date specified
Measuring – Simulation • Barbara Joubert offered to contribute to the design process through "shoebox" and other simulations that will assist with estimating the energy/environmental outcomes • Agreed that Barbara would provide input to the design team through Greg • Albrecht/Roman would also be able to contribute in this area and the three of them should work out how best to contribute	Barbara Barbara/Roman	As required ASAP

Design – Introductory Comments • Site and budget substantially narrow down choices for components of a NOW Home • Despite some gaps in the Design Brief, it will narrow down choices even further • Agreed that Greg Burn will do the drawings in consultation with the rest of the Design Team • Noted that the site was not surveyed as yet, but the team does understand the noise, aspect, orientation and positioning issues • Noted that there are some security issues; work with WCC on their plans for public access at the rear of the site	Greg	As required
Design Brief – Progressing to Final Version • Need to set an initial set of targets; talk to Katja about WCC knowledge on water use; discuss ideas for targets with Design Team along the way • Need a new version of the existing brief to readily incorporate the targets, design log and priorities; keep the format and detail around the features and benefits approach	Roman/Barbara Karen/Dave	13 May 13 May
Filtering • Kimball introduced a diagrammatic representation of the overall process and the role of house design, filtering and a product/system database (included with Agenda) • Noted that Karen was likely to be responsible for the development of the database, in conjunction with BRANZ who already have certain information bases; but that the development and populating of the database would take some considerable time; in the meantime we would operate in relation specifically to the Olympic Place NOW Home • Agreed that the Sustainability Framework would need to be better developed before it could be appropriately used • Agreed that in any use for the design process, the Sustainability Framework would be weighted neutrally as we had no basis for differentiating between the elements in terms of what is most or more important • Agreed that we would use the next two weeks to develop further the sustainability framework to determine how it was made up and to get a better feel for how it would feature in the NOW Home process	All	13 May

Next Meeting • 14 May, 10 am to 4 pm, Ecomatters Trust	Katja to check availability	ASAP

NOW Home Core/Design Team Meeting

Ecomatters Trust, Olympic Place, New Lynn
14 May 2003

Minutes

ITEM	ACTION (Who, When)	
Introductory Comments • Agenda agreed • The core team will sign off on the design brief • Determine organisations' sign-off procedures for final design and communicate any potential time or process risks to Kimball	All	19 May
Path Forward • One page graphic introduced by Kimball • Feedback welcome on top of comments already received from Chris • Redistribute after including comments	All Kimball	16 May 19 May
Marketing • Further discuss prospects and approach with Kevin and Russell	Jo/Kimball	ASAP
Design Brief – Decision Process for Finalising • One page graphic introduced by Kimball • Agreed that Sustainability Framework was more appropriate for output measurement and as an input to marketing, while the design process required targets at features and benefits level instead • Add amendments to graphic (from meeting) and redistribute	Kimball	16 May
Design Brief – New Format • New format introduced and explained by Dave • Format accepted as good advance on first version • Email to all team members	Dave	ASAP

Design Brief – Multi-Criteria Decision Making • Explained by Barbara • Agreed that it would be utilised as part of the design process, and be applied at features and benefits level • Discussion about whether the scales as set out in the process needed to be fully determined as part of the design process for this NOW Home • Agreed that we should attempt to use the full version of the methodology now, and therefore set out the scales for all features and benefits • Draft first set of scales to be produced	Barbara	ASAP
Finalising Design Brief – Feature and Benefit Responsibilities • Site • Accommodation • Structure • Waste • Moisture • Thermal • Energy • Light • Acoustics • Air Quality • Health • Fire • Landscaping	Katja Annika/Dave Louw Roman Chris Albrecht/Barbara Albrecht/Barbara Roman Jo Chris Jo/Roman Chris Katja	Done
Finalising Design Brief – Discussions about Features and Benefits at the Meeting • The team broke up into groups to discuss individuals' areas of particular interest with others. Potentially contentious conclusions were reported back • Add statement of principles at the beginning of the Design Brief, including eg any timber from sustainable resources, passive solar, managing moisture risk to structure • Remove timber references from Structure • Add user manual and speed of construction to Construction and Maintenance • Remove wind, mini-hydro, etc from Energy • Keep Health as a feature and benefit although likely all elements will actually be cross-references to elsewhere	Robin (first draft)	16 May

Finalising the Design Brief – Steps to Completion • Improve the brief with further refinements of the elements of each feature and benefit, based on the discussions referred to above and further thinking by team members • Add targets to each feature and benefit • Send revised versions to Dave, **copy to Kimball** • Collate comments and return back to team as proposed final brief	All Dave/Kimball	19 May, by noon 19 May, by 5 pm
Finalising the Design Brief – Approval Process • Key representative on team from each organisation to prepare executive summary of design brief • Ensure have OK from organisation for the detailed version of the brief to be signed off within the team	Annika, Chris, Jo, Barbara, Louw/Karen As above	20 May 23 May
Design – Timing • Agreed that design team will work off the design brief as collated on Monday 19 May • Draft preliminary design to be developed prior to next team meeting • Attempt to finalise preliminary design to level that will allow approval of Parks team on 4 June	Design Team Design Team	27 May 3 Jun
Choosing Between Products and Systems – Decision Process • One page graphic introduced by Kimball • Agreed as being appropriate • Some presentation improvements to be made	Kimball	19 May
Next Meeting • 28 May, 9 am to 4 pm, Ecomatters Trust • Ensure projector and lunch arranged	Katja to check availability Katja	ASAP
Tentative Following Meeting • 3 June, 9 am to 4 pm, Ecomatters Trust • Timing is based on Parks meeting on 4 June		

NOW Home Core Team Meeting

Ecomatters Trust, Olympic Place, New Lynn, Auckland
18 June 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Karen Bayne, Bryan Walford, Mike Collins, Louw van Wyk (Forest Research) • Dave Moore (COHFE on behalf of Forest Research) • Katja Lietz, Annika Lane (at end) (Waitakere City Council) • Chris Kane, Roman Jaques, Albrecht Stoecklien (BRANZ) • Jo Duggan (Gib) • Kimball Fink-Jensen (Qwant) Apologies: • Greg Burn (Structure) • Robin Allison (Eco-Housing, on behalf of Waitakere City Council) • Barbara Joubert (EECA)		
Design Progress Update – comments from Team: • Relocatability discussed by FR team members with Russell this morning and it was felt that relocatability didn't preclude concrete slab • Design features would have to be built in to ensure relocatability was possible, and how the house would be relocated would need to be explained • There is expertise within the team to be called on in terms of what is required by way of design to make the house relocatable • "Bath separate" comment – Bryan suggested that shower over bath would be better to allow toilet to be separate; Katja suggested that if budget became an issue, reducing second bathroom to just a toilet would be appropriate • A sun diagram would be helpful as a visual guide (overlay over orientation) • An ALF analysis/Energy+ simulation will be undertaken; the design will be checked against BRANZ's four standard house designs to determine insulation and double glazing requirement; then this design will be modelled for shading, overheating etc • If solar panels located on north roof face, then check optimal location of cylinder close to solar panels;	Louw to email Greg offering assistance Albrecht	Thu 17 Jun Wed 2 Jul (for update on progress)

ITEM	ACTION (Who, When)	
preference to be closer to kitchen than bathroom due to relatively lower volume draw off • Integrate solar panels with roof so don't have raised panels for leaves etc to catch behind; also perhaps clear panel over solar panels? • Sun benefits (solar panels) surprisingly insensitive to roof angle ("standard formula" is latitude + 15%, according to Mike) • Preference for lower western sun than eastern as house has already received its heat during the day • Size of bedrooms – Greg and Robin discussing relationship between this and size of living space; smallish children's not necessarily a problem eg use bunks • Should relocatability in fact be a feature? May depend on complexity of relocation so input from the relocation expert may be a decisive factor in this • No water tank shown – where is it going to go? Rainwater for flushing, hot water and garden so location dependent on pipe lengths; maybe raise it so can gravity feed the toilet (can't gravity feed to hot water so will need a pump somewhere); perhaps locate in south-western corner and move MBR window along so tank can tuck into corner; or even consider locating underground given need a pump anyway; or locate on southeastern corner over bank to "hide" it (subject to any WCC concerns regarding further encroachment); <u>need to investigate WCC perspective</u> • Innovative features framework: affordable, proven, minimal compromises in terms of utility, doesn't look too weird, easy to use and maintain; innovation will be subjectively judged at the end of the design process in terms of whether it seems to have sufficient innovation (by way of features and/or integrated design) • Not sure how much of an issue the encroachment onto the bank is – when is survey being undertaken? (See below) • Washing line optimal location appears to be north-eastern corner – extend pergola a bit further perhaps to give outdoor covered area for both drying and kids play area? • Roofline – while simpler than earlier, could it still be simplified further? What would be the pros and cons?	Katja	Fri 20 Jun

ITEM	ACTION (Who, When)	
	Jo to talk to Greg	Mon 23 Jun
Landscaping: • Is driveway presumed to be in build cost or not? Will be required for resource consent • Confirm landscaping is an additional budget item beyond house build cost, as to date its been accepted it is not part of the build cost	Greg to comment Kimball	Fri 20 Jun Mon 23 Jun
Design Brief: • Constraint for house build cost has not been updated with change in detail of document	Karen	Fri 20 Jun
Site Issues: • Setback from boundary - is this required? Being Parks land, it may not – has this been checked already? An extra couple of metres on the western side would help with the bank issues • When is the survey being undertaken? Request from team for future plans to reflect site parameters to help deal with site-related issues raised	Greg Greg to comment	Fri 20 Jun Fri 20 Jun
Design Progress Check with WCC Consent Team: • Discuss concept plan with Bronwyn Allerby to see if any issues (positive, negative) are obvious to her (check with Greg first in case he is doing this already)	Katja	Mon 23 Jun
Studs and Spacings: • Comments in design log about using standard framing sizes noted • Sub-team to investigate prospects of incorporating wider spacings/stud widths in this NOW Home (Olympic Place); discuss with Greg the rationale for not using them as per designers log	Jo to lead (with Louw, Mike and Albrecht)	Wed 2 Jul (for update on progress)
Filtering Review: • Filtering paper to be updated based on comments from meeting and Building Code content (in the case of Performance) • Add Environmental Wellbeing as proposed; but **don't** integrate Energy, Waste and Water within it (as discussed during meeting)	Katja	Wed 25 Jun

ITEM	ACTION (Who, When)	
Filtering as Part of Design Decision-Making: • Request by team for explanation of how cost is being incorporated into the design process (so Team can understand how we will manage/contain the risk of overruns of design vs budget) • Core Team experts committed to providing information back to Design Team in a timely fashion and to the depth and breadth requested	Greg Team	Mon 23 Jun As required
Cultural Sensitivity: • This is a consideration in the project • We need to decide how to deal with cultural requirements (eg Maori, Pacific Island, Asian) in the design process • Housing NZ guidelines may provide a useful framework (team believes Greg has this already) • To be raised with Owners' Team in terms of how far we should go in introducing it into the process and what weight it should have relative to other key drivers (eg energy efficiency) in the case of conflict	Kimball	Mon 23 Jun
Targets: • Roman requested further information on demographics of the area – particularly income • Targets document (as being developed by Roman) to be updated based on comments at the meeting • Roman requested further information about crime prevention through design – who can provide input and guidelines • Roman requested further information on the current average weight of recyclables and landfill waste per household and per person • Apply BRANZ Green Home scheme as an overall assessment – expect to get an "Excellent" score!	Katja Roman Katja Katja	Fri 20 Jun Wed 2 Jul Mon 23 Jun Mon 23 Jun

ITEM	ACTION (Who, When)	
Monitoring: • Only one house, so scientifically hard to generate comparable information • However there is a project in Melbourne where occupants are there for short term (say six months) and therefore can measure different occupant attributes (thereby increasing the sample size); not ideal but better than just one family; occupants don't pay to rent, but do have to participate in promotion (eg showing people around once per week); <u>more information coming</u> • (Add to considerations when promotional strategies being finalised) • Not clear yet that we know how will measure EMFs and need to determine • Match monitoring plan against Design Brief targets to ensure all are covered • Monitoring plan to be further developed: o Who does monitoring (automatic, occupier, etc) o How often, when o Priority o Cost (capital, ongoing if any) • Assumption is Albrecht is responsible	Albrecht Roman Albrecht Albrecht	Wed 2 Jul (update of progress) Wed 2 Jul (update of progress) Wed 25 Jun Wed 2 Jul (update of progress)
NOW Home Beyond Olympic Place: • Kimball presented (for information) the diagram tabled at Owners Team • Promotion – in absence of promotional strategy, Team determined that it will respond to any queries by saying that yes we are working on something called the NOW Home, we don't have much to say at present, but we will be talking about it further as the project unfolds • Certain public dissemination of information, up to and including the Design Brief, is impossible to avoid (eg OIA requests (perhaps) and reports to Parliament in July) • Owners Team requested to authorise work on promotions and brand as soon as possible	Kimball	Fri 20 Jun
Owners Team Meeting Feedback: • Identified decision points where Owners Team has requested to be involved: o Features and benefits [*done*] o Design brief [*done*] o Concept design o Filter framework o Monitoring		

ITEM	ACTION (Who, When)	
o Developed design o Working drawings o Information base (Olympic Place version) o Builder contract o Construction commencing o Completion o Handover (to Beacon? Check with Owners Team) o "Virtual architect" database (strategy) o Promotion/communications (strategy) o Brand (strategy) o Tech transfer (strategy) • Request from Owners Team members to **not** be generally included in emails between Core/Design Team members • Emails to Owners Team only with information specifically for them, or documents that form part of a specific decision	Kimball All	22 Jun Today onwards
"Virtual NOW Home": • Quantification of some attributes of the database will pose challenges • Bryan presented some thoughts to date that were well received, and will send this out • Comments from team required • Allowing people to click-through from parts of house to find the decision elements involved was seen to be very desirable, and Bryan is working down that path	Bryan Team	Thu 19 Jun Thu 26 Jun
Project Timing: • Investigate timing of resource consents with adoption of management plan as consents may not be required if new management plan (scheduled for July) is in place before we apply for our consents • However this depends upon whether issues like height will lead to a resource consent being required in any case	Greg	Wed 23 Jun
Next Meeting: • Thursday 3rd July in Auckland, 10 – 4 pm (however see email for possible change due to Greg's time limits)		

NOW Home Core Team Meeting

Winstone Wallboards, Penrose, Auckland
2 July 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Bryan Walford (Forest Research) • Dave Moore (COHFE on behalf of Forest Research) • Roman Jaques, Albrecht Stoecklien (BRANZ) • Jo Duggan, Kevin Golding (at beginning) (Gib) • Greg Burn (Structure) • Robin Allison (Eco-Housing, on behalf of Waitakere City Council) • Kimball Fink-Jensen (Qwant) Apologies: • Karen Bayne, Mike Collins, Louw van Wyk (Forest Research) • Chris Kane (BRANZ) • Katja Lietz, Annika Lane (at end) (Waitakere City Council) • Barbara Joubert (EECA)		
Kevin Golding Beacon Briefing: • Beacon resolved to take over NOW Home at the appropriate time; timing currently dependent on FRST decisions about funding (approx. two weeks) • Forest Research continuing to "own" project in the meantime • Promotional process underway with Stephen McKernon reporting to Brian Dingwall at BRANZ (on behalf of Beacon) • Any issues from potential promotional programme that affect design issues now – identify today and Kevin will take those up with the promotional team • Beacon objective broadly in the areas of: o Capturing hearts and minds o Sustainability scorecards o Homes and neighbourhoods o Harnessing industry o Demonstrating high level returns to Government • EECA not to be a formal shareholder in Beacon; if they are to be replaced it is because there is another appropriate member available		

ITEM	ACTION (Who, When)	
Free Power Limited review of Design Brief (at Request of Gib): • Team took brief look at report • Agreed that Albrecht and Roman would review and then discuss separately with Free Power	Albrecht and Roman	Fri 6 Jul
Feedback on minutes of previous meeting: • Clarified that the process was the design log would be kept up to date as practicable during the process, although the focus is on getting it right at the end rather than modifying elements of the log multiple times as we go through iterative decision-making • Design decision process will see Design Team discussing any areas of debate with identified subject matter experts, then putting forward a preferred design based on their expertise		
Latest draft design discussion: • Towards the street, can move house one metre closer than previous draft plan • Can slide house closer to Ecomatters Trust as necessary/desirable • No need therefore for any part of house structure to sit over the bank • Simplified the design based on transportability eg common lateral wall (almost), simplified roof • Further request for proactive feedback from team on design		
Core Team breakout session (while Design Team held own meeting): • Overhangs: will be assessed at BRANZ ASAP. Potential for them to be up to 1.5 m. Were this to be the case, and this was a concern from any other design perspective, then alternatives would include planting, pergolas, external screens, reflective glazing windows, etc • Noise between living areas and bedrooms (6 and 7): internal noise may be an issue; extra insulation/double-layered plasterboard and noise-sealed doors may be necessary • Between main bathroom and master bedroom: same issue a la plumbing noise • Check solar water system for whether it has a separate solar water system; recommendation required on specific system to use • Plumbing between solar water heater and hot water cylinder via skillion roof: will check to make sure there	Roman and Albrecht Albrecht	Fri 6 Jul Mon 9 Jul

ITEM	ACTION (Who, When)	
are no issues caused by this (although sounds like the solar panels are in fact over a truss roof) • Lack of storage: what about utilising the roof space over the garage? Is it going to be a lined ceiling or exposed trusses? If exposed, then place eg particleboard/plywood off the bottom and ladder access to provide storage • Bicycle storage would be nice – ability to access from outside (not having to open garage door) • Main bathroom: presume it will be vented past any outside appendages eg bicycle shed • Skylight in skillion roof over kitchen? (If in fact extra light is desirable) • Flow from entrance to bed rooms and main bathroom being past dining table is unfortunate (see Design brief 1.6) • Opportunity to add view from kitchen to entrance (add internal window)? (security feature) • Insulation: R3.0 insulation materials for all external walls; internal noise-susceptible walls (see above) can have R1.8 (ie nothing special); walls between house and garage should have same insulation as external walls (R3.0); door from garage to house should be well sealed; external door from garage should be ventilated (sash vent window) • Idea: box window seat in dining room – move dining table over so uses seat • Possibly access from kitchen to garage to ease access to paper, glass and organic recycle bins • Glass between kitchen and play area only half height (table height up) to allow for PC work space; or double-sided storage/visibility • Note that noise level targets currently proposed are probably more stringent than normal accepted outcomes; double-glazing or double-laminated glass helps • Mobility access into bathroom – have to go around corner on drawings version 4		
Design Team progress: • Good progress made in their breakout session • Work up to concept design level and send out to wider team for final feedback while Design Team members on leave next week • Also to go to builder for costing next week • Tentative plan for Owners Team sign-off week of 14-18 July • Will commence work on the developed design the same week	Design Team	Fri 6 Jul

ITEM	ACTION (Who, When)	
Materials: • Possible list of primary materials that could be used in the house are as follows: o Roof: Colortile o Cladding: Fibre cement weatherboard (presume this means fibre cement weatherboards, not either fibre cement or timber weatherboard) o Fascia: Colorsteel fascia/gutter o Floor: Concrete slab o Floor covering: sealed concrete/carpet (in bedrooms) o Framing: 90x45 timber @ 600c (H1.2) o Joinery: Aluminium (Double glazing where relevant) o Roof framing: Timber trusses/rafters o Internal Lining (walls/ceiling): Drywall (Noise/wet system where relevant) o Insulation: R3 Fibre glass • Team to consider this list and forward their thoughts to Greg, **copied to all regular team meeting attendees** (as per the email distribution list to which these minutes were attached)	All	ASAP
Next Meeting: • Tentatively Wednesday 16 July - tba	Kimball	Wed 9 Jul

NOW Home Core Team Senior Representatives Phone Meeting 16 July, 4 pm	
Issue	**Comments**
Has there been any modeling eg ALF?	Albrecht's suggestions have been about reminding us to pay attention to the possibility of this house not being very different (eg insulation-wise) from a normal house, hence the ALF values would not be to our target levels? Some modeling has been done but further work from Victoria University students being done as well and these will be the true results
Design vs performance and cost	Some of the design features give us the option of choosing between performance vs design; eg could eliminate skillion roof
	We like the skillion roof because it adds architectural appeal
	80:20 rule – make the best decisions possible – it may cost more, but want to get a balance; balance design v performance; should be able to do so within a 10% allowance for innovation, based on others' experiences
	Gardners doing a cost to a standard (benchmark) specification, and we can then look to add to it with our "special" features
	First thoughts revealed at last meeting on materials – used to get Gardners going with preliminary costing; as the materials go through the filter we can then revise costings to account for any change
	Didn't want to race off to Gardners with a package that would scare them eg distinctly different combinations of materials/techniques
How much innovation is there in the house – definition of "NOW"	NOW House = using the best of technology available today; but must be confident that it will be sound (will still be working in 6 months [and 6 years etc])
	Definition of "NOW" - if you can design for manufacture without having to experiment or research something new, and required materials are available today --> then should be able to use as a NOW technology
	Combination of technologies that make a "normal" house perform better; has to appeal to people, including being aesthetically appealing

	Do we risk new approaches vs only using techniques already tested and available?
900 mm stud spacing/150 mm stud thickness system	No fire reports, no sound reports, not tested –does this mean it can't be NOW technology? **No**
	Cost savings in framing timber almost certainly more than offset by thicker plasterboard, architraves etc
	Team view: this system is a NOW technology
	Not being 3604 compliant is pretty much a non-issue (many houses built are not 3604 based)
	We should get a simple rule of thumb analysis of its viability before making a final decision – particularly lifecycle cost and thermal insulation performance; we know we can do it but is it worth doing?
	Need to talk to all the relevant material manufacturers about how we plan to use their (existing) materials and that they are happy with it being used in that way (without them having to test it?)
	Will need a "producer" statement as part of the building consent; get an engineering opinion and (probably) a moisture opinion; describe our rationale for stepping outside of current approaches
Other potential "different" systems	Mike's solar water system – not ready for this house; using Albrecht's suggested approach instead
	Relocatability – At last meeting Mike volunteered to develop a solution and we are awaiting their suggested approach; his issues eg what parts are concrete floor, where are the splits in the roof, were all determined at the last meeting
	Implementing truss system using MGP6, wider beam and different connectors – Mitec willing to look at design but do we still want to pursue with Louw? Matter of detail (not part of concept design) but perhaps worth flagging to Owners Team?
	No services part of wall (bedroom 3) – to allow for flexibility eg later movement; yes, and under control
Other builders' potential concern at use of "different" systems?	Apart from the fact this is a different technology, when you show people how it is done, were their builder to exhibit concern, does that mean it shouldn't have been included?
	Probably not - as soon as one TA approves an approach, then others tend to look at it and it can achieve wider acceptance

	Sometimes TAs would ask for additional things to be included – this can itself lead to more innovation
Progressing to developed design	Developed design close to being able to be generated after the concept design, given the nature of the process we've been using (developed design-type issues being worked through as we go therefore short path to updating). CAD requirements pretty quick following this stage
Issues to resolve to move from today to completed design for Community Board	Talk to Resene about an appropriate colour design scheme – Jo and Greg to action
	Greg approaching interior linings/exterior cladding manufacturers in time for next Thursday
	Materials issues – everybody please check last meeting's minutes for potential material decisions and get comments to Greg by Friday in a format that will align with our decision making process (ie Sustainability Framework)
Peer review	Robert Vale - has not returned Karen's emails as yet so a phone call will be made. Greg will travel to him if necessary and take him through the design and seek his input prior to Thursday
	John Sutherland – Greg is already in touch with him along similar lines
Core Team meeting	Wellington, Thurs 24 Jul, 9 am to 3 pm, venue tbc (either EECA or BRANZ). Kimball, Chris and Karen to sort out details
Owners Team meeting	Wellington, Thurs 24 Jul, 3 to 4 pm, venue as above
	Targeting presentation of next version of design (version 6) as final concept design, subject to any comments from Owners Team)
	ASAP after Owners team meeting, will send out to the core team a list of issues discussed at that meeting regarding the concept design, along with a plan on how to resolve them (this can be developed by the core team members at the Owners Team meeting immediately after it?)
Community Board	Feeling of the team is that we are able to present at the 4th August meeting, and therefore should be included on the agenda on Friday
	Landscaping needs consideration prior to Community Board meeting – Greg to discuss with Allan; Kimball to work through how it will be funded, but will have to be done one way or another

Current Project Timeline	17 July Gardners (through Greg) – preliminary costing based on version 5; email outcome to team
	18 July Core Team – thoughts to Greg (copied to whole team) on appearance materials where performance could be affected (roofing material, cladding material, etc) Kimball – agenda for Owners and Core Team meetings
	23 July (latest) Jo/Greg – discuss colour scheme with Resene Karen/Greg – peer review from Robert Vale, John Sutherland Greg – discuss issues with linings/claddings manufacturers Core Team – make key appearance-related material decisions and finalise design
	24 July Owners Team – sign off Concept Design
	30 July WCC Parks Management Team presentation – approve for Community Board
	4 August Community Board presentation – approval sought
	ASAP after Concept Design approval Design Team – complete developed design, and agree with Core Team Owners Team – sign off developed design
	ASAP after developed design Design Team – complete working drawings, and agree with Core Team Owners Team – sign off working drawings
	ASAP after working drawings Consents (building, resource) lodged

NOW Home Core Team Meeting

EECA, NGC House, Wellington
24 July 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Karen Bayne, Mike Collins, Russell Burton (part) (Forest Research) • Chris Kane, Roman Jaques, Albrecht Stoecklien (BRANZ) • Jo Duggan, Kevin Golding (part) (Gib) • Greg Burn (Structure) • Robin Allison (Eco-Housing, on behalf of Waitakere City Council) • Katja Lietz, Annika Lane (Waitakere City Council) • Kimball Fink-Jensen (Qwant) • John Goodchild, Barbara Joubert (EECA) Apologies: • Dave Moore (COHFE on behalf of Forest Research) • Louw van Wyk, Bryan Walford (Forest Research)		
Russell Burton Beacon Briefing: • Has been verbally advised by FRST that Beacon will be funded		
Peer Review Update: • Greg had a meeting on Tuesday with Robert Vale, and late yesterday his comments came through • Greg met yesterday with John Sutherland and initial feedback was very positive, with report to come early next week		
GJ Gardner Costing Update: • Based on a "standard" approach, have identified the cost as $139,000 + GST; includes driveway but no paths • Have also identified the double glazing "extra" would be $3,800 + GST, and that there are "standard" items such as waste disposal (which we won't have) included in the main price		
Design: • Suggestion from John Sutherland is that Masterspec be used; needs to be discussed with Owners Team		

ITEM	ACTION (Who, When)	

• Dave Moore and Karen have looked at the design relative to pg 8-10 of the brief, to check for a balanced mix of Post-Kyoto components, and have three comments
  o Drying court
  o Moisture venting from kitchen/bathroom
  o Garage detached/vented
• Robin: Need to see site plan to assess eg space for water tanks; will deal with any issues through the brief given to Alan Duxfield at WCC for landscaping; the concern is whether there is enough space for the extras
• Roof over dining – is this a useful place to have a roof? Perhaps better over the play area?
• Greg's comments – roof overhang is relevant to soffit drop
• Jo raised the issue of whether the stud height should be 2.7 m? No; insufficient project-related benefits (eg for the extra cost (could be 10%))
• Could translucent roof in outdoor areas be used? Greg: if you want, subject to loss of soffit drop; Albrecht: could create overheating issues; will use vegetation to create shade in summer
• **Decision: translucent roof outside live/play area and dining area**
• Pergola (outside main living area) with its slat effect doesn't create shelter, but does create some shade; **decision: no opaque cover over pergola, but deciduous vegetation**
• Robin: **Kitchen functionality comment regarding relocating fridge; suggested change agreed**
• Robert Vale's comments about airlocking the entry: **agree that we will place some sort of barrier (probably glass) to close off house from front door (aesthetically pleasing but preventing energy loss)**
• Robin's comments about entry to master bedroom, and Robert Vale's comments about privacy lobby for that entry: suggest either remove lobby (and move bathroom door and add cupboard there); **Greg has already decided to move bathroom door anyway and decision is to keep cubby space free for freestanding furniture/built in cabinetry**
• Albrecht: **extra natural light over computer area; good idea and integrate with the natural light over kitchen**
• Barbara: ventilation throughout house? **Decision is to add a high, narrow window to wall between entrance and living; perhaps louvred and kept open for ventilation**		

ITEM	ACTION (Who, When)	
• Team: kitchen venting for hob and for general air; passive for general but passive for hob as well? No, mechanical ventilation likely but Roman will investigate the pros and cons of passive vs mechanical and anyone who wants to contribute should log their comments with Roman by middle of next week • Any general concerns held with kitchen in middle of house without external wall? No, provided ventilation takes air in right directions (not into house) • Bicycle shed should be specified on site plans	Roman	ASAP
Material Choices Required this meeting: • Roof • Cladding • Floor • Framing/wall system • Joinery • Roof framing **(one obvious preferred choice: Douglas fir)** • Insulation • Gutter • Fascia • Downpipes • Garage door • Soffit lining • Pergola **(one obvious preferred choice: Lawsons Cypress)** • Driveway Other items not to be concluded at this meeting: • Paint • Paving material • Internal lining – wall • Internal lining – ceiling • Building wrap • Finishing trim • Floor covering • Kitchen cabinets • Fixtures and fittings		
Roof: • Onduline (not durable in NZ, sheds fibres into gutter; therefore non-starter)		

ITEM	ACTION (Who, When)	
• Bardoline (not durable in NZ, sheds fibres into gutter; therefore non-starter) • Timber shingles (cost to high, and high maintenance,therefore non-starter) • Green (grass) roof (cost too high, potential high maintenance, structural issue, market acceptance issue,therefore non-starter) • Stainless steel (cost too high, therefore non-starter) • Long-run steel (painted) • Long-run steel (non-painted) • Corrugated Aluminium (painted) • Corrugated Aluminium (non-painted) • Pressed steel tile • Concrete tile • Clay tile Steel products have potential zinc issue, but not clear whether roofs, brake linings, etc are key contributors (indications are however that roofs are under suspicion in mind of ARC); therefore potential issue for environment Concrete and clay tiles beat other options on a lifecycle cost basis, but of the two clay is more expensive (imported, limited numbers) GJ Gardner can put concrete tiles on for same price as colorsteel Concrete tiles may create issue for installation of solar panels but not likely [Issue resolved since the meeting - no problem] Concrete tiles would be removed from roof for relocating Concrete tiles if used should be made locally **Choice is between corrugated aluminium and concrete tiles** Cost appears to be about the same even allowing for extra structural requirements for concrete (BRANZ and Building Economist figures) What will look better in future? Probably both the same **Review final decision after cladding and make with downpipe and guttering decision**		

ITEM	ACTION (Who, When)	
Wall structural system: • Solid (concrete-based) – incompatible with relocatability, therefore non-starter • Solid (timber-based) – not thermally efficient, therefore non-starter • **Light frame – yes** Steel vs timber: • Steel higher on embodied energy • Steel (wood?) can shield EMFs • Steel worse for thermal conductivity (but could be resolved) • Steel worse for condensation (but could be resolved) • Steel is not a renewable resource • Steel has higher water toxicity and emissions during manufacture • Steel requires higher energy to recycle • Timber more flexible **Therefore choose timber** Species of timber for external framing: • Lawsons Cypress – not available, therefore non-starter • Macrocapa – not suitable for framing, therefore non-starter • Douglas fir – no treatment required (as yet), cost not believed to be substantially higher, but may not be an "acceptable solution" under new version of 3602 (although could be allowed as an alternative solution) • Radiata – requires treatment – but can specify this as H1.2 boron treatment at 0.4%, so a safe and more environmentally acceptable solution than LOSP **Provided no problems with code acceptance, and provided that there is no treatment required, the decision is to use Douglas fir (provided that on cost comparisons it still doesn't cause a problem) If not, we use H1.2 boron treated radiata** Karen to compile the argument for the use of Douglas fir (untreated)	Karen	ASAP
150 mm studs at 900 mm centres:		

ITEM	ACTION (Who, When)	
• Albrecht's presentation re heat differences: would contribute to a reduction in heating energy, but the conclusion is that would get bigger bang for buck from double-glazing windows than from increasing wall framing size and putting extra insulation into walls • Other issues with 150 mm: reduces floor area in house (or have to increase house dimensions to retain interior dimensions), extra cost ~$2,500 (lining, framing but haven't accounted for door trims, etc), possible build risk (cost) as not been built before, thicker walls may appeal more but perhaps for a more expensive/larger house? **Decision is to use standard framing dimensions due to insufficient thermal performance gains relative to cost**		
Cladding: • Solid plaster – not suitable for relocatability, therefore non-starter • Precast concrete/sandwich construction –solid concrete-based and not suitable for relocatability, therefore non-starter • Brick veneer – high lifecycle cost, very difficult to clean if graffiti occurs • Hotbloc – not acceptable as solid concrete-based and not suitable for relocatability, low thermal performance • EIFS – not sustainable as not suitable for relocatability, possible weathertightness risk, therefore non-starter • Lockwood – not compatible with timber frame, therefore non-starter • Hebel - not suitable for relocatability, therefore non-starter • Fibrecement sheet – higher risk of weathertightness issues, therefore non-starter • Onduline –aesthetics would be an issue for this house, plus having to take some risk on performance (not widely used), therefore non-starter • Hardiplank – relative to linea, not as appealing, therefore non-starter • Board and batten – not as aesthetically suitable for this particular single-storey house • PVC/Aluminium – not appropriate to use for this project • Linea – thumbnail sketch suggests neutral lifecycle cost – higher up-front cost, but very dimensionally stable and lower maintenance cost; no performance history creates some risk; dust and other issues from cutting on site; therefore don't use • Cedar/radiata shingles – for gables only (add a gable for		

ITEM	ACTION (Who, When)	
aesthetic reasons (as a feature)? Decide after cladding choice but on first thoughts, design not suitable) • Ecoply – should be treated (looks terrible when left to weather); requires horizontal joint; therefore don't use • Timber weatherboards (especially Lawsons Cypress and Macrocapa as don't need to be treated IF Macrocarpa is heartwood and is Grade A or clears, then it does not have to be painted, otherwise paint or stain. Cypress should be painted or stained; Redwood not in consideration (team consensus)) **Decision is to use timber weatherboard; exact species to be determined (based on cost, availability – Greg to find out, *BRANZ to provide information on lifecycle costs for different finishes*); stained or painted or acrylic still to be determined; horizontal instead of vertical. (Again, if cost a major issue with cypress, can revert to radiata treated boron weatherboards, but then would definitely need to paint them. Would still be cheaper and more environmentally friendly than linea, but need to look at performance etc.)** **More likely we will choose paint on the basis that there are lighter colour options and lighter colours are preferable from a performance perspective (maintenance, thermal and overheating)** **Colour is important for Community Board but not the actual nature of the finish; sub-group to consider the issue**		
Returned to roof decision after decision on cladding: • Thrown back to design team (no reason to choose concrete tile or aluminium for other project reasons) • **Design team decision: concrete tile**		
Exterior Window and Door Joinery: • Cedar – unable to be sure from a sustainable source, therefore non-starter • uPVC – non-renewable, health hazard during and post-construction; therefore non-starter • Steel – durability problem; have to be galvanised and painted precisely; • Macrocapa – can oil it inside instead of painting • Radiata – needs to be made from edge glue laminated pieces, to prevent distortion and swelling – cost may be prohibitive cf. other timbers		

ITEM	ACTION (Who, When)	
• Timber – better thermally than broken aluminium, renewable resource, has to be constructed well -– talk with wood joinery specialists and compare prices • Aluminium – condensation is an issue, has to be thermally broken **Ask GJ Gardner to price the combinations (with double glazing, hush glass, etc) and provided (in conjunction with other decision areas) that timber doesn't take us over the budget, then we will go for timber**		
Guttering: • PVC – non-starter for same reasons as for cladding • Copper – non-starter • Aluminium – will be corroded due to run-off from concrete tiles, therefore non-starter • Colorsteel – remaining option **Decision is colorsteel**		
Fascia: • Timber – maintenance issues • Colorsteel – integrated, choice of profiles **Left to design team**		
Soffits: • Hardieflex • Plywood **Left to design team**		
Floor: • Timber/particleboard – requires excavation, retaining wall, etc to get 450mm depth for ventilation; therefore non-starter • Concrete (with polystyrene) – enough reasons to prefer concrete. Floor not to be rib-raft – ie. solid polystyrene slab under and at edges to prevent heat loss to ground **Decision is concrete floor**		
Insulation: • Polystyrene – custom-cut on site, not suitable for the wall cavity; therefore non-starter for wall • Rockwool – potential health hazard (to be checked), more expensive, no clear other benefits, therefore non-		

ITEM	ACTION (Who, When)	
starter • Wool – has to be mixed with polyester to keep "fluffy" in the wall; sinks as it settles; expensive (although not in context of house); potential for inconsistency in manufacture • Polyester – can be variable performance due to manufacturing inconsistency; new material made from oil-based product • Macerated paper – potential for slumping, must be installed correctly, dust, insects, deterioration risk (over longer periods) although with binders should be OK; however best impact on environment (Roman's documentation) • Fibreglass – most reliable product, made from waste material, irritant to skin but not carcinogenic (as sometimes suggested) R-values can be achieved with virtually any type of insulation, although consistency of materials can affect actual performance Possibly different materials in the wall and the roof (different risks of sagging) **Team decision: insufficient reliability of information on installed performance of products other than fibreglass; therefore use fibreglass and general request (to industry?) that there be research done to provide more certainty of installed performance of other products The problem is not a lack of research, but rather that specification accuracy is not enforced. Manufacturers/installers seem to claim whatever they can get away with.** **However there is an option, in the flat ceilings, to put in another product, such as acrylic-bonded macerated paper, and carry out our own tests of its installed performance and more paper will be added paper if necessary after the test, to achieve the required R-value [Subsequent suggestion is to have half the ceiling with bonded and half with loosefill]** **Decision still required exactly what approach to take**		
Exposed rafter suggestion: • **No because want the maximum insulation space from concealed rafters from design perspective is**		

ITEM	ACTION (Who, When)	
considered old-fashioned and better to conceal them		
Downpipes: • Will be a charged system • Choices are polypropylene or PVC **Preference for polypropylene over PVC due to reasons against PVC outlined above**		
Garage door: • Cedar (not an option, see above) • Coloursteel • Zincalume® • Timber (eg ply with facing) **Design Team to choose** **During the discussion, determined that a better design would be to put a raftered roof + joists in the garage, with roof light for extra lighting**		
Driveway: • Solid concrete – impermeable therefore creates run-off issues, therefore non-starter • Tarseal – impermeable therefore creates run-off issues, therefore non-starter • Crushed shells – disability access issue, therefore non-starter • Gravel – believed to be considered unfinished and therefore not acceptable to Council? However still has disability access issues • Gobi-blocks – same issues with paving, not good for disabled access; could be used between strips • Concrete paving (in strip form) – same as concrete paving, except not as stable over time • Grasscell – disability access issue, possible reliability of construction • Concrete strip – assists with disable access (one would be 1 metre wide, and path to door from this one), without having negative impact on impereability **Decision is concrete strip**		
Next Meeting: • Tue 5 August, 12 – 6 pm, Ecomatters Trust, New Lynn , Auckland		

NOW Home Core Team Meeting

Ecomatters Trust, Olympic Place, New Lynn, Auckland
5 August 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Karen Bayne, Bryan Walford (Forest Research) • Albrecht Stoecklien, Chris Kane (part), Roman Jaques (part) (BRANZ) • Jo Duggan (Gib) • Greg Burn (Structure) • Robin Allison (Eco-Housing, on behalf of Waitakere City Council) • Katja Lietz (Waitakere City Council) • Kimball Fink-Jensen (Qwant) • Barbara Joubert (EECA) Apologies: • Dave Moore (COHFE on behalf of Forest Research) • Louw van Wyk, Mike Collins (Forest Research)		
Science Research Questions: • "Technology Performance" should be at a higher level and encompass design • Market Transformation – use market research advice as to how specifically to get our research needs from visitors satisfied • Design Performance – survey of tenants (and of reference group); issue of technology transfer: more work to be done to make sure this is covered adequately • Request for feedback to Albrecht of any further questions and issues as a result of digesting the paper	All	
Water use discussion with Richard Taylor from EcoWater: • Has been involved with water issues for a number years • Tabled worksheet on water usages • With stormwater tank supplying hot water, 72% of needs will come from rainwater and this means potentially large storage requirement (in excess of assumption of 5,000 gallons) • Asked to check, assuming we were getting 80% of the 72% potential from stormwater, and rest from mains (automatic top-up), what the tank size requirements would be – 5,000 gallons may not be enough for this but	Richard (Katja to follow up)	

ITEM	ACTION (Who, When)	
we may be better to live with this size than go bigger • Hot water from the rainwater system for the kitchen sink raises the question of chemical contaminants (airborne sources) • Question from Richard about how we heat the hot water (answer: solar with electric booster, separate pump, can be mains pressure) • For hot water in the kitchen sink, options are small electric cylinder or filter or instant hot water • Normally it is not hot water feed to the dishwasher • Not instant hot water because don't want to bring three phase power in for that reason alone • Prefer not to have a second cylinder (extra energy used to heat) • So preference is for an in-line filter for hot water; however we have to determine that they exist! • If the in-line filter for hot water doesn't exist, then instead of a second cylinder, could feed the hot water cylinder with mains water instead (revealing research gap for using stormwater safely for hot water) • However preference is to avoid this and there are research elements to this project so use rain water anyway • In all cases, test water quality on regular basis; if rain water quality not good enough, can always put a filter in on the cold water entering the hot water cylinder; check for cost • Hot water cylinder will kill the bugs, so filter is required for chemical contaminants • Regarding sizing, Earthsong experience is that a 7,000 gallon tank can be used for six or so houses • So expect a 5,000 gallon tank to be sufficient; less would be better • BRANZ to work through the issues above (eg filter availability and cost) • Meter locations: o From street (Council one is OK only if we can monitor it electronically; otherwise our own) o Mains top up to rain water tank o Mains (cold) into bathroom o Ex pump from rain water tank o Into hot water cylinder o Outside tap o Shower (hot and cold) o Laundry (hot and cold) o Toilet • EcoWater interested in supplying the meters – Kent	Albrecht to follow up	

ITEM	ACTION (Who, When)	
PSM-T 15 or 20 mm – can be read electronically or manually; the data will be very helpful for them • Need to check whether to monitor the rain water tank level – ultrasonics could be expensive so need to investigate for cost/benefit	Albrecht to check	
External joinery decisions: • As discussed last meeting, double glazing standard aluminium for house was $3,800 + GST • Thermally bridged aluminium was a further $1,500 + GST • First timber prices received were extremely high so further investigation being undertaken by G J Gardners • Albrecht has previously imported windows from overseas cheaper than NZ; will investigate the implications (price, time) for imported windows	Greg Albrecht	
Project transition issues: • Who will be responsible for decision around fixtures, fittings and kitchen/bathroom choices (which can have material impact on our performance objectives, plus could involve reasonable amounts of work); there is a need to now identify the whole transition process from consent stage to finished house design, all fitout choices and construction project management • How will we handle the landscape design? This is a requirement of the resource consent and WCC have nominated Boffa Miskell to do it, but this needs to be managed to ensure it continues to be true to the project (well integrated)	Karen, Chris, Kimball to discuss with Russell (Owners Team discussion) Same discussion	
Paint decisions: • Preliminary exterior colour scheme put together for Community Board meeting yesterday with the help of Resene • They are also working on preliminary interior colour schemes • Advice received to date is that there is some trade-off between “environmentally friendly” paints and standard paints that means there may be some issues with using these paints for the exterior • Concrete floor coating – use tung oil (refer Robin Allison)		

ITEM	ACTION (Who, When)	

• Issues required to make decisions:
  o What is available?
  o Does it work?
• Need to discuss these issues with Bernie Dawson
• Then resume discussion on colour scheme with the identified supplier from that process; meantime don't use up more of Resene's time
	Karen	

Materials choices worksheet:
• Very necessary process
• Every product required to be considered on every dimension
• Each team member to review and add comments in after considering the comments made to date
• Columns to be modified to include:
  o Part of house
  o Material/system
  o Sustainability framework dimension
  o Team member's name (one row to be added by each team member if someone else has already commented)
  o Score (+,0,-)
  o For each of "Manufacturer/Industry Association claim", "Independent Report", "Anecdotal Evidence" (subject to confirmation):
  ▪ Comment(s)
  ▪ Reference(s)
• Master document to be handed from organisation to organisation, with the first two being FR and BRANZ; expected completion timeframe by them is two weeks, at which point the document should be > 80% complete
	Kimball
	
	Roman
	
	Kimball	

Next Meeting: • To be determined	Chris, Karen, Kimball to discuss tasks and timeline from here	Thu 7 Aug, 11.30 am

NOW Home Core Team Meeting

Kingsgate Hotel, Hamilton
6 October 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Karen Bayne, Mike Collins (Forest Research) • Roman Jaques (BRANZ) • Jo Duggan (GIB®) • Greg Burn (Structure) • Annika Lane (WCC) • Robin Allison (Earthsong EcoNeighbourhood, on behalf of Waitakere City Council) • Kimball Fink-Jensen (Qwant) • Barbara Joubert (EECA) Apologies: • Albrecht Stoecklien, Chris Kane (BRANZ) • Louw van Wyk (Forest Research) • Katja Lietz (Waitakere City Council)		

ITEM	ACTION (Who, When)	
Materials Database: • Still need more work done to ensure this represents the best efforts of the team • Everyone to consider the database as it exists to date and add any further information across the dimensions of the sustainability framework • Areas of priority: o Roof: clay tiles, concrete tiles, long-run steel o Framing: steel and wood; any comments that distinguish between douglas fir and radiata should be included in the individual species' row; if they relate to wood in general, they should be placed in the "wood" row o Cladding: fibrecement planks, fibrecement weatherboards (linnea), timber weatherboards, brick veneer and Ecoply o Window joinery: wood and aluminium o Soffits: plywood and fibrecement o Insulation: fibreglass, wool (note usually mixed with eg polyester so have to comment on both) and macerated paper o Internal lining: plasterboard and hardboard (NOTE: priority areas not discussed at the meeting – any comment on these two as the priority areas?) • Colours to be used to mark additional information (can't clearly remember these – have I got them all and got them right?): o Robin – yellow (as per the version of the database attached to these minutes) o Roman – light blue o Jo - Green o WCC - Orange	All	By Thu 8 Oct, 5 pm
Landscape Design: • First chance for team to see and discuss the draft plan prepared by Boffa Miskell and WCC staff • Brief to be circulated for information • Barbara introduced some relevant Australian thinking about considerations in the landscape design choices: • Design landscaping to facilitate year round moderation of the internal climate • Minimise erosion potential • Maximise the use of recycled compost, soil conditioners and mulches • Plant indigenous flora, and where appropriate, food generating plants	Greg	

ITEM	ACTION (Who, When)	
• Design landscaping to contain at least 50% indigenous flora • Landscaping to contribute to passive building operation (eg cooling loads reduced through shading) • Incorporate water and waste water management into landscaping • Use no artificial (synthetic) herbicides and pesticides • Incorporate site waste disposal systems into landscaping design (organic and water) • Use plants with low water requirements • Much of this is already covered in the WCC Planting Guidelines which are being used by the designers • Brief covers issue of maintenance but this will be considered further in the next round of discussions • It would be desirable to add the feature elements of the landscape design to the database so we treat the key landscape decisions in a similar manner to the house decisions; ask the designers to provide a supporting explanation with the design and then we can look at how to incorporate into the database • Some concern about the lack of detail about the species given they will contribute to important considerations for the project (eg solar shelter, traffic noise, wind shelter during cold winds, desire for zero runoff) • Fence – do we want it fenced right around the site as per the design? Want a good relationship between the Sustainable Living Centre, the Ecomatters Trust house and the park itself with the NOW Home; also need to consider security requirements for occupying the house for two years • Access around the house, particularly past the tank and from the shed to the garden and lawn, needs further consideration • Where are the compost bins? • The paved areas materials need to be identified and to be consistent with the driveway • Design needs to more clearly contemplate crime prevention issues (CPTED) throughout the design (Mike Mills, WCC) • How family friendly is the design? Where do children play, how secure is the wetlands area from wandering toddlers, etc • Water tank to be kept above ground as per design due primarily to visual benefits of being seen to be managing water • Require more explanation of the wetland – why is it there and what would it look like? How do we prevent		

ITEM	ACTION (Who, When)	
mosquitoes? • No identifiable barbeque space • Generally, what distinguishes this garden as a New Zealand garden? • Indoor/outdoor living should be more liveable, whereas currently just appears to follow pergola line meaning no space for table, chairs etc • What planting will be used for the pergola? • How has wheelchair or disabled access been considered? To be discussed with Mike Mills (WCC) and Dave Moore		
Build cost progress: • Got pricing on window options through Sard (sp?); timber window pricing expensive but feeling is that there may be better priced timber options available, so all those in the group who have access to timber window pricing should get prices ASAP • Wintec has already been given the schedule a week ago so will be chased up this week • Big problem getting information out of people in the industry at present given how busy it is, but just need to be persistent • How far should we go in getting prices? • Re timber, under E2 timber will not be an acceptable solution so will have to convince WCC that it is acceptable • Other than the impact of windows, there is no additional requirements beyond the original estimate from G J Gardner at this stage	All; Greg to send window schedule to Mike and Robin Roman	
Choice of timber framing materials: • No way to judge at this time whether Douglas fir will or won't be acceptable under the new 3602 so we should make a choice based on our best judgement and not worry about it • Talk to supplier involved in Earthsong about difference in pricing for new planned houses as a benchmark on cost difference	Robin	
Drawings: • Distribute version 7A to team (as used at Community Board meeting) • Send ArchiCAD document to Greg	Greg/Kimball Barbara	
Distribution List Reminder: • **Remember to copy everyone in the team on your**		

ITEM	ACTION (Who, When)	
emails of information that could lead to a decision about materials! • The list I use is as follows (please check your own records for completeness): o Albrecht Stoecklein: albrechtstoecklein@branz.co.nz o Annika Lane: annika.lane@waitakere.govt.nz o Barbara Joubert: latitudes@paradise.net.nz o Bryan Walford: bryan.walford@forestresearch.co.nz o Chris Kane: chriskane@branz.co.nz o Dave Moore: dave.moore@cohfe.co.nz o Greg Burn: structure@ihug.co.nz o Joanne Duggan: Joanned@gib.co.nz o John Goodchild: john.goodchild@eeca.govt.nz o Karen Bayne: karen.bayne@forestresearch.co.nz o Katja Lietz: katja.lietz@waitakere.govt.nz o Louw van Wyk: louw.van.wyk@forestresearch.co.nz o Mike Collins: mike.collins@forestresearch.co.nz o Robin Allison: ecohousing@xtra.co.nz o Roman Jaques: romanjaques@branz.co.nz		
Next Meeting: • Suggested date is Monday 20 October at 10.00 am – 4.00 pm in Auckland (exact venue TBA, but will try for Ecomatters Trust) • Included on the agenda will be: o Update from Russell Burton about how NOW Home is to transition into Beacon o Market and promotion development that Stephen McKernon has been doing o Further discussion of science questions behind this project and how they relate to Beacon objectives	Kimball Kimball	
Owners Team Meeting – items suggested for discussion: • Resource consent information pack • Role of Housing NZ going forward		

NOW Home Core Team Meeting

Ecomatters Trust, Olympic Place, New Lynn, Auckland
22 October 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Mike Collins, Louw van Wyk (Forest Research) • Dave Moore (COHFE, on behalf of Forest Research) • Albrecht Stoecklien (BRANZ) • Jo Duggan (part) (GIB®) • Greg Burn (Structure) • Katja Lietz (Waitakere City Council) • Robin Allison (Earthsong EcoNeighbourhood, on behalf of Waitakere City Council) • Kimball Fink-Jensen (Qwant) • Barbara Joubert (EECA) Apologies: • Roman Jaques, Chris Kane (BRANZ) • Karen Bayne, Bryan Walford (Forest Research) • Annika Lane (Waitakere City Council)		
Materials Database: • Kimball presented the new form of the database and this was accepted as a workable database of information from which material choices could be made • Discussion ensued regarding how to make choices between materials utilising Sustainability Framework resulted in decision to: o For each material choice, the team read and absorbed all information in the database o On a scoresheet, for each material choice the team collectively scored each of the most likely 2-3 materials on each sustainability framework element, from -10 to +10 o We added up each material's score for each framework element, without weighting		

ITEM	ACTION (Who, When)	
Material choices decided at the meeting: • Roof: clay tiles, subject to being made locally and price – if not local or price too high, then concrete • Cladding: timber weatherboards • Window joinery: wood double glazing, subject to price – if too high, then revert to aluminium double glazing		
Remaining material choices: • Leadership tasks allocated to individuals as per list at the bottom of the database file • To be completed by 31 Oct • Consult others as required • Add relevant records to database to show information used in coming to decision • Fill out scoresheet as appropriate • Send database back to Kimball for compilation with others • For categories assigned to Design Team, they will make the choices at the appropriate time in the process for completing the drawings		
Build cost progress: • Windows still remain as the primary outstanding issue, but pricing to be requested from Robin's Hamilton supplier • Second price for whole house to be determined based on full material choices list	Robin	
Drawings: • Version 7A distributed to team		
Next Meeting: • Purpose is to cover the final choices for all remaining materials as discussed at the meeting • Suggested date was Wednesday 5 November, however subsequent to meeting Greg has indicated his unavailability • However in the meantime I suggest keeping 5 November free, subject to confirmation – I will see how we can still go ahead due to the pressures of time	Kimball	

NOW Home Core Team Meeting

Forest Research, Sala Street, Rotorua
10 March 2004

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Greg Burn (Structure) • Annika Lane (Waitakere City Council) • Kimball Fink-Jensen (Qwant) • Chris Kane, Roman Jaques, Albrecht Stoecklein (BRANZ) • Jo Duggan (Winstone Wallboards) • Karen Bayne (Forest Research) Apologies: • Katja Lietz (Waitakere City Council) • Robin Allison (Eco-Housing, on behalf of Waitakere City Council)		
Trade-Offs Process (attached as separate document): • A trade-off process was developed as follows: o Identify the pricing of the alternatives from the Material Choices Brief as prepared by G J Gardner o Consider the cost of each of the alternatives for a given house component and determine the team view of the option giving the most value for money against the elements of the sustainability framework o Recognise the pragmatic point that given the purpose of this house, there will have to be some tangible, visible signs of difference, otherwise it will be very hard to "sell" the house to the average person o Do not reduce options considered to be "must-haves" by consensus amongst the project team o Once limit of reductions reached without compromising the sustainability framework/design brief, consider whether the house can be reduced in size (without requiring complete redesign) to free up the cost of the extra components • The outcomes of applying this trade-off process are		

ITEM	ACTION (Who, When)	
included in the trade-offs spreadsheet • Decisions made: o Wall framing: H1.2 as Waitakere City Council unlikely to accept the alternatives o Roof trusses: while could be made out of alternative materials, frame and truss makers will be wary and will be using H1.2 almost exclusively now or in very near future o Roof: as roof tiles cannot be sourced from a locally-made source, we will revert to concrete tiles o Fascia: use Colourseel as there is insignificant benefit to justify the cost of timber alternatives given the small area involved o Floor finish: the Team considered it not necessary to have polished concrete floors throughout the house and bedrooms could be carpeted. Price to be confirmed but assumed to be a saving of ~ $1,000 over all polished concrete. Design Team to consider whether any other options are feasible eg tiles over plain concrete, embedded features o Weatherboards: actual material can be decided later and can be painted not stained if necessary o Joinery: price difference between double-glazed aluminium and double-glazed timber is substantial. The Team felt that this could not be justified for the benefits, but that inexpensive extra features such as timber reveals could be included to compensate (up to a maximum of $1,000 worth) o "Must haves": ▪ Timber weatherboards ▪ Double glazing ▪ Rainwater tank ▪ Solar hot water system ▪ Unbroken expanded polystyrene base ▪ Fusiotherm water piping • For budget purposes, it was considered that an allowance would have to be made for some extra features for selling the house. These were to be allowed for at $8,000	Design Team	ASAP
Budget Reconsideration: • GST: It was noted that the Design Brief indicated the budget was on a GST exclusive basis. On discussion the		

ITEM	ACTION (Who, When)	
Team determined that the Design Brief should have referred to the budget as being GST inclusive rather than GST exclusive on the basis that this is the "normal" way to buy a house. Therefore this was to be recognised as an error and the budget was identified as being $150,000 GST inclusive, + $15,000 GST inclusive for sustainability framework add-ons • As a consequence the original estimate received from G J Gardners was ~ $6,000 over-budget • The Team discussed the impact of build cost inflation in the period since the budget had originally been set • Assessment of build cost inflation required	Kimball, Chris, Greg	ASAP

Appendix E
Owners Team Minutes

NOW Home Owners Team Meeting

Totara Room, Waitakere City Council, Waitakere City, Auckland
17 June 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Russell Burton, Karen Bayne (Forest Research) • Annika Lane (Waitakere City Council) • Chris Kane (BRANZ) • Kimball Fink-Jensen (Qwant) Apologies: • Kevin Golding (Gib)		
This Team's Role: Russell outlined the intent of this meeting: • To establish a "Board of Management" representing the senior representatives of the companies investing in the NOW HOME • To ensure alignment of the teams • To sign off on passing through each "gate" • To protect the investment • To effect an appropriate transference of the NOW HOME into Beacon • This group will act like a Board of Management. Sign off will be effected formally		
Decision points ("gates") for Owners Team involvement were agreed to be: • Features and benefits [*done*] • Design brief [*done*] • Concept design • Filter framework • Monitoring (how, what) • Developed design • Working drawings (including QS cost) • Information base (Olympic Place version) • Builder contract • Construction commencing • Completion • Handover **(did this mean to Beacon or from builder?)** • "Virtual architect" database (strategy)		

ITEM	ACTION (Who, When)	
• Promotion/communications (strategy) • Brand (strategy) • Tech transfer (strategy) Chris Kane suggested a model of peer review at each gate. This means that when the project team present their outcome, they are comfortable they are demonstrating the best possible outcome to the Owners Team	Karen, Chris to develop Russell to sign off	ASAP
Individual Role: • Kimball as project manager is a facilitator, keeper of the timelines and carries out certain project administration matters such as minutes of these meetings		
Mission/Purpose: Agreed that: • "The NOW House research project is about building houses for the post-Kyoto environment (2012-2015), but constrained in that it can only utilise NOW materials/technologies (those currently available or able to be achieved today). "Through this project we will enable significant and sustained change in the thoughts, behaviour and uptake of ideas of all people affected throughout the residential value chain." • This is based on the first paragraph from the "Overview" section of Design Brief, plus the last item from the "Success Is" section in the Design Brief		

Elements (as per list attached to the Agenda):
• Were confirmed as being the collective understanding (see attached), subject to:
  • Add "The NOW HOUSE launch must be timed with the best monitoring and technology transfer processes in place"
  • Shift "Alignment of team actions is critical" to "Values" section of list		

Values: • Were confirmed as appropriate (subject to above; see attached)		

ITEM	ACTION (Who, When)	
Success statements: • Were confirmed as appropriate (see attached)		
Builder decision: • Team to put up builder choice proposal for ratification by Owners Team	Kimball to arrange	ASAP
Promotion/Communication, Brand and Technology Transfer: • Concern was expressed that the timing of the NOW HOME and the timing of delivery on communications were not aligned: o Kevin is addressing the communications issue and will bring it back to the team o Review of alignment of timing o Russell noted we will not progress to stage II (delivery) until we have aligned the programmes and have a clear pathway to also deliver the communications/technology transfer objectives - AGREED	Kevin Russell/Kevin	ASAP ASAP
Project Timing: • Target land owner approval at New Lynn Community Board meeting of 4 August • Consents issued as soon as possible after that, with expected date being subject to when consents are lodged • Construction can commence after consents issued, assuming builder contract signed • When referring to timing for completion of construction, current position is “towards the end of the year”		
Next Meeting: • When concept design is ready to be presented for decision	Kimball/Greg	When concept design available

NOW HOUSE OWNERS MEETING

17 June 2003
4 pm at Waitakere City Council.

Outcome:

- Confirm current status and actions moving forward
- Alignment of team and leader responsibilities
- Protecting our investment
- Alignment to greater Beacon vision.

AGENDA

1. Confirm / amend agenda / confirm outcomes
2. Solidity of foundations
    a. Confirm / amend key issues (below)
    b. Implications going forward
    c. Confirm / amend values and success
    d. The time – quality tension.

3. Moving forward
    a. Individual and team responsibilities
    b. Who and what
4. This teams role
5. Other

Elements:

1. The NOW HOUSE will be mapped into Beacon when Beacon goes live.
2. The NOW HOUSE is a key milestone in the Beacon journey
3. The NOW HOUSE launch must be timed with the best market / communication package in place.
4. We are gathering valuable data on this journey and it needs to be protected and mechanisms developed to capitalise on it.
5. Alignment of team actions is critical.

Values:

- Setting a benchmark for best practice.
- The performance requirements are better than Code minimum.
- Make the best decisions possible given appropriate and reasonable analysis. (Remember the 80:20 rule).
- Describe your goal, how will you measure success and how will you confirm success.
- Behind every decision is a story – ensure your story is in the log.
- Making a mistake is forgivable, not trying is not forgivable.
- The best personal ethics – we do not accept personal gifts – any gifts to the project are officially notified and recorded, and included in the budget.
- All material and system decisions to be run through the decision filter.
- Unless there are strong reasons why not we use New Zealand-based biologically-derived sustainable and renewable resources.
- It is difficult that's why we have the best team.
- You CAN be SMART and INNOVATIVE within a NOW framework.

Success is?

Success	Performance indicators.
A HOUSE that sets a new "benchmark" for understanding sustainability in the framework of affordable and desirable.	▪ Detailed performance criteria with at least 90% of these criteria met. ▪ We break the mould – eco and sustainable are affordable and desirable ▪ National interest in the house is very high ▪ We achieve innovation within a NOW Framework.
A HOUSE that requires significantly less water, energy, resource to operate than a "typical" house.	▪ We achieve 60% of "typical" resource demands.
We will have created a decision framework that we can build into a powerful future tool.	▪ We have developed a baseline decision filter system. ▪ We will have developed a sustainable framework of real and meaningful value.
We will have exposed knowledge gaps.	▪ Created a log of key issues relating to buildings that are otherwise not dealt with.
Created opportunities for the future.	▪ A list of great ideas ready to be tested in retrofit or new build solutions.
We know why we have made ALL decisions.	▪ Every decision and issues affecting those decisions are documented.
We have created a platform that will set precedents for House design.	▪ Developed a system for House design ▪ Set protocols for design focussed on sustainability.
We have captured the attention of the Nation.	▪ Media exposure ▪ Web hits ▪ Demand for information.
We will achieve significant and sustained change in the thoughts, behaviour and uptake of ideas of all people effected throughout the residential value chain.	▪ Code changes and bylaws reflect project aims and outcomes ▪ People come to us as the source of best practice in residential building

NOW Home Owners Team Meeting

EECA, NGC House, 44 The Terrace, Wellington
24 July 2003

Minutes

ITEM	ACTION (Who, When)	
Attendance: • Russell Burton (Chair) , Karen Bayne (Forest Research) • Annika Lane (Waitakere City Council) • Chris Kane (BRANZ) • Kimball Fink-Jensen (Qwant) • Greg Burn (Structure) • Kevin Golding (Gib) • Jo Duggan (Gib) Apologies: • None		
Housing NZ participation: • Need to clarify their involvement in Beacon and on the Owners Team meeting • John Tocker or Louise Hoather to be contacted	Russell	Immediate
Agenda: • Add "Other Issues"		
Minutes of Last Meeting: • "Handover" means from the builder to us • Confirmed as true and accurate record		
Matters Arising: • Builder choice: o Paper tabled o Kevin outlined the context for the process; examination of Club Gib® builders; proceeded to narrow down; investigated Fletcher Residential but they didn't believe they could be the strategic partner longer term; next obvious choice was G J Gardner o Bob Greenbury is the key contact and project manager from G J Gardner for this project o The team questioned elements such as that the builder choice was critical part of developing the whole picture – they will be part of the tech transfer approach. The experiences at BERU at Queensland verified this. o Annika noted that we will be quizzed on the choice of builder – particularly if it is not a local builder – hence the need for solid rationale. o **Choice of G J Gardner (Manukau) agreed**		

ITEM	ACTION (Who, When)	

Peer review progress – Robert Vale
• Update from Greg:
  ◦ Met with Robert Vale; he had read design brief and asked questions; discussed site issues; then went through Concept 6
  ◦ Overview of his feedback is not particularly innovative but would be a big improvement on typical house construction
  ◦ Made some design improvement suggestions
  ◦ Felt design had come together well for size of house and approach we were taking to the market (eg people could recognise it as a typical house, we could sell it as a "more efficient etc" house and not having to be especially "operated" by occupants)
  ◦ Feeling he was going to be more interested in how we develop the design into specific features that are of interest to him
• NOW and FUTURE house perspectives: discussed in the conversation, but not evident in his comments
• Robert's comment about lack of innovation were discussed; the key question is what innovation has really been achieved over say 30 years?
• This is a good question with a scope beyond this group and to the industry
• Issues involved include focus on cost cutting, "big bang" improvements
• **Action: Best way to maximise value of Robert's input to be considered by team members**
• **Chris expressed concern about IP issues – as Vales about to embark on a similar project and we have to ensure at least there is no possibility of apparent transference of IP. Chris to discuss with Russell**
	All;
	Chris and Karen to coordinate
	
	Chris / Russell
		
		ASAP

Peer review progress – John Sutherland: • Interested in particular in design aspects • Pleased Robin Allison involved • Likely to get his feedback early next week		
Design Update From Today: • Addition of translucent roof over dining and second living: Kevin asked about rain noise from this; glazing options • Kitchen glazed panel to be switched with fridge • Robert Vale's suggestion of glazed panel at door (air lock) to be adopted • Change of roof in garage to rafter roof with roof light • Highlight window in entry – further cross-ventilation, but being narrower and higher it won't prevent furniture being put under them		

ITEM	ACTION (Who, When)	
Material choices discussed at Core Team meeting: • Concrete roof tiles • Douglas fir wall framing • Douglas fir roof framing • Double glazed windows (final specification yet to be determined – see below) • Lawsons Cypress pergola timber • Colour steel guttering • Concrete floor • Fibreglass insulation • Polypropylene downpipes • Concrete strip driveway Outstanding: • Paint (sub-team to consider) • Timber or aluminium joinery (preference for timber, but cost in conjunction with glazing options to be discussed with Gardners) • Fascia (design team to choose) • Soffits (design team to choose) • Garage door (design team to choose)		
Owners Team Comments on Design: • Kevin: check wood joinery for acoustic performance; lighting? Artificial lighting plan to be devised by Barbara Joubert/BRANZ, utilising based on sun angles; ribraft floor? Issue dealt with by floor choice today • Colour scheme – working with Resene so far but with the question over paint company having arisen today, Chris will talk to the appropriate BRANZ technical person • Reservoir under deck? Thought to be considered further by Design Team • Russell: pleased with job to date; answered Robert's comments well; use of stormwater? (Greg) aiming not to put any into the stormwater system; KPIs we expect to be a minimum target • Russell: Other stakeholder buy-in: engage John Tocker (Housing NZ); Jeanine Langvik and Michael Taylor (Ministry of Health) should be engaged as soon as possible from now; Police should be consulted as well Are there other stakeholders we should consult? • From Resource Consent point of view, approach Bay Olympic Soccer Club and Lynfield Harriers and probably the service station; liaise with Gretchen Schubeck from Ecomatters	Chris Greg Annika	
Design Sign-Off: • **Agreed that the process and outcomes to date be approved**		
Filtering Framework:		

ITEM	ACTION (Who, When)	
• **Approved to date on expectation that it will be further developed**		
Monitoring Brief: • **Cannot be approved at this stage due to issues noted in Albrecht's paper** • Tenancy term impacts on research question; feeling of Owners Team is that one year rotations would be more manageable; raises issue of whether the project will continue beyond two years (for future consideration) • Monitoring should be part of developing better tools and IP in monitoring; this knowledge will contribute to FUTURE house • Role of tenant in monitoring: goes to promotion strategy • Chris requires key direction on each of the main points in the paper from promotion perspective, in order to approve the specific monitoring plan • Note the cost allowance ($15,000 + GST) is there to cover capital items		
Promotion Strategy: • Promotion is an issue for Beacon both in terms of ownership for the NOW Home and from their own perspective • Clarity requested from WCC of the process and consultation to be undertaken • EECA, WCC and HNZ declined opportunity to fund the first round • It was noted that there were some internal communication issues around the PR / media approach. • Russell noted that there are three issues to address 1. The immediate issue of NOW HOME becoming public information – 2. That Beacon as a Consortium is being announced and 3. That we need to line up the tech transfer aspects with the opening of the NOW HOME. Items 1 and 2 extreme urgency. • Therefore FR, Gib® and BRANZ have underwritten the first round of branding work (on expectation that will be refunded by Beacon); Bryan Dingwall responsible and will contact all participants regarding meeting next Friday • The media approach will be agreed upon next Friday but expect that in the first instance media attention should be diverted to FR • Kevin is preparing a sample media release for tabling next Friday. • Brand development documents tabled • Annika noted that the vision is not just about retrofitting houses but building future communities. • Chris Kane to talk to Bryan Dingwall regarding aligning brand and vision		

ITEM	ACTION (Who, When)	
	Chris	
Other Business – Archiving: • Karen to act as repository of information to date, with Beacon to ultimately take over (IP being generated) • All key documentation to be copyrighted to participant organisations – action for all Team members and for Kimball to convey to Core Team	All	
Other Business – Waitakere / FR /Ecomatters MOU: • Unsigned as yet; provides for FR to have right to transfer (to Beacon) • Suggestion was that it will likely be signed as it stands • Ecomatters Trust very keen to be the purchaser		
Other Business – Next Projects: • Issue left on the table about how we structure the work going forward (eg THEN home team) • There will be a meeting on August 4 and a small celebration • The next trigger for the owners team to be defined (when is next major outcome)	Kimball / Russell	

Kimball Fink-Jensen <kimball.fink-jensen@qwant.com>
14/10/2003 06:53
Please respond to
kimball.fink-jensen@qwant.com

To
Robin Allison <ecohousing@xtra.co.nz>, John Goodchild <john.goodchild@eeca.govt.nz>, '"Roman Jaques"' <romanjaques@branz.co.nz>, '"Albrecht Stoecklein"' <albrechtstoecklein@branz.co.nz>, '"Annika Lane"' <annika.lane@waitakere.govt.nz>, '"Barbara Joubert"' <latitudes@paradise.net.nz>, '"Bryan Walford"' <bryan.walford@forestresearch.co.nz>, '"Chris Kane"' <chriskane@branz.co.nz>, '"Dave Moore"' <dave.moore@cohfe.co.nz>, '"Greg Burn"' <structure@ihug.co.nz>, '"Joanne Duggan"' <Joanned@gib.co.nz>, '"Karen Bayne"' <karen.bayne@forestresearch.co.nz>, '"Katja Lietz"' <katja.lietz@waitakere.govt.nz>, '"Louw van Wyk"' <louw.van.wyk@forestresearch.co.nz>, '"Mike Collins"' <mike.collins@forestresearch.co.nz>
cc

Subject
Next Meeting and Next Steps

Hi Team

We met with the Owners Team today and updated them on progress. We went over the materials database and how we would make decisions based on the information collected. I demonstrated a new version of the database that I have been working on, which is attached to this message. The purpose of transferring the information you been providing to the new format is that it will make the confirmation of the decisions much easier, instead of to trying to compare information within the previous format. It will also provide a basis on which the ongoing development of the database will be much easier. You can see the way all the information about

the roof has already been put into the new format, with one row for each individual piece of information.

Over the rest of the week I will continue to transfer the information submitted into the new format. Then next week we will have another team meeting to go through the database and confirm our material choices. The process for that will be that individuals will be allocated a house area (roof, framing, cladding, etc), go through the database for that area and identify what they think would be the best option. Then we will come back together as a group and go over the reasons for the proposed choices. (I gave the Owners Team a demo of how I saw that working and there seemed to be agreement that that should work.)

If you have any information you have not yet submitted, please record it in the new format, filling in each field. The entries at the top are there so that you can copy the appropriate one down, if you want a shortcut way of filling in a field. At the end of the database I have provided one row of each combination of house component and material choice – if you have more than one piece of information for a component (which is almost certain if you have any at all) then insert additional rows as required.

The next issue is confirming a meeting date. I propose we choose from Tuesday, Wednesday or Thursday, based on information from Katja and Chris about days they are not available. Please let me know TODAY if you have any preferences, and I will do my best to nominate a day that works for most people. The venue will be Auckland, probably at Ecomatters Trust if available (Annika/Katja, can you let me know if it is available on those days?)

Thanks

Kimball  Material Choices v8 - Extract.xls

Kimball Fink-Jensen <kimball.fink-jensen@qwant.com>
25/03/2004 23:03
Please respond to
kimball.fink-jensen@qwant.com

To
Robin Allison <ecohousing@xtra.co.nz>, 'Annika Lane' <Annika.Lane@waitakere.govt.nz>, 'Katja Lietz' <Katja.Lietz@waitakere.govt.nz>, Greg Burn <structure@ihug.co.nz>, Chris Kane <chriskane@branz.co.nz>, 'Albrecht Stoecklein' <AlbrechtStoecklein@branz.co.nz>, Roman Jaques <romanjaques@branz.co.nz>, Joanne Duggan <Joanned@gib.co.nz>, Karen.Bayne@ForestResearch.co.nz
cc

Subject
NOW Home Minutes, Update Since Meeting and Request for Plan B

Hi Team

Sorry about the delay in the minutes – there has been action occurring since but I thought I would have had progress to report a bit earlier and had intended to send it out at the same time.

Build cost inflation: I have met with Chris Kane and Ian Page (BRANZ economist) and we have discussed the build cost inflation issue. We agreed that BRANZ should identify the estimated increase in build cost and we also discussed some of the elements that they would be considering. BRANZ's comments have come back and are as follows:

> There has been a 10.9% increase in the value of new houses across the country, although this also takes into account land value, which we are not. In Auckland, this will be higher due to land prices.
>
> In Auckland, due to material supply and labour market pressures, it is believed that the cost of the built house will have increased approx 2% further than the rest of the country.
>
> Because of the weathertightness problems experienced around the country, and subsequent revisions to NZS 3602, 3640, and NZBC clauses E2 and B2, it has been assessed that the cost of construction has increased by approximately 2.5%
>
> We believe that an acceptable cost to the purchaser (and hence NOW budget) increase for the building since January 2003 is of the order of 9%.

House size issue: When the above 9% is multiplied through our formulae in the trade-off spreadsheet, this would suggest a reduction 7.5 m² in the size of the house would be sufficient. At the meeting Greg talked about this sort of reduction as likely to be doable.

However, he is in discussion with G J Gardner as it appears that the feeling that their prices for the base design would hold in spite of the general increase in build cost probably doesn't apply to all aspects of the house eg where subcontractors are involved – and there may perhaps be an increase in base price after all. He is trying to get something more certain about this nailed down with Gardners.

Greg is also working through possible reductions in size as per the meeting suggestions. However the extent is dependent on the getting the base cost issue sorted out. To give you

some idea of what we are talking about: say the net effect of the Gardners discussion was that the 9% above became 5% (ie Gardners report back a 4% increase in the base house cost), we would then be talking about a 15 m² reduction.

Despite the best efforts of the design team, there is the risk that this may be too much if we still wish to retain the design shape and the liveability aspects of the house. **Therefore I think it would be prudent for the rest of us to consider a Plan B.**

I suggest that you each consider the spreadsheet attached with the minutes, which you will recall is the trade-off spreadsheet we developed in Rotorua. Please rank your preferences for the removal of features we have chosen to say ”must” be included. If you can get those back to me by Monday evening, I will report back what the average rankings are. I think we have to be realistic, just as people getting a house designed and negotiating the cost with the builder would have to be, and acknowledge we cannot necessarily have everything we want.

However it may not come to this – as I say, it is a Plan B.

I look forward to your responses!!

Regards
Kimball
[attachment "Final Tradeoffs.xls" deleted by Karen Bayne/ForestResearch/NZ] [attachment "2004-03-10 NOW Home Core Team Meeting Minutes.doc" deleted by Karen Bayne/ForestResearch/NZ]

Appendix F
Reviews of the NOW house Design Brief

FREE POWER LTD.
P.O. Box 10-1207
N.S.M.C.
Auckland
New Zealand

Phone +64 9 4275206 Fax. +64 9 4275208 Cell 021 633999 Email info@freepower.co.nz

COMMENTS ON DETAILED BRIEF FOR OLYMPIC PLACE NOW HOME

Authors: Breustedt, Emerson, Howell, Lord.

General remarks

If the results from the NOW HOUSE should be the basis for further buildings, all the most important criteria should be addressed in the briefing .

Two important parts are missing.

1. 'The user' - house owner or tenant.

Consumption and waste of resources in the domestic area is mainly caused by inattentiveness and ignorance of tenants and house users. Technical solutions for saving resources are available, but are not applied and used in adequate manner.

Besides this detailed briefing it is necessary to develop an education package for the house user in form of a product manual (which we know from other products like washing machines, dish washers).
On the other hand the house user should get relevant information about his resource consumption. The theoretical possibility of having access to his meter box is not enough.
Offer appropriate means of giving the house owner the best and quickest information about his use of resources to enable him to make the right decisions in the every day use of resources.

2. Space heating

The demand for space heating is effected by heat losses through transmission and by heat losses through ventilation. The heat losses through uncontrolled ventilation are not addressed in the briefing and are not in the monitoring process.

Detail

Page 5 Project Aims
1.a To meet the needs of the next decade it is necessary to offer not only technical solution. We have to include the decision maker on site (end-user) in the project.

Page 6 Include whiteware in appliances. To allow the occupier to choose appliances would likely result in less efficient and resource hungry choices. The star rating itself is no guarantee of choosing the best options.

Page 7

What is meant by 60% of "typical" resource demand . Specific data would be better.

Page 8
Affordability/Target
$ 150,000 for how many m² ?
Hot water consumption target 30 liters/ person day
Total costs over 50/100 year missing.

Page 9
Air exchange rate measured on site under normal wind conditions should be between 0.4 and 0.6/h

Page 10
We agree that .64 Kgs/Kwh is a reasonable figure.
Suggest single target for CO2 regardless of fuel used. Primary energy use (not end energy use) should be factored into this target.

Page 12
Cost and energy required to relocate house on slab needs to be calculated.

Page 13
Water saving fittings for taps and showers etc. should be venturi type to give the impression of good flow by introducing air-mixing to maintain pressure.
Provide minimum of X m³ for rainwater collection and use. This should be specified
Ventilation methodology – there should be a check of air-tightness of the building envelope.
Roof and attic dimensions suitable for possible solar thermo-siphon system.
Water reduction should be expressed in specific litre targets.
Better to go for *Airtight*, how can you control *breathable*!

Pages 16- 19 layout not suitable for analysis, subject headings need to be included in the table.

Page 22
NZ Standard for Solar water heating immature compared to Australian standard. We would suggest compliance with the Australian requirements in this case would be preferable.

Page 24
Define occupancy demand more accurately. Peak demand must be defined and sustained by the systems.

Page 28
4.3 check expected life time of recycled material
4.6 any composting system should be vermin and biological activity proof.(Location should comply with NZ Health requirements).

Page 30
5.3 include simple mechanical ventilation to be used during heating period, passive system will not work under the climatic conditions of New Zealand

Page 31
6.1 – Minimize south facing windows and double glazing should be installed at these windows at least.
Specific goals in kWh/m² are necessary
Include Surface/Volume ratio as design specification

Page 32
6.5 insulate total area of slab of ground floor
floor coverings e.g. carpet will only delay the thermal storage response and should not be ruled out.
6.6

How best to heat a house in Auckland, if in build heating is not specified?
We recommend extended solar collector system in conjunction with gas or solid fuel boost to drive low temperature radiation system.

Heat pumps are inefficient compared to other available technology!
Health authorities recommend heating in the Auckland area for people with asthmatic conditions.

6.7 Should not be required. In-build heating is more efficient and preferable.
6.8 Kitchen should be located on the east side.
We are puzzled by the comments about east and west facing windows.

Page 33
7.1 Space heating (climate dependent) how much energy is necessary to cover transmission losses and how much is necessary to cover losses through uncontrolled ventilation?
The Solar Industry Assn. is not a mature organisation compared with its counterpart in Australia.
7.4 open vents are not necessary.
7.8 white-ware should be genuine low energy by international standards and specified in the design.
7.10 design specification: zoning, e.g. southern buffer zone with temperature allowed under 18 degree (all times in winter)

Page 35
8.1 Lux requirements should be specified.
8.4 shade controlled for east windows.

Page 36
Double-glazing impacts energy consumption but extends also the buildings life and contributes to a healthier living environment.

Page 37
9.3 ‘On demand’ pressure pumps for grey or rain water system should only be used if the duty cycle is low otherwise they are very energy inefficient unless there is a large pressure store.

Page 39
We would not recommend a fire sprinkler system for this dwelling.

Page 40
11.1 passive vent systems will not work satisfactorily, controlled ventilation with a sealed envelope is the right option. Occupant education is essential as around 20% energy reduction is achieved by this means alone.
11.4 these RH targets cannot be met without controlled ventilation and heating.

Page 42
First paragraph again controlled non-passive ventilation essential.

Page 43
13.8 Rainwater tank overflow and Landscaping should provide for swales and water permeable paving to take water for irrigation as and if required.

Page 46
15.1 there needs to be an education package delivered with the house to the owner. This would be similar to a product manual supplied with an appliance. The occupier should have visible feed back on consumptions as this will optimize the behavioral contribution to energy conservation.

Page 47

Requirement for RCDs not mentioned.
Avoid electric dryer installation if possible.

Page 48
Reticulated gas is the best option followed by LPG. Monitoring of either is straightforward. Thermo-syphon solar hot water, although a little less efficient, has no on going running costs and is less prone to system failure.

Page 49
Water consumption of gravity feed systems is not difficult to monitor
.

Page 50
Monitoring water use should include zone monitoring of showers, laundry, kitchen and irrigation to gardens. In addition to Insolation monitoring, wind speed and direction recording by means of an on-site anemometer should be included as this affects solar collector and ventilation performance. Measurement of external humidity should be taken.

Final Thoughts

Budget should be finalized after the working drawings are done.

Consideration given to ‘buildability’ will allow more capital for energy saving measures.

Roof design should anticipate solar collectors at optimum performance angles (45° +) and allow for space in the roof cavity for the possibility of thermo-syphonic preheat.

Design should account for ease of possible future extensions.

..oo0oo..

Forest Research Institute

Notes on the "Now House" programme

Comments by Associate Professor Dr Robert Vale, University of Auckland, School of Architecture

Based on the document "Detailed Brief for Olympic Place NOW Home" dated May 2003.

General comments:

The document starts with the following statement " The NOW House research project is about **building houses for the post-Kyoto environment** (2012-2015), but constrained in that it can **only utilise NOW materials/ technologies** (those currently available or able to be achieved today)." This statement seems to be contradictory in two senses in the light of the subsequent description of the NOW House project.

The first contradiction is that in "the post-Kyoto environment" it will not be enough to build houses which reduce current resource demands by only 40% to 50%, particularly in terms of energy consumption. If all new houses from 2004 onwards were built to the NOW House standards, New Zealand's housing-related greenhouse emissions would continue to rise. The government's commitment to the Kyoto Protocol requires a reduction in emissions. Even if all new houses from 2004 onwards were to be zero-emissions, the Kyoto commitment would not be met, all that would happen would be that the situation would remain static. At least there would not be a rise in emissions. An important part of the NOW House and subsequent research needs to be the consideration of technologies that can be applied to the existing housing stock to reduce its current emissions and its overall environmental impact.

The second contradiction is the assumption that "NOW materials/technologies" constrain the design of a relevant post-Kyoto house. There is no reason to suppose that this is the case, and to claim this sounds more like a failure of nerve rather than a statement of fact. The following case study from the Australian Greenhouse Office's "Your Home Technical Manual" is an example of serious post-Kyoto houses built using the technology of the 1990s.

"This UK case study demonstrates that, even in a climate considerably colder than any found in Australia, homes requiring no energy from an external source can provide year round thermal comfort and a healthy environment for occupants. The case study also demonstrates how almost every recommendation in the fact sheets has been applied in a single project that was built at reasonable cost."

http://www.greenhouse.gov.au/yourhome/technical/fs77b.htm

In the light of the statement - "The NOW House project aims to research and encapsulate what we know today about best practice in meeting the needs of the next decade – the ‘post-Kyoto’ society" the project as described does not seem either to meet the requirements of the post-Kyoto society, nor to represent current best practice. The NOW House could have been built in the 1970s with 1970s technology and could easily have achieved the same, or better, performance.

Having said that, the NOW House is likely to represent an improvement over the existing pattern of NZ houses in terms of its energy consumption and its water demand. The criticism is based on the fact that the document seems to be trying to make more of it than seems appropriate. Once one accepts the project for what it is, the overall process and design aims seem to be well thought out (see detailed comments below)

Detailed comments

Page 4: It seems unlikely that a good outcome will be achieved with such a large team involved in the project. Design does not often work successfully when done by a committee, as decisions end up being

based on the lowest common denominator of the group. This may be one reason why the targets for this design are so conservative?

Pages 8 to 10: It is excellent to see that the design targets are set out so clearly and related to numerical values so that performance can be measured upon completion of the house and related back to the target values.

Pages 12 to 15: Similarly the Design Constraints are clearly established.

Page 12: In the UK it was found that "wired" or "smart" houses used significantly more energy than conventional houses, particularly where systems were used to allow the house to operate automatically – it will be essential that any automation of the house does not lead to higher energy consumption. From the description it sounds as if the "wired" nature of the design is mostly to do with passive access to services and the availability of cabling, so there should not be a problem.

Page 28: Grey water recycling is a difficult issue. Grey water, even if only from baths/showers/laundry (ie not the kitchen sink) develops an unpleasant sulphurous smell after being stored for only 24 hours or less. Most available grey water recycling systems make use of chlorine dosing to treat this problem, but the use of chlorine would be undesirable in a house that was endeavouring to represent a reduced impact on the environment. It is always preferable to try to reduce demand (such as with the proposed rainwater tanks) rather than to try to recycle water.

Page 32: The proposed R-values look adequate, but there seems to be no reference to the proposed R-value for the glazing.

Page 33: The same comment as for grey water recycling applies to waste heat recovery from water – it is always cheaper and more reliable to reduce demand. I would suspect that it would be very hard to make a case for waste heat recovery from hot water in a single dwelling, unless the occupants were fantastically wasteful in their hot water use.

Page 34: I would have liked to see more detailed specification of the appliances for the house, particularly the refrigeration, laundry and cooking appliances. Four star performance does not seem very challenging for the appliances. Will a front-loading European washing machine be used to save water? Will cooking be all-electric (better for indoor air quality)? Similarly there is little information on the proposed lighting, except for mention of either 50% or 100% CFLs.

Page 39: Hard-wired smoke detectors can be very high energy users. The three required by the UK Building Regulations in the Autonomous House, Southwell, Nottinghamshire, used more energy than the low-energy refrigerator. It seems excessive to demand hard-wired smoke detectors rather than battery ones, which are cheap and familiar.

Page 47 ff: The monitoring proposals look excellent, and draw on BRANZ's huge experience with the HEEP project. Good monitoring will be the most valuable outcome of this project.

The plans

The proposed design was provided as a set of A4 sketches. The elevations represent a house that is appropriately conventional in appearance for this project. The emphasis throughout the project on affordability and the market is commendable. If the public will not accept more sustainable houses there is little chance of getting them built (although my personal experience is that once people are offered "a house with no bills" they will accept a lot more differences than they will for "a house with reduced running costs").

The plan is very good, with plenty of space achieved out of a relatively small area by removal of circulation and by controlling the size of bedrooms. I would suggest the creation of a draught lobby at the

front door (there is plenty of room for it within the existing plan) and a second door inside the main bedroom for acoustic privacy from the live/play space adjacent. Sealing of the door into the kitchen from the attached garage will be important to avoid indoor air quality problems from the car fumes.

Conclusions

The project seems to be well thought out and the briefing document is thorough. However, the intende performance of the house seems disappointing – the desired energy reduction could probably be achieved by taking a conventional NZ Building Code house, installing a reasonably sized solar hot water system, and specifying European Class A appliances and compact fluorescent lights. Where is the innovation? However, the construction and monitoring of the house should provide some useful data when combined with the relevant HEEP findings.

Robert Vale
University of Auckland
23 July 2003

Appendix G
GJ Gardner Build Estimates

NOW HOUSE OLYMPIC PLACE NEW LYNN

31 May 2004

COSTING SPECIFICATION

Floor	**concrete**	***1**
Roof	**concrete tiles**	
Wall framing	**radiata H1.2**	
Exterior cladding	**radiata H3.2 bevel back**	
Exterior joinery	**double glazed aluminium**	
Fascia	**color steel fascia gutter system**	
Garage door	**color steel sectional overhead**	
Entry door	**timber in aluminium frame**	
Soffit	**Hardiflex**	
Down pipes	**valsir polypropylene**	
Building wrap	**Framegard 2**	
Interior linings -wall	**10mm Gib**	
-ceiling	**13mm Gib**	
Insulation	**fibreglass batts**	
Floor finish	**polished coloured concrete**	***2**
Interior finish –wall	**paint**	
-ceiling	**paint**	
Interior doors	**paint finish hollow core**	
Tap ware	**low flow**	***3**
Finishing lines	**FJ pine**	
Electrical	**builder standard**	***4**
Kitchen fittings	**builder standard**	***5**
Vanities	**builder standard**	***6**
Water pipes	**Fusiotherm**	
Rain water tank	**plastic**	***7**
Solar water heating	**builder standard**	***8**

NOTES

1 Coloured polished concrete with plain concrete to garage. Alternative quote required to reduce cost of this option – if cost can't be reduced will need to change specification to use carpet to bedroom areas to reduce overall cost. Under floor EPS insulation to be included.

2 As above.

3 Builder to specify low flow tap ware -to be approved by Now House Design Team.

4 Builder to provide electrical plan- to be approved by Now House Design Team.

5 Kitchen plan is being prepared by Now House Design Team –builder to allow standard kitchen allowance and then to confirm price of kitchen when design is completed.

6 Builder to allow for standard vanities –to be approved by Now House Design Team.

7 Builder to include all relevant accessories, pumps, etc.

8 Builder to allow for solar water heating system-to be approved by Now House Design Team.

10TH.June 2004

MR GREG BURN
Structures Ltd
P.O.Box 62
Westpark Village
HOBSONVILLE

Re:- **Now House – Olympic Place - Lynfield**

Good morning Greg

Thank you for the opportunity to submit our tender for the construction of a residence at the above address. Our tender is based on the developed design plans Concept 7B dated May 2004, comprising sheets 2 – 5 inclusive. We have incorporated in the tender the following requested variations:-

- Radiata bevel backed weatherboard treated to H3.2
- Double glazed aluminium Joinery. Beaded sashed allowed with no passive venting.
- 13mm Gib. Board to all ceilings
- Polished concrete floors to all areas except, garage and bedrooms. Standard concrete used.
- Aquatica Smarte range of tapware except to hose taps and laundry tub
- FusioTherm piping throughout
- 15000 Ltr. Rainwater Tank with pressure pump and Tank Vac fitted
- Sureflow Solar hotwater system with 280ltr. Mains pressure HWC
- Timber entry door
- Valsir polypropylene downpipes

Our tendered price for this dwelling is $183880.00 GST included [one hundred and eighty three thousand eight hundred and eighty dollars only] , it is a fixed price and includes the following:-

- A quote of $5600.00 for the Sureflow solar heating hot water system
- 20 light fittings including 4 pendant fittings to raking ceilings and a PC sum of $225.00 for light fittings for the pendant units
- 15 double power points and 1 x computer outlet
- 5 x smoke alarms
- 2 x telephone points and 2 x TV outlets
- Showerwell combo shower trays and linings with aluminium pivot door and safety glass.
- Quote of $5160.00 for kitchen as attached plans
- Whiteware including Simpson LaCasa under bench oven, Ergo solid cook top, Robinhood Waste disposal unit; Robinhood 600 canopy
- Athena Eclipse vanity units

- Foundation concrete floor slab with 50mm insulation between the DPC and the hardfill with edge return. Similar to detail 4-14 Page 73 of Builders Foundation handbook [confirmation of detail will be required.]
- Building frame treated to H1.2
- Building Consent
- PC sum of $1850.00 for the supply and lay of carpet to all bedrooms
- Allowance of 50 lm for stormwater & 50 lm foulwater drains.

We have specifically excluded:-

- Landscaping including drives and paths
- Letterbox and clothesline
- We have assumed a level site and no allowance has been made for bulk excavation
- We have assumed that the boundary pegs are available for a site set out

This offer is subject to;

- Execution of a standard GJ Gardner Homes building contract,
- Acceptance of this quotation within 30 days.
- Monthly progress payments, based on value of work in place.
- .

We trust you find this quotation competitive and look forward to discussing it further with you in due course.

Yours sincerely
Stebo Holdings Limited T/A
G.J.Gardner Homes

Bob Greenbury

NOW Home Progress Update
16 July2004

Build Cost

- The estimated price from G.J. Gardner. has been revised to $179,926. No changes were required to the design – an error was found by G.J.Gardner. in the costings that had caused the previously advised price to be above $180,000
- This is now a “firm quote” – a contract could be signed with the builder and the house would be built for this amount
- The next step with the builder is to consider the contractual requirements for getting the house built. An issue to be considered is the effect on the contract price of material donations. The contracting party (presumably Beacon) will need to authorise/conduct these negotiations

Landscaping

- A revised landscaping plan has been completed and costed by Boffa Miskell. The revised plan cost is now under $30,000. The design is still consistent with the look and feel of the rest of Olympic Park so should be acceptable for resource consent purposes

Consents

- A meeting is planned for this week with key players from Waitakere City Council involved in the consent process to ensure the content of the resource and the granting process is as efficient (timely) as possible
- With the school holidays upon us Greg has taken a deserved break and I have not yet caught up with him regarding progress on the building consent drawings
- The best guess is that a time of 6 weeks will elapse from now until both consents have been issued

Lease

- A lease arrangement is under preparation by Waitakere City Council officers to govern the granting of use of the land. A meeting with the WCC legal officer will also be held this week to ensure all required details from the NOW Home design process are available

Construction Timing

- The critical path for completion now comes down to two key processes
- The first is completion of the final working drawings and receipt of the building consent
- The second is the sourcing of all donated materials, which is at least partly contingent on the confirmation of final materials from the working drawings and any matters arising during negotiation with the builder, as well as the arrangements under which those materials will be sourced
- Provided these are both completed by mid to late September, the house is capable of being completed before Christmas (assuming 12 week building programme)

Kimball Fink-Jensen
NOW Home Project Manager

Appendix H
Landscape Design

LANDSCAPE BRIEF

NOW HOUSE
OLYMPIC PLACE, NEW LYNN

AUGUST 2003

OVERVIEW

The Now House is a research project being undertaken by a number of organizations -the intention is to build a home on a Waitakere City Council site in New Lynn, that will incorporate readily available materials and technology within a specific budget, that demonstrate best practice with respect to sustainability and the requirements of the Government endorsed Kyoto Protocol.

The home will be used as a basis for research –it will be occupied by a family and will be monitored on a number of performance based criteria, such as water usage, power consumption and temperature variance, over a period of two years.

SITE

The site is located in Olympic Place, New Lynn, on an area of Olympic Park between the existing Ecomatters Trust house and Clark Street. The site is not a subdivided lot, it is an area of land that has been defined in size as the land upon which the home will be built.

The contour of the site is generally fairly level, with a bank to the East of the site that drops away to the Portage Creek. The only trees on the site are currently two large gums, which have been designated as dangerous and will be removed.

THE HOUSE

The Now House is a single storey three bedroom home of around 165m2, that is positioned on an East – West axis across the site, with the living areas positioned across the long axis of the house, facing North. The single garage and entry, face West to Olympic Place.

The home will be constructed on a concrete floor slab and will have timber weatherboards and a concrete tile roof.

LANDSCAPE REQUIREMENTS

FENCING

It is envisaged that for security reasons that the site will need to be fenced on the boundary – however it is also desirable for the home to have open access from the entry and garage to Olympic Place and for the home and site to be relatively visible to the public. Consequently fence construction must facilitate these requirements.

A public walking path is located along the East boundary of the site, and this should be considered with respect to privacy and security.

PLANTING

Plants should comply with the requirements of Waitakere City Council planting guidelines. Planting should compliment the site fencing type and layout, to ensure privacy for the occupants where required, while at the same time maintaining public visibility of the home.

Planting layout should also give consideration to integration with the existing landscaping of the Ecomatters Trust house to the North of the site.

As the home is incorporating passive solar design principles, planting layouts should consider the desire to ensure the home receives sufficient sun during cold months and has some shelter during hot months.

Where possible planting should assist in reducing the traffic noise from Clark Street, to the South of the site and in sheltering the home from prevailing, South Westerly winds during the cold months.

Plants should be considered, that will assist in the desire to create a zero run-off site and for low maintenance characteristics.

It is desirable to incorporate a vegetable garden and compost facility, into the design.

COURTYARDS

It is envisaged that an outdoor living court will be located to the North of the home, which will be accessed through doors from the formal and informal living areas. This court will also incorporate a pergola, that has clear roofing to provide a sheltered outdoor play / entertaining and storage area. The court should function as a readily accessible and frequently used extension of the homes living space.

A drying court is envisaged to the South of the home, that is accessed from the garage / laundry and that may incorporate a garden storage shed (for garden implements and bikes).

Consideration should be given, to keeping impermeable surfaces and site run-off, to a minimum, when selecting courtyard materials and designing the layout.

DRIVE

The garage will access Olympic Place via a drive to the West of the home –consideration should be given, to keeping impermeable surfaces and site run-off, to a minimum, when selecting drive materials and designing the layout.

The drive could also function as a second vehicle off street parking space.

ENTRY PATH

The entry will access Olympic Place via a path to the West of the home, that may be incorporated into the driveway. Consideration should be given, to keeping impermeable surfaces and site run-off, to a minimum, when selecting entry path materials and designing the layout.

OTHER REQUIREMENTS

WATER TANK

The home will recycle roof water and will need to be connected to a 3.6m diameter water tank – it is envisaged that this tank will be located in the area to the South of the master bedroom. The overflow from this tank will be the only connection to the Council storm water system.

Location and planting / screening should be designed to minimize the visibility of the water tank.

LINK TO ECOMATTERS TRUST HOUSE

It is possible that the home may revert to a community facility following the two year research period – therefore a possible access link to the existing Ecomatters Trust house to the North of the site should be considered.

SECTION 1: SUMMARY

		Price
1.	Preliminary and General	$ 2,570.00
2.	Site Preparation and Earthworks	$ 1,693.50
3.	Paving and Surfaces	$ 8,036.50
4.	Fencing	$ 12,165.00
5.	Utilities	$ 1,380.00
6.	Planting	$ 12,216.85
7.	Maintenance	$ 1,050.00
8.	Contingency (10%)	$ 3,911.2

Sub-Total (amount to be carried forward to Form of Tender)	*$*	*43,023.05*
	Plus GST	*$ 5,377.90*
	TOTAL	$ 48,400.90

Items not included in estimate :

- Additional topsoil to garden beds if required
- Compost and plant material for vegetable gardens
- Additional earthworks to level site if required

SECTION 2: SCHEDULE OF PRICES

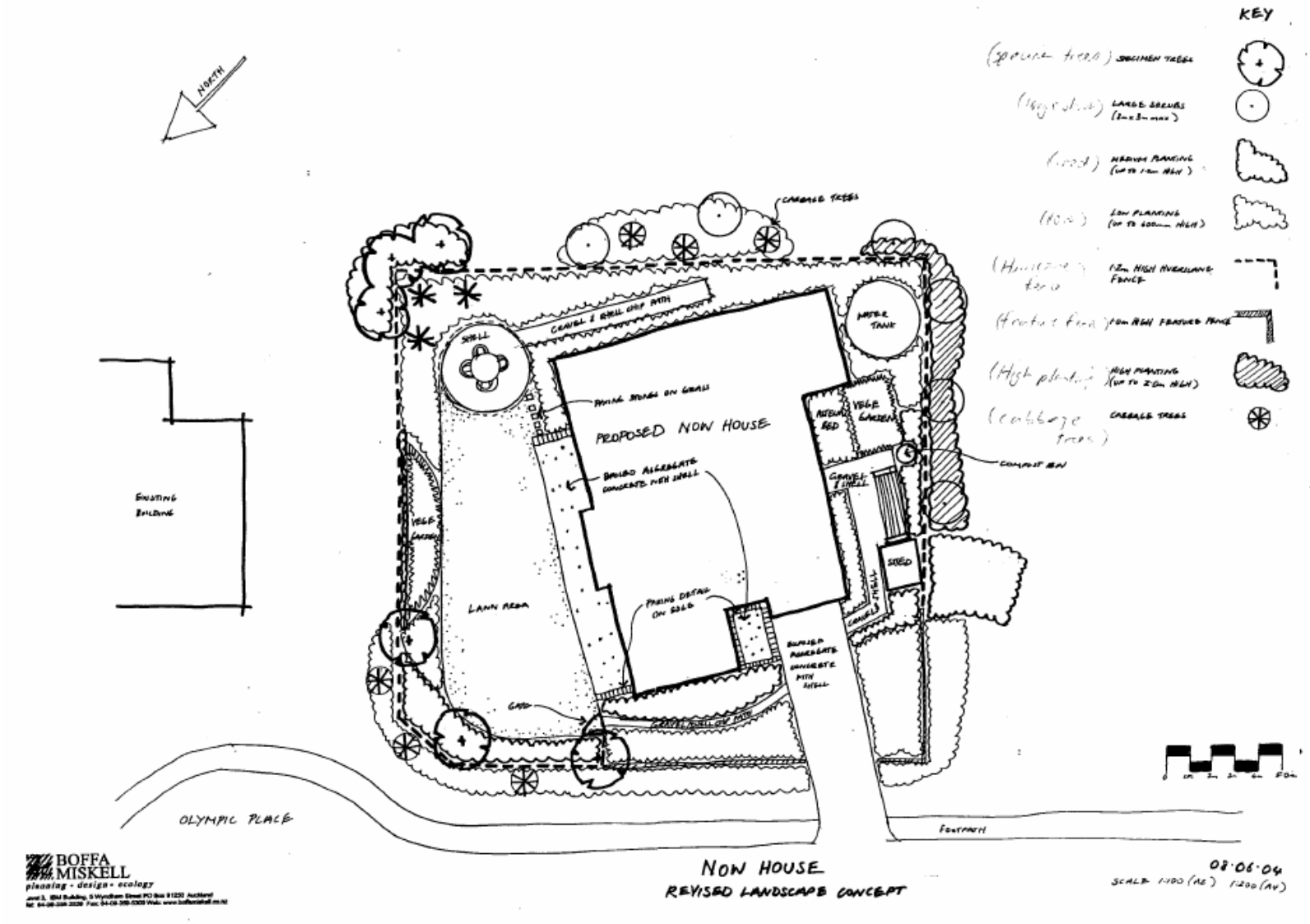
Item	Description	Quantity	Unit	Rate	Amount
1.0	PRELIMINARY & GENERAL				
1.1	Site establishment, clean up, removal from site and disestablishment	1	Item		1285.00
1.2	Construction Administration/Quality Control/ Site Safety	1	Item		1285.00
		SUB-TOTAL TO SUMMARY			$2,570.00
2.0	SITE PREPARATION/EARTHWORKS				
2.1	Spray out all existing grass with approved herbicide	475	m″	1.2	570.00
2.2	Cultivate all areas to be planted to a minimum depth of 300mm	385	m″	0.7	269.50
2.3	Excavate to form tree pits 1000x1000x1000mm, dispose of excavated material off site.	7	m^3 solid	42.0	294.00
2.4	Price to supply and place good quality topsoil to all tree pits	7	M3	50.0	350.00
2.5	Fill or excavate to formation level stormwater collection bed/shell area	5	M3	42.0	210.00
		SUB-TOTAL TO SUMMARY			$1693.50
3.0	*PAVING AND SURFACES*				
3.1	Driveway: Exposed aggregate concrete with shell chip, 150mm deep with reinforcing, on 200mm deep compacted GAP 40 basecourse	31	M2	80.0	2480.00
3.2	Paving around living area and entry foyer: Exposed aggregate concrete with shell chip, 100mm deep with 100mm deep compacted GAP 40	25	M2	75.0	1875
3.3	Paving edging detail to living area and front entry foyer 200x100 paver edging (to match concrete and paving stones)	12	LM	80.0	960.0

Item	Description	Quantity	Unit	Rate	Amount
3.4	Stepping stones Supply and place 400 x 400mm concrete pavers, (to match other paving) on a concrete pad, with 100mm GAP 40 compacted basecourse	5	No.	30.0	150
3.5	Gravel with shell areas (pathways and utility area) GAP 7 compacted in 3 layers with shell added to final layer on 100mm deep GAP 40 basecourse	32	M2	32.0	1024
3.6	Timber edging to gravel path ways and shell area	74	LM	15	1110.0
3.7	Shell surface 75mm depth crushed shell (size 9-20mm) on 100mm GAP 40 Basecourse	12.5	M2	35.0	437.50
		SUB-TOTAL TO SUMMARY			$8,036.50
4.0	*FENCING*				
4.1	1.2m High 'hurricane' fence powder coated black.	71.5	L/m	110.0	7865.0
4.2	1.0m high Regency fence supplied by Warner Fences, black paint finish	18	L/m	200.0	3600.0
4.3	1.2m wide pedestrian gate to suit 1.8m fence with lockable latch	1	No.	700.0	700.0
		SUB-TOTAL TO SUMMARY			$12,165.0
5.0	*UTILITIES*				
5.1	Clothesline Supply and install Hills Extendaline 6 clothesline, product number FD50034, Beige colour, attach to two H4 timber posts 100x100x2400 into concrete foundations placed 3.5m apart, line height 1.8m.	1	Item	300.0	300.0
5.2	Supply and install 2.0m x 2.0m Coloursteel garden shed, with concrete floor, colour to match house.	1	Item	800.0	800.0

Item	Description	Quantity	Unit	Rate	Amount
5.3	Earthmaker compost bins, 466 litres	1	No.	200.0	200.0
5.4	Supply and attach to fence standard letterbox	1	No.	80.0	80.00
		SUB-TOTAL TO SUMMARY			$1380.0

6.0	PLANTING				
6.1	Supply and mix into topsoil 0.05m3 of compost per m2 of area to be planted.	15	M3	40	600.0
6.2	Carry out minor grading and cultivation of all areas to be planted, bringing the soil to an even grade, free from minor hollows and ridges at correct levels	300.5	m″	0.50	150.25
6.3	Supply and plant the following plant material including backfill to all planting holes, staking and fertilizer Note: Plant sizes and cost subject to availability – to be confirmed				
a)	Low Amentiy planting	1320	PB02	*5.50*	7260.0
b)	Medium amenity planting	134	Pb05	*7.0*	938.0
c)	Medium shrubs	10	Pb12	*12.00*	120.0
d)	Large shrubs	27	Pb28	*27*	729.0
e)	Specimen trees	7	Pb95	*130.0*	910.0
6.4	*Supply and spread 75mm depth cambium bark mulch to all planting areas. Bark to be thoroughly watered down at spreading.*	22.5	m^3	*40.0*	900.0
6.5	V cut edge to garden beds	34	L/m	15.0	510.0
6.6	Grass seeding, Duet-Turf Ryegrass – includes required site preparation to provide suitable tilth for seed and fertiliser at a rate of 0.06kg/m2	*83*	*M2*	*1.2*	*99.60*
		SUB-TOTAL TO SUMMARY			$12,216.85
7.0	MAINTENANCE				

7.1	*3 months Maintenance and Defects Liability Period to planting/hard landscape works – one visit per month*	3	No.	*350.0*	1050.0
		SUB-TOTAL TO SUMMARY			$1,050.0



NEW HOUSE
REVISED LANDSCAPE CONCEPT

08.06.04
SCALE 1:100 (A3) 1:200 (A4)

SECTION 1: SUMMARY

		Price
1.	Preliminary and General	$ 2,000.00
2.	Site Preparation and Earthworks	$ 4,120.85
3.	Paving and Surfaces	$ 4,966.00
4.	Fencing	$ 11,947.50
5.	Utilities	$ 1,380.00
6.	Planting	$ 5,578.50
8.	Contingency (10%)	$ 3,000.0

Sub-Total (amount to be carried forward to Form of Tender)	*$*	*32,992.85*
	Plus GST	*$ 4,124.10*
	TOTAL	$ 37,116.95

Please Note :

- Additional earthworks to level site if required has not been included in this estimate
- The rates listed in the schedule are estimates only and based on current contractor pricing.

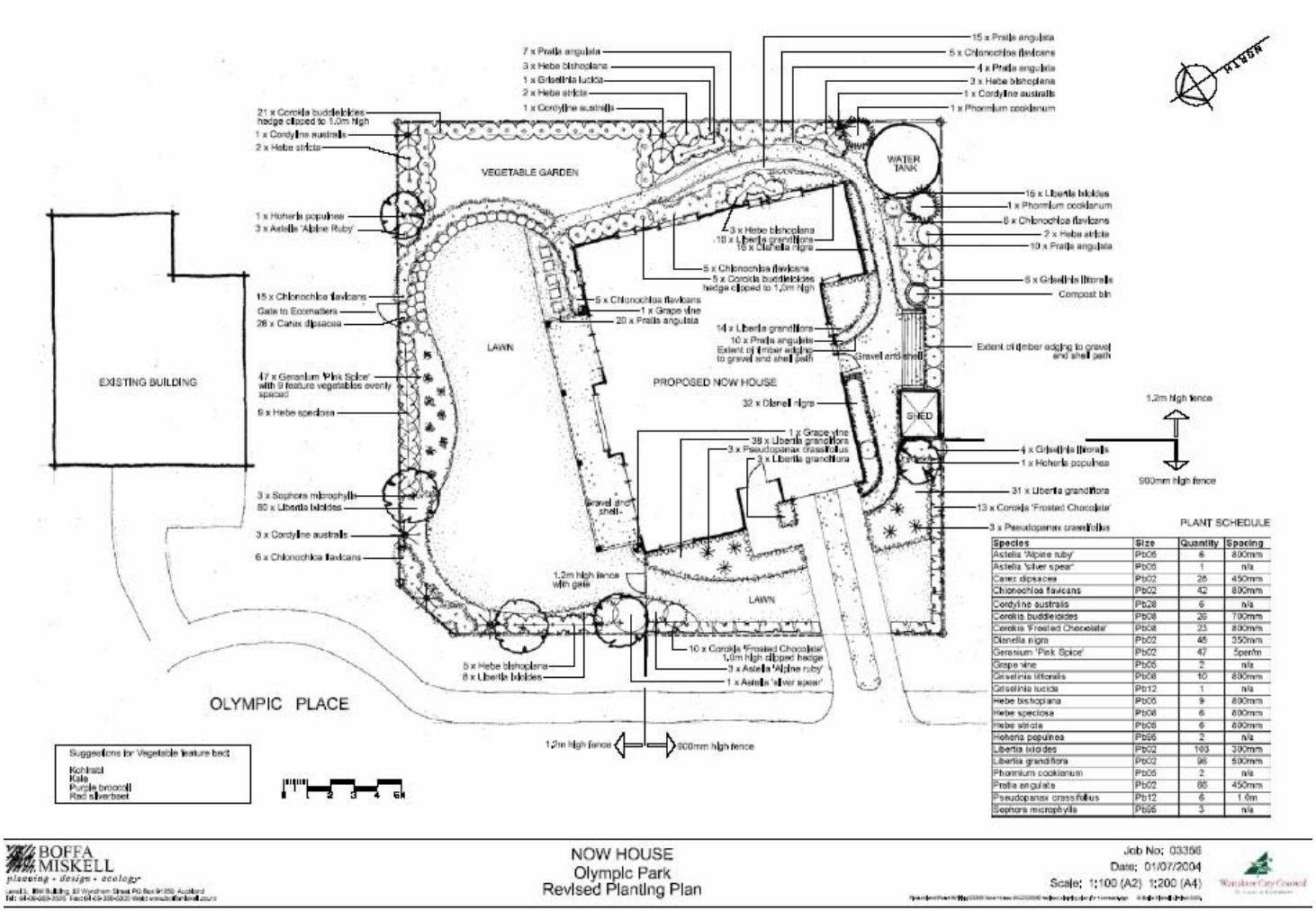
SECTION 2: SCHEDULE OF PRICES

Item	Description	Quantity	Unit	Rate	Amount
1.0	PRELIMINARY & GENERAL				
1.1	Site establishment, clean up, removal from site and disestablishment	1	Item		1000.0
1.2	Construction Administration/Quality Control/ Site Safety	1	Item		1000.0
		SUB-TOTAL TO SUMMARY			$2,000.0
2.0	SITE PREPARATION/EARTHWORKS				
2.1	Spray out all existing grass with approved herbicide	290	m″	1.2	348.00
2.2	Cultivate all areas to be planted to a minimum depth of 300mm	175.5	m″	0.7	122.85
2.3	Price to supply and place good quality topsoil to all tree pits	5	M3	50.0	250.0
2.4	Supply and place good quality imported topsoil to all garden beds (300mm depth)	50	M3	50.0	2500.0
2.5	Supply and spread good quality imported topsoil to all grass areas (150mm depth)	18	M3	50.0	900.0
		SUB-TOTAL TO SUMMARY			$4,120.85
3.0	*PAVING AND SURFACES*				
3.1	Driveway: Exposed aggregate concrete with shell chip, 150mm deep with reinforcing, on 200mm deep compacted GAP 40 basecourse	27.5	M2	80.0	2200.0
3.4	Stepping stones Supply and place 400 x 400mm concrete pavers, (to match other paving) on a concrete pad, with 100mm GAP 40 compacted basecourse	5	No.	30.0	150
3.5	Gravel with shell areas (pathways and utility area) GAP 7 compacted in 3 layers with shell added to final layer on 100mm deep GAP 40	63	M2	32.0	2016.0

Item	Description	Quantity	Unit	Rate	Amount
	basecourse, gravel and shell consistency to match concrete				
3.6	Timber edging to gravel path ways and shell area painted black (refer plan for extent of edging)	40	LM	15	600.0
		SUB-TOTAL TO SUMMARY			$4,966.00
4.0	*FENCING*				
4.1	1.2m High, Anchor Wire Ltd pool fence, powder coated black, 2.4m panels attached to black powder coated posts, 400mm deep concrete footings.	74.5	L/m	115.0	8567.50
4.2	900mm high 'residential' style fence supplied by Anchor Wire Ltd, powder coated black, 2400mm long panels x 900mm high. Panels folded top and bottom. Attached to posts powder coated black, 300mm deep concrete footings.	18	L/m	110.0	1980.0
4.3	1.0m wide pedestrian gate to suit 1.2m high fence with lockable latch, powder coated black finish (to match fence)	2	No.	700.0	1400.0
		SUB-TOTAL TO SUMMARY			$11,947.50
5.0	*UTILITIES*				
5.1	Clothesline Supply and install Hills Extendaline 6 clothesline, product number FD50034, Beige colour, attach to two H4 timber posts 100x100x2400 into concrete foundations placed 3.5m apart, line height 1.8m.	1	Item	300.0	300.0
5.2	Supply and install 2.2m x 2.0m Eden garden shed, Coloursteel with gable roof, dark green colour, with 150mm deep concrete slab floor on 100mm compacted gap 40 basecourse.	1	Item	800.0	800.0

Item	Description	Quantity	Unit	Rate	Amount
5.3	Earthmaker compost bins, 466 litres	1	No.	200.0	200.0
5.4	Supply and attach to fence standard letterbox	1	No.	80.0	80.00
		SUB-TOTAL TO SUMMARY			$1380.0

6.0	PLANTING				
6.1	Supply and mix into topsoil 0.05m3 of compost per m2 to main vegetable garden	2	M3	40	80.0
6.2	Carry out minor grading and cultivation of all areas to be planted, bringing the soil to an even grade, free from minor hollows and ridges at correct levels	300	m″	0.50	150
6.3	Supply and plant the following plant material including backfill to all planting holes, staking and fertilizer Note: Plant sizes and cost subject to availability – to be confirmed				
a)	Astelia 'Alpine ruby'	6	PB05	*7.50*	45.00
b)	Astelia 'silver spear'	1	Pb05	*7.50*	7.50
c)	Carex dipsacea	28	Pb02	*5.50*	154.00
d)	Chionochloa flavicans	42	Pb02	*5.50*	231.00
e)	Cordlyine australis	6	Pb28	*25.00*	150.00
f)	Corokia buddleioides	26	Pb08	*10.0*	260.00
g)	Corokia 'Frosted Chocolate'	23	Pb08	*10.0*	230.00
h)	Dianella nigra	48	Pb02	*5.50*	264.00
I)	Geranium 'Pink Spice'	47	Pb02	*5.50*	258.50
J)	Grape vine	2	Pb05	*7.50*	15.00
k)	Griselinia littoralis	10	Pb08	*10.0*	100.00
l)	Griselinia lucida	1	Pb12	*12.00*	12.00
m)	Hebe bishopiana	9	Pb05	*7.50*	67.50
n)	Hebe speciosa	6	Pb08	*10.0*	60.00
o)	Hebe stricta	6	Pb05	*7.50*	45.00
p)	Hoheria populnea	2	Pb95	*130.0*	260.00
q)	Libertia ixioides	103	Pb02	*5.50*	566.50
r)	Libertia grandiflora	96	Pb02	*5.50*	528.00
s)	Phormium cookianum	2	Pb05	*7.50*	15.00
t)	Pratia angulata	66	Pb02	*5.50*	363.00
u)	Pseudopanax crassifolius	6	Pb12	*12.00*	72.00
v)	Sophora microphylla	3	Pb95	*130.0*	260.00
6.4	*Supply and spread 75mm depth cambium bark mulch to all planting areas. Bark to be thoroughly watered down at spreading.*	11	m^3	*40.0*	440.0
6.5	V cut edge to garden beds	55	L/m	15.0	825.0
6.6	Grass seeding, Duet-Turf Ryegrass – includes required site preparation to provide suitable tilth for seed and fertiliser at a rate of 0.06kg/m2	*120*	*M2*	*1.0*	*120.0*
		SUB-TOTAL TO SUMMARY			$5,578.50



PLANT SCHEDULE

Species	Size	Quantity	Spacing
Astelia 'Alpine ruby'	Pb05	6	800mm
Astelia 'Silver spear'	Pb05	1	n/a
Carex dipsacea	Pb02	28	450mm
Chionochloa flavicans	Pb02	42	800mm
Cordyline australis	Pb28	6	n/a
Corokia buddleioides	Pb08	26	700mm
Corokia 'Frosted Chocolate'	Pb08	23	800mm
Dianella nigra	Pb02	48	350mm
Geranium 'Pink Spice'	Pb02	47	5per/m
Grape vine	Pb05	2	n/a
Griselinia littoralis	Pb08	10	800mm
Griselinia lucida	Pb12	1	n/a
Hebe bishopiana	Pb05	9	800mm
Hebe speciosa	Pb08	6	800mm
Hebe stricta	Pb05	6	800mm
Hoheria populnea	Pb95	2	n/a
Libertia ixioides	Pb02	193	300mm
Libertia grandiflora	Pb02	96	500mm
Phormium cookianum	Pb05	2	n/a
Pratia angulata	Pb02	66	450mm
Pseudopanax crassifolius	Pb12	6	1.0m
Sophora microphylla	Pb95	3	n/a

BOFFA MISKELL
planning + design + ecology

NOW HOUSE
Olympic Park
Revised Planting Plan

Job No: 03356
Date: 01/07/2004
Scale: 1:100 (A2) 1:200 (A4)

Waitakere City Council

Appendix I
Interview Summary Report
(Refer to hardcopy notes in envelope)